

Final Project Evaluation Report

Building Resilient Food Security Systems to Benefit the Southern Egypt



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Project Basic Information

Project Category	Regular Programme
Country	Egypt
Title of Project	Building Resilient Food Security Systems to Benefit the Southern Egypt Region
Type of Implementing Entity	Multilateral Implementing Entity
Implementing Entity	United Nations World Food Programme
Executing Entity	Ministry of Land Reclamation and Agriculture
Project Duration	Original Project Period: March 2013- March 2017 Revised Completion Date under Extension 1: October 2018 Revised Completion Date under Extension 2: April 2020 Revised Completion Date under Extension 3: June 2020
Project Budget	USD 6,904,318

Project Timetable:

Project Timetable	Expected Date	Actual Date
Start of Project Implementation	March 2013	March 2013
Mid-term Review	2015	September 2015
Project/Programme Closing	October 2018	June 2020
Final Evaluation	2019	November 2020

Contents

Abbreviations	5
Table of Tables	6
Table of Figures	6
Units Used	6
Executive Summary	8
1. Introduction	18
1.1. Context	18
1.2. Project Overview	19
1.2.1. Project Location	19
1.2.2. Project Components	21
1.2.3. Project results' Matrix.....	22
1.3. Evaluation General Information.....	25
1.3.1. Foreword.....	26
1.3.2. Objectives of the Evaluation	26
1.3.3. Approach and Methodology	26
2. Evaluation Findings	28
1.4. Project Design and Implementation	28
1.4.1. Project Strategy.....	28
1.4.2. Implementation Arrangements	29
1.4.3. M&E System	32
1.4.4. Stakeholders Participation	34
1.5. Project Outcomes.....	37
1.5.1. Outcomes' Relevance.....	37
1.5.2. Outcomes' Effectiveness	42
1.5.3. Outcomes Efficiency.....	72
1.6. Sustainability and Risks	77
1.6.1. Financial sustainability	77
1.6.2. Institutional Sustainability	78
1.6.3. Environmental Sustainability	79
1.6.4. Overall Sustainability Rating	80
1.7. Progress towards Impacts.....	80

3. Conclusions Lessons Learned and Recommendations 84

3.1. Conclusions and Overall Rating..... 84

3.2. Lessons Learned and Recommendations..... 87

Abbreviations

AF	Adaptation Fund
ARC	Agricultural Research Centre
CAPMAS	Central Agency for Public Mobilization and Statistics
CCIC	Climate Change Information Center
CEWS	Climate Early Warning System
CLAM	Central Laboratory for Agro-metrology
CMS	Climate Monitoring Stations
DAC	Development Assistance Committee
EACDP	Executive Agency for Comprehensive Development Projects
EEAA	Egyptian Environmental Affairs Agency
EGP	Egyptian Pound
EMA	Egyptian Meteorological Authority
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
GDP	Gross Domestic Product
GoE	Government of Egypt
HIECS	Household Income, Expenditure, and Consumption Survey
ICDL	International Computer Driver's License
IFAD	International Fund for Agricultural Development
IFC	Institute of Field Crops
MALR	Ministry of Agriculture and Land Reclamation
MTE	Mid-Term Evaluation
MoSS	Ministry of Social Solidarity
MoWRI	Ministry of Water Resources and Irrigation
MoU	Memorandum of Understanding
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
SMART	Specific, Measurable, Achievable, Realistic, and Timely
SoP	Standards of Operations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
SWERI	Water and Environment Research Institute
WFP	World food Programme

WB World Bank

Table of Tables

Table 1	Table 1: Project Results Matrix
Table 2	Main Project Partners and their Contributions to the Project Activities
Table 3	Project Monitoring and Evaluation Plan
Table 4	Main Project Partners and their Contributions to the Project Activities
Table 5	Contribution of the Project Results to the AF-Core Outcomes
Table 6	Contribution of Project Results to the Objectives of National Agricultural Strategy
Table 7	Productivity Increase versus Input Cost Decrease for Main Crops
Table 8	Planned and Actual Expenditure and Delivery Rates of Project Results
Table 9	Project Procurement Prices versus Market Prices
Table 10	Number of Beneficiaries Supported by the Project
Table 11	Project Overall Rating

Table of Figures

Figure 1	Governorates of Egypt
Figure 2	Analytical Overview of the Project Strategy
Figure 3	Project Organogram
Figure 4	Progress of Community Involvement in Project Activities
Figure 5	Development of Community Involvement in Project Activities
Figure 6	The Distribution of Planned Budget and Actual Expenditure among the Outputs of Outcome-1
Figure 7	The Traditional Irrigation Network in Egypt
Figure 8	The Percentage of Mesqas developed per Project Year
Figure 9	The Distribution of Planned Budget and Actual Expenditure among the Outputs of Outcome-2
Figure 10	Annual Project Expenditure and Delivery Rate
Figure 11	Project Cumulative Expenditure and Delivery Rate
Figure 12	Annual Project Expenditure and Delivery Rate

Units Used

Ardab:	150 kg
Hectare:	1000 m ²
Qirat:	175 m ²
Feddan:	4200 m ²

0.42 ha

Executive Summary

Context:

Egypt and particularly its agricultural sector face serious challenges that threaten food security and the well-being of its rapidly growing population. In addition to the extremely limited natural resources, Egypt is highly vulnerable to the negative impacts of climate change. Southern Egypt (SE) in particular faces some of the worst climatic shocks; heat and frost waves are generally more frequent, intense, and unpredictable. Subsequently, food production is comparatively lower in the Southern zone than elsewhere in the country, which is one of the key reasons for its chronic poverty.

In response, the WFP in Egypt in cooperation with the Ministry of Agriculture and Land Reclamation (MALR), represented by the Executive Agency for Comprehensive Development Projects (EACDP), implemented the project *“Building Resilient Food Security Systems to Benefit the Southern Egypt”*. The adaptation Fund (AF) approved the project and allocated USD 6,904,318 to finance it. The document at hand is the report of the final project evaluation carried out by an external, independent consultant (ToRs-Annex 1).

Project Overview:

Area:

The project target area includes 49 villages distributed across 5 governorates in Southern Egypt: Assiut, Suhag, Qena, Luxor and Aswan.

Components:

The project has two components:

Component 1: Adaptation to climate change through technology development and transfer. Specifically, this includes building resilience in agricultural and livestock and poultry production as well as introducing and using low cost water saving solutions.

Component 2: Capacity building for climate knowledge and adaptation replication aiming at scaling up the results achieved by component-1 and disseminating lessons learned and generated information. The components are reflected and elaborated in the project Results Framework (Annex 2)

Evaluation Approach and Methodology:

In addition to properly addressing the outcome and impact levels, the evaluation paid more attention than usual to the output level and related activities, in order to increase their usability for on-going and similar planned projects. Within the AF-evaluation framework and guides, the evaluation adopted a quantitative-qualitative mixed-methods approach, depending on both secondary and primary sources. A consultative and participatory methodology was applied to gather primary data, information and perceptions. Methods and tools included: desk review, in-depth individual interviews, FGDs and observations.

Evaluation Findings

Project Design and Implementation

Project Strategy:

The project strategy (as reflected in its logframe-design) is particularly diverse and wide in scope. It represents a conceptual innovation and introduced a pioneering model in the scheme of community-based interventions. The main pillars of the project strategy and design are solid, consistent and reflect clear causal relationships. However, the project logframe is somewhat flawed regarding the formulation

of a few objectives and indicators. Consequently, some the actual project achievements tended to be underestimated or not completely captured. The rating of the project strategy is *Highly Satisfactory*, while the project design as included in the logframe is rated as *Marginally Satisfactory*. **The overall rating of the project strategy and design is Satisfactory.**

Implementation Arrangements

The project was implemented within a national implementation modality, with WFP-Cairo office as the Implementing Entity and the Ministry of Agriculture and Land Reclamation (MALR) as the executing entity, through the *Executive Agency for Comprehensive Development Projects EACDP*. A MOU was signed between WFP and the Government of Egypt, represented by MALR, to define their roles and responsibilities in the implementation of the project. Another MOU was signed between the Egyptian Environmental Affairs Agency (EEAA) and MALR to define roles and responsibilities and regulate the collaboration of the two entities. A Project Management Unit (PMU) led by a Project Manager was established, with a central office in Luxor and an office in each other project governorate.

WFP, as the implementing entity of the project, has successfully provided oversight and support throughout execution, ensuring exemplary results, efficient management and proper fund utilization by the project. The EACDP contributed to the project through its extensive experience, supervision and technical support. Moreover, EACDP represented a considerable value added in facilitating and liaising project coordination with other governmental entities. The initial project duration was four years, from March 2013 to March 2017. However, the project witnessed three no-cost extensions, due to which the project ended in June 2020. The extensions were largely justified. **In conclusion, the project implementation arrangements are rated as Highly Satisfactory**

M&E System

The planned elements and milestones of the M&E system were appropriately conducted with some delay in the milestones. The budget allocated for the planned system was proportional to the activities. However, the M&E system suffered from some weaknesses that were already mentioned in the MTE-report. The M&E system is comprehensive and accurate but needed further elaboration in order to capture aggregated and disaggregated data as well as qualitative information. The system did not appropriately enable conducting data analysis and evidence based evaluation and planning. **In Conclusion: the M&E system is rated as Marginally Satisfactory.**

Stakeholder Participation

One of the project's strengths is the wide scope of stakeholders engaged in all project phases, which enriched knowledge input and technical contributions and facilitated coordination at both policy and operational levels. The project also depended to a large extent on community participation and grassroots organizations (local NGOs). At the national level, a project Steering Committee (SC) was formed including relevant partners and stakeholders. The SC was concerned with policy level and managed to solve several coordination issues. The project carried out several capacity development measures targeting stakeholder entities. At community level, the participation of beneficiaries, implementing partners and other stakeholders was strictly applied throughout the project's duration. The project depended on local NGOs as implementing partners of most of its activities. In order to do so, intensive physical and human capacity development measures were carried out.

Another important community organization model created and supported by the project was achieved through the Water Users Associations (WUAs), which were connected to the canal lining activity (under output 1.3). **In conclusion: at all levels and in all project phases, stakeholders and partners participation was extraordinary and is rated as Highly Satisfactory.**

Overall, the project design and implementation is rated as Satisfactory.

Project Outcomes

Outcomes' Relevance

The AF overall goal implicitly includes three conditions that mainly determine the interventions' alignment with it: a) targeting an area that is vulnerable to the effects of climate change; b) targeting the adaptation of the respective area to climate change; and c) implementing and introducing climate-resilient measures. All three conditions are completely covered by the project goal, objectives and outcomes. An elaborate analysis of the contribution of the single project activities / outputs to the AF-outcomes showed that almost all project activities represent direct or supportive measures to the AF-outcomes. *Therefore, the project is Highly Relevant to the AF overall goal, objectives and outcomes.*

As for national needs and priorities as reflected in the *National Agricultural Strategy*, the achievements of all project outputs, under both project outcomes, directly or indirectly contributed to the strategy objectives. Thus, *the project results are in alignment with and Highly Relevant to the National Agricultural Strategy.*

In Conclusion: The project outcomes are Highly Relevant to both the AF-core outcomes and the objectives of relevant national strategies.

Outcomes' Effectiveness

Outcome 1: Improved adaptive capacity of the southern region of the country in the face of anticipated climate-induced reduction in food security through asset creation, knowledge/technology transfer, and capacity/skills development

Output 1.1: Community level mobilization and climate adaptation planning

Community mobilization already started during the project planning and preparation phase. This inception phase paved the way for direct, actual awareness and mobilization activities and created an early positive attitude towards the project. Moreover, the participatory approach and community-based operational modality adopted by the project led to a continuous mobilization of the communities throughout the project life cycle. Although community mobilization was time-consuming and partially responsible for the slow pace of project delivery in the first two years, its return was worth it, not only in terms of climate change awareness but also due to the social return and community organization through activating partner NGOs, forming WUAs and the joint work in agricultural land consolidations.

In conclusion: The target of the output-1.1 (reaching 130,000 people) was actually exceeded, since the awareness and mobilisation activities reached 145,960 people.

The output (1.1) is rated as Highly Satisfactory.

Output 1.2: Establishment of a climate change and adaptation online application

In collaboration with several national entities, the project developed software for a Climate Early Warning System (CEWS) that links climate station forecasts to a central hub, and relates them to climate adaptation solutions. The project established a semi-official structure linked to the system, consisting of Climate Information Centres (CICs) at governorate, district and village levels. To complement this, a mobile application was developed, through which the messages of the warning system can be received. Climate Information Centres at governorate level were established and equipped to run the system. The first output target (*over 100 direct participants trained to use the system*) was achieved. The second target (*over 130,000 direct beneficiaries from the system and over 1 million indirect beneficiaries from the potential scale-up of system use*) could not be quantitatively measured. However, about 147,000 persons visited the website and therefore had access to the warning system and received information from it. The vast majority of beneficiaries interviewed are not internet users, and those who are aware of the website

are a minority. Nevertheless, the majority benefited from the system through information dissemination measures, e.g. broadcasting per loud speakers or mobile texting. The outreach of the information created by the system could have been wider if a more comprehensive and regular dissemination framework had been developed and applied.

In conclusion: The **output 1.2** was effective in increasing resilience against climate change and still has great potential for expansion. However, the CEWS was not utilized to its full capacity, since the dissemination framework was not fully constructed and put in place in an appropriate and more regulated manner. **The output 1.2 is rated as satisfactory.**

Output 1.3: Introduction and use of water saving irrigation and other adaptation techniques

The project introduced several GAPs that are also low-cost water saving solutions. Complementary to those activities, the output 1.2 aimed at improving the field irrigation systems through lining the traditional, extremely inefficient field canals (Mesqas). The activity applied an increasing cost sharing modality, i.e. the contribution of the project decreased from year to year. The most prominent results achieved in the framework of the output include: saving between 30-40% of irrigation water, saving almost the same rate of energy costs, reducing up to 80% of the time needed for irrigation, providing water to farmers through the mesqas, increasing the productivity of water and land, gaining land areas, improving soil quality and ending disputes and conflicts over irrigation.

Creating the Water User Associations (WUA) represented an important value added to the activity; it was the first experience for the farmers in organizing themselves in a formal framework. When the informants were asked to rate the activity of developing mesqas on a scale from 1 to 5, the average was 4.9. The first target of the output-1.3 (over 4,000 acres directly benefiting from optimal irrigation efficiency using low-cost solutions) was exceeded, since the area covered amounted to 6,960 acres. The second target (all canals undergoing improved irrigation efficiency benefit from WUAs established and strengthened under the project) is reached, since 98 semi-formal and formal WUAs were established and supported, covering all improved Mesqas.

In conclusion, the output 1.3 is rated as Highly Satisfactory.

Output 1.4: Building resilience through agricultural production

The project developed and introduced a package of adaptation techniques, almost all of which are also water saving solutions. The most important practices are: introducing heat-tolerant varieties for the main crops (wheat and sugarcane), replacing the domestic heat sensitive maize with a heat tolerant variety of sorghum, soil deep ploughing and surfaces leveling, consolidating land plots into larger collective units, introducing and promoting raised bed planting and changing planting dates. In addition to those relatively wide-scale activities, the project introduced some pilot activities as well. Partner NGOs have also been the implementing partners for the activities related to crop production, in return for a well-calculated profit margin. The project applied the same increasing cost sharing modality applied in canal lining. By the end of the project, there was almost consensus among stakeholders and beneficiaries over the great success of wheat farming in the consolidated areas, which not only led to increased productivity, but also improved soil quality and decreased input costs and irrigation water and time. In addition, the introduced varieties were highly resistant to climate factors. The project presented extension models for the cultivation of medicinal and aromatic plants, which were technically effective but faced marketing constraints. The main agro-processing pilot was the sun-drying of tomatoes which is one of the most successful value chain addition techniques. The activity addressed women so as to integrate them into the value chains and increase and diversify the sources of livelihood.

Conclusion:

The *first target* of the output (over 37,000 people directly benefit and over 100,000 indirectly benefit from access to heat resistant strategic plants, and learn how to change sowing dates, and other soft techniques to reduce climate risks) was significantly exceeded, since 51,977 people benefited directly from all or parts of the package of soft techniques that reduce climate risks and increase farmers' income from crop production. In addition, about 120,000 people benefited indirectly through adopting the introduced practices in their own fields. The second target (about 10,000 beneficiaries are engaged in income diversification schemes) is largely achieved, since 8,200 farmers were engaged in agricultural income diversification activities. When the informants were asked to rate the crop production activities on a scale from 1 to 5, the average was 4.5

The output 1.4 is rated as Highly Satisfactory.

Output 1.5: Building resilience through livestock and poultry production

In the framework of this activity, animal production is considered a means of livelihood diversification to increase the resilience of poor, landless populations and mainly women. Therefore, the activity focused on small animals and poultry (goats and ducks). Goats constituted a reasonable choice since they can tolerate heat, are easily fed and do not require much space. The implementation modality was based on a revolving fund managed by the local NGO and in-kind lending and payback. This was ideally suited to the target group. The first year of the activity witnessed some problems related to the health and physiological state of the goats, culminating in a relatively high mortality rate. After the MTE, the project took corrective actions and successfully addressed those problems. Many of the beneficiaries were able to reinvest the income they obtained from selling the male off-spring into establishing micro-projects, such as selling clothes and groceries, sewing and making handbags, thus further expanding their income generation capacities. The beneficiaries also showed a great degree of satisfaction with the goat rearing activity and its positive impact on their lives and those of their families. When asked to rate the activity on a scale of 1 to 5; the average was 4.6.

Raising ducks was not a traditional activity, however, the selection of ducks and in particular the variety of ducks provided by the project was a very successful choice, since they are not sensitive to heat grow fast; therefore, the production cycle lasts from 3-4 months. Raising ducks achieved a swift impact on the lives of beneficiaries, the majority of whom were women, particularly women chiefly or fully in charge of their families. The marketing methods and profits varied among duck raisers according to the size and location of the village. In addition to generating income, the ducks represented a clear improvement in the nutritional status of the families, as their incomes only rarely allowed for the purchase of meats. The majority of participants in the FGDs was in agreement over the success of the activity and voiced great enthusiasm for it. When the informants were asked to rate the activity on a scale from 1 to 5, the average was nearly 5 (4.99).

About 95% of the participants in the FGDs stated that they participated in one or more animal health training event. Complementary to the livestock and poultry activities, the project provided capacity building to the vet-service sector in the targeted governorates. Access to veterinarian services was available to almost all the beneficiaries in the livestock production, achieving the quantitative target. However, about 10% of the informants said that the veterinarians use the equipment provided by the project and the medications available in the clinics for their private practice.

The project also introduced beekeeping in the framework of livelihood diversification. Most of the interviewed beneficiaries expressed their satisfaction with the training they received and the quality of the production units. However, some complained of the location of the hives or the insufficient technical supervision, which prompted them to seek the assistance and advice from older producers.

Conclusion: Output 1.5 has three targets. Regarding the first target (over 36,000 women trained on reduction techniques of climate risk to livestock), project reports indicate that about 33,300 people directly benefited from the training activities. However, the informants from partner NGOs believe that the actual numbers exceeded the registered numbers by far. The second target (Over 90% of women engaged in raising livestock will have access to proper vet services equipped to reduce climate risk) is achieved (regardless of the intensity and regularity of the vet service). The third target (18,200 women have access to specialized livestock revolving schemes during project life) was almost doubled. This item responded to a very high demand and was based on the remarkable success of the activities. However, what made the expansion of the activity possible was the floating of the Egyptian pound, which rendered available additional budgets after exchanging dollars for pounds. The activities related to this output were generally very successful and contributed the most to project results at impact level, since they changed the socio-economic conditions in the targeted villages.

In conclusion, Output 1.5 is rated as Highly Satisfactory.

Outcome 2: Government more committed to investing in and sustaining climate risk reduction strategies and measures

Output 2.1: Training of government technical staff

Within each of the five agriculture directorates in the targeted governorates, the project established a Climate Information Center, mainly responsible for operating the warning system. The project provided these units with required office and communication facilities, including PCs and internet access. Staff training was provided to 20 engineers from each directorate, focusing on computer skills at the level of the International Computer Driving License (ICDL). At the national level, the most important achievement of the project is the provision of a new, high-capacity server to the EMA. The CEWS represented an important and pioneering example that became known to leaders in the agricultural sector. Moreover, the project directly contributed to the development and implementation of several national policies and strategies, including Egypt's National Adaptation Strategy, the National Strategy for Climate Adaptation in Agriculture, National Communications to the UNFCCC, and Egypt's National Agricultural Strategy 2030. The concept of climate change has become integrated in the policies and decisions related to the agricultural sector. Trainees on the CEWS spread awareness of climate change in their departments and represented the core of many activities that contributed to digitizing the agricultural sector at the level of their governorate. Indeed, one of the project governorates even transformed the early warning center established by the project into an early warning and crisis management unit, indicating a mindset that did not previously exist in the project.

Conclusion:

Output 2.1 has two targets: The first target (Software developed and launched to link climate stations belonging to different government agencies together, and developing adaptation guidance for each climate scenario) is largely achieved, however mainly at regional rather than national level. The second Target (300 officials at local and central government, as well as parliament, are aware of climate proofing agriculture and water management) is difficult estimate; nevertheless, the abovementioned results at policy level indicate that the target was likely achieved. **Output 2.1 is rated as satisfactory**

Output 2.2: Universities integrate climate adaptation solutions into their academic curriculum

Particularly during the second half of the project's life cycle, the documentation and dissemination of best practices and lessons learned was the subject of intensive efforts by the project. Several stakeholders positively evaluated the TV spots that were produced and aired, valuing their content. Farmers and representatives of partner NGOs were more enthusiastic about the radio interviews conducted with project stakeholders about the different interventions and successes in their villages. Numerous printed

materials were produced and disseminated. The project was innovative and pioneering in its use of social media; it created a website that was regularly updated and visited over 35,000 times. In addition, six Facebook groups were created. Another innovative and very effective means of communication and dissemination was the YouTube channel created by the project, on which seven documentary videos on project interventions are available. Those videos were also directly disseminated among relevant stakeholders.

Conclusion: Output 2.2 has two targets (1- at least 10 online messages produced and 2- at least 10 TV spots and programmes as well as 10 radio spots produced and aired), which are achieved. However, the indicators used for the targets do not completely reflect the achievement of the output.

In conclusion, output 2.2 is rated as Marginally Satisfactory.

Output 2.3: Sharing project results and lessons learned and mainstreaming new approaches in local and national planning

The target of output 2.3 (“10 awareness and advocacy events held for new parliamentarians and policy-makers”) was not achieved. Nevertheless, other (actually more important) comparable activities at policy level were implemented, which also contributed to sharing results and lessons learned. These included: advocacy events, presentations to the Minister of Agriculture, site visits, annual workshops. Almost each of the interviewed key-persons participated in at least one of the activities and expressed his/her satisfaction with it.

Conclusion:

Like output 2.2, the indicator used for the target does not completely reflect the achievement of the output, however the project conducted many more activities than planned, which significantly contributed to the results. Therefore, **output 2.3 is rated as Highly Satisfactory**

Output 2.4 Universities integrate climate adaptation solutions into their academic curriculum

The target of output 2.4 stipulates that “300 from the three key universities in Southern Egypt benefit from lessons learned from project interventions”. According to the project documentation, a total of 2,411 university students from the three universities participated in project interventions on climate adaptation. Moreover, the project provided equipment as well as financial and technical support to regional agricultural faculties to establish extension fields. It also organized workshops targeting professors of agricultural sciences to advocate for the inclusion of thematic areas related to climate change in academic curricula as well as field visits for students and included students in training programs.

Conclusion: Regardless of the fact that the indicator does not exactly measure the output, the output target is remarkably exceeded and therefore is **rated as highly satisfactory**.

Overall Outcomes' Effectiveness

The Outcome target 1 (“Over 90% of target population understands the climate change phenomenon, risks to livelihoods, and adaptation solutions”) is likely achieved; however, it cannot be measured quantitatively in the framework of the evaluation.

The Outcome target 2 (“Over 20,000 direct and 28,000 indirect people adopting optimal efficiency in irrigation using low-cost technologies”) is achieved, since according to project documentation, 26,931 direct and 53,862 indirect beneficiaries started adopting low-cost technologies that improve the efficiency of irrigation. However, the evaluator arrived at a much higher estimation. This is based on the fact that increasing the efficiency of irrigation in the framework of the project was not restricted to lining and improving the irrigation canals, since almost all introduced agricultural practices not only increased crop productivity and reduced climatic risks, but also remarkably saved irrigation water. Chief among those

practices are the laser leveling of soil, raised-bed planting and land consolidation. As mentioned under output 1.4., beneficiaries and stakeholders confirmed the significant impact of the adopted agricultural practices on water saving. Some considered this impact even larger than the impact of the improved canals. Even if no concrete figure is calculable here, it is a matter of fact that most of the beneficiaries of the agricultural activities (51,977 direct and 119,942 indirect beneficiaries) automatically adopted low-cost water saving solutions. Consequently, **outcome target (2) is widely exceeded.**

Outcome target 3 stipulates that “38,000 direct and over 100,000 indirect people adopt at least one climate risk reduction measure in agriculture and livestock”. According to the project’s documentation, 49,440 direct and 98,440 indirect beneficiaries adopted at least one climate risk reduction measure in agriculture and livestock. This estimation is not consistent with the achieved quantitative targets of the related outputs. Under output 1.4 alone, about 52,000 farmers directly and about 120,000 indirectly benefited from the project activities that provided access to heat-resistant strategic plants, as well as from soft techniques to reduce climate risks. In addition, about 37,000 women directly benefited from the heat tolerance and livelihood diversification livestock activities. **In Conclusion, outcome target 3 is definitely exceeded.**

Outcome 2: Government more committed to investing in – and sustaining – climate risk reduction strategies and measures

Outcome target 1 details “a positive trend sufficient to sustain and scale up interventions of this project”. In addition to the project’s participation and impact on consolidating climate change strategies and agricultural policies, the project directly led to the allocation of government budgets to achieve a wider implementation of the project activities. For instance, the minister of agriculture recently issued a decision to adopt raised-bed farming nationwide, with the state providing the mechanization services for land levelling and establishing raised-bed farms, covering about 40% of the costs. Other examples include the establishment of the *Luxor Center for Coordinating Climate Change Projects*, the inclusion of the project’s agriculture processes and technical aspects in the national wheat campaign, repeated climate change official hearings submitted by parliament members approached by the project and the inclusion of most of the project interventions in the National Climate Adaptation Plan. **In conclusion, outcome target 2 is achieved.**

Outcome Target 2 states “Government programs developed to deliver: climate information hubs to scale up use of systems developed under output 1.2, adaptation knowledge and services embedded in government extension services and Revolving funds extending beyond the project areas to benefit other communities in SE aiming to spread water conservation technologies and heat tolerant varieties in agriculture and livestock”. Those targets are discussed above. In conclusion **the target is achieved.**

This was aided by building the financial and human capacities of these associations, thus changing their approach entirely from charitable societies with limited capacities, to organized institutions capable of development work, with an understanding of the relationship between development and climate change.

Conclusion:

Outcome 1 is rated as highly satisfactory.

Outcome 2 is rated as highly satisfactory when evaluated based on the actual achievements and as satisfactory when evaluated based on the logframe indicators and targets.

Since:

- a) *the achievements of the main project outputs mostly reached or exceeded the targets;*

- b) *the vast majority of interviewed stakeholders and beneficiaries are highly satisfied with project results; and*
- c) *the achieved results at both output and outcome level significantly contributed to the overall project objective.*

The overall outcome effectiveness of the project is as rated Highly Satisfactory.

Outcomes' Efficiency

Cost Efficiency

By the end of its duration, the project delivery reached USD 6,903,822, which represents almost 100% of the total project budget (save for the budget of the evaluation item). However, while outcome 1 exceeded the budget allocated to it, reaching about 112% of its funds and four of its outputs highly exceeding the allocated budget, the activities of outcome 2 consumed only 63% of the allocated budget. This is mainly attributed to the devaluation of the EGP, which had a different impact on the different activities. Another important factor is the overlap between activities and indicators, which led to several activities being carried out as part of outcome 1, when they were actually supposed to fall under outcome 2.

All significant purchase activities were carried out in accordance with the financial rules by applying tendering, and were open and transparent. Committees of stakeholders participated in selecting the suppliers. In general, the majority of the cost components were mostly lower than the market price or cost. The share of administrative costs in the total project budget is acceptable and even relatively low considering the wide scale of activities and their geographical spread. Several factors increased the financial efficiency of the project, e.g. adopting the modality of increasing cost sharing, engaging a large number of volunteers and widely relying on online dissemination, which has almost no cost. *In conclusion, the cost efficiency of the project is highly satisfactory*

Time Efficiency

Due to the late start of the project, the first year (2013-2014) did not witness notable activities. The delay was attributed to political instability at the national level. In 2014-2015, the annual delivery rate remarkably increased from 2.5% to 15.9%. From the following year (2015-2016) onwards, the delivery rate maintained a stable trend at around 18-19%. The cumulative expenditure and delivery rate as well as the annual expenditure and delivery rate reflect an overall *high level of time efficiency*.

In conclusion, the project efficiency is rated as Highly Satisfactory.

Sustainability and Risks

The assessment of sustainability likelihood is based on the analysis of factors which enhance and support the sustainability of the project results and those which represent threatening risks.

Accordingly:

Financial and economic sustainability is moderately likely

Socio-political sustainability is likely

Institutional sustainability is moderately likely

Environmental sustainability is likely

In conclusion, the overall sustainability of the project results is Moderately Likely, which is a final score summarizing the abovementioned aspects of sustainability. This overall sustainability rating is considered a Highly Satisfactory achievement taking into consideration the context of development work in Egypt.

Progress towards Impacts

The project's overall goal at impact level is to *"Build diversified and resilient livelihoods for marginalized rural communities in the Southern Egypt region through transfer of technology, capacity building, and information."* This goal is translated into the strategy objective: *"To build resilience of Southern Egypt farming communities in the face of climate change and variability risks to food security."*

The impact goal and objective are clearly and directly linked to the project outcomes (as discussed under project strategy). In light of the successful achievement of the outcomes and the overall moderate likelihood of sustainability, the aimed impact is likely to be achieved.

The impact indicator as included in the project logeframe is: *"Over 50% of southern Egypt farming communities practice risk reduction measures."* An accurate quantitative measurement of the impact indicator was not possible in the framework of the final evaluation.

As for the number of beneficiaries whom the project directly supported, 145,960 beneficiaries were reached, which represents 107% of the target. The total number of direct and indirect beneficiaries, which is more important in terms of impact, amounted to 729,800 beneficiaries, i.e. 642% of the target. The share of women among the direct beneficiaries (25%) did not reach its target (40%). This is a recurrent problem of the target statement rather than a lack of achieved results. Agriculture is almost entirely restricted to men in Upper Egypt and consequently, most of the project activities targeted male beneficiaries (agricultural practices, irrigation, solar energy, warning system, field visits and technical training). Taking into consideration the extremely conservative gender norms in the project area and compared to several previous and ongoing similar interventions, the achieved percentage of female beneficiaries is considered a remarkable success.

The evaluator was not in a position to accurately prove the abovementioned figures of beneficiaries. Nevertheless, the achieved results at the outcome level deliver solid evidence for the number of directly supported beneficiaries. The evaluation results of the outcomes' sustainability widely confirm the numeric range of supported beneficiaries. This result stems from the fact that ***the project achieved or contributed to sustainable changes in human lives and systems.*** Those changes led to a ***reduction of climate change vulnerability*** in the targeted areas and, to different extents, in the wider scope of Upper Egypt. Through their high replicability and potential, they can represent serious steps on the way to achieving impact at the national level.

1. Introduction

1.1. Context

With a population of 101 million (in 2020), Egypt is the most populous country in North Africa and the Arab world. However, its rapidly growing population (with an annual increasing rate of 1.7%) occupies only about 4% of the country area. This is due to the unique topographical status of Egypt; since the Egyptian terrain consists of a vast desert plateau interrupted by the Nile Valley and Delta, where the population is concentrated and where most of the cultivated land is located. In 2018, the total cultivated area was about 9 million feddan (3.8 million ha), which represents about 3.8% of the total country area¹.

In addition to the extremely limited land resources, Egypt suffers under severe water dependency and scarcity. The water dependency ratio of Egypt is one of the world's highest with 96.9% of the total renewable water resources flowing from outside the country². The total renewable water resources per capita stand at 56.8 m³/year/capita (in 2018-2019)³. This value is permanently decreasing due to the population growth. This inadequacy of available natural resources, along with other socio-economic challenges facing the country, represent serious threats for the well-being and food security of the citizens and in particular, the poor.

About 29.7 of Egyptians live under the income poverty line⁴. According to the 2019 Global Hunger Index, Egypt suffers from a moderate level of hunger, ranking 61 out of 117 countries. Food affordability, quality and safety remain challenges. Egypt continues to rely on global markets for around half of its food requirements, which makes the country highly vulnerable to food price shocks. Malnutrition is another growing concern, with a 21.4% stunting rate, and 5.5% underweight rate of children under-five years of age.⁵

In the face of all those challenges, the agriculture sector plays a vital role in the economy, as well as in enhancing food security and social stability. Although its contribution to the GDP has been declining over the last decades, reaching about 11% in 2018-2019,⁶ the agriculture sector provides livelihoods for about 55% of the population and directly employs about 30% of the labor force. The sector accounts for about 20% of total exports and foreign exchange earnings.⁷ However, the agriculture sector suffers from severe chronic problems and obstacles; on the top of which are the extreme fragmentation, inefficient farming techniques, poor marketing infrastructure and post-harvest facilities, limited agricultural value addition, lack of adequate extension and veterinary services, as well as lack of effective farmers' organizations.

In addition to those problems, Egypt is highly vulnerable to climate change impacts. According to the Intergovernmental Panel on Climate Change, Egypt's Nile Delta is one of the world's three vulnerability hotspots. Projections indicate that Egypt will suffer (and is already suffering to a degree) from rising sea

Southern Egypt, in particular, faces some of the worst climatic shocks; heat and frost waves are generally more frequent, intense, and unpredictable in Southern Egypt. Resulting crop failures have been on the rise in the zone. Although no official data is published to quantify crop losses from mor levels, water

¹ All figures in this paragraph are taken from or calculated based on the database of the Central Agency for Public Mobilization and Statistics (CAPMAS), available at: https://www.capmas.gov.eg/Pages/StaticPages.aspx?page_id=5035

² FAO, Country Profile-Egypt, version 2016, available at: <http://www.fao.org/3/i9729en/i9729EN.pdf>

³ Calculated based on the database CAPMAS, available at: https://www.capmas.gov.eg/Pages/StaticPages.aspx?page_id=5035

⁴ CAPMAS, Household Income, Expenditure, and Consumption Survey(HIECS), 2019

⁵ WFP, Egypt, available at: <https://www.wfp.org/countries/egypt>

⁶ Calculated based on the database CAPMAS, available at: https://www.capmas.gov.eg/Pages/StaticPages.aspx?page_id=5035

⁷ FAO, Country Profile-Egypt, version 2016, available at: <http://www.fao.org/3/i9729en/i9729EN.pdf>

scarcity, and an increase in the frequency and intensity of extreme weather events. Consequently, food security, human health, the economy and ecosystems in Egypt are at risk.⁸ erratic weather, failures of fruits and vegetables, and the effect on prices, are widely reported in the media, and are of increasing concern to producer groups. The region is expected to continue to suffer from the highest rates of temperature rise (up to 1.5-2o C on average by the year 2040).

Subsequently, food production is comparatively lower in the Southern zone than elsewhere in the country. The higher temperature of the zone is a key factor contributing to lower agricultural productivity. The climate-impacted environment is forcing people to overexploit their already stressed natural resources, mainly land and water, to compensate for low productivity. Moreover, low productivity is one of the key reasons for chronic poverty, preventing people from investing to enhance their productivity through the provision of inputs and maintenance of land, leading to further deterioration of the resource base and ultimately incomes.

Southern Egypt risks to lose at least 30 percent of its food production by 2050 as a result of climate change impacts, including reduced crop and livestock productivity, increasing crop-water demand and reduced water use efficiency, increase in pest and disease infestations, and institutional weaknesses. The socio-economic impacts of this climate change-induced food insecurity may be significant on the communities of Southern Egypt.

In response, the World Food Programme (WFP) in Egypt submitted to the Adaptation Fund (AF) the proposal of the project “Building Resilient Food Security Systems to Benefit the Southern Egypt Region”. The AF approved the proposal and allocated USD 6,904,318 to finance the project. The project was implemented in cooperation with the Ministry of Agriculture and Land Reclamation (MALR), represented by the Executive Agency for Comprehensive Development Projects (EACDP). The project started in 2013 and was completed by the end of June 2020.

The document at hand is the report of the final project evaluation.

1.2. Project Overview

1.2.1. Project Location

The project target area includes 49 villages distributed among 5 governorates in Southern Egypt (figure 1). In the following is a brief description of the project governorates.

Assiut Governorate:

Assiut lies in the Middle Egypt region (a sub-region of Southern Egypt). It has a population of about 3.5 million of which 2.2 million live in rural areas. There are no major towns outside the capital city. Agriculture is the main activity, and the major crops are cotton, grains and vegetables. The main livestock is poultry, which is sensitive to heat shocks. The governorate stretches 120 kms along the banks of the Nile, and into the Eastern and Western deserts. This provides significant potential for land reclamation.

⁸ GoE, UNDP, UNE, GEF, National Adaptation Plans in focus: Lessons from Egypt, available at: <https://www.adaptation-undp.org/resources/project-brief-fact-sheet/national-adaptation-plan-process-focus-lessons-egypt>

Figure 1: Governorates of Egypt



Sohag Governorate:

Sohag lies in the Middle Egypt region, south of Assiut. It has a population of about 3.8 million people of which the vast majority is in rural areas. Agriculture is the main activity. The governorate stretches about 100 kms in a narrow strip along the banks of the Nile, constrained from any desert expansion from stretching into the Eastern and Western deserts. This limits the governorate’s horizontal expansion potential, and makes it ideal for an adaptation demonstration within old lands⁹. Sohag is among the top governorates in terms of food insecurity.

Qena Governorate: Qena is one of the governorates of Southern Egypt, covering a stretch of 180 Km of the Nile valley with a total area of 9565 km² of which approximately 15% is inhabited. Qena had a population of about 2.65 million people, 67% of which live in rural area. 65% of the Qena’s population relies on agriculture for a living, with 63% of the governorate reported to be living below the national poverty line. Water stress and high temperatures have been known to be among the main harsh environment characteristics of the governorate, and are identified as key reasons for its low crop productivity. They have also been identified as main constraints for horizontal expansion opportunities. Climate-induced increases in temperature and extreme weather events are expected to exasperate this situation. As such, the governorate is among the most vulnerable governorates as far as climate- induced impacts on agriculture and livelihoods.

Luxor Governorate:

The Governorate of Luxor is located in Upper Egypt. It was upgraded from a city to a governorate following Presidential Decree 387 for the year 2009, particularly because 52% of its population is rural. It is currently divided administratively into seven cities and six districts. The total area of Luxor is 2,424.82 km² including the desert hinterland, out of which 241.42 km² are inhabited. Areas of cultivated land are estimated at 47,212 acres, while the area of arable reclaimable lands is estimated at 37,000 acres⁸². Luxor is famous as a touristic governorate; however, in response to recurring national and international disruptions, people working in tourism normally revert to agriculture, overburdening the agricultural -productive

⁹ Old lands” is the term used to distinguish between historical, typical agricultural areas and reclaimed and desert areas

system and further stressing natural resources (e.g. since the Covid-19-crisis started). Luxor is predominantly touristic. Agricultural activities are mainly in cultivation of sugarcane, local beans, wheat and maize, employing approximately 61% of the population.

Aswan Governorate:

Aswan Governorate is the Southern-most governorate of Egypt. It has a population of 1,100,000 inhabitants, and occupies an area of 34,608 km². Aswan is Egypt's hottest, driest governorate. Its climate ranges from mild in the winter to very hot in the summer with absolutely no rain all year. There is maybe 1 or 2 mm of rain every 5 years. In fact, Aswan is one of the driest inhabited places on earth. It is a famous world- wide touristic attraction owing to its history, monuments, high dam and botanical garden. Economic activities of the governorate are limited, with tourism, agriculture and fishing in the forefront.

Villages' selection:

For identification of project locations, and with climate being the main selection criteria, all agro-climatology parameters- namely minimum and maximum temperatures, wind speed, relative humidity, and evapotranspiration for the 5 governorates of the Southern region were analyzed as a first step. The analysis concluded that each of the five governorates has its own climatic characteristic and it was thus decided that, to effectively generate adaptation lessons for the entire zone, the project is to work in all the five governorates. As the governorate is the lowest administrative unit for which climate indicators can be applied, socio-economic and food security vulnerability was used to fine-tune selection of locations at a sub-governorate level namely for selection of districts, then villages within districts, which would be models to pursue by neighboring villages.

Field visits and stakeholders consultations at the local level then followed, leading to the final selection of the 14 villages where the project was to start. Criteria for selection included accessibility, security, the presence of tribal conflicts or social tension, willingness and capacity of the local community, and the presence of competent service providers with whom the project can partner in implementation and sustainability. During the course of the project implementation, the same criteria was also used for selection of the new villages to where the project was to expand.

1.2.2. Project Components

The project was designed to have 2 components as follows:

Component 1: Adaptation to climate change through technology development and transfer

Activities under this component included:

A- building resilience in agricultural production through a set of integrated interventions among which:

- Establishment of a climate and food security monitoring system in project areas
- Introduction of tested and proven heat tolerant varieties of common crops
- Building soft skills to build resilience in the face of weather variability that may impact plants in critical growth stages through changing sowing dates and agricultural practices
- Value addition in agriculture and intercropping to diversify and increase income as a means of risk reduction and increasing resilience
- Value addition to diversify and augment income sources, such as improved post-harvest practices and small scale food processing

B- Building resilience in livestock and poultry production through providing heat tolerant varieties, vet services, training and ongoing technical assistance applying a revolving fund modality.

C- Introduction and use of water saving solutions

Component 2: Capacity building for climate knowledge and adaptation replication

Component 2 aimed at scaling up the results achieved by component 1 and disseminating lessons learned and information generated through:

- Capacity building of government technical staff through a wide array of trainings
- Documentation & sharing of lessons learned and best Practices
- Integration of climate adaptation solutions into the curriculum of the universities and technical schools

1.2.3. Project results' Matrix

The following table illustrates the project results matrix, summarizing the content of the project logical framework (logeframe).

Table 1: Project Results Matrix

Indicators	Baseline	Target for Project End	
Overall Objectives:			
<ol style="list-style-type: none"> 1. <i>Improving the adaptive capacity of the Southern region of the country in the face of anticipated climate-induced reduction in food production</i> 2. <i>build institutional capacity at all levels to enable sustainability and replication</i> 			
Objective Indicator	Proportion of SE farming communities that are more climate resilient through adoption of water efficient irrigation, risk reduction measures in agriculture and livestock, diversified income sources, and access to EWS	Over 90% of southern Egypt rural inhabitants are vulnerable to climate change and variability and demonstrate low level of knowledge of risk reduction measures	Over 50% of SE farming communities practice risk reduction measures
Outcome 1: <i>Improved adaptive capacity of the Southern region of the country in the face of anticipated climate-induced reduction in food security through asset creation, knowledge/technology transfer, and capacity/skills development</i>			
Outcome Indicator 1	Percentage of target population in SE demonstrating knowledge of climate change and variability and means to reduce risk to their livelihoods	30% of sample interviewed as part of the baseline assessment knew about climate change with varied levels of understanding	Over 90% of target population understand climate change phenomenon, risks to livelihoods, and adaptation solutions
Outcome Indicator 2	Number of people adopting optimal efficiency in irrigation using low-cost technologies Such as canal	More than 90% of people reported doing clearing of irrigation canals	Over 20,000 direct and 28000 indirect people adopting optimal efficiency

	lining and other surface irrigation low-cost solutions	Less than 1% reported adopting any other measures to conserve water	in irrigation using low-cost technologies
Outcome Indicator 3	Water user associations established and active in effective management of water resources and waterways	No. water associations available	A minimum of 12 water user associations established and actively operating
Output 1.1: Community level mobilization and climate adaptation planning			
Output Indicator 1.1.1	Number of people participating in awareness sessions and mobilized to participate in project activities	over 1500 people, who participated in the baseline survey	Over 130,000 people participating in awareness sessions and mobilized to participate in project activities
Output 1.2: Establishment of a climate change and adaptation online application/system			
Output Indicator 1.2.1	Number of people using the climate change and adaptation online application	Zero, because no such system was in place	Over 100 direct participants in Cairo and participating governorates trained to use the system
Output Indicator 1.2.2	Number of people benefiting from the system with climate information, early warning and adaptation guidance	Zero, because no such system was in place	Over 130,000 direct beneficiaries from the system and over one million indirect beneficiaries from the potential scale-up of system use
Output 1.3: Introduction and use of water saving irrigation and other adaptation techniques			
Output Indicator 1.3.1	Number of acres benefiting from optimal irrigation efficiency using low-cost solutions.	Less than 1%	Over 4000 acres directly benefiting from optimal irrigation efficiency using low-cost solutions
Output Indicator 1.3.2	Proportion of target communities benefiting from adequate services of water users associations.	Zero because no water users associations were established in the target zone	All canals undergoing improved irrigation efficiency benefit from WUAs established and strengthened under the project
Output 1.4: Introduction and use of water saving irrigation and other adaptation techniques			
Output Indicator 1.4.1	Number of people from among the target population benefiting from demonstration farms, extension services, and	None of the population were benefiting from any interventions for this purpose	Over 37,000 people directly benefit and over 100,000 indirectly benefit from access to heat resistant strategic plants, as well as

	farm-to-farm visits to enhance their resilience and reduce climate risks.		learn how to change sowing dates, and other soft techniques to reduce climate risks
Output Indicator 1.4.2	Number of people engaged in income diversification strategies to reduce risks and vulnerability of food security to climate.	Less than 5% of people are engaged in income diversification strategies.	The above figure includes about 10,000 beneficiaries are engaged in income diversification schemes (intercropping, high value crops, and/or organic farming)
Output 1.5: Building resilience through livestock and poultry production			
Output Indicator 1.5.1	No. of women trained on risk reduction in raising large ruminants, small ruminants and poultry; animal nutrition and alternative fodder.	Zero women trained on climate risk reduction to livestock	Over 36,000 women trained on reduction techniques of climate risk to livestock
Output Indicator 1.5.2	Proportion of women accessing adequate vet services in their villages as it relates to climate related risks and diseases.	About 98% of respondents to the baseline survey indicate inadequacy of vet services in their villages	Over 90% of women engaged in raising livestock will have access to proper vet services equipped to reduce climate risk
Output Indicator 1.5.3	Number of women benefiting from small loans to acquire heat tolerant livestock varieties.	No access to specialized livestock financing schemes are available	18,200 women have access to specialized livestock revolving schemes during project life
Outcome 2: Government more committed to investing in – and sustaining – climate risk reduction strategies and measures			
Outcome Indicator 2.1	% increase in budget allocated to adaptation in local, regional and national plans.	Zero	A positive trend sufficient to sustain and scale-up interventions of this project
Outcome Indicator 2.2	Key institutions needed capacity development to deliver services for climate risk reduction in rural communities	No programs or staff dedicated to adaptation services in key local governmental and non-governmental institutions.	Government programs developed to deliver: Climate information hubs to scale up use of systems developed under output 1.2 Adaptation knowledge and services embedded in government extension services Revolving funds extending beyond the project areas to benefit other communities

			in SE aiming to spread water conservation technologies and heat tolerant varieties in agriculture and livestock
Output 2.1: Training of government technical staff			
Output Indicator 2.1.1	Number of people trained; % of trainees that are able to properly retain message from training.	Training programmes for government on climate risk management to benefit rural communities will still be developed	Software developed and launched nationally to link climate stations belonging to different government agencies together, and developing adaptation guidance for each climate scenario for use by online users nationwide
Output Indicator 2.1.2	Number of advocacy meetings	Zero	300 officials at local and central government, as well as parliament, aware of climate proofing agriculture and water management
Output 2.2: Documentation of lessons learned and best practices			
Output Indicator 2.2.1	Number of awareness materials printed	No materials are produced on climate risk reduction in agriculture	At least five different printed products At least 4 different press releases issued
Output Indicator 2.2.2	Number of online messages	Zero	At least 10
Output Indicator 2.2.3	Number of TV spots and programmes aired.	Zero	At least 10 TV spots produced and aired At least 10 radio spots produced and aired
Output 2.3: Sharing project results and lessons learned and mainstreaming new approaches in local and regional planning			
Output Indicator 2.3.1	Number of awareness and advocacy events held for new parliamentarians and policy makers.	Zero	At least 10
Output 2.4: Universities integrate climate adaptation solutions into their academic curriculum			
Output Indicator 2.4.1	Number of students benefiting from lessons learned from project interventions	Zero	300 yearly from the 3 key universities in Southern Egypt

Source: Extracted by the Evaluator based on the project documents

1.3. Evaluation General Information

1.3.1. Foreword

Final evaluations characteristically focus mainly on project outcomes, sustainability and impacts (if any), while outputs are rather briefly addressed. The evaluation on hand, in addition to properly addressing the outcome and impact levels, paid more attention than usual to the output level and related activities. The justification of that approach is the fact that a proposal for a second project phase was submitted to the AF before the evaluation started and has been approved during conducting the evaluation. At the same time, and building on the success of this project, WFP and the Government of Egypt (GoE) decided to replicate its successful interventions in more villages in Southern Egypt through funding from the Netherlands Kingdom.

WFP and the GoE are also currently developing a new submission to the GCF to extend climate resilience to Middle Egypt through the replication of this project's successful interventions. . The elaborated documentation and evaluation of the outputs and activities might support the operational planning and implementation of those and potential other new projects, which increases this evaluation's usability.

1.3.2. Objectives of the Evaluation

As required in the 'Guidelines for Project/Programmes Final Evaluation' of the Adaptation Fund, the evaluation aims to provide a comprehensive and systematic description of the performance of the project evaluating its project design (including conceptualization) and implementation. It is to:

- Assess achievement of project outputs and outcomes towards achievement of increased resilience/reduced vulnerability,
- Identify lessons learned
- Provide recommendations for what could have been done better.
- Identify signs of success and/or failure as well as actions taken to achieve sustainability and replicability.

1.3.3. Approach and Methodology

Approach:

The evaluation adopted the quantitative-qualitative mixed approach, depending on both secondary and primary sources. A consultative and participatory methodology has been applied to gather primary data, information and perceptions.

Methods:

Secondary Data Review and analysis:

The desk review served two functions: a) providing direct information for use in the evaluation report and b) providing insights about issues to be raised and/or confirmed during primary data collection. The desk review included:

- AF-evaluation related guides
- Project document
- Annexes
- MOUs
- SOPs signed for the project
- Periodical project reports
- Activities' reports

- Knowledge products such as flyers and brochures
- Project related national strategies
- Project related technical papers and studies

Individual Interviews:

In-depth individual interviews were conducted with representatives of the following target groups:

- Key officials in Cairo (WFP management and officials of the Ministry of Agriculture)
- Key officials in the project governorates (concerned officials in the different directorates at the governorate and local levels including officials from the directorates of Agriculture, Irrigation, and Social Solidarity)
- WFP –project responsible officer
- Board Members of project partner-NGOs
- Project staff
- Project experts

The total of interviewed individuals amounts to 41 Persons from all project governorates**

Focus Group Discussions:

FGDs were conducted with representatives of the following target groups:

- Project staff
- Board Members of project partner-NGOs
- Beneficiaries of agricultural activities
- Beneficiaries of improved irrigation canals (Mesqas)
- Male beneficiaries of goats' lending activity
- Female beneficiaries of goats' lending activities
- Absolvents of IDCL training course

The total of individuals participated in FGDs amounts to 115 Persons from all project governorates.

Site Visits and Observations

The evaluator visited several project sites to observe several samples of the following:

- Consolidated fields
- Medicinal and aromatic plants' fields
- Solar Energy stations
- Improved irrigation canals
- Goats' enclosures
- Ducks' enclosures
- Bee hives
- Tomatoes' drying units
- Women micro enterprises (beneficiaries of animal production)
- NGOs' offices/work spaces

2. Evaluation Findings

1.4. Project Design and Implementation

1.4.1. Project Strategy

The Strategy of the project (as reflected in its logframe-design) is particularly diverse and wide in scope, with respect to areas of intervention, activities, as well as spatial allocation. Its strategy and design represents a conceptual innovation and introduced a pioneering model in the scheme of community-based interventions, where it literally started from “scratch”, informing the people of the meaning of the new vocabulary “Climate Change” and ended with a community-led climate change adaptation package. The cornerstone of the project strategy is embodied in the clear and consistent causal relationship between its goal, overall objective and the main two components (figure 2).

Vertically, implementing direct adaptation measures in the appropriately selected villages (component 1) is a perfect way to build resilience and increase adaptive capacities at micro level. In the meantime, building institutional capacities at all levels (component 2) is the basis for scaling up climate resilience of farming communities at the meso-and macro-level.

Horizontally, the two components have mutual positive interactions and effects; building institutional capacities supports the implementation of the direct adaptation measures in the targeted areas, while achievements and successful models and pilots provide government and policy makers with a greater focus on climate change aspects in a holistic manner. However, there is a formal issue regarding the phrasing of the project goal and overall objective. Goals are supposed to represent the broadest and most holistic level of the results scheme of a project. They should not include achievements’ measures. Nevertheless, the project strategy almost replaced the goal with the overall objective, since building resilience is broader and more generic than building diversified and resilient livelihoods.

At the **outcome-output levels**, there is also strong and clear internal (vertical) consistency between outcome-1 and the affiliated five outputs; whereby the outputs directly feed into the outcome. This does not completely apply to the same extent to outcome-2, since there is no significant direct causality between the outputs and the outcome in this instance. While outcomes are supposed to entirely or largely represent the collective results of project outputs, government commitment to higher investment in and sustaining of climate risk reduction strategies and measures is the result of numerous factors and contextual circumstances that are out of the project’s hands. As included and discussed under the section on Effectiveness, the project undoubtedly contributed to outcome-2, however, its contribution cannot be exactly measured. The contribution of the outputs under outcome-2 to component-2 (i.e. the next level in the hierarchy of the results scheme) and consequently the overall objective and goal is far more consistent, immediate and measurable. Moreover, those outputs horizontally support the outputs under outcome-1.

The logframe includes some output objectives as well as some indicators at different levels to varying degrees do not fulfill the SMART-criteria of objectives and indicators. This is one example for not entirely SMART objectives: “Universities integrate climate adaptation solutions into their academic curriculum”. This objective (like the investment of the government) depends on numerous internal and external factors. As a result, considerable achievements of the project’s work with universities were not reflected in the output objective.

In other cases, the output objective was reasonable but the related indicators were not appropriate for measuring it; e.g. the numbers of TV-posts or press articles as indicators for the documentation of lessons learned and best practices.

In addition, there were important and impressive results for which there were no separate or explicit outputs and indicators, such as the capacity building of partner NGOs, which is neither really covered by the output on community mobilization nor by the output on the training of government technical staff.

It is worth mentioning that the MTE indicated this problem and recommended elaborating the project logframe or at least reconsidering some indicators and adding new ones. However, this was hardly doable regarding the complex required procedure in light of the wide scope of partners and stakeholders, whose agreement was needed.

Conclusion:

The main pillars of the project strategy and design are solid, consistent and reflect clear causal relationships. However, the project logframe is somewhat flawed regarding the formulation of a few objectives and indicators. Consequently, some the actual project achievements tended to be underestimated or not completely captured. The rating of the project strategy is **Highly Satisfactory**, while the project design as included in the logframe is rated **Marginally Satisfactory**.

Therefore, *the overall rating of the project strategy and design is Satisfactory*

1.4.2. Implementation Arrangements

The project was implemented under a national implementation modality, with WFP-Cairo office as the Implementing entity and the Ministry of Agriculture and Land Reclamation (MALR) as the executing entity, through the *Executive Agency for Comprehensive Development Projects EACDP*. A MOU was signed between WFP and the Government of Egypt, represented by MALR, to set forth their roles and responsibilities in the implementation of the project. Another MOU was signed between the Egyptian Environmental Affairs Agency (EEAA) and MALR to define roles and responsibilities and regulate the collaboration of the two entities. As a first positive result of this cooperation, the MALR provided office space for the PMU as well as five office spaces (one in each Governorate) within the buildings of the agricultural directorates to host the project offices.

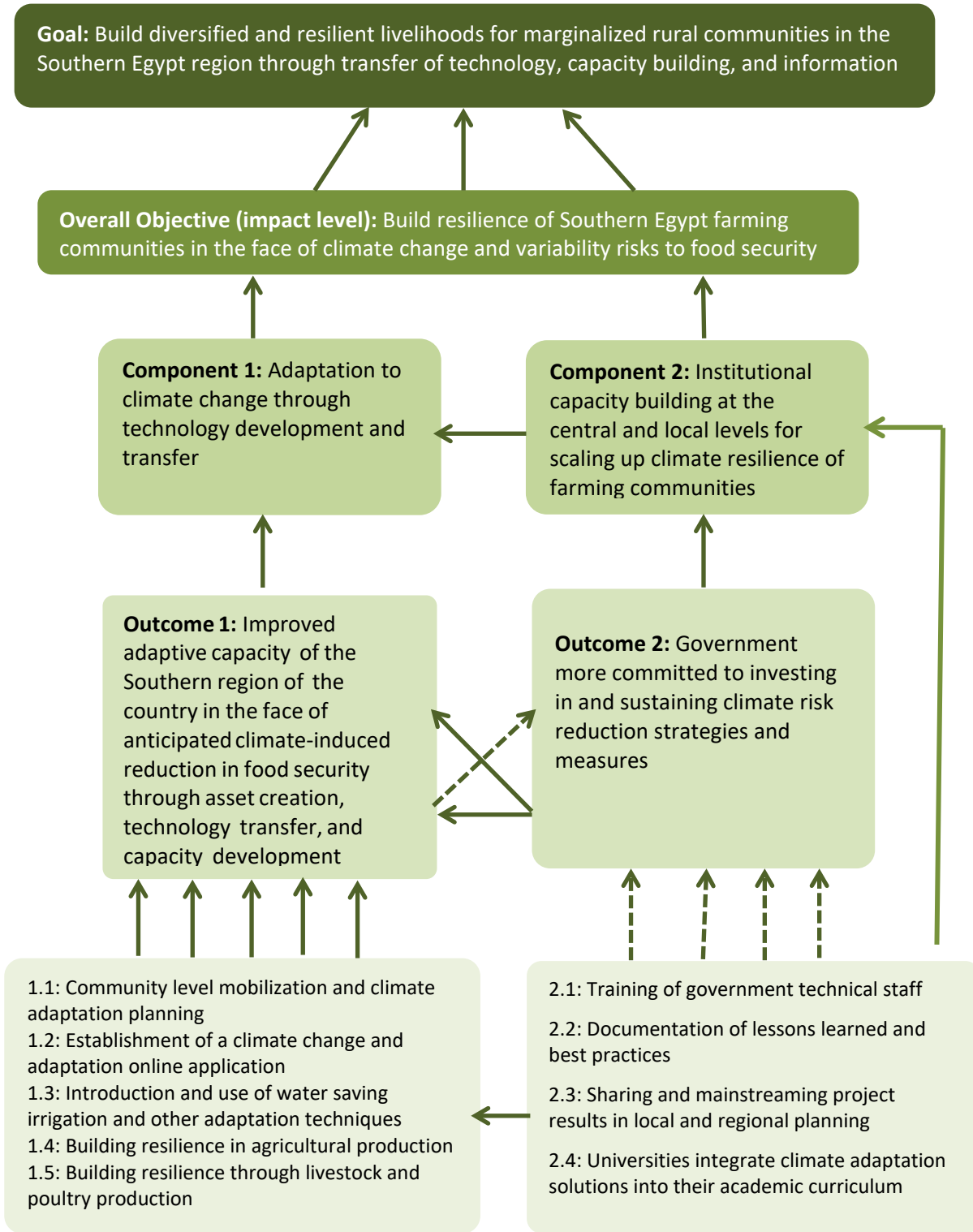
WFP established a Trust Fund (TF) to manage funds received from the AF for the project implementation. This followed the WFP Executive Director approval dated 16 November, 2012 to create a Standard Corporate Framework for contributions from the Adaptation Fund.

WFP designed the project, successfully provided oversight and support throughout its execution, and ensured proper fund utilization in the framework of the SOP. WFP continuously delivered on-job support and guidance to the PMU and supported the inter-annual reporting and data collection. WFP has also consolidated input from the PMU and guaranteed the quality of the annual reports to the AF, documented success stories, and built synergies with similar projects and agencies both at the national, regional and international levels.

The EACDP as the representative of MALR responsible for project execution possesses extensive experience in project relevant areas and fulfills WFP regulations as a prerequisite for fund transfers. The EACDP passed an institutional assessment conducted by a United Nations accredited audit firm that examined its financial and administrative book keeping, procedures, regulations and performance.

An important agreement that governed project implementation was the **Standards of Operations Document (SOP)**, which was stipulated by the WFP and the EACDP. The document set forth detailed implementation mechanisms, roles and responsibilities, obligations, staffing arrangements, staff and expertise hiring procedures, procurement and financial regulations including transfer modalities and eligible expenditures and was annually updated and extended.

Figure 2: Analytical Overview of the Project Strategy



Source: Designed and illustrated by the Evaluator

A Project Management Unit (PMU) led by a Project Manager was established, with a central office in Luxor and an office in each other project governorate. The organogram (figure 3) shows the project organogram. The EACDP backstopped the PMU, particularly, in dealing with governmental bodies within or outside MALR. In the framework of the SoP, this management modality was generally successful and problem less. However, the SoP Document restricted the ability of the Project Manager to flexibly and promptly react to occurring changes; since changes required approval.

The ceilings of single cost items as included in the document were often a matter of amendments, mainly as a response to inflation but in a few cases because the cost was under estimated. At project start-up, WFP set a ceiling value of advanced payments to the PMU at USD 100,000. This value was justified as a tool for oversight control and risk management; however, it led (among other factors) to some delays in implementing costly activities. With time the PMU increasingly gained experience and strengthened its capabilities which resulted in gaining trust and minimizing risks. Along with this process, the implementation rates of the activities progressively increased. In response, WFP increased the ceiling of advanced payment more than once, reaching USD 300,000.

The MTE indicated that the PMU was understaffed, taking into consideration the scope of activities and the rather complicated paperwork (due to fulfilling national and WFP- regulations), and therefore recommended to hire more employees. Indeed, the project responded with hiring one part time assistant in each governorate. However, this was not sufficient concerning the increasing work load in the second half of the project duration. The understaffing was widely compensated through the higher level of effort of all staff members; including the Project Manager.

A proportional increase of the salaries was not possible, since this would have required the approval of the WFP and EACDP which follows different financial frameworks and regulations. Assigning third parties (e.g. private sector) with some tasks would have relieved the staff and allowed them to focus more on the other tasks. In addition to the regular staff, the project hired community coordinators on a semi-voluntary basis (one in each village).

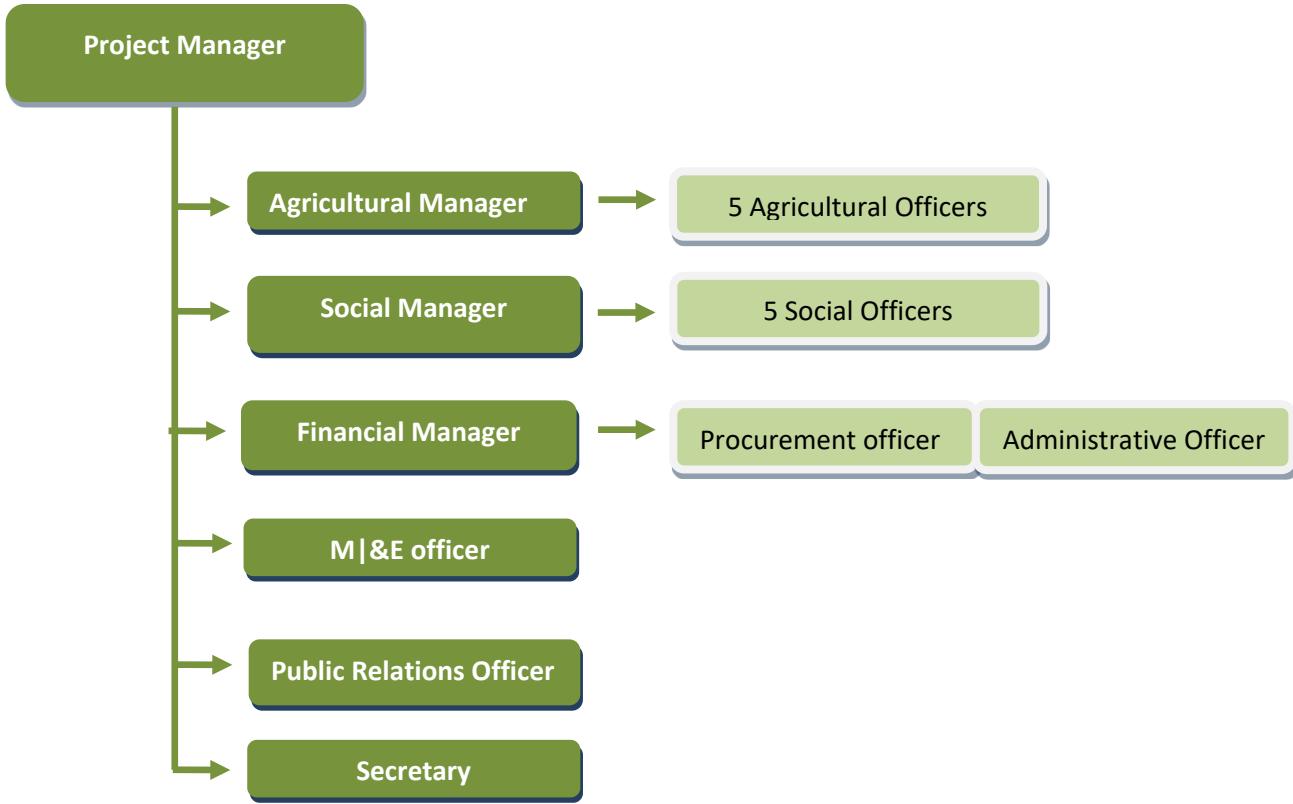
The coordinators played an important role in facilitating the implementation of the project activities and acting as a link between the locals and the project. They represented an asset and added-value without significant cost, since they only received a limited allowance, which was fixed for all, regardless the differences in work load and number of beneficiaries.

The initial project duration was four years from March 2013- March 2017. However, the project witnessed three **no-cost extensions**, as follows:

- Revised Completion Date under Extension 1: October 2018
- Revised Completion Date under Extension 2: April 2020
- Revised Completion Date under Extension 3: June 2020

The first extension was due to the delay of the starting of actual project activities. This is attributed to several factors; most important of them were the political situation that led to frequently changing high ranking officials (including the concerned ministers and the Head of EACDP), the difficulties in finding staff with the required profile at the governorate level including the PM (re-announcing), unforeseen delays in procurement of essential goods and services as well as the intensive and time-consuming community mobilization.

Figure 3: Project Organogram



Source: Illustrated by the Evaluator based on project documentations

The MTE recommended an on-year extension to compensate for that delay. The second extension was needed for completing activities which were expanded due to the financial surplus resulted from the devaluation of the national currency. The third two-month extension was to compensate the delay of project closing phase due to the outbreak of COVID-19 and the resulted restrictions of movement and group gatherings. During this phase, the staff was paid from the budget of the replicated project. The final evaluation considers all three extensions justified and have positively impacted the project achievements.

WFP, as the implementing entity of the project, has successfully provided oversight and support throughout execution, ensuring exemplary results, efficient management and proper fund utilization by the project. WFP played the main role in designing the project, provided support in stipulating the items under the SOP, and delivered on-the-job support and guidance to the PMU as well as assistance in developing the inter-annual reporting templates and data collection monitoring tools. etc. WFP facilitated the smooth implementation of the project activities and ensured proper utilization of funding through monthly reviews of expenditure documents for each executive entity and financial audits. WFP has also consolidated input from the PMU and ensured the quality of the annual reports to the AF, documented success stories, and built synergies with similar projects and agencies both at the national, regional and international levels.

Conclusion:

The project implementation arrangements are rated Highly Satisfactory

1.4.3. M&E System

The project Monitoring & Evaluation system was designed including the following levels:

- Officers in the sub-offices in each of the project governorates undertake monitoring on a day-to-day basis in project locations for activities and progress according to a set of indicators. They prepare monthly and quarterly progress reports and send them to the central PMU –office.
- The central PMU consolidates the governorates reports in project monthly and quarterly progress reports and send them to WFP.
- WFP as the multilateral implementing entity, develops WFP quarterly reports and annual progress reports to the AF
- In addition, WFP-personnel and consultants undertake regular, periodical visits to the project locations, gathering information by applying observations, FGDs and individual interviews.

The main milestones of the M&E system are:

- Baseline assessment
- Midterm evaluation of project early outputs, project management arrangements, progress of implementation, bottlenecks, and impact where relevant
- Final evaluation of project outputs and outcomes

The budget allocated for the planned system is proportional to the activities. The planned elements and milestones of the system were appropriately conducted with some delay of the milestones. However, the MDR indicated some weaknesses of the M&E system; some of them were due to the indicators as included in the project logframe and some of them were related to the design of the system.

The MTE recommended hiring a specialized expert to elaborate the system, adjust existing indicators and develop new ones, design a database that allows easy access to aggregated and disaggregated data through adequate software. The recommendations aimed to activate the role and usability of the system in following-up on activities, improving performance, safeguarding effectiveness and facilitating decision-making and planning. In response, the project hired an M&E officer and expanded the system that became more comprehensive and accurate. However, no expert was hired to elaborate the system’s design by reviewing the indicators, creating flow-chart for the gathered information and data, determining the level and type for more purposeful analysis.

Table (3): Project Monitoring and Evaluation Plan

Task	Responsible Parties	Time frame
Monitoring field visits	WFP	Monthly
Quarterly reports	WFP	At the end of each quarter
Annual Progress Reports (APR)	WFP	At the end of each year
Meetings of the Project Steering	WFP	Every 3 months
Mid-term Evaluation MTE	External Evaluator	Month 24 of the project
Final Evaluation	External Evaluator	After project conclusion
Project Final Report	WFP	At least two months before
Financial Audit	WFP	At the end of project

Source: Project documentations

In conclusion; the M&E system is comprehensive and accurate but it needed further elaboration in order to be able to capture aggregated and disaggregated data as well as qualitative information. The system did not appropriately enable conducting data analysis and evidence based evaluation and planning.

In Conclusion: the M&E system is rated Marginally Satisfactory.

1.4.4. Stakeholders Participation

National and Governorate levels:

One of the project strengths is the wide scope of stakeholders engaged in all project phases, which enriched knowledge input and technical contributions and facilitated coordination at both policy and operational levels. The project was also depending on a high grade of community participation and grassroots organizations (local NGOs).

At the national level, a project Steering Committee (SC) was formed through a decree issued by the Minister of Agriculture. It was composed of the EACDP-Supervisor General, WFP-representative, the Project Manager, representatives of the Egyptian Environmental Affairs Agency (EEAA) representative as well as the heads of the different agencies and institutes with whom the project will collaborate. The committee was supposed to meet quarterly and its mandate was to provide overall guidance to the project. These regular meetings proved to be difficult to arrange and the committee actually met when needed (rather ad-hock). The SC was concerned with policy level and managed to solve several coordination issues. Similar committees were formed at the governorate level. The practical partnerships and cooperation mostly occurred on a bilateral basis. Table (4) illustrates the project’s main partners directly contributing to the project activities and their rules. The project carried out several capacity development measures targeting stakeholder entities; on top of them the Egyptian Meteorological Authority (EMA), extension service and agricultural directorates, veterinary service directorate, universities and agricultural secondary schools. Those institutions received modern equipment and staff training in relevant fields. Stakeholders met expressed high appreciation for the project support and emphasized the benefits of it, not only for the targeted communities but also for all districts affiliated to their work mandate.

Table 4: Main Project Partners and their Contributions to the Project Activities

Partners	Contribution
Ministry of Agriculture and Land Reclamation (MALR), including: <ul style="list-style-type: none"> ▪ The Agricultural Research Centre (ARC) ▪ The Institute of Field Crops (IFC) ▪ Climate Change Information Center ▪ Land Improvement Authority 	<ul style="list-style-type: none"> ▪ Providing technical support and expertise where needed ▪ Identifying sources of local expertise ▪ Overseeing activities implementation ▪ Overseeing demonstration farms ▪ Strengthen own extension teams under the project ▪ Setting technical specifications for procurement of climate resilient varieties and vet equipment/devices ▪ Supporting government wide advocacy process and organizing training for its own staff
Egyptian Meteorological Authority (EMA)	<ul style="list-style-type: none"> ▪ Generating climate data through its climate stations ▪ Participating in training and advocacy activities ▪ Participating in process related to climate monitoring

	<ul style="list-style-type: none"> ▪ Providing expertise on climate monitoring for university curricula
Community Organizations (NGOs and WUAs)	<ul style="list-style-type: none"> ▪ Contributing to community mobilization ▪ Deploying human resources to use online information system & communicate adaptation guidance to community ▪ Supporting the establishment of Water Users Associations ▪ Supervise public works on behalf of the community ▪ Mobilizing community pioneers (early adopters) of modified technologies ▪ Organizing various field activities ▪ Organizing training and awareness sessions ▪ Managing livestock revolving funds and reporting on fund progress and financial data ▪ Identifying and reporting on case studies and success stories for advocacy materials
Ministry of Local Development (Governorates and directorates)	<ul style="list-style-type: none"> ▪ Supporting project operations ▪ Connecting their information centers to the CEWS ▪ Preparing and periodically updating village profiles ▪ Monitoring activities implementation ▪ Assisting in conducting procurement of vet clinics related equipment (vet directorates) ▪ Participating in provision of training and organizing training activities for their staff ▪ Coordinating mainstreaming of project achievements in local and regional planning
Ministry of Social Solidarity	<ul style="list-style-type: none"> ▪ Supervising partners NGOs' institutional and financial performance ▪ Participating in procurement committees for activities implemented by partners NGOs
Universities	<ul style="list-style-type: none"> ▪ Providing expertise and technical support where needed ▪ Deploying students to participate in field work ▪ Review curricula to integrate project themes ▪ Providing training on various thematic areas (e.g. beekeeping)

Source: Project documentations

In addition to those partners, other stakeholders were remarkably involved, on the top of them:

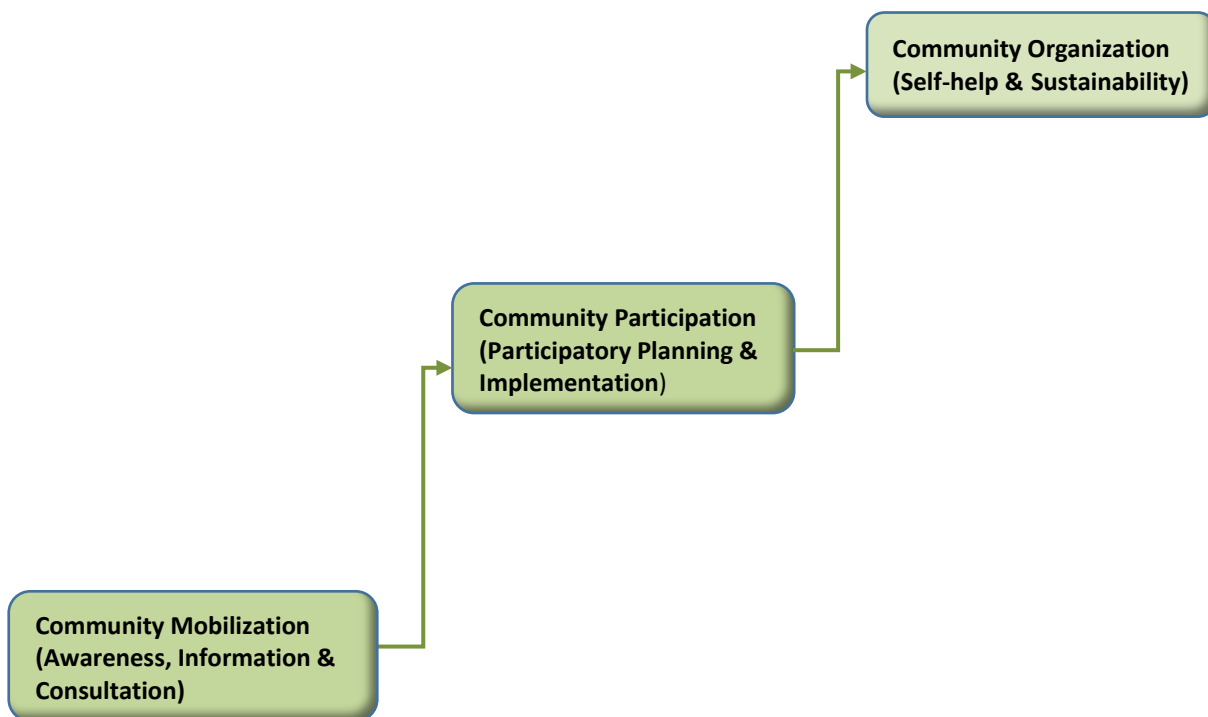
- The Egyptian Environmental Affairs Agency (EAAA)-Executing Partner
- The Ministry of Social Solidarity (MoSS)
- The Ministry of Water Resources and Irrigation (MoWRI)

- The Water and Environment Research Institute-SWERI

Community level:

Participation of beneficiaries, implementing partners and other stakeholders at the village level was the most active type of participation throughout the project’s duration. The time and budget spent for community mobilization was completely paid off. Raising awareness was vital for the success of the project activities. In the initial interactions with local inhabitants (planning and designing phase), the project targeted achieving community mobilization in order to become acquainted with the region and study conditions and problems on one hand, as well as familiarizing the community with climate change and the project on the other hand. Figure (4) illustrated the logic behind community capacity building and participation as a mean of achieving sustainability.

Figure 4: Progress of Community Involvement in Project Activities



Source: Designed by the Evaluator

Prior to commencing implementation activities, the project had selected an NGO in each village from a shortlist recommended by the respective ministry (MoSS), based on the availability of a minimum of institutional capacity. Subsequently, the project evaluated the NGOs institutionally and provided them with equipment and staff capacity building in order to enable them to manage the administrative and financial work load associated with implementing the project activities. Out of the 49 NGOs, five organizations were excluded after starting the implementation of the activities for their poor performance. This is an acceptable rate indicating reasonable selection criteria and processes. The majority of the selected NGOs had weak institutional capacities and development experience but also had a potential for improvement. Part of the NGOs were already active or had experience in development work. A minority of NGOs had on-going lending activities, financed from different resources, from which they could implement complimentary activities that increased effectiveness and impact of the project activities (e.g. lending the ducks beneficiaries to buy refrigerator). On the other side, the availability of a strong NGO in some cases came over other selection criteria of the targeted villages. In the first project

year, partner NGOs were assigned with implementing activities, before building their capacities, which slowed the delivery rate or negatively impacted the activity results. This remarkably changed in the following years; the institutional capacities of almost all partner NGOs made a great leap forward.

Generally, the beneficiaries were highly satisfied with the performance of the NGOs and expressed their appreciation emphatically, however, with some individual differences. During its inception phase, the project excluded the cooperatives as implementing partners due to their severe and chronic weaknesses. Although this was justified, including and strengthening some cooperatives (at least as a pilot) would have been a value added.

It was originally planned to include agricultural cooperatives in the project activities, however, they have been excluded in the inception phase. The project management justified this exclusion by several external and internal factors that make the cooperatives inactive and weak. Although these arguments are true, the evaluator believes that building the capacities and activating of (at least) some pilot cooperatives was necessary, since they are the organizations mandated by all agricultural activities and the only arm of MALR at the village level (agriculture directorate offices are only available at the district level).

Another important community organization model created and supported by the project are the Water Users Associations (WUAs)¹⁰. The MoWI, demands implementing the canal lining as a pre-condition to register an official WUA, this was an obstacle facing the implementation of the canal lining activity on a participatory basis. The involvement of The NGOs helped the project overcoming this obstacle. A sub-committee with a separate sub-bank account was established under the umbrella of each partner NGO. This allowed starting the canal lining activity in time with active participation of the beneficiaries. After finishing the canals, most of the WUAs (sub-committees) applied for the official registration as independent bodies. Out of 91 WUAs, 32 are endorsed and legalized. The common interest and the awareness and positive experience of the members of the WUAs build a solid base for sustainability.

Conclusion:

At all levels and in all project phases, *stakeholders and partners participation is rated Highly Satisfactory*
Overall, the project design and implementation is rated Satisfactory

1.5. Project Outcomes

1.5.1. Outcomes' Relevance

1.5.1.1. Relevance to Adaptation Fund Outcomes

The overall goal of the AF is “Assist developing-country Parties to the Kyoto Protocol and the Paris Agreement that are particularly vulnerable to the adverse effects of climate change in meeting the costs of concrete projects and programmes in order to implement climate-resilient measures”.

In other words, the AF overall goal implicitly includes three conditions that mainly determine the interventions' alignment with its overall goal:

1. The intervention should target an area that is vulnerable to the effects of climate change.
2. The intervention should target the adaptation of the respective area to climate change.
3. The intervention should implement and introduce climate-resilient measures.

All three conditions are completely covered by the project, since:

¹⁰ Detailed addressed under the section on output 1.3

1. Egypt as whole and Upper-Egypt in particular are heavily affected and threatened by climate change.
2. The overall objective of the project at impact level (“to build resilience of Southern Egypt farming communities in the face of climate change and variability risks to food security”) as well as the two outcome objectives (1) Improved adaptive capacity of the Southern region of the country in the face of anticipated climate-induced reduction in food security through asset, knowledge/technology creation and transfer, and capacity/skills development; and 2) Government more committed to investing in and sustaining climate risk reduction strategies and measures) directly contribute to achieving the AF-goal.
3. All project output activities are direct climate-resilient measures or support those measures.

As for the project output level, table (5) illustrates if and how the project outputs contribute to each of the AF-outcomes. For the purpose of the analysis, the outputs’ contributions are divided into two types: outputs that represent direct measures to achieve the AF-outcomes and supportive measures.

Table 5: Contribution of Project Outputs to the AF-Outcomes

AF- Core Outcomes and Project Outputs (POs)	Type of Output Contribution	
	Direct	Supportive
AF-Outcome 1: Reduced exposure at national level to climate-related hazards and threats		
PO 1.1: Community level mobilization and climate adaptation planning		
PO 1.2: Establishment of a climate change and adaptation online application		
PO 1.3: Introduction and use of water saving irrigation and other adaptation techniques		
PO 1.4: Building resilience in agricultural production		
PO 1.5: Building resilience through livestock and poultry production'		
PO 2.1: Training of government technical staff		
PO 2.2: Documentation of lessons learned and best practices		
PO 2.3: Sharing and mainstreaming project results in local and regional planning		
PR 2.4: Universities integrate climate adaptation solutions into their academic curriculum		
AF-Outcome 2: Strengthened institutional capacity to reduce risks associated with climate induced economic losses		
PO 1.1: Community level mobilization and climate adaptation planning		
PO 1.2: Establishment of a climate change and adaptation online application		
PO 1.3: Introduction and use of water saving irrigation and other adaptation techniques		
PO 1.4: Building resilience in agricultural production		
PO 1.5: Building resilience through livestock and poultry production'		
PO 2.1: Training of government technical staff		
PO 2.2: Documentation of lessons learned and best practices		
PO 2.3: Sharing and mainstreaming project results in local and regional planning		

PR 2.4: Universities integrate climate adaptation solutions into their academic curriculum		
AF-Outcome 3: Strengthened awareness and ownership of adaptation and climate risk-reduction processes at the local level		
PO 1.1: Community level mobilization and climate adaptation planning		
PO 1.2: Establishment of a climate change and adaptation online application		
PO 1.3: Introduction and use of water saving irrigation and other adaptation techniques		
PO 1.4: Building resilience in agricultural production		
PO 1.5: Building resilience through livestock and poultry production'		
PO 2.1: Training of government technical staff		
PO 2.2: Documentation of lessons learned and best practices		
PO 2.3: Sharing and mainstreaming project results in local and regional planning		
PR 2.4: Universities integrate climate adaptation solutions into their academic curriculum		
AF-Outcome 4: Increased adaptive capacity within relevant development and natural resource sectors		
PO 1.1: Community level mobilization and climate adaptation planning		
PO 1.2: Establishment of a climate change and adaptation online application		
PO 1.3: Introduction and use of water saving irrigation and other adaptation techniques		
PO 1.4: Building resilience in agricultural production		
PO 1.5: Building resilience through livestock and poultry production'		
PO 2.1: Training of government technical staff		
PO 2.2: Documentation of lessons learned and best practices		
PO 2.3: Sharing and mainstreaming project results in local and regional planning		
PR 2.4: Universities integrate climate adaptation solutions into their academic curriculum		
AF-Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress		
PO 1.1: Community level mobilization and climate adaptation planning		
PO 1.2: Establishment of a climate change and adaptation online application		
PO 1.3: Introduction and use of water saving irrigation and other adaptation techniques		
PO 1.4: Building resilience in agricultural production		
PO 1.5: Building resilience through livestock and poultry production'		
PO 2.1: Training of government technical staff		
PO 2.2: Documentation of lessons learned and best practices		
PO 2.3: Sharing and mainstreaming project results in local and regional planning		
PR 2.4: Universities integrate climate adaptation solutions into their academic curriculum		

AF-Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas		
PO 1.1: Community level mobilization and climate adaptation planning		
PO 1.2: Establishment of a climate change and adaptation online application		
PO 1.3: Introduction and use of water saving irrigation and other adaptation techniques		
PO 1.4: Building resilience in agricultural production		
PO 1.5: Building resilience through livestock and poultry production'		
PO 2.1: Training of government technical staff		
PO 2.2: Documentation of lessons learned and best practices		
PO 2.3: Sharing and mainstreaming project results in local and regional planning		
PR 2.4: Universities integrate climate adaptation solutions into their academic curriculum		
AF-Outcome 7: Improved policies and regulations that promote and enforce resilience measures		
PO 1.1: Community level mobilization and climate adaptation planning		
PO 1.2: Establishment of a climate change and adaptation online application		
PO 1.3: Introduction and use of water saving irrigation and other adaptation techniques		
PO 1.4: Building resilience in agricultural production		
PO 1.5: Building resilience through livestock and poultry production'		
PO 2.1: Training of government technical staff		
PO 2.2: Documentation of lessons learned and best practices		
PO 2.3: Sharing and mainstreaming project results in local and regional planning		
PR 2.4: Universities integrate climate adaptation solutions into their academic curriculum		
AF-Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies		
PO 1.1: Community level mobilization and climate adaptation planning		
PO 1.2: Establishment of a climate change and adaptation online application		
PO 1.3: Introduction and use of water saving irrigation and other adaptation techniques		
PO 1.4: Building resilience in agricultural production		
PO 1.5: Building resilience through livestock and poultry production'		
PO 2.1: Training of government technical staff		
PO 2.2: Documentation of lessons learned and best practices		
PO 2.3: Sharing and mainstreaming project results in local and regional planning		
PO 2.4: Universities integrate climate adaptation solutions into their academic curriculum		

Source: Estimated and designed by the Evaluator

The evaluation of the project effectiveness as included which rates effectiveness “*highly satisfactory*”, indicates that the alignment of the project with the goal, objectives and outcomes of the AF as above discussed and analyzed, also applies for the actual achievements of the project.

Conclusion:

The project is Highly Relevant to the AF overall goal, objectives and outcomes.

1.5.1.2. Relevance to the National Agricultural Strategy

The project results are in alignment with and *Highly Relevant* to the National Agricultural Strategy. The achievements of all project outputs, under both project outcomes, directly or indirectly contributed to the strategy objectives, as illustrated in table (6).

Table 6: Contribution of Project Results to the Objectives of the National Agricultural Strategy

Project Results	Outcome 1					Outcome 2			
	Output 1.1	Output 1.2	Output 1.3	Output 1.4	Output 2.1	Output 1.5	Output 2.2	Output 2.3	Output 2.4
Agricultural Strategy Objectives									
1. Promoting sustainable use of natural agricultural resources	Direct	Direct	Direct	Direct	Indirect	Indirect	Indirect	Direct	Indirect
2. Increasing the productivity of both land and water units	Direct	Direct	Direct	Direct	Indirect	Indirect	Indirect	Direct	Indirect
3. Raising the degree of food security of the strategic food commodities	Direct	Direct	Indirect	Direct	Direct	Indirect	Indirect	Direct	Indirect
4. Improving the livelihood of rural inhabitants	Direct	Direct	Indirect	Direct	Direct	Indirect	Indirect	Direct	Indirect
5. Reducing poverty rates in rural areas	Direct	Direct	Indirect	Direct	Direct	Indirect	Indirect	Direct	Indirect
6. Increasing the competitiveness of agricultural products in local and international markets	Indirect	Indirect	Direct	Direct	Indirect	Indirect	Indirect	Indirect	Indirect
7. Improving the climate for agricultural investment	Indirect	Indirect	Direct	Direct	Indirect	Direct	Indirect	Indirect	Indirect

Direct contribution

Indirect Contribution

Conclusion:

The project outcomes are *Highly Relevant* to both, the AF-core outcomes and objectives of relevant national strategies. One of the key reasons for the project’s success is its rationale and justification, as the project design achieved a perfect balance between alignment with the strategy and goals of the Adaptation Fund (AF) and the WFP on the one hand and national plans and responding to urgent needs on the other. The project moreover surpassed alignment with existing national projects to foreseeing future trends of the state and active participation in crystallizing them in the form of new policies and executive modalities. When the project began with digitizing climate change information and

agricultural services, the state had not yet begun digitizing the agricultural sector as a whole. Additionally, the project’s policies in developing irrigation channels and agricultural consolidation began before these became national and sector goals

1.5.2. Outcomes’ Effectiveness

1.5.2.1. Effectiveness of Outcome 1

Improved adaptive capacity of the southern region of the country in the face of anticipated climate-induced reduction in food security through asset creation, knowledge/technology transfer, and capacity/skills development

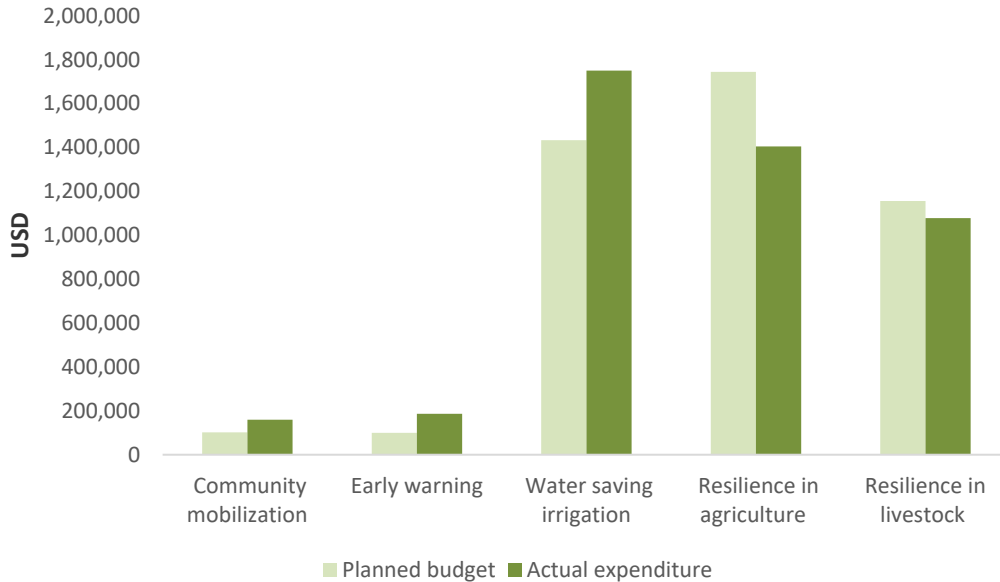
Overview

There are 5 outputs under outcome 1, namely:

- Output 1.1: Community level mobilization and climate adaptation planning
- Output 1.2: Establishment of a climate change and adaptation online application
- Output 1.3: Introduction and use of water saving irrigation and other adaptation techniques
- Output 1.4: Building resilience through agricultural production
- Output 1.5: Building resilience through livestock and poultry production

Since the outcome rating is a result of the rating of the single outputs, it is important to consider the distribution of the planned budget and actual expenditure among the outputs, which is illustrated in figure (6)

Figure 6: The Distribution of Planned Budget and Actual Expenditure among the Outputs of Outcome 1



Source: Calculated and illustrated by the Evaluator based on project documentations

Output 1.1: Community level mobilization and climate adaptation planning (including community awareness activities)

Community mobilization already started during the project planning and preparation phase. In this early stage, a wide range of participatory tools were repeatedly applied, e.g. an inception workshop, FGDs with different groups of potential beneficiaries, partners and other stakeholders as well as numerous key-persons interviews. In addition, a wide-scope baseline study was conducted addressing 1,500 potential beneficiaries spread across the targeted areas. These activities informed the communities about the project, created an early positive attitude towards it and paved the way for the latterly conducted direct community mobilization activities when the project started.

The explicit mobilization and awareness activities included a variety of traditional methods and tools, such as community meetings, brochures, awareness seminars and mosque sermons. In addition, the project was pioneering in introducing a very effective mobilization tool, namely stage shows informing communities about the project activities and climate change-related issues in the form of theatre dramas.

The field findings of the evaluation proved that these shows were the most successful mobilization and awareness-raising tool. The beneficiaries interviewed mentioned those shows with excitement and admiration, and more important they retained the messages and information which were included in the shows. The shows were firstly performed by professional actors; later on, they were performed by local residents, including females. This does not only reflect a high grade of trust and integration in the project, but also a remarkable social change, taking into consideration the extremely conservative traditions and values that dominate in Upper Egypt.

Moreover, the participatory approach and community-based operational modality adopted by the project led to a continuous mobilization of the communities throughout the project life cycle.

Gender disparities were noticed in the level of awareness of climate change at large and its link to the project activities they benefited. This is attributed to two factors: a) women generally are less educated and exposed to sources of information and b) the type of activities the beneficiaries were involved in, since crop production and irrigation, where the impact of climate change is very obvious and recognized, are male dominated, while female beneficiaries have been mainly involved in animal and poultry production, where the link to climate change is less clear.

Conclusion:

Community mobilization and empowerment is considered one of the most successful project activities that have integrated with, supported and applied the participatory approach in the various stages of the project. This activity also supported the achievement, sustainability and impacts for the rest of the activities and results. The activity included many levels, starting from the beneficiaries and ending with decision-makers. It also contributed to the achievement of large numbers of volunteers from the local communities. Although the activity was time-consuming and was partially responsible for the slowness of project delivery in the first two years, its return was worth it, not only in the form of climate change awareness but also due to the social return and community organization through activating partner NGOs, forming water user associations and joint work in agricultural land consolidations.

The **target** of output (1.1) is: over 130,000 people over the project life participated in awareness sessions and were mobilized to participate in project activities. The actually achieved figure exceeded the target, reaching 145,960 people.

The output (1.1) is rated Highly Satisfactory

Output 1.2: Establishment of a climate change monitoring system

The main source for climate information in Egypt is the Egyptian Meteorological Authority (EMA). In the framework of the Agricultural Climate Adaptation Strategy (ACAS), the Agricultural Research Centre (ARC) of the MALR founded the Central Laboratory for Agro-Meteorology (CLAM). The laboratory established Climate Monitoring Stations (CMS) at the regional level. At the governorates level, there were no links between those metrological stations on one side and the agricultural directorates, extension workers, farmers' organizations and individual farmers. Consequently, farmers had no direct access to information about climate factors that impact their crops or to advice on how to respond to them.

The project developed software for a Climate Early Warning System (CEWS) that links climate station forecasts to a central hub, and relates them to agricultural practices instructions to farmers on how to address upcoming weather (climate adaptation solutions). Several entities collaborated in creating the system; on the top of which were the ARC, EMA, CLAM, Climate Change Information Centre (CCIC), Institute of Field Crops (IFC) and Soil, Water and Environment Research Institute (SWERI). The project developed a website in Arabic¹¹ and integrated the CEWS into it.¹² The system also included an interactive map that allowed not only searching for information but also asking specific questions¹³ related to a certain crop in a certain area and time. The project established a semi-official structure linked to the system, consisting of Climate Information Centres (CICs) as follows:

- 5 CICs at governorate level, embedded in the agriculture directorates (with two staff members in each)
- 51 at district-level, embedded in the agriculture directorates' offices
- 51 CICs at village level, embedded in the offices of the partner NGOs (340 volunteers worked on the system)

To compliment this, a mobile application was developed, through which the messages of the warning system can be received. The early warning system started by covering one crop, namely, wheat and expanded in response to beneficiaries' requests to include maize, sorghum and sugar cane.

Within each of the five agriculture directorates in the targeted governorates, the project established a Climate Information Centre, responsible for operating the CEWS. The project provided those units with required office and communication facilities, including PCs and internet access. Staff training was provided to 20 engineers from each directorate, focusing on computer skills at the level of the International Computer Driving License (ICDL). The best two absolvents of the training were assigned to run the CEWS with regular technical support from the project. The selected staff received additional on-the-job training to enable them to effectively monitor, analyse, and disseminate climate data and information.

The system relies on the Climate Information Centres receiving climate information and agricultural instructions and inputting them into the CEWS in order to be openly available to all, as well as through

¹¹ <http://climatechange-eg.org/askme.aspx>

¹² <http://climatechange-eg.org/Instructions.aspx>

¹³ <http://climatechange-eg.org/Map.html>

the mobile application for those who download it on their devices. In addition, the agriculture directories would send the information by fax to its workers on the district level.

There is no doubt or conflict among stakeholders over the urgent need for the CEWS and its importance in confronting climate change, and in particular in closing the large gap between the points of information production (meteorology stations and research centres) and the farmers, who need this information. This need becomes even more urgent and the gap wider due to the extreme weakness of agricultural extension services, which has led farmers to confront climate challenges that they cannot resolve through their traditional experience. This system also complies with the state strategic plan to digitize the agriculture sector in the framework of digital transformation at the national level (which became increasingly important and saw a great push with the appearance of Covid-19). The CEWS marks a major future opportunity to serve the purpose of agricultural development and adapt to climate change in a number of fields, as it represents a good basic infrastructure for further digitalization of agricultural information and extension services which would significantly support climate change adaptation.

As for the output **targets**, output (1.2) has two targets:

The **first target** is “over 100 direct participants in Cairo and participating governorates trained to use the system”. This target was achieved; however, due to the repeated change of ministers and heads of sectors at the Ministry of Agriculture in Cairo at the time of the training, a change has been made restricting the target group to participants from the governorate level. This proved to be very effective in building the capacities related to the project’s overall objectives.¹⁴

The **second target** of output (1.2) is “over 130,000 direct beneficiaries from the system and over 1 million indirect beneficiaries from the potential scale-up of system use”. In the framework of the final evaluation, it is impossible to accurately measure the indicator of this target quantitatively. On the one hand, a total of about 147,000 persons visited the website and therefore had access to the warning system and received information from it.

Despite the fact that the website and the interactive map are directed in the first degree towards end beneficiaries (farmers), the FGDs with the beneficiaries indicated that the vast majority of them do not use the internet, and those who are aware of the website are a minority. This is expected in view of their economic and educational standards. Practically speaking, the direct users of the system were the agricultural extension workers and other workers in the agriculture directorates, part of the volunteers and staff of the partner NGOs, as well as a limited number of the natural leaders of villages and farmers with a higher education level than the standard.

However, this by no means indicates that the farmers did not benefit from the system, as the complementary tools provided by the project as an integral part of the system design largely made up for

Wheat Farmer (beneficiary):

“When we got the message not to irrigate the wheat because there is rain on the way, the majority of us did not take the message seriously and considered it wrong information and irrigated their crops, while a small minority took a risk and did not. After the rain, we all saw the great damage that was inflicted on the irrigated crop, while the crops of those who followed the message survived. We didn’t know that just a message can save a crop.”

Mango farmer (non-beneficiary):

“Last season, we lost the majority of our mango because unexpected winds felled the flowers. If we knew that the winds were coming, we would have sprayed the crop with flower stabilizers. If we had received the messages, like the wheat farmers did, we would have been able to save the mangos.”

¹⁴ More details under the output (2.1)

the lack of electronic interaction, since the partner NGOs acted as a mediator between the system and the end beneficiaries. The NGOs received early warning notifications and agricultural instructions from the device or application, which they then passed on to farmers. The most far-reaching messages were those that were delivered verbally through talking in mosques or using the speakers at mosques, or using vehicles that travelled through the village broadcasting the message through speakers (both the vehicles and speakers were rented). In other (smaller) villages, messages were circulated through fixed sound systems that broadcast from the headquarters of the association directly to the surrounding area. This was proven and confirmed by the FGDs' participants, whereby the vast majority of informants said that they received the information from the system on climate events and how to deal with them one way or another. They also expressed its great usefulness for them and said that it repeatedly led to saving their harvests.

Following verbal messages, direct communication was the next best way of spreading information effectively, despite the difficulty in measuring it. Direct communication includes vertical communication between experts and agricultural extension workers provided by the project, and the farmers, or horizontal communication between the farmers themselves. It is worth noting that the extensive community participation in all project phases contributed to enhancing communication and dissemination of early warning information among beneficiaries and non-beneficiaries. This was followed by messages sent via text on mobile phones, whether SMS or via the app designed by the project and made available for free on the Google PlayStore. Despite the high potential of this tool, the high level of illiteracy limited everyone's ability to interact with it.

It was observed that the degree of dissemination of information varied from one place on another and one event to another, according to the collective circumstances and the differences in the personal interest and capabilities of those in charge of the NGOs. For the same reason, there were differences in the ability to convince beneficiaries of following the information, particularly those who were not involved in agriculture activities, as farmers are usually attached to traditional methods that they inherited and it is difficult for them to be convinced of alternative steps. However, trust in the system's information was achieved through practical experience when the beneficiaries saw the role that the information played in saving the crops and increasing productivity. Farmers stated that they avoided up to 60% in harvest losses compared to their neighbours, who did not follow or did not know about the system.

Conclusion:

The **output 1.2** was effective in increasing resilience against climate change and still has great potential for expansion. The project achieved a pioneering pilot of high importance as it proved that poverty and lack of education, which are widespread characteristics among small farmers, do not prevent digitization and use of new technologies. Despite some shortcoming, the project succeeded in providing information on climate change and related agricultural instructions to small farmers, in spite of not only their digital but also their literal illiteracy. In addition to WhatsApp and SMS messages on mobile phones, which became available in the smallest and most remote of villages, the simple tools used to transfer climate information and agricultural extensions, whether in the form of online content or audible content in mosques, local NGOs and mobile speakers, had the highest outreach and coverage, as there was not one case that could not be reached on one of these ways.

However, the CEWS system could have achieved a greater level of dissemination if it had been originally designed for use by an intermediate segment, e.g. extension agents, staff of agricultural directorate, NGOs and Cooperatives as direct beneficiaries (whilst making it available for all). This would have required putting in place a more regulated and comprehensive dissemination framework, to allow for reaching wider coverage, particularly as climate events do not distinguish between beneficiaries and non-beneficiaries and are not limited to one village.

The output (1.2) is rated Satisfactory.

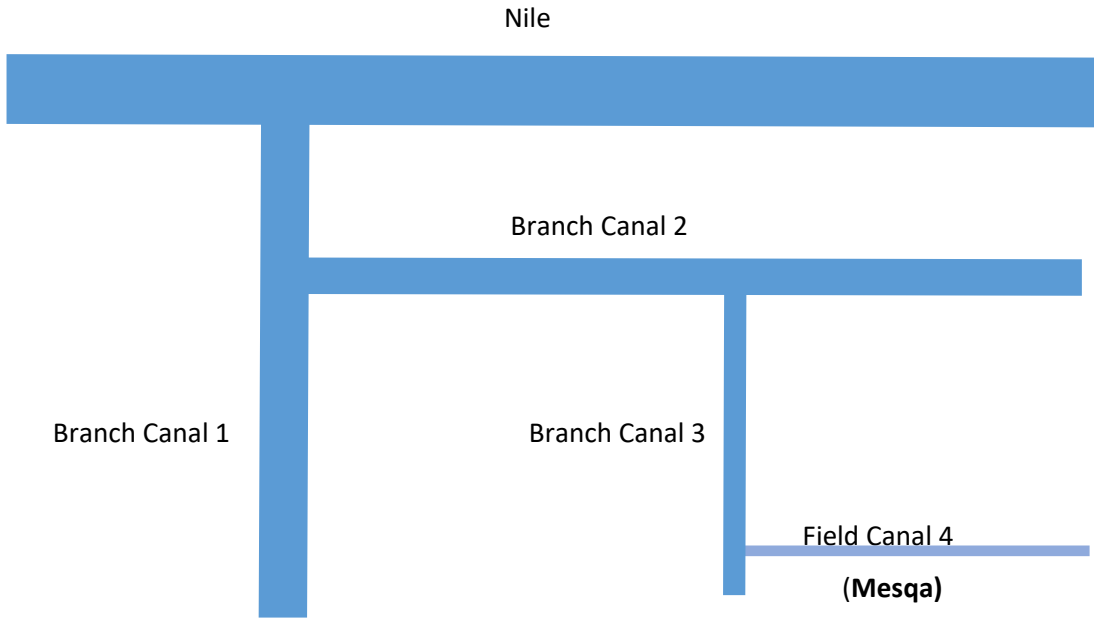
Output 1.3: Introduction and use of water saving irrigation and other adaptation techniques

The development of the irrigation systems and rationalization of water consumption is not only a national priority but also an urgent need and priority for farmers.

The project introduced several GAPs that are, at the same time, effective low-cost water-saving solutions, such as: laser soil leveling, raised-bed planting, land consolidation and introducing crop varieties with low water demand.¹⁵

In addition to water-saving agricultural practices, the project carried out the canal lining activity. This activity can be understood in the framework of the traditional irrigation system in Egypt. Figure () shows the components of the irrigation system in the vast majority of agricultural land in Egypt. Water canals from the Nile gradually decrease from branch canal 1 to branch canals 2 and 3 until they reach the level of the mesqa or field canal. Up until the level of branch canal 3, this system falls under the authority of the Ministry of Irrigation, which has worked to develop and line these canals in the framework of the “National Project to Develop Field Irrigation”. However, the fourth level, the mesqa, does not fall under the responsibility of the Mol, but rather the Ministry of Agriculture, as it does not run through state land but rather through the private property of farmers.

Figure 7: The Traditional Irrigation Network in Egypt



Source: Developed by the Evaluator

¹⁵ Details addressed under output 1.4

As a result of this organizational framework, the majority of mesqas are in disrepair and development efforts rarely reach them. As a result of the degraded conditions of Mesqas, a number of multi-dimensional problems have appeared, including:

- Major waste of space on either side of the canals, reaching one meter on each side, where weeds grow and which are not suitable for agriculture
- Waste of water due to seeping into the soil under and around the Mesqas
- Slow movement of water during the irrigation period between the start and the end of the Mesqa, which decreases the efficiency of the irrigation process in terms of time, the cost of energy for pumping the water, and the increasing loss of water volume due to evaporation, which caused farmers to irrigate at night due to the lack of water in the daytime
- Increased irrigation of farms in the earlier part of the canals (due to the continuation of irrigation for long periods) and the lack of irrigation at the ends of the canals, as they do not get enough water
- The limited crops that the farmers at the end of the Mesqa can grow, as they are limited to crops with low water requirements
- Deterioration of the quality of soil due to the rise in groundwater levels, which leads to soil salinity
- Mesqas repeatedly become blocked because of weed and waste in a repeating cycle of blockage and clearing
- Environmental deterioration in the form of the spread of dirt, bad smells and insects
- Frequent disputes between farmers because of disagreements over expectations and volume of irrigation water.

Due the complete lack of *farmer organizations* to address these issues, the condition of mesqas has deteriorated severely, especially in light of general water scarcity. Additionally, the uneven ground level of agricultural land in most areas constitutes yet another irrigation problem. Since the prevalent irrigation method is flood irrigation, this ground level irregularity wastes large quantities of water and is harmful to both crop and soil. Moreover, land fragmentation contributes to further waste of irrigation water.¹⁶ As a natural consequence, the economics of crop production have been affected by irrigation problems in terms of the increased cost and lower production.

To address those problems, the project output 1.3 targeted improving and developing the field canals (canals' lining). Despite the pressures resulting from these issues, some farmers were hesitant to try the new system in the first year. This altered completely after they saw the developed Mesqas, as many applied to develop their own Mesqas, and the demand far outnumbered the project's capacity. The success of the experience with the developed Mesqas and the farmers' demand for them is apparent from the increase in demand. Figure (8) shows the percentage of mesqas developed to the total achieved.

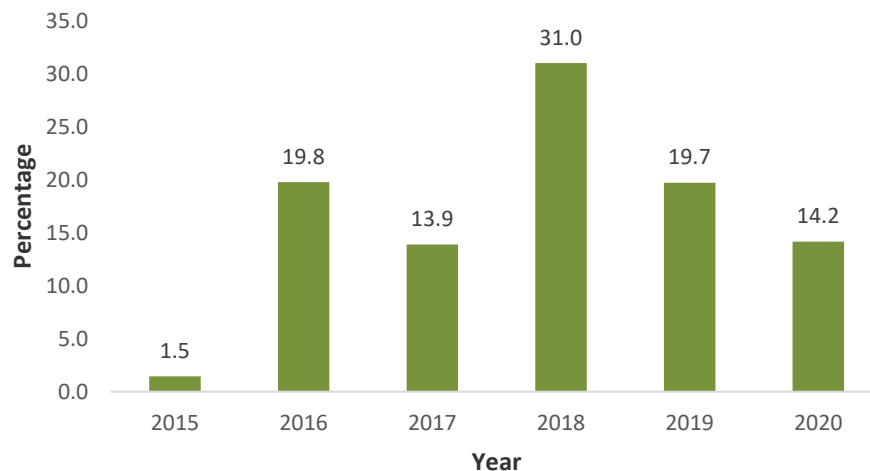
This was in spite of the reduced support from the project, whereby the project contributed to about 75% of the cost of developing Mesqas in the first two years while farmers bore 25% of the cost, while it ended with almost the reverse of this ratio by the final year of the project. The project offered in-kind contribution in the form of construction materials and technical support during execution. In the last year this was almost entirely limited to technical support, with the farmers and partner NGOs making agreements with contractors and overseeing the execution and offering practical help in developing the canals and moving the waste to decrease the cost. It is worth noting that farmers who had rejected the

¹⁶ Irrigation issues related to agricultural practices are addressed under Output 1.4, to avoid repetition.

project idea while there was major support were themselves on the waiting lists after the support had been reduced, after having ascertained the major benefits of developing the canals.

The development of the Mesqas was undertaken in the form of a partnership, alongside all the activities of the project, whereby the project involved in the decision making the end beneficiaries, i.e. the farmers using the targeted Mesqa and the technical workers in the irrigation and agriculture departments, alongside the project representatives and partner NGOs.

Figure 8: The Percentage of Mesqas developed per Project Year



Source: Developed by the Evaluator based on project documentations

The first decision concerned choosing between open irrigation canals or closed ones (underground pipes). Along with technical considerations such as topography, the number of beneficiaries, the area and type of land through which the Mesqas run, there were other preference factors, such as preference for closed pipes in the event that the irrigation canals ran through residential areas or the prioritization of the need for expanding a road.

The Mesqa development activity is considered the most successful among the project agriculture activities, according to both the stakeholders' and the farmers' evaluation, as its benefits are significant, direct and sustainable by their nature. As such, there was no disagreement over them according to the fieldwork, which largely complied with the project's documentation:

- Saving between 30-40% of irrigation water
- Saving almost the same rate of energy costs, whether solar or electrical
- Reducing up to 80% of the time needed for irrigation
- Providing water to farmers at the ends of mesqas and making available to them crops that were previously unavailable
- Increasing the productivity of water and land units
- Gaining areas that were added for agriculture, particularly in the cases of open Mesqas
- Widening roads, particularly in cases of closed Mesqas (pipes), after the roads had previously been cut off by open canals to the point that some of them could not allow cars to pass, whereas now cars can travel two ways

- Beginning of improvement of the soil quality
- Improvement of the environment in the area, particularly in cases of closed Mesqas, as the smells, garbage and insects have disappeared
- End of disputes over irrigation

There were almost no complaints over the development of the Mesqas from the technical side, except that some of the beneficiaries would have preferred closed rather than open Mesqas, as they are considered more efficient in transporting and saving water. Developing the Mesqas was among the project activities that saw the most increase in demand, above the project's ability to execute it. This was also apparent in the degree of adoption, whereby many in the project villages and neighboring villages developed their Mesqas in accordance with the same models as the projects, and usually with assistance from the same contractors.

Farmer benefiting from a developed Mesqa:

"Our Mesqa is 200 meters long and irrigates 60 feddan. The problems related to mesqas and irrigation was never-ending, as the Mesqa was constantly blocked with waste from different sources. About every two months, we had to rent trucks and diggers to clean the Mesqas, and the water flow was weak and extremely slow. Water was barely reaching farmers at the end of the canal; the poor guys did not get enough water for their land and faced many difficulties in getting the small amount of crop they were left with. In total, as farmers on the Mesqas, we needed six days to irrigate our land. During this time, there were a lot of disputes, and lands at the beginning of the Mesqa were flooded. Now, after the development of the mesqas, we irrigate all our land in one day and rarely do we need some additional time on the next day. We have saved a lot of effort and each farmer has gotten enough share of the water, ending disputes."

What adds to the effectiveness and success of the activity of developing mesqas was the attention given to the organizational/institutional aspect. Water User Associations (WUA), which included not just farmers but also anyone affected by the presence of Mesqas that pass through their lands or residential areas. Work on the Mesqas began before completing the official form of the WUAs. This was started by establishing sub-committees in the partner NGOs that executed the activities, including the beneficiaries of the mesqas, as the law does not allow the establishment of an official WUA except after the constructing work is done. The majority of the WUAs applied for official registration after lining their canals. At the time of this evaluation, about 30% of the NGOs had been registered in accordance with the law and had gained legal personality independent of the NGOs. Members of the WUAs (or the sub-committee) selected a board of directors made up of three people. The establishment of WUAs is considered a qualitative leap in the farmers' management of their affairs, as it represents their first experience in organizing themselves and working collectively. WUAs' work was further expanded in a spontaneous manner to become a means of not just managing water, but to negotiate and resolve other disputes and to exchange experiences, deciding on crop types and selecting seeds to benefit the group. In recognition of the role of the WUAs, the MoI involved their boards of directors in the management of the larger canals (Branch 3).

When the informants were asked to rate the activity of developing mesqas on a scale from 1 to 5, the average was **4.9**.

Conclusion:

There is a consensus among farmers, implementing NGOs and stakeholders that low-cost water-saving solutions introduced by the project have been very successful. The benefits realized through those activities are varied, including conservation and rehabilitation of natural resources as well as several socio-economic benefits. Although canal lining holds a distinguished position among the applied water-saving activities, other interventions which are common with agricultural activities were not less effective water-saving solutions (e.g. soil leveling, raised-bed planting, land consolidation and introducing crops' varieties with low water demand). As for achieving the output targets, output 1.3 has two targets:

The **first target**, "over 4,000 acres directly benefiting from optimal irrigation efficiency using low-cost solutions" **was exceeded**, since the area covered reached 6,960 acres.

The **second target** "all canals undergoing improved irrigation efficiency benefit from water user associations established and strengthened under the project" **is reached**, since 98 semi-formal and formal WUAs were established and supported, covering all improved Mesqas.

The output 1.3 is rated Highly Satisfactory

Output 1.4: Building resilience through agricultural production

According to the results of the baseline study for the project, the most important factors that prevent farmers from applying any climate change adaptation practices are lack of knowledge and uncertainty about the impact of such practices. It is worth noting that in the surveys conducted in the villages, these two factors alternated in their ranking, whereas the cost factor always followed in third place in all villages.

Although the extension service is mentioned in the villages' survey results as the first source of information (regardless of how weak and ineffective), the extension agents, as well as all other sources of information, have not tackled adaptation to climate change in any way. Moreover, all relevant authorities and research institutions may have information and studies on the phenomenon of climate change and its impacts on agriculture; however, none of them have any studies, or even guidelines, on how to adapt agriculture to this phenomenon. Accordingly, *almost none of the farmers had applied any technological adaptation solutions before the project started*, and very few of them (about 5%) had been engaged in income diversification strategies, such as intercropping, high value crops, and/or organic farming.

In response, the project developed and introduced a package of adaptation techniques, which were partially or fully applied. It is notable that almost all these practices are also water saving solutions. The most important of these are:

- Introducing new heat-tolerant varieties for the main crops in the region (wheat and sugarcane)
- Replacing the domestic heat sensitive maize with a heat tolerant variety of sorghum
- Deep ploughing and soil surfaces leveling
- Consolidating land plots into larger collective units
- Introducing and promoting raised bed planting
- Changing planting dates
- Intercropping of new crops

In addition to the abovementioned wide-scale activities, the project introduced two pilot activities:

- Cultivating medicinal and aromatic plants
- Agricultural processing (targeting women)

Most of those practices were new in the region, and therefore were met with hesitance by the majority of the farmers, who have fear of innovations that is typical of traditional small and rather poor farmers. In the face of farmers' suspicions, the project started its crop production activities not only with awareness raising but also with establishing extension/demonstration fields as practical models to illustrate the impact of the introduced package.

However, convincing farmers to consolidate their fragmented land plots together was the toughest part of all project activities. Despite the utmost importance of unifying holdings in achieving technical and economic efficiency in crop production, they nonetheless contradict with traditions and the psychological and social motivations for private physical ownership of the agricultural holdings in Upper Egypt, as tribal and familial values play a superior role. From another point of view, they also contradict with the individual needs of producing crops other than the unified crops. Several discussions and negotiations took place to create the general foundation to consolidate the lands whilst placing signposts to distinguish the land borders of each of the farmers without obstructing agricultural activities. The agreement included consolidating the area and type of crop and preparing the land and the timings of agricultural activities, from seeding to harvest. In addition to the general difficulties in placing regulations, there were many individual complicated problems that the project workers committed to resolving with great patients and extraordinary effort.

The project activities in the field of crop production included wheat, sorghum, sugarcane, cowpeas, medicinal and aromatic plants, which is discussed in the following.

The partner NGOs Have also been the implementing partners for the activities related to crop production. The project linked the NGOs with inputs' suppliers, so that they can obtain big buyers advantages, mainly lower prices for the benefit of the farmers. The project calculated a profit margin for the NGOs (5%) to cover the operational costs related to the agricultural activities in a sustainable way.

Wheat:

Wheat is considered the most important and widespread crop in the project governorates, as it is depended upon as a crop for personal consumption for the production of bread, as well as selling the surplus. As with the rest of the crops, the productivity of wheat was low (on average, 11-12 ardab), and the harvest were often damaged due to climate events.

In addition to the awareness activities and spreading new ideas about agricultural techniques that are compatible with climate change, farmers were asked to apply the technical package in one feddan (demonstration field) of their land. Farmers who had more than one feddan continued to apply the traditional practices in the rest of their land. The selected fields had to fulfill a set of technical conditions in order to ensure their success and demonstrating effect. In order to encourage farmers to participate with their fields, the project offered in-kind incentives in the form of free mechanization, seeds, fertilizers and intensive technical support. The number of farmers willing to participate in the first wheat season reached 32 farmers (first actual beneficiaries). The wheat demonstrating fields achieved great success, whereby the wheat harvest increased compared to previous years and surrounding lands. More impressive was the difference in productivity of the same farmer with and without the provided package and technical support delivered by project experts. The wheat productivity of the demonstration fields was an average of 25%-40% higher.

There is consensus among stakeholders and beneficiaries over the great success of wheat farming in the consolidated areas, which led not only to increased productivity, as beneficiaries also mentioned the following benefits:

- Deep ploughing improved the soil quality.

- Soil surface leveling facilitated agricultural activities and reduced the amount of water required
- Raised-bed planting represented a major development that facilitated agriculture, for example seeding, fertilizing and weeding, and reduced the need for seeds and fertilizers by about 40% and water by about 25%
- The introduced species were highly resistant to climate factors.
- Consolidation economized mechanization as it saved costs and reduced losses in birdfeed and in harvest activities, and it increased pest resistance and put an end to the damage that resulted from different crops being adjacent to one another, with different irrigation needs and timings.

The seeds distributed by the project were of great importance, not only in increasing productivity in the consolidated lands but also in adapting and disseminating the new GAPs, as the distributed seeds were mother seeds and therefore produce new high-quality seeds from their crops for several years, which allows many farmers to sell their harvest or to give it as seeds for regrowth rather than consumption. The beneficiaries also agreed that the seeds variety that they received is the best that has ever been made available to them and appreciated the continuous technical support.

News of this impressive success spread throughout the region, and its impact was much larger and more effective than all

convincing and awareness efforts. The project organized a wide-scale folkloric event- harvest days to present the wheat harvest and weigh the samples in front of guests to prove the increase in productivity. Moreover, the project organized farmers' and students' visits to the extension fields by non-beneficiaries from the project's villages, as well as neighboring ones. This paved the way for moving from piloting to scaling up the crop activities.

According to the plan announced at the beginning, the project followed a modality of gradually decreasing support (increasing beneficiaries cost share) from year to year. At the start of the activity, the project began with providing in-kind support to beneficiaries in the extension fields and the participation in the first year, in the form of consolidating holdings. The support included mechanization services to prepare and level the land and provide seeds and fertilizers for free, alongside intensified technical support (extension services). The in-kind support decreased from year to year until it was completely ended in the final two years, in which the technical support continued. Despite this, every year new NGOs applied to join the activity, as representatives for their village farmers; whereas it was hard to reach the first 32 farmers amid full support, the new farmers in the final year recorded 1,172 famers, with a total of 6,146 famers on an area of 7,159 feddan. These areas played a major role not only in achieving great yields for their owners but also due to having been actually transformed into a kind of extension fields. At the same times, their importance can be understood through comparing them to the governmental extension fields managed by the Ministry of Agriculture in the framework of the *National Wheat Campaign*, which plants one demonstrating field (one feddan) in each district, moving it each year from one village to another. Therefore, the 7,159 feddan achieved represented a leap in the project's governorates that benefited thousands of farmers who saw the experiment directly as beneficiaries. It is worth noting that the information made available through the CEWS.

According to the heads of the agricultural directorates in the project governorates, the rate of adopting the practices that the project introduced was very high, as the vast majority (80% to 90%) have come to consider soil surface leveling a fundamental step for agriculture, even in the cases of agriculture that takes

Wheat farmer:

"I benefited greatly from the mechanization, seeds and fertilizers provided by the project. However, despite all the costs saved by the support, I believe the technical support and information I received are much more valuable than all that. Non-beneficiary-farmers treat me and other beneficiaries as experts."

place on flat area (not on raised-beds). The raised-bet technique became the usual technique for wheat planting. There is great demand from the farmers for the seeds that were provided by the project and those produced by them, but the demand exceeded the availability, particularly after the project ended, as the provision of seeds depended on the ability of partner NGOs to communicate with the agricultural department.

Sorghum:

Unlike wheat, which was a key crop at the start of the project, the majority of farmers had stopped planting sorghum for decades, during which maize was the preferred crop and the most profitable. Moreover, sorghum became associated in the collective conscious with cheap bread, and therefore it was viewed as either fodder or food for the poor. This resulted in decreased lands dedicated to it from year to year. Maize productivity meanwhile decreased due to climate change and became more vulnerable to pests. As such, the project adopted the (re)introduction of sorghum as an alternative to maize, since it is more heat-tolerant, requires less water, claims the land for shorter periods, is more salt-resistant (even absorbs salt from the soil) and more disease-resistant.

Replacing the well-established, traditional maize crop with sorghum was a much more innovative step than changing the variety and agricultural practices of wheat. Nevertheless, much more farmers were willing to participate with their fields in the first sorghum season. This is attributed to the impressive success of the wheat fields, which built trust in the project and its innovations. Sorghum production started with 207 feddan/farmers in the summer season 2014 and reached 848 feddan in 2020.

As with wheat, the in-kind support provided by the project was reduced annually, yet the number of farmers increased until it reached 3,237 farmers on an area of 2,900 feddan at the end of the project. Compared to the averages in areas outside the project area, the productivity of the beneficiaries was higher by about 30-35%. The sorghum fields also played the role of extension fields for non-participating farmers, which led to great expansion in sorghum areas in the project villages and neighboring villages, to the point that whole villages were transformed from growing maize to sorghum and it was not produced just as fodder but came to be sold as seeds. Aiding this expansion, particularly in the final two years of the project, was the noticeable decline in productivity of maize due to the heat waves and the appearance of new pests that led to the failure of farmers' efforts to resist them in many villages, until the loss of harvests reached 50% in some cases, while others removed them from the land before the harvest period had been completed. However, with the increase in supply and the lack of marketing channels, many sorghum farmers faced issues in marketing their crops at fair prices.

Sugarcane:

Sugarcane is a key crop in Upper Egypt, as its importance approaches that of wheat. In spite of the fact that the current variety is decades old and vulnerable to pests, the project activity related to sugarcane was not based on land consolidation and wide scale implementation. This is due to two main reasons:

Firstly: sugarcane fields are much harder to consolidate, as the crop requires several years and was not planted at the same time in neighboring farms. It required a longer period than that of the project, as well as negotiations with partners at a level exceeding that of the project.

Secondly: sugarcane is the only contractual crop in Upper Egypt, whereby it is produced according to trilateral contracts between the agricultural bank, the sugar company (the main buyer of sugarcane crops) and the farmers. In terms of sugarcane varieties, the considerations of the company differ from climatic point of view or those of farmers, as the company preferred the old variety that had been contracted for.

The project activity was limited to extension fields, which introduced a variety that is more resistant to pests and climate change and less water consuming. The project's efforts to change the variety of

sugarcane and support its production did not meet as much success as in the cases of wheat and sorghum. Therefore, the adoption of a new type of sugarcane was more widespread among farmers who marketed their crop to cities to make sugarcane juice, rather than those who sell their crop to the company.

Cowpeas

The project introduced the technique of intercropping by growing cowpeas as fodder between the lines of sorghum. Among the most important characteristics of cowpeas is the improvement of soil and increasing its fertility, as well as helping protect the sorghum crop from any thermal shocks. The number of farmers who participated in intercropping using cowpeas increased from 952 to 7,000 farmers, though the demand varied between landowner farmers who care about long-term effects and the degree of improvement of the soil characteristics and tenants who leased the land for a season or a year, and who were more interested in the key harvest crop and the bulk of the return from it.

Medicinal and aromatic plants

The project presented extension models for the cultivation of medicinal and aromatic plants in governorates where they had no notable presence, as well as providing technical support in governorates that had some production of these plants. From an agricultural perspective, this experiment was a success, but some of the new farmers of the medicinal and aromatic plants were not able to market the product to profit.

Agro-processing:

Since crop production in Upper Egypt is almost exclusively a male domain, the project provided two pilots in agricultural processing aiming at: a) promoting women's participation and empowerment; and b) improving and diversifying livelihoods through increasing value added.

Agricultural processing activities included sun drying tomatoes and deseeding pomegranates. While drying tomatoes was introduced in 4 project governorates (6 production units), the locals of the 5th governorate (Asyut) preferred having a unit for deseeding pomegranates, since it is a main crop of the area.

Sun-drying tomatoes are one of the most successful value chain addition techniques. While fresh tomatoes are sold at around USD100/ton, dried tomatoes are sold to Egyptian markets at around USD 1,300/ton and international markets at USD 2,000/ton. It should be noted that 10 kg of fresh tomatoes produce 1 kg of dried tomatoes. The activity integrated women into the value chains and created about 100 work opportunities for women with an average daily income of about EGP 50-60 per person. Additional benefits of sun drying tomatoes include protecting farmers from having to sell their fresh tomatoes when prices are at their lowest and reducing the usually high losses associated with selling fresh tomatoes (25 -40 % losses on average).

Conclusion:

The achievements under **output 1.4** represented *major and very successful results of the project*, with multiplied effects. Through the activities under this output, the productivity of the included crops was increased between 29 and 50% and the input costs decreased between 17-35% (table**). Although soil leveling and raised-bed planting presented additional cost factors, the returns from the productivity increase along with the input cost decrease widely exceeded the cost of those two items. In addition, land consolidation achieved between 10- 25% increase in cultivated land, which saved about 25% of irrigation water and allowed for the use of larger-scale machinery for tillage and land levelling. Overall, this increased farmers' productivity by an estimated average of 40% and increased their income by an estimated average of 45%.

Table7: Productivity Increase versus Input Cost Decrease for Main Crops

Crop	Percentage of Productivity Increase	Percentage of Input Cost decrease
Wheat	50%	14%
Sorghum	36%	35%
Maize	30%	17%

Source: Project documentations, confirmed by several stakeholders and beneficiaries

The output 1.4 has two targets:

The *first target* “over 37,000 people directly benefit and over 100,000 indirectly benefit from access to heat resistant strategic plants, and learn how to change sowing dates, and other soft techniques to reduce climate risks” has been significantly exceeded, since 51,977 people benefited directly from all or parts of the package of soft techniques that reduce climate risks and increase farmers’ income from crop production. In addition, about 120,000 people benefited indirectly through adopting the introduced practices in their own fields.

The second target “*about 10,000 beneficiaries (out of the beneficiaries of target 1) are engaged in income diversification schemes*” is widely achieved. 8,200 famers (out of the beneficiaries of the first target) were engaged in intercropping activities and other income diversification activities.

As mentioned under output 1.3, almost all the activities aimed at building resilience through crop production were simultaneously effective and low-cost water-saving solutions. In addition, they reduced costs by providing cheaper inputs and maximized returns through increasing productivity. Crop production activities also targeted the chronic problem of land fragmentation– one of the biggest problems facing Egyptian agriculture for decades – through the consolidation of areas and agricultural operations. This process met many difficulties due to its incompatibility with inherited values and customs. The provision of in-kind support in the form of agricultural and mechanization requirements for free during the first year, followed by the application of increasing cost sharing conditional upon agricultural consolidation, was a suitable modality to attract farmers initially. Later, this strategy gradually ensured their self-reliance in order to achieve sustainability. In addition, the pilot activities demonstrated production models that increase and diversify income, empower women, decrease post-harvest losses and increase value added.

When the informants were asked to rate the crop production activities on a scale from 1 to 5, the average was 4.5

Although, the project achievements under the second target were less successful than the first target¹⁷, those activities are less significant in terms of their extent, allocated budget, number of beneficiaries and impact.

The output 1.4 is rated Highly Satisfactory.

Output 1.5: Building resilience through livestock and poultry production

¹⁷ The focal point of achieving the aim of diversifying income changed during the execution of the project to animal production, output 1.5.

In the framework of this activity, animal production is considered a means of livelihood diversification to increase the resilience of poor, landless population and mainly women. Therefore, the activity focused on small animals and poultry which are typically kept by women.

The results of the baseline study showed that:

- No women were trained on good practices for breeding and raising livestock
- Only about 2% of respondents to the baseline survey indicated inadequacy of veterinary services in their villages.
- No access to specialized livestock financing schemes was available in target communities

The animal production activity included breeding goats, raising ducks and to a relatively limited extent beekeeping

Goats:

The project's selection of goats is a good reasonable choice for the following reasons:

- Goats can tolerate high temperatures
- Goats are easily fed since they eat several kinds of fodder, leftovers and agricultural byproducts
- Goats do not require much space
- Goats usually produce offspring twice a year, which is in keeping with the project's duration and the revolving lending mechanism
- Goats do not cost as much as larger cattle, which allows for a wider base of beneficiaries and reduces loan risks

The implementation modality based on a revolving fund managed by the local NGO and in-kind lending and paying back was optimally appropriate to the target group and local circumstances. The implementing partners (local NGOs) are present in the communities and known to residents and were therefore able to spread ideas and apply the selection standards among the applicants in view of their knowledge of the residents. The terms for the selection of the beneficiaries were reasonable, balancing between the degree of need (poverty) and the ability to succeed in raising the livestock. They included:

- Beneficiaries should be of low income
- Beneficiaries' income should nonetheless suffice for keeping and caring for the goats.
- Beneficiaries should dispose of sufficient space to raise the goats.
- Beneficiaries should be known to be trustworthy and likely to repay the credit.

In terms of the operational mechanisms, the NGO obtained the goats through in-kind exchanges, i.e. the project was behind contracting to purchase them and supplied them to the NGOs in exchange for their commitment to recycling the monetary value of the goats in the form of new payments. In addition, the end beneficiaries were also dealt with in kind through the revolving lending mechanism, whereby credit and repayment occur through in-kind transactions.

The beneficiaries received 1-3 goats, according to the place available to them and their ability to provide fodder for the goats, on the condition that they would return the goats to the association a year later in the same number and physiological condition (in terms of age, weight and pregnancy), to be given to new beneficiaries. As such, each of the project villages received three batches of goats. The beneficiaries committed to paying 5% of the cost of the goats to the NGOs (2% for administrative fees and 3% for veterinary services), in addition to EGP 30 to the government cattle insurance fund, which is the fund responsible for compensation in the event of the cattle's death.

The first year of the activity witnessed some problems related to the health and physiological state of the goats, which led to a relatively high death rate. The project rectified this in the following batches by changing the supply source and intensifying veterinary supervision prior to purchase, as well as providing pure-breed bucks, with one buck per village.

After confronting the challenges of the first year, the goat rearing activity achieved great success rates of no less than 90% in any of the villages, as well as great demand from the women on the second batches. The majority of the beneficiaries of the goat activity who participated in the focus groups multiplied their numbers by keeping the female newborns and selling the male animals and buying more goats.

About 75% of the participants in the interviews view the next generations (newborns) of the goats as having improved because of the pure-breed bucks, while the remainder did not succeed in breeding the local female goats with the imported males, due to the large size of the males compared to the females. Therefore, they were not able to breed, or in cases where they did, the newborn was too large for the female mother to handle. In some cases, the village did not receive a male goat to begin with.

The beneficiaries praised the NGOs for their flexibility and their consideration of their circumstances if the repayment dates did not correspond with the physiological state of the goats. In the cases when the goats did not become pregnant, the NGOs exchanged them with others and extended the payment date for another year. Additionally, in many cases, the NGOs played the role of intermediary between the beneficiaries and the veterinarians and helped them obtain compensation in cases of death.

Many of the beneficiaries were able to reinvest the income they got from selling the male off-spring goats into establishing small projects, such as selling clothes and groceries, sewing and making handbags, further expanding their income generation capacities

The beneficiaries also showed a great degree of satisfaction in the goat rearing activity and its positive impact on their lives and those of their families. When asked to rate the activity on a scale of 1 to 5, the average was 4.6. The main source of dissatisfaction among a minority of them was the weakness of veterinary services in some of the villages, where the vets were not prompt enough in responding to cases of illnesses. Additionally, some of the officials believed more regular preventive veterinary services such as vaccinations should have been provided, rather than limiting services to treating illnesses.

Ducks:

Success story
Goats activity-Beneficiary

In our village women are clever. Most women who received goats were able to grow their project and use the income to start new projects. I have been raising goats for three years. At first, I got two goats, one of which was pregnant and gave birth, so I then had two goats and two bucks. I paid my debt to the NGO, sold the bucks and obtained new goats. This way I could start another project, producing liquid soap. Our entire life has changed. We now have two sources of income instead of one, and I feel like my husband respects me more. We have fewer problems and I no longer get scared if a child falls ill; now can take the kid to doctor.

Success story
Ducks' activity-Beneficiary

Although raising ducks was not a traditional activity, nor was it one of the most common food items in the region, the selection of ducks as a type of productive activity – and in particular the variety of ducks provided by the project – was a very successful choice. This is because the supplied ducks are not sensitive to heat and is fast growing; therefore, the production cycle lasts from 3-4 months and its cost is low and does not need a large place, making it suitable for even the poorest segments that could not provide goat food. While some combined both goats and ducks, those who did not get goats were prioritized.

The implementation modality was based on starting with an in-kind payment provided by the project to the NGOs as ducklings (two to three weeks old), which is the appropriate age as ducklings have overcome the critical stage of rearing which requires great experience and care. The NGOs then sold the ducks to the beneficiaries through an instalment payment system, with a grace period at the beginning. The NGOs also provided good types of fodder recommended by veterinarians. The fodder was also paid by the beneficiaries in instalments, which greatly facilitated matters for them. After the NGOs were trained on the operation, the project provided the budget of the next payments and the NGOs took over the process of buying through committees, which included the participation of a project officer and a representative of the Ministry of Social Solidarity, which has the right to administrative supervision over the NGOs.

Even though the livestock production activity originally targeted solely women, procedurally, this was not the case during implementation. In the baseline study, female participants expressed their enthusiasm about the activity; however, they were not aware of the formal procedures it entailed, such as signing papers, offering guarantees and committing to repayment. When it became clear that the goat activity, which was the initial activity for this target, required such formal steps, many families refused to allow women to be involved. As a compromise, the project and the local communities agreed that the women obtain the goats while a male member of the family (the husband in the case of married couples or a close relative in the case of single women) is in charge of formalities.

However, with the repetition of the activity and the increasing links with the NGO and trust in the project, the majority of families no longer had reservations towards women's direct work with the NGOs.

As with raising ducks and the key project activities, the activity achieved a swift impact on the lives of beneficiaries, the majority of whom were women, in particular women chiefly or fully in charge of providing for their families (the majority of the sample have husbands who are unemployed or who work in marginal, irregular jobs, as well as widows and a minority of unmarried women who care for their origin families).

I started my duck project by buying 8 ducklings from the NGO. In the last 4 years, I have renewed the loan 14 times and built a stone shed for the ducks. At the moment (time of the interview) I own 500 ducks, and I get the fodder from the NGO. I found out that the NGO lends cash money from another project, at an interest, so I took out a loan, bought a freezer, and hired village girls to clean and freeze the ducks, I go to authorities and banks in the nearby city, to tell the employees about my ducks and leave my contact information. They call me whenever they need ducks. I also made a deal with the vendors and a car driver to deliver my product to them. Now I have a large and growing network of customers, both consumers and retailers. The freezer helped me a lot, since I no longer have to sell right away if prices are down, or invest space and feed in ducks that have already reached their marketing weight.

Success story

Ducks' activity-Beneficiary

My husband has a chronic heart condition and cannot work. His early pension is very small (900 EGP), and almost all of it goes into buying his medication. Since he fell ill and retired, our family was almost entirely dependent on help from our relatives, but now we no longer need charity support. The income I generate from the ducks ranges from 1800 to 2000EGP per month.

The NGO representatives mentioned that the demand for ducks was very large, which prompted some of the NGOs to specify limited amounts to each beneficiary. The repayment and recycling rate are considered important factors indicating the success of the projects, as the cases of defaulting on repayment were almost nonexistent and were limited to individual cases, such as in the case of the death or debilitating illness of a family member (not one case of the fieldwork sample). Meanwhile, there were about 3-5% of late and rescheduled payment of debts, as beneficiaries were largely committed to securing a new payment, which was contingent on repaying the previous instalment. One of the clear indicators of success is the repetition of duck selling cycles through the NGOs, as each association repeated the experiment several times, reaching up to 14 times in the NGOs that began the activity early. The majority of the beneficiaries were able to multiply their ducks with the repetition of the cycles.

The price of the ducklings supplied to the beneficiaries was not lower than the market price, but even in cases when the price was equal, the beneficiaries were convinced that the difference in quality makes up for it in terms of the ducks' health and eight in particular, as the birds were immunized to diseases. The poultry purchased from local traders saw a very high death rate, at times reaching 50%, while the death rate among the project's birds was very low, at less than 5% on average, with the exception of the batches that arrived in January and February, in which the death rate was 10%, as the ducklings could not take the harsh cold at the peak of winter (this is not related to climate change but rather the weather during these two months). The majority of the NGOs stopped buying ducks at this time in the following cycles.

The marketing methods and profit raised varied for duck raisers in accordance with the size and location of the village and the rate of residents who benefited from the project. In the small, remote villages, the full quantities would go to the same market at the same time, and as a result supply exceeded demand. Traders who visited the villages would benefit from this as they would get the ducks at lower prices. Meanwhile, in larger villages or those close to larger markets or cities were able to sell at higher prices. Some of the NGOs had money lending activities associated with other projects, which made available to some of the beneficiaries loans to buy refrigerators and expand their work, as the refrigerators cleared space for a new batch of ducks without forcing them to sell at low prices. Some of the NGOs helped the producers participate in the city markets or offer frozen ducks at distribution outlets. The producers were also able to reach agreements with poultry shops in cities and delivery cars to transport the ducks to the shops. As a result, the profits from the ducks varied from one place to another, whereby according to all these factors the price per kg ranged from EGP 25 to 40. This shows the importance of the marketing factor in determining the return.

More widespread marketing methods (live ducks) that were practiced by the beneficiaries

- Selling in the village market or neighboring villages
- Selling door-to-door to acquaintances, neighbors and relatives
- Selling to traders who came to beneficiary villages and paid cash or in-kind in exchange for other products (clothing or home needs)
- Selling to traders in nearby cities where beneficiaries sent their products through agreements with them and with vehicle owners

Less widespread but more successful marketing methods that were practiced by the beneficiaries

- NGOs contracted with traders in Cairo who took the offered ducks in one batch
- Creating a network of customers via the beneficiaries by going to the workplaces of potential customers
- Selling frozen or refrigerated ducks, whether on demand or through regular deals
- Online marketing (one case)
- Whatever the marketing method, mobile phones played a big role in communication and expanding customer networks.

In addition to generating income, the ducks represented a clear improvement in the nutritional status of the families, as their incomes were insufficient to allow the purchase of meats except rarely. As a result, the majority of duck breeders aimed to sell their produce or most of it, while specifying a proportion for domestic consumption, which declined in accordance with economic status. A limited proportion (about 10%) of the participants in the FGDs raised ducks purely for the purpose of domestic consumption to save the cost of buying meat.

The majority of participants in the FGDs were in consensus over the success of the activity and their great enthusiasm for it. When the informants were asked to rate the activity of raising ducks on a scale from 1 to 5, the average was nearly 5 (4.99).

Training on animal production:

Training activities on goats and ducks breeding/raising, nutrition and health continued throughout the years of the project, having been repeated with each new group of beneficiaries. In most villages also included domestic fodder production which can save about 25% of the fodder cost. However, the required fodder components were not all available in most villages. The increasing awareness of the caused the beneficiaries to shift from traditional feeding methods, which depend on leftovers and grains available at home, to mainly relying on healthy types of fodder recommended in the training and provided by the NGOs to the beneficiaries.

The stakeholders and beneficiaries expressed full satisfaction regarding the training activities in terms of raising awareness levels and skills, as well as the clarity of the content and its suitability to the level of the recipients.

About 95% of the participants in the FGDs said they participated in one or more training event. This was aided by the fact that the training was held in the villages, which is particularly suitable for women, as it is difficult for them to travel outside of their villages, according to tradition. The majority of participants in the FGDs were able to recount the most important points included in the training and how they benefited from them in successfully raising livestock and poultry. The training was not limited to the beneficiaries of the revolving lending, but was available to all residents.

Veterinary services:

The sharp shortage in veterinary services provided to village is considered a chronic problem for livestock production in Egypt in general, and for small livestock and poultry in particular. This was confirmed by the baseline study, as 98% of those included in the study indicated that there were no veterinary services available to them.

In the framework of the capacity-building component, the project gave great importance to the veterinary services, which included developing the units and providing equipment, as well as training to veterinarians on using it. The veterinarians also participated in the stages of the activities related livestock production, whether directly in the units or via the partner NGOs. In order to organize the provision of veterinary services, the beneficiaries paid 3% of the cost of ducks and goats to the executing association in return for veterinary services, in addition to the mandatory participation of the governmental Animal Wealth Insurance fund for the goat beneficiaries.

In the case of ducks, the most important veterinary service was obtaining immunized poultry, in contrast with those available in the market outside of the project. This factor reduced the poultry mortality rates, alongside the experience gained from the training and with the accumulation of experience due to the Accumulation of experience among beneficiaries.

As for goats, the veterinary services focused on performing check-ups on the imported goats' physiological state and treating the ill cases according to demand, i.e. not in a preventive, regular manner. The goat breeders committed to referring to veterinary healthcare in cases of illness, as in cases where illness ended in the livestock's death, only those who visited a vet after the appearance of symptoms were compensated.

The level of beneficiaries' satisfaction towards the veterinary services varied from one village to another. In total, about three quarters of the participants in the FGDs were satisfied with the service, while the remainder believed it to be insufficient. This was largely dependent on the veterinarian responsible for the area and the degree to which the NGOs followed up with them.

However, access to veterinarian services was available to almost all the beneficiaries in the livestock production, achieving the quantitative target.

About 10% of the informants said that the veterinarians use the equipment provided by the project and the medicines available in the clinics for their private, paid practice.

Beekeeping:

In the framework of livelihood diversification, the project introduced beekeeping in response to the demand of the communities. The project approached women to participate in the beekeeping; however traditions prevented them from participating in the training or moving long distances to the hives' locations. The beneficiaries of the beehives numbered at 197 producers out of them three women.

The majority of the beneficiaries were beginners with no prior experience. As such, the process began with training courses in a specialized institute, while project experts selected the locations of the hives in accordance with technical considerations. The project provided the hives against a 5% down payment of the price, with the rest to be paid in biannual installments. The beneficiaries meanwhile were responsible for establishing the instructions that the units ran on. The experts and some of the producers with experience in the area also provided technical supervision. This was a reasonable settlement, since the beneficiaries were able to collect and sell honey 2-3 times in average per year. Marketing of bee-products at a fair price is one of the problems faced by honey producers, with the exception of some for whom the conditions or their special abilities allowed them to find successful marketing means. However, the return even in view of the weak marketing was enough for all of the producers to regularly pay off their

installments and achieve a net profit. The honey production activity was successful and sustainable in four governorates, while it did not succeed in one governorate (Aswan) due to the prevalence of palms and therefore hornets, which are a natural enemy of bees. The budget allocated for honey production was therefore transferred to the component of duck production.

The beneficiaries expressed their full satisfaction with the training they received and the quality of the production units. However, some of them complained of needing to change the location of the hives or the insufficient technical supervision, which prompted them to seek the assistance and advice of older producers to resolve their technical problems.

Conclusion:

Output 1.5 has three targets:

The first target *“Over 36,000 women trained on reduction techniques of climate risk to livestock”* According to the project reports, about 33,300 people directly benefited from the training activities. However, the informants from partner NGOs believe that the actual numbers exceeded the registered numbers by far, since the participants in the training activities attracted unexpected and unregistered inhabitants, which was confirmed by the FGHs’ participants. This fact indicates that the first target is reached, or almost so.

The **second target** *“Over 90% of women engaged in raising livestock will have access to proper vet services equipped to reduce climate risk”* is achieved (regardless of the intensity and regularity of the vet service), since almost all women received training by vets, all ducks were vaccinated and all goats were examined and in case of illness, treated.

The **third target** *“18,200 women have access to specialized livestock revolving schemes during project life”* was almost doubled. This item responded to a very high demand and was based on the remarkable success of the activities. However, what made the expansion of the activity possible, was the floating of the Egyptian pound, which rendered available additional budget after exchanging dollars for pounds.

The three targets ought not be considered equally, since the third target is the core of the output 1.5 in terms of budget, importance and impact, while targets 1 and 2 have a supporting role.

The activities related to the output were generally very successful and contributed the most to project results at impact level¹⁸ since they changed the socio-economic conditions in the targeted villages.

The Output 1.5 is rated Highly Satisfactory

1.5.2.2. Effectiveness of Outcome 2

Outcome 2: Government more committed to investing in – and sustaining – climate risk reduction strategies and measures

Overview:

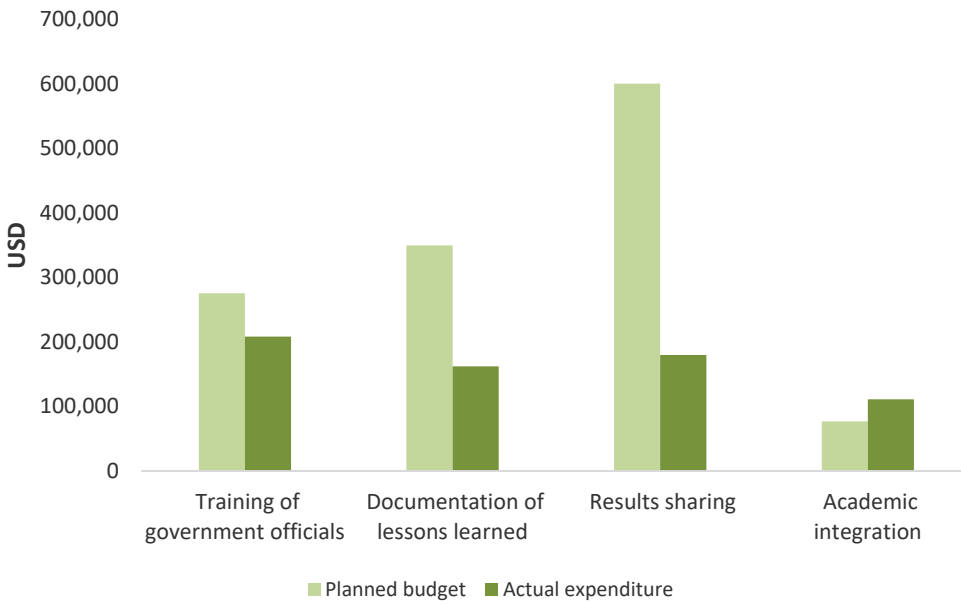
Under outcome 2, there are 4 outputs:

- Output 2.1: Training of government technical staff
- Output 2.2: Universities integrate climate adaptation solutions into their academic curriculum
- Output 2.3: Sharing project results and lessons learned and mainstreaming new approaches in local and national planning
- Output 2.4: Documentation of lessons learned and best practices

Figure (9) illustrates the distribution of planned budget and actual expenditure among the outputs

¹⁸ Detailed addressed under the section on impact

Figure 9: The Distribution of Planned Budget and Actual Expenditure among the Outputs of Outcome-2



Source: Calculated and illustrated by the Evaluator based on the project documentation

Output 2.1: Training of government technical staff

Prior to the project, climate change was not considered an issue in any notable manner in the project area. On the national level, studies were available on climate change and its impact; however, there were no mechanisms or programs in place for how to deal with this phenomenon or disseminate the information to officials and farmer.

The main source of climate information in Egypt is the Egyptian Meteorological Authority (EMA). In the framework of the Agricultural Climate Adaptation Strategy (ACAS), the Agricultural Research Centre (ARC) of the MALR founded the Central Laboratory for Agro-Meteorology (CLAM). The laboratory established Climate Monitoring Stations (CMS) at the regional level. At the level of governorates, there were no links between those metrological stations on one hand and the agricultural directorates, extension workers, farmers’ organizations and individual farmers on the other.

Under output 2.1 the project developed software for a Climate Early Warning System (CEWS), which links climate stations forecasts to a central hub, and applies them to agricultural practices instructed to farmers on how to address upcoming weather (climate adaptation solutions). Several entities collaborated in creating the system, led by the ARC, EMA, CLAM, Climate Change Information Center (CCIC), Institute of Field Crops (IFC) and Soil, Water and Environment Research Institute (SWERI). The project developed a website in Arabic¹⁹ and integrated the CEWS into it.²⁰ The system also included an interactive map that allowed not only searching for information but also asking specific questions²¹ related to a certain crop in

¹⁹ <http://climatechange-eg.org/askme.aspx>
²⁰ <http://climatechange-eg.org/Instructions.aspx>
²¹ <http://climatechange-eg.org/Map.html>

a certain area and time. To compliment this, a mobile application was developed, through which the messages of the warning system can be received. In addition to enhancing the physical capacities of the central EMA, the project provided training to 250 governmental focal points on the management of agro-meteorological data, communication skills and means of information dissemination.

Within each of the five agriculture directorates in the targeted governorates, the project established a Climate Information Center, mainly responsible for operating the warning system. The project provided these units with required office and communication facilities, including PCs and internet access. Staff training was provided to 20 engineers from each directorate, focusing on computer skills at the level of the International Computer Driving License (ICDL). The best two recipients of the training were assigned to run the warning system, with regular technical support from the project. The selected staff received additional on-job training to enable them to effectively monitor, analyze, and disseminate climate data and information.

In order to improve the extension sector's capacity to disseminate knowledge and scale-up climate adaptation interventions, they signed an MOU with the Extension Sector. In the framework of this, the project equipped 100 extension workers with motorcycles.

At the national level, the most important achievement of the project is the provision of a new, high-capacity server to the EMA. The server's capacity is not fully utilized in the framework of the current utilizations, but it allows for the accommodation of future needs related to climate change, particularly if the database for replicating the CEWS is expanded and linked to agricultural activities or others related to climate factors on a national level. The CEWS represented an important and pioneering example that became known to leaders in the agricultural sector. In terms of availability, the online software is available for free, as well as the project's webpage and the interactive map. Users can also get the climate early warning app on their mobile phones and computers (through the Google PlayStore); however, training on its use and knowledge of it is largely limited to the project governorates. Further, the problems with extension services are too large for the project to have a significant impact on them.

In the agricultural circles in the project governorates, there is a high level of satisfaction with the CEWS and a desire to expand the range of its content and area, as the system has great potential for use that has yet to be exploited and is limited to the institutional commitments to update the information included in system and transfer information from the software to the different levels and groups of potential beneficiaries. The main weakness in the system is the lack of clear horizontal and vertical paths.

In this regard, including some pilot agricultural cooperatives, in spite of their weaknesses and problems, could have been an added value to the project results

As for officials' awareness on climate change related agriculture and water management, the following results were achieved:

The project directly contributed to the development and implementation of several national policies and strategies, including Egypt's National Adaptation Strategy, the National Strategy for Climate Adaptation in Agriculture, National Communications to the UNFCC, and Egypt's National Agricultural Strategy 2030.

The concept of climate change has become integrated in the policies and decisions related to the agricultural sector, whether on the central level in Cairo or on the level of governorates. The concept and

its adoption were transferred from agricultural officials to policy-makers in the authorities of other relevant ministries. The presence of the general secretaries of the governorates at the head of the project management committees in each governorate, and the representation of the authorities and ministries in the committees, contributed to spreading awareness of climate change in these bodies and helped to integrate the concept in their decisions and activities. MPs in the project governorates adopted during parliament sessions issues related to climate change in their constituencies on more than one occasion.

Trainees on the CEWS spread awareness of climate change in their departments and represented the core of many activities that contributed to digitizing the agricultural sector at the level of their government. Indeed, one of the project governorates even transformed the early warning center established by the project into an early warning and crisis management unit, indicating a mindset that did not exist before in the project.

Conclusion:

Output 2.1 has two targets:

The **first target** “Software developed and launched nationally to link climate stations belonging to different government agencies together, and developing adaptation guidance for each climate scenario for use by online users nationwide” is largely achieved, however mainly at regional rather than national level. The adaptation guidance for each climate scenario is still limited.

The **second Target** “300 officials at local and central government, as well as parliament, are aware of climate proofing agriculture and water management” It is difficult to be estimated in number of people whose awareness has been raised among officials and policy and decision makers. Nevertheless, the abovementioned results at policy level indicate that the target is likely to be achieved.

The Output 2.1 is rated satisfactory

Output 2.2: Documentation of lessons learned and best practices

Particularly during the second half of the project’s life cycle, the documentation and dissemination of best practices and lessons learned was a point of intensive efforts by the project. Actually implemented activities in this regard widely exceeded the planned activities in terms of types and quantity.

Several stakeholders positively evaluated the TV spots that were produced and aired and valued their content. Farmers and representatives of partner NGOs were more enthusiastic about the radio interviews (27 in total) conducted with project stakeholders about the different interventions and successes in their villages.

Numerous printed materials were produced and disseminated e.g. posters, brochures, desk calendars, block notes and desk organizers. The printed materials included valuable information about climate change issues and project activities in colored, attractive and reader/user friendly formats. Project printed materials were visible in all visited NGOs and several authorities.

As for the press, 121 press releases were issued and 50 articles were written about the project in different popular newspapers.

The project was innovative and pioneering in its use of social media. The project created a website, that was regularly updated and was visited over 35,000 times. In addition, six Facebook groups were created (one for the project as a whole and one for each governorate), with an average number of about 5,000 to 7,000 participants in each. Another innovative and very effective means of communication and dissemination was the YouTube channel created by the project, on which seven documentary videos on project interventions are available. Those videos were also directly disseminated to relevant stakeholders.

Conclusion:

The output 2.2 has two targets:

The first target is “at least online messages 10 produced”.

The second Target is “at least 10 TV spots and programmes as well as 10 radio spots produced and aired”.

Both targets are achieved. However, the indicators used for the targets are not completely reflecting the achievement of the output. The documentation of the lessons-learned and best-practices cannot be measured by the number of TV, radio and online spots. Generally, the project documentation efforts and results are not proportional to the wide scale of activities and results.

The output 2.2 is rated Marginally Satisfactory

Output 2.3: Sharing project results and lessons learned and mainstreaming new approaches in local and regional planning

The output 2.3 has one target: “10 awareness and advocacy events held for new parliamentarians and policy-makers”. The target was not achieved. Nevertheless, other (actually more important) comparable activities at policy level were implemented. In addition to the activities and means of dissemination and advocacy, listed under the previous target, which also contributed to sharing results and lessons-learned, the following activities were successfully carried out:

- 87 advocacy events have been held for policy
- 12 presentations were made to the Minister of Agriculture and senior government officials
- 60 site visits were organized, bringing 301 relevant officials to visit the project fields and see the achievements
- 27 events were organized for beneficiaries to present their experiences to other potential beneficiaries, with an average of 570 beneficiaries in each event
- Annual workshops were organized to discuss opportunities and constraints, and share experience and learning (with an average of about 70 project actors from the community, department, regional and national levels)

Almost each of the interviewed key-persons participated in at least one of the activities and expressed his/her satisfaction about it.

Conclusion:

Likewise output 2.2, the indicator used for the target is not completely reflecting the achievement of the output, however the project conducted much more activities than planned, which significantly contributed to the results.

The output 2.3 is rated Highly Satisfactory

Output 2.4 Universities integrate climate adaptation solutions into their academic curriculum

The **target** of output 2.4 “300 from the three key universities in Southern Egypt benefit from lessons learned from project interventions”.

According to the project documentation, a total of 2,411 university students from the three universities participated in project interventions in climate adaptation. Foremost among the activities targeting universities:

- Providing equipment as well as financial and technical support to three regional agricultural faculties to establish extension fields and practical models demonstrating measures for climate change adaptation
- Organizing field visits for a total of 500 students of agricultural sciences to learn about project activities
- Including students of agricultural sciences in the training programs implemented by the Meteorological Authority
- Organizing several workshops targeting 30 professors of agricultural sciences to advocate for the inclusion of thematic areas related to climate change in academic curricula

Conclusion:

Regardless the fact that the indicator does not exactly measure the output, the output target is remarkably exceeded.

The output 2.4 is rated highly satisfactory

1.5.2.3. Overall Outcomes’ Effectiveness

Outcome 1: Improved adaptive capacity of the southern region of the country in the face of anticipated climate-induced reduction in food security through asset creation, knowledge/technology transfer, and capacity/skills development

Outcome target 1: Over 90% of target population understands the climate change phenomenon, risks to livelihoods, and adaptation solutions. According to the estimations of the project reports, the targeted rate was achieved, which stakeholders also considered to be a realistic rate and which was confirmed by FGDs with the beneficiaries. However, the target achievement cannot be quantitatively measured in the frame work of the evaluation.

The beneficiaries met, particularly the participants in the agricultural and irrigation activities showed a clear understanding of the effects of climate change on their agriculture and income sources. This does not necessarily translate to their use of the correct scientific terminology in describing climate change and its impacts, but rather in their ability to describe it in local terms that indicate its meaning. The beneficiaries also showed a great capacity to distinguish between impacts of normal, regular climatic fluctuations and those due to the extraneous climate change phenomenon on their lives, such as the general trend towards increasing temperatures and increasing humidity in numerous areas that were historically known for dry weather. They were also aware of the attendant appearance of new pests and the failure of traditional and new treatments in combating them.

Meanwhile, women were less aware of the phenomenon, as women began talking about climate change, but their awareness of the extent of the phenomenon was far more limited than men’s, particularly as their key area of economic activities, which is livestock production, saw limited or unclear impact from climate change. However, they obtained information about climate change primarily through the

awareness activities carried out by the project, in particular the plays that dealt with various aspects of climate change and clarified the relationship between diversification of sources of income and the ability to withstand the economic and environmental impacts of climate change. Additionally, the increasing circulation of topics related to climate change in the village communities and through the workers in the local NGOs implementing the project played a great role in consolidating the awareness acquired through the direct methods of awareness-raising.

Generally, it can be said that climate change and its impacts have become a familiar part of the collective conscious in the project villages. To substantiate the achievement of outcome target 1 with figures, a wide-scale survey with a representative sample size addressing the population of the Southern Egypt zone was needed at the end of the project and/or as part of its closure activities. However the outbreak of COVID 19 during the last two months of the project duration made this survey not possible.

However, based on the deep investigation of secondary data available and the results of the numerous interviews conducted, *it could be concluded that the outcome target (1) is very likely to be achieved.*

Outcome target 2: Over 20,000 direct and 28,000 indirect people adopting optimal efficiency in irrigation using low-cost technologies

According to the project documentation, 26,931 direct and 53,862 indirect beneficiaries started adopting low-cost technologies that improve the efficiency of irrigation. However, the evaluator came up with a much higher estimation. This is based on the fact that increasing the efficiency of irrigation in the framework of the project was not restricted to lining and improving the irrigation canals, since almost all introduced agricultural practices did not only increase crop productivity and reduce climatic risks, but also remarkably saved irrigation water. On the top of those practices are the laser leveling of soil, raised-bed planting and land consolidation. As mentioned under output 1.4., beneficiaries and stakeholders confirmed the significant impact of the adopted agricultural practices on water saving. Some estimation considered this impact even higher than the impact of the improved canals. Even if a concrete figure cannot be estimated, it is a matter of fact that most of the beneficiaries of the agricultural activities (51,977 direct and 119,942 indirect beneficiaries) automatically adopted low-cost water saving solutions. The establishment of the Water User Associations was a fundamental step that supported the achievement of the target. *Outcome target (2) is widely exceeded.*

Outcome target 3: 38,000 direct and over 100,000 indirect people adopting at least one climate risk reduction measure in agriculture and livestock

According to the project documentation, 49,440 direct and 98,440 indirect beneficiaries are adopting at least one climate risk reduction measure in agriculture and livestock. This estimation is not consistent with the achieved quantitative targets of the related outputs. Under the output (1.4) alone, about 52,000 farmers directly and about 120,000 indirectly benefited from the project activities that provided access to heat-resistant strategic plants, as well as soft techniques to reduce climate risks. In addition, about 37,000 women directly benefited from the heat tolerance and livelihood diversification livestock activities.

As for non-beneficiaries, although stakeholders could not accurately quantify the number of farmers who adopted climate risk reduction measures, they estimated that in the project area, the vast majority of wheat farmers changed their planting technique from planting on flat surfaces to planting raised-beds. Many farmers (and even entire villages) changed their crop structure to planting sorghum instead of maize and soil leveling became a self-evident agricultural practice.

Several partner NGOs that have different sources of funding reported that they expanded livestock activities, following the same modality applied by the project due to the high adaptation rate, which is

reflected in an increasing demand, particularly on ducks and fodder. *Outcome target 3 is definitely exceeded*

Outcome 2: Government more committed to investing in – and sustaining – climate risk reduction strategies and measures

Outcome target 1: A positive trend sufficient to sustain and scale up interventions of this project

In addition to the project's participation and impact in consolidating climate change strategies and agricultural policies, the project directly led to the allocation of government budgets to achieve wider implementation of the project activities, the most important of which are:

- The minister of agriculture recently (in November 2020) issued a decision to adopt raised-bed farming and spread it nationwide and for the state to provide mechanization services for land levelling and establishing raised-bed farms, covering about 40% of the cost at market price, based on the project's achievements in raised-bed farming in terms of increasing productivity and saving water, as well as other production inputs.
- Based on the project's experience and with close cooperation with it, the *Luxor Center for Coordinating Climate Change Projects* was established, affiliated to the MALR, to exchange expertise between Egypt and other African countries in the field of confronting climate change.
- The national wheat campaign (the implementing body was the Scientific Research Academy) adopted the agriculture processes and technical aspects that the project introduced, at the top of which was raised-bed farming, seeds and consolidating holdings. The campaign made a decision to obtain the seeds that the project introduced, contingent upon consolidating holdings, whilst employing the same experts who worked on the project.
- Several parliament members approached by the project repeatedly submitted official hearings regarding climate change related issues and claims.
- Adaptation with climate change became a key factor in creating crop policies implemented by the MALR which determine the main crop varieties.
- The MALR and local authorities also requested from the WFP to scale up the project interventions in other directorates and governorates.
- Most of the project interventions have been included in the National Climate Adaptation Plan.

In conclusion, outcome target 2 is achieved

Outcome Target 2: Government programs developed to deliver:

- Climate information hubs to scale up use of systems developed under output 1.2
- Adaptation knowledge and services embedded in government extension services
- Revolving funds extending beyond the project areas to benefit other communities in SE aiming to spread water conservation technologies and heat tolerant varieties in agriculture and livestock

The CEWCs that were established in the agricultural directorate was accompanied by training, not only for those working on it but a relatively large number of workers in departments (20 in each department). This is considered a strong foundation for the sustainability of climate monitoring and consolidating it into the work of relevant governmental departments. In addition, 51 early warning centers have been established at the district-level offices of the agricultural directorates of the five project governorates. An MOU was signed between the BMU and extension sector in the MALR, aiming to host the early warning units in the MALR organogram. However, due to the sluggishness of bureaucratic procedures, even when conducting the evaluation, the centers had not become structural units with monetary allocations and

fixed staff. However, this did not prevent them from continuing their duties during the project's existence. Rather, their tasks went beyond the direct jobs that were created for them and came to represent an added value to the administrations. In one of the governorates, the center was transformed into an early warning and crisis management unit.

The key persons interviewed from the MALR said that there are plans from the MALR to expand the CEWS in terms of content (climate indicators and crop numbers) as well as benefiting areas. This is because the system represents a major opportunity to compensate for the weakness of agricultural extension services and lack of available capacities, particularly as building capacities in the meteorological center and building human and material capacities in the agricultural administrations and extension sector constitute fundamental foundations that allow for the expansion of the CEWS.

The MALR established, under the umbrella of the general department for public relations, a unit to coordinate between the development projects from among the donor organization. This creates an opportunity to expand the implementation of the project activities that were proven successful and effective in building resilience to climate change, without intersection with or repetition of the same target groups. The project established 51 climate information centers in partner NGOs to deliver services for climate risk reduction. The NGO centers have 340 dedicated volunteers, while there are two staff members in each government center.

Indeed, many NGOs and donor projects have adopted the project's experiences in the field of revolving lending for livestock production, as well as water-saving technologies, including land-leveling, agricultural methods and developing field canals. Further, many partner NGOs have succeeded in obtaining funding from other sources to expand the implementation of one or more of the project activities.

This was aided by building the financial and human capacities of these associations, thus changing their approach entirely from charitable societies with limited capacities, to organized institutions capable of development work, with an understanding of the relationship between development and climate change.

Conclusion:

Outcome 1: The project improved the adaptive capacity in its targeted areas in the face of anticipated climate-induced reduction in food security through asset creation, knowledge/technology transfer, and capacity/skills development. The project grounded a solid basis for improving the adaptive capacity in the southern region and at national level. *Outcome 1 is rated highly satisfactory.*

Outcome 2: The project significantly contributed to increasing and strengthening governmental commitment to investing in – and sustaining – climate risk reduction strategies and measures. However, the formulation of this outcome, as well as its targets and indicators (particularly target 2) as included in the project logframe, do not optimally reflect nor measure the results achieved under this outcome. On the contrary, the formulation of project component 2, as included in the project document (capacity building for climate knowledge and adaptation scale-up) is much more reflective and consolidating of the results at the output level. Building the capacities for scaling up is an outcome result that can be achieved by the project, but using those capacities by the government for scaling up and allocating the needed resources depends on numerous factors that cannot necessarily be affected by the project. This kind of result is rather an impact level result (which is partly achieved under the first target). Therefore, rating outcome 2 is complicated.

Outcome 2 is rated "highly satisfactory" when evaluated based on the actual achievements and as "satisfactory" when evaluated based on the logframe indicators and targets.

Overall Outcome's effectiveness: Since:

- d) the achievements of the main project outputs mostly reached or exceeded the targets;

- e) the vast majority of interviewed stakeholders and beneficiaries are highly satisfied with project results; and
- f) the achieved results at both output and outcome levels significantly contributed to the overall project objective

The overall outcome's effectiveness of the project is rated Highly Satisfactory.

1.5.3. Outcomes Efficiency

1.5.3.1. Cost Efficiency

By the end of its duration, the project delivery reached USD 6,903,822, which represents almost 100% of the total project budget (except the budget of the evaluation item). As indicated in Table (8), there were clear discrepancies between the delivery of outcome 1 and its outputs on the one hand and outcome 2 on the other (which is smaller in terms of the budget allocated to it in the project design).

Table 8: Planned and Actual Expenditure and Delivery Rates of Project Results

Outcomes	Outputs	Planned Budget	Expenditure at Project Completion	Delivery Rate
Outcome 1	1.1 Community mobilization	101,950	159,354	156 %
	1.2 Early warning system established	100,000	186,577	187%
	1.3 Introduction and use of water saving irrigation	1,433,129	1,750,670	122%
	1.4 Building resilience in agriculture production	1,744,835	1,405,221	105%
	1.5 Building resilience in livestock production	1,156,210	1,078,183	98%
Subtotal component one		4,536,124	4,580,006	111%
Outcome 2	2.1 Training of government officials	275,450	208,187	103%
	2.2 Documentation of lessons learned	349,500	162,185	48%
	2.3 Results sharing	600,300	179,890	43%
	2.4 Academic integration	76879	111,047	144%
Subtotal component two		1,302,129	1,302,129	63%
Activities total		5,838,253	5,836,253	93%
Execution and management	Project execution costs	554,634	501,982	91%
	Project management fee	511,431	511,431	100%
Grand total		6,904,318		100%

Source: Calculated and illustrated by the Evaluator based on project documentations

While outcome 1 exceeded the budget allocated to it, reaching about 112% of its allocation, with four of its outputs highly exceeding the allocated budget, the activities of outcome 2 consumed only 63% of the allocated budget, as did all its components, with the exception of one component specified for training those targeted in governmental agencies. Among the reasons contributing to this discrepancy:

- A) The huge devaluation of the Egyptian pound at the end of 2016 led to two contradictory financial results. On the one hand, prices increased in great leaps that in some cases doubled in the years after the flotation, particularly in 2017, which practically decreased the purchasing power of the project budget. On the other hand, the value of the remaining project funds that were still in dollars increased, as it was valued at more when exchanged to Egyptian pounds. The effect of the two types of change differed according to the type of activity and the date of implementation. Among the resulting positive changes was an increase in the implementation of the basic activities of the project, which allowed the outcomes of some activities to achieve or approach impact.
- B) The overlapping between the activities and indicators mentioned above led to the extensive and successful implementation of most of the activities concerned with capacity building under the first component, while the second component included building the capacities of government employees only.

Much of the documentation and dissemination activities were also undertaken under outcome 1.2 through the online dissemination and social media related to the early warning system. All operational expenditures were governed by a Standards of Operation (SOP) document, which was signed and operationalized by project start in 2013 to serve as the framework for cooperation between the World Food Programme-Egypt Country Office (WFP) and the Executive Agency for Comprehensive Development Projects (EACDP) in the implementation of the project. It set forth detailed implementation mechanisms, roles and responsibilities, obligations, staffing arrangements, financial regulations including transfer modalities and eligible expenditures.

The cost ceiling for all items was settled and repeatedly amended in agreement of all parties. The most significant amendment occurred after the floating the Egyptian currency and the attendant price leap. The originally set ceilings were generally appropriate or under estimated, and likewise the vast majority of conducted ceilings' amendments; which were almost always well justified and in proportion to the inflation rate or lower than it. The ceiling amendment for a few expenditure items was somewhat overestimated and significantly higher than rate of inflation.

All significant purchase activities were carried out in accordance with the financial rules by applying tendering, and were open and transparent. Committees of stakeholders participated in selecting the suppliers.

In general, the majority of the cost components were most the time lower than the market price or cost in the context of other interventions, such as the fees of experts and workers, compared to other projects in the region or at the national level. Additionally, the cost of a meter of developed irrigation channels and the cost of agricultural mechanization per acre, according to the project management, did not actually reach the cap placed for them. Meanwhile, there were cost items with prices lower or close to the market price (for example, the cost per meter of improved channels were about 40% higher than the cost through the project). There are other activities that were equal to or slightly surpassed market rates, such as the price of ducks and fodder, which is due to two reasons: a) the project must commit to purchasing from traders and suppliers who are certified and capable of providing legal bills, which means that their costs are subject to the value-added tax, while the rest of the market is largely informal and does not adhere to bills and taxes, and b) there is a great difference in quality, which all the beneficiaries who participated in the FGDs were in consensus over when they compared the fodder and duckling sold by traders and those obtained through the project. They also had enough financial awareness to compare the cost and return,

preferring the higher price for the quality, which decreased death rates and increased productivity. However, there was disagreement over the cost and return of the goats (which were free to beneficiaries but constituted a financial commitment to the implementing associations), as over half of the interviewed NGOs viewed the prices of goats as higher than necessary, which was not justified by the added value alone. The fieldwork results indicate the financial efficiency of the goat activity varies from one batch to another and one place to another.

A rapid assessment of the approximate market price of a group of activity-related purchases compared to the price obtained by the project yielded the following results:

Table 9: Some Examples of Project Procurement Prices versus Market Prices

Relation to Market Price Cost Items	Over Market Price	Around Market Price	Under Market Price
Seeds per kg			
Agricultural machineries per hour ²²			
Fertilizers per Kg			
Improved Mesqas per m			
Goats per head			
Dicks per pair			
Equipment for the veterinary units			
Rehabilitation of the veterinary units ²³			

It is important to consider that the price of seeds delivered to the farmers by the project was around the market price they were used to pay for much lower quality and none-original (mother) seeds. The mother seeds were delivered to the beneficiaries for about 30% of their actual price.

In terms of the percentage of administrative costs of the total project budget, it is acceptable and is even considered relative low concerning the wide scale of r of activities and their geographical spread. In addition to the administrative costs of implementing the project activities in 14 additional villages (in addition to the 49 villages included in the project) under the name of SHRAK-Project, which was added to the climate change project, in return for the final extension of the project period for two months due to the closure the project, during SHRAK-Project paid the salaries of its employees.

²² Due to cooperation agreements with governmental providers

²³ Carried out by partner NGOs

There are a number of factors that increased the financial efficiency of the project, the most important of which are:

- Adopting the modality of increasing cost sharing
- Relying on a large number of volunteers in awareness building, mobilizing communities and supervising activities
- Including beneficiaries of the livestock production in the costs of administrative tasks undertaken by the implementing associations and the cost of veterinary services, as well as the costs of managing and maintain solar power stations
- Renting the project headquarters for the full period of the project and not on an annual contract
- Relying on online dissemination on a wide scale, which has almost no cost

Among the factors that could have enhanced the efficiency of the project is increasing the beneficiaries' portion of cost sharing in improving irrigation channels, whether in cash or in-kind payment, starting from the first year, as they are desired measures and have a clear impact and do not require a great effort for persuasion, unlike other innovations.

Additionally, some of the interviewees from local NGOs believe that buying some of the agricultural machinery would have been more economically feasible than renting it, which requires more information and studies. This also applies to renting passenger cars for the project center in Luxor.

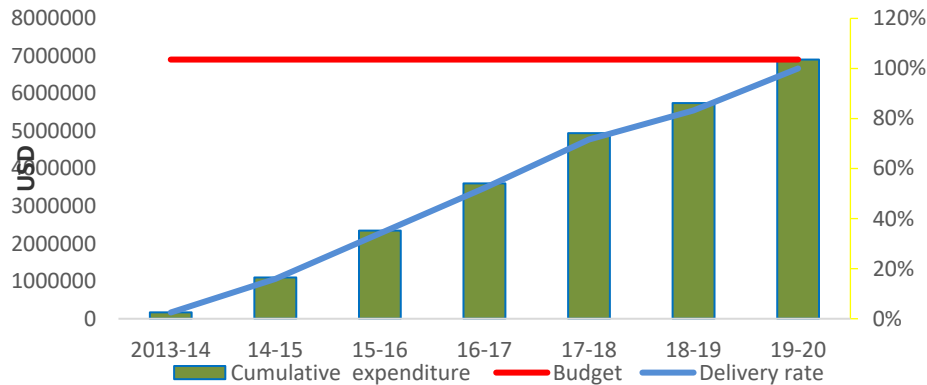
Conclusion:

The cost efficiency of the project is highly satisfactory

1.5.3.2. Time Efficiency

Due to the late start of the project, what would have originally been the first year (2013-2014) did not witness notable activities. The delay was attributed to political instability at the national level, which led to repeated changes in high ranking officials and the postponement of creating a project bank account. In addition, hiring the project manager took much longer than expected and planned. As a result of the delay, the annual technical and financial reports of the project considered the second project year (2014-2015) as year 1, in terms of activities, targets and allocated budgets included in the project document. As illustrated in figure (10), in 2014-2015, the annual delivery rate remarkably increased from 2.5% to 15.9%. From the following year (2015-2016) onwards, the delivery rate maintained a stable trend at around 18-19% (with one exception).

Figure 10: Project Cumulative Expenditure and Delivery Rate



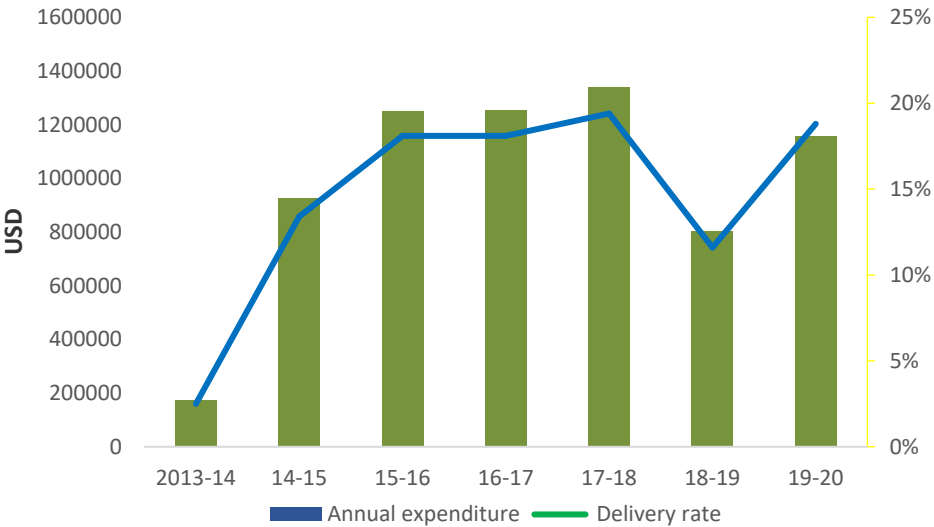
Source: Calculated and illustrated by the Evaluator based on project documentations

Adherence to the monthly, quarterly and annual schedules varied from one output or activity to another due to several external obstacles, as well as the overloading of project staff. The main factors that slowed down the delivery rate during the first two years are:

- The high degrees of community mobilization and community capacity building
- Applying a bottom-up participatory approach in decision-making and implementing activities, which enhanced cost efficiency and sustainability, but was very time consuming
- Several activities faced external obstacles (e.g. the supply of goats was problematic and delayed, equipment for the veterinary services was held by the customs authorities for bureaucratic reasons, agricultural machinery was not always available or in good condition)
- Some activities were met by initial refusal and required a lot of convincing and reaching agreements (e.g. land consolidation and changing crops and varieties)
- Some activities were delayed due to ceiling on the budget items as settled in the PSO, which was initially limited to USD 100,000 (in response, the ceiling was raised to USD 200,000)

Some of these obstacles continued to occur throughout the project life cycle and others emerged. However, the cumulative expenditure and delivery rate as illustrated in figure (10), as well as the annual expenditure and delivery rate reflect an overall *high level of time efficiency*.

Figure 10: Annual Project Expenditure and Delivery Rate



Source: Calculated and illustrated by the Evaluator based on project documentations

Conclusion:

The project efficiency is rated *Highly Satisfactory*

1.6. Sustainability and Risks

The assessment of sustainability likelihood is based on the analysis of factors which enhance and support the sustainability of the project results and of those which represent threatening risks.

1.6.1. Financial sustainability

Sustainability supporting factors:

- Applying the modality of gradually increasing cost-sharing by beneficiaries in improving agricultural practices and water saving interventions
- Relying on domestic crop varieties, which were recommended by Egyptian research institutes and particularly on mother (fundamental) seeds, which are breeding seeds, which increased adoption efficiency and sustainability
- The particularly high scalability and replicability of the project interventions
- Governmental adoption of the project recommendations through national strategies and plans, such as the national plan to develop field irrigation, the national strategy for climate change and the national wheat project, some of which considered the results of the project as being among their targets
- The community ownership of the main project components, the most important of which is developing irrigation channels and changing agricultural practices
- The role of local civil associations in managing the project activities, and in particular the livestock production component, which is managed through applying the revolving lending mechanism, and to which the NGOs were continuously committed. More importantly, the NGOs have an interest in continuing the activity through the collection of administrative fees from the beneficiaries, and it also grants the NGOs a special status in the community and helps them obtain funding for other projects
- The high repayment rate for the revolving loan (over 95%)
- Replication, as there are many projects by donors that adopted the project activities or similar ones
- Approval of government support, representing about 60% of the costs of the necessary mechanization of the agricultural practices introduced by the project
- Guaranteed higher financial sustainability for the activities that are self-funded continuously by the beneficiaries, such as maintenance of irrigation canals through the WUAs, maintenance and management of solar power units for monthly payments paid by the beneficiaries to the implementing associations (what raises the chance of sustainability is shifting from dependence on imported units with high maintenance costs to local units with low maintenance costs), as well as the revolving lending of livestock production, whereby the beneficiaries pay the implementing associations in return for the veterinary and administrative services, at 5% of the value of the loan

Sustainability risk factors:

- A few of the project activities do not include sufficient incentives for the partner NGOs to encourage them continuing implementing those activities
- The government authorities that adopt similar activities may not have sufficient budgets to continue them
- The lack of allocation of government funds until now for the early warning centers in the directorates
- The limited government budgets allocated to veterinary and agricultural extension services
- Reliance on leased equipment for all mechanization activities, rather than equipment owned by the implementing bodies

In conclusion: financial and economic sustainability is moderately likely

1.6.1.1. Socio-political Sustainability:

Sustainability supporting factors:

- The significant and pioneering community mobilization, capacity building and participation throughout the project life cycle and the resulting real and tangible social change through building the community's sense of self-confidence and belief in its abilities, which strengthened the feeling of ownership and responsibility
- The implementation by well-established, community-embedded and accepted local organizations
- Changing the attitude and orientation of partner NGOs from a mindset that focused on helping people through charity activities to a mindset that seeks people's economic empowerment through developmental activities
- At the political level, the wide scale of authorities directly involved in project or supporting its direction and activities due to their alignment with their strategies and policies represents a strong basis for political sustainability.

Sustainability Risk factors

- In the event that the implementing NGOs received funding from other bodies that is based on charity work, there may be a corrosion in the social capital built by the project
- There are existing projects that implement similar interventions and activities, but the absence cost-sharing with the beneficiaries when these projects end could impact the principle of ownership and participation that the project spread

In conclusion: Socio-political sustainability is likely

1.6.2. Institutional Sustainability

Sustainability supporting factors:

- The establishment of the Sustainability Unit for Climate Change Projects affiliated to the MALR, including officials from the WFP and the EACDP affiliated to the MALR, in addition to the project officers. The unit established committee at the level of governorates aiming to achieve sustainability (an unprecedented step that strongly supports institutional sustainability)
- Secondly, the establishment of a sub-department in the central department for public relations in the MALR, aiming to achieve coordination and integration between development projects, which can support the building of upcoming projects on the achievements of the climate change project,

and supports the continuation of successful activities and the completion of those that did not have a full chance or that faced some obstacles or mistakes

- The joint responsibility of the project between the Ministry of Agriculture, the Ministry of Environment and the WFP, and the wide scale of official partners and stakeholders at the national and governorate levels.
- Building the physical and human capacities of relevant governmental partners, on the top of which were the EMA, the agricultural directorates and the extension and veterinary service sectors
- The project's reliance in its technical aspects on official research bodies (most of which are affiliated to main concerned party, which is the Ministry of Agriculture)
- The involvement of the Ministry of Social Solidarity, which is responsible for supervising and auditing the NGOs implementing project activities, particularly the revolving funds for animal production
- Building the organizational capacities of the partners NGOs and turning the vast majority of them from simple (rather primitive) and semi-organized units into capable, professional institutions through physical and human capacity development measures

Sustainability Risk Factors:

- The chronic institutional weakness of governmental authorities concerned with most of the project activities and their lack of available capacities, which threatens some activities (such as the continuation of supplying seeds, the lack of fertilizers and the weakness of agricultural extension and veterinary services)
- Not including the agricultural cooperatives in capacity-building activities and not integrating them in any tangible way in implementing the project activities
- The relatively shortage of ToT as an important component of sustainable human capacity development, as well as the lack of training comprehensive replicable portfolios
- The absence of an institutional framework or incentives for the continuation of consolidation of holdings, which makes it difficult to predict its sustainability
- The possibility of implementing the new scheme of the Ministry of Agriculture to provide farmers with free inputs in exchange for consolidating their holdings cannot be judged yet.

In conclusion: Socio-political sustainability is moderately likely

1.6.3. Environmental Sustainability

Sustainability supporting factors:

- The project significantly contributed and partly grounded environmentally sustainable solutions in the area of conservation and management of natural resources, at the top of which are the water saving activities (canal lining were soil leveling, raised-bed planting recorded to induce up to 40% reduction in water usage), gaining land through canal lining and land consolidation, and soil improvement and solar energy
- The governmental and international support for most of the provided solutions
- The introduced agricultural practices combined economic and environmental benefits and increased the productivity per unit of water and land (e.g. heat resistant seeds and raised-bed planting led to decreasing the amount of water and fertilizers by about 25-30%)

- The Early Warning System reduced losses (in some cases up to 60%) and supported reducing chemical inputs
- Reducing soil, water and air pollution through reducing the amounts of chemical inputs

Sustainability Risk factors:

- Unexpected climate or generally natural events that could reduce the impact of the sustainability factors (low likelihood)
- Severe water scarcity due to the current rate of population growth or to factors external to the country, e.g. the Grand Ethiopian Renaissance Dam (low likelihood, since the GoE considers the issue highest priority)
- Some of the above-mentioned factors that support sustainability are dependent on factors of financial and institutional sustainability

In conclusion: Environmental sustainability is likely

1.6.4. Overall Sustainability Rating

Although (ML) rating largely reflects the chances of sustainability and risks of results on the level of outcomes as a whole, there are nonetheless discrepancies between the sustainability likelihood of single activities and results at the output level, as several of the activities, due to their nature and the success in their implementation, can achieve a rating of (L). On the top of those are: building human capacities on different levels, social and cultural changes, adopting low-cost agricultural practices, solar power units, developed mesqas and livestock production revolving loans.

Some other activities achieved the same overall rating of (ML), namely those that achieved good chances of sustainability but still have significant risk factors, such as the absence of a guaranteed institutional framework. This applies to the agricultural activities that were applied through the decreasing support method, as well as the early warning system, for which the material and human infrastructure were put in place – however, in both cases, despite the presence of important sustainability factors; there is no certainty over whether a permanent institutional framework will be provided for them. There are activities of limited numbers and scope that are moderately unlikely (MU), as they did not get enough time to provide the necessary sustainability factors and to avoid potential risks, such as a few pilot activities for agricultural production and the production of medicinal and aromatic plants, which primarily face economic risks in the form of the absence of marketing paths.

Conclusion:

The *overall sustainability of the project results is Moderately Likely (ML)*, which is the final score summing up numerous sustainability factors: financial and economic sustainability (evaluated ML), socio-political sustainability (evaluated likely- L), institutional sustainability (evaluated ML) and environmental sustainability (evaluated L). This overall sustainability rating is considered a Highly Satisfactory achievement of the project taking into consideration the context of development work in Egypt.

1.7. Progress towards Impacts

Impacts generally refer to intended and unintended long-term changes to drivers of global benefits at the local, national or regional levels, determined by observed changes in the vulnerability or vulnerability drivers of ecological or human systems. From an evaluation point of view, impact is understood as the likelihood of clear connections between the achieved outcomes and impacts, as presented in the chain

result or logical framework of the project. Given the long-term nature of impacts, usually they cannot be fully achieved and assessed at the time of project completion. However, achieving the outcomes, their link to the overall goal and their likelihood of sustainability can widely reflect impacts or at least progress towards impacts.

The project's overall goal at impact level is to "Build diversified and resilient livelihoods for marginalized rural communities in the Southern Egypt region through transfer of technology, capacity building, and information."

This goal is transmitted into the strategy objective: "To build resilience of Southern Egypt farming communities in the face of climate change and variability risks to food security." The impact goal and objective are clearly and directly linked to the project outcomes (as discussed under project strategy). In light of the successful achievement of the outcomes and the overall moderated likelihood of sustainability, the aimed impact is likely to be achieved.

The impact indicator as included in the project logframe is: "Over 50% of southern Egypt farming communities practice risk reduction measures." An accurate quantitative measurement of the impact indicator was not possible in the framework of the final evaluation.

As for the number of beneficiaries (which is the impact indicator according to the AF results tracker), table (10) shows the targeted and achieved number of beneficiaries.

Table 10: Number of Beneficiaries Supported by the Project

	Number of Beneficiaries					
	Target at Project Completion			Achieved at Project Completion		
	Total	Direct	Indirect	Total	Direct	Indirect
Total	1137000	137000	1000000	729800	145960	583840
% of female beneficiaries	40.00%	40.00%	40.00%	25.00%	25.00%	25.00%

Source: Project documentations

According to the figures, the project directly supported 145,960 beneficiaries, which represent 107% of the target. More important for the impact level is the total number of directly and indirectly supported beneficiaries, amounting to 729,800 beneficiaries, i.e. equal to 642% of the target. The share of women among the direct beneficiaries (25%) did not reach its target (40%). This is a recurrent problem of setting the target rather than of achieved results. Agriculture is almost entirely restricted to men in Upper Egypt and consequently, most of the project activities targeted male beneficiaries (agricultural practices, irrigation, solar energy, warning system, field visits and technical training). Taking into consideration the extremely conservative gender norms in the project area and compared to several previous and ongoing similar interventions, the achieved percentage of female beneficiaries is considered a remarkable success.

The evaluator was not in a position to accurately prove the abovementioned figures of beneficiaries. Nevertheless, the achieved results at the outcome level deliver solid evidence for the number of directly supported beneficiaries and the evaluation results of the outcomes' sustainability widely confirm the range of the number of the total of supported beneficiaries.

Likewise, the share of beneficiaries actually impacted or likely to be impacted by project support is not measurable at this stage or in the framework of the project evaluation. However, there are sufficient signs and indicators confirming its significant impact in the targeted communities and remarkable impact in

neighboring communities, as well as a basis for future impact at the regional and national levels. This result is grounded in the fact that ***the project achieved or contributed to sustainable changes in human lives and systems***. Those changes led to a ***reduction of the climate change vulnerability*** in the targeted areas and to different extents, in the wider scope of Upper Egypt. Through their high replicability and scaling up potential, they can represent serious steps on the way to achieving impact at the national level. Most of those results are thoroughly discussed under the sections addressing the outcomes and their likelihood of sustainability, which is the pre-condition and basis for impacts; however, they are summarized in the following from an impact point of view.

Vulnerability reduction through more resilient agricultural systems:

All the project interventions related to agricultural (crop) production and irrigation led directly to a change in agricultural, irrigation and energy systems that made them more resilient to climate change, in particular:

- Agricultural consolidation of disparate plots of land was necessary to be able to laser-level the soil, which saved on irrigation water consumption and allowed for deep ploughing, in turn improving the characteristics of the degraded soil and rehabilitated it
- Introducing new crops and varieties that are heat- and pest-resistant that are less water-consuming decreased the risks of climate change and events
- Improving the irrigation channels greatly decreased water consumption and loss, which is considered a confrontation of the current and expected shortage of water resources
- Complimentary to improving irrigation canals, the pilot models of solar energy units introduced an innovative and sustainable low-cost energy solution. Compiling both interventions maximizes their environmental and economic benefits.
- The early warning system effectively helped to adapt agricultural process to climate change, indeed saving crops from threatening climate events, and the system has even greater potential than that achieved
- Reducing production costs, improving the soil and increasing productivity are all factors that were reflected sustainably on the income achieved from agriculture, where estimations of income for beneficiaries from this varied between 30% to 40% of the current agricultural income

Vulnerability reduction through livelihood diversification

The interventions that led to the diversification of source of income include crop and livestock production. The most important direct results are:

Livelihood diversification through livestock production:

The livestock production activity is the most important activity whose multiple results could be directly observed at the impact level at the end of the project, and even during its implementation for the beneficiaries and adopters, as the areas of livestock that the project selected, according to the wishes of the beneficiaries (ducks, goats and beekeeping) have short production cycles. It is also the only activity where almost all of the beneficiaries are considered to be women (even in the majority of cases where the loan was registered in the name of the husband or father). The revolving loans for fattening ducks were the most impactful activity, followed by goats even though the beginning of the goat lending activity came before the ducks. The majority of the beneficiaries were able to repeatedly make use of the revolving loan for ducks and they were able to expand production of ducks and goats. In both cases, the return made a notable, albeit variable contribution in increasing family incomes and indeed shifting some from having almost nothing to achieving an income. As the priority for receiving loans went to the

neediest, the impact of the activity in decreasing the rate or degree of poverty can be observed. Based on field observations and the information of the participants in the interviews, it can be said in principle that the poorer the households, the greater the impact resulting from the livestock production activity.

The livestock production also had a greatly impact on the social level through empowering women economically and changing their social role and status, as most of them became economically active and generators of income for the first time in their lives, which changed the dynamics of interaction and, according to them, reduced family disputes.

Among the indirect effects that can begin to be observed are the improvements in the nutritional status of the beneficiary families, whether through the consumption of duck and sometimes goat meat, or by directing the sales proceeds to foods with higher nutritional value (more vegetables, fruits, meats and dairy). The majority of the participants in the FGDs reported an increase in spending on education from the income earned, in particular buying books or private tuitions (a widespread practice in Egypt).

Another indirect effect spread in villages through the reinvestment of income generated from livestock production in a number other productive projects, but this effect was linked to the individual abilities of the beneficiaries.

Diversifying production through crop production:

The project introduced new crops to the region, the most important of which is sorghum (which was widespread decades ago and then declined sharply until it almost disappeared) and to a lesser extent fodder beans, and on the level of the pilot medicinal and aromatic plants. It also introduced new varieties of both wheat and maize crops. Irrespective of the success on the outcome level, the diversification resulting from the introduction of sorghum and changing the varieties of wheat were among the two activities whose results could be observed at the outcome level. Farmers in both cases were more resilient to climate changes and events that occurred in the region, which resulted in not only a quantitative increase in income but also an increase in the stability and ability to secure income sources.

In addition, the project provided two pilots in agricultural processing (sun drying of tomatoes and separation of pomegranate) which are very likely to be replicated and therefore to contribute to contribute to improving and diversifying livelihoods, while promoting women's empowerment.

Vulnerability reduction through building capacities and social capital

Capacity building at the individual, community and institutional levels is considered among the results sustainably achieved by the project (whether by its nature and due to the success of its implementation). The project devoted a large portion of its time, effort and budget to awareness-raising and training at different levels and through different approaches. The resulting development in awareness, knowledge and attitudes was not only related to climate change, but rather exceeded to community awareness, participation, volunteer work, and acceptance of and demand for the idea of free economic activity.

There has also been a major leap in the capabilities of most of the project's partner NGOs at the local level (some were already at a relatively high level institutionally, while a limited number did not respond to development efforts). This transformed them from organizations with limited capabilities and expertise that were restricted to charitable and religious activities into development organizations with a vision and mission that are have human, financial and physical capabilities for institutional work.

The establishment of water user associations (initially as committees in the partner NGOs then as independent legal entities) is a new experience in community organization that granted their members experience, capabilities and awareness of the important of collective work.

Agricultural consolidation was also a positive new community experience and it was more difficult than spreading water associations, as the joint interests in the water associations surpassed the conflicting interests, whereas the opposite was true of agricultural consolidation, which was fraught with a lot of conflicts of interest. Undergoing this experience was a precedent in organized collective work and an opportunity to acquire new skills in negotiation and awareness of the concept of creating a win-win situation.

The impact resulting from these forms of collective work and community organizations has gained special significance due to the near-complete absence of the role of traditional agricultural and rural organizations, in particular agricultural cooperatives.

All these community activities, in addition to building governmental capacities in the agencies related to agriculture and livestock production created – collectively and through their mutual interaction with each other – a clear and largely sustainable change in the social capital in the project areas.

3. Conclusions Lessons Learned and Recommendations

3.1. Conclusions and Overall Rating

The project *Building Resilient Food Security Systems to Benefit the Southern Egypt Region* largely benefited from the Multilateral Implementing Entity. The executing parties, the WFP and the EACDP (*Executive Agency for Comprehensive Development Projects*), effectively and continuously backstopped and supported the project throughout its lifetime. The roles of the executing parties were complementary and widely harmonized with one another. WFP mainly focused on risk and financial control, general supervision, quality control and technical support. The EACDP enjoy the advantages of a governmental entity (representing the Ministry of Agriculture), with more flexibility and less bureaucratic restrictions. This specific nature made the EACDP a perfect partner at national and governorate levels, playing a significant role in facilitating coordination and liaising between the project and other governmental entities, besides providing supervision and technical expertise. The project partnerships with local NGOs as implementing partners at grassroots level was no less reasonable and successful, particularly regarding the revolving funds-based activities. The structure composition, Team Leader and staff of the PMU constituted important strengths of the project.

The strategy and design of the project represents a conceptual innovation, not only in the framework of climate change adaptation and WFP-programming but also in the scheme of developmental interventions in Egypt at large. The project pioneered in introducing a new and comprehensive model including improving food security, increasing income, combating poverty and empowering women while conserving, rehabilitating and environmentally managing natural resources.

The project faced external challenges and obstacles, most importantly the political instability and the associated frequent changes in high ranking officials (in the first two years), the extremely complicated and time consuming bureaucratic regulations, the weak capacity of partners and stakeholders, the delays in important procurements and services as well as the resistance of the (potential) beneficiaries to replace traditional and familiar practices with new unknown practices and techniques. Finally, the outbreak of covid-19 limited or slowed down the implementation of some planned activities.

In addition to those external hindering factors, some internal factors had a relatively negative impact on its performance and achievements. This includes the confusing or overlapping formulation of some objective statements as included in the project logframe; the inappropriateness of some indicators for measuring the respective objectives, the understaffing of the PMU relative to the workload, the gaps in

the M&E system and the lack of deep, comprehensive and evidence-based documentation of the project innovations, implementation modalities and achievements. While the understaffing was compensated through the high commitment and dedication of the staff, the weaknesses of the M&E system, logframe and documentation meant that some activities and results were not properly captured. Although the flexibility in responding to local needs is a positive attitude and one of the project's strengths, it caused a slight overload in activities. However, those initiatives were rather pilot activities with limited budgets. Finally, the project did not sufficiently distinguish between wide-scale and pilot interventions in terms of dissemination strategies.

In spite of those hindrances, the project achieved or exceeded almost all its outputs' and outcomes' targets, efficiently utilized its entire budget, accomplished the objectives of the first and most important outcome-1 and accomplished the objectives of the outcome-2 to a large extent. The achieved results are likely or moderately likely to be sustained after project completion. Therefore, at the outcome level, the project definitely:

- improved the adaptive capacity in its targeted localities (and partly in its governorates) in the face of anticipated climate-induced reduction in food security
- built a solid basis for improving the adaptive capacity in the southern region and at national level,
- significantly contributed to increasing and strengthening governmental commitment to investing in and sustaining climate risk reduction strategies and measures.

As for the impact level, the project contributed to and created a strong basis for reducing vulnerability in the Upper Egypt region through more resilient agricultural systems, livelihood diversification and building capacities and social capital at different levels in a likely sustainable and highly replicable manner. Nevertheless, the impact indicator as included in the project logframe "Over 50% of southern Egypt farming communities practice risk reduction measures" could not be accurately measured in the framework of the evaluation.

Since the outcomes' effectiveness and efficiency are rated as Highly Satisfactory, and almost all other aspects are rated as Satisfactory or Highly Satisfactory, the overall rating of the project (according to the AF-rating system) is Highly Satisfactory.

The ratings of each project result on each evaluation criterion as well as the overall evaluation of the project are captured in the following table (11).

Table 11: Project Overall Rating

Evaluation Main Criteria	Evaluation Sub-Criteria	Rating
Design and Implementation	Strategy	Highly Satisfactory
	Logeframe design	Marginally Satisfactory
	Implementation Arrangements	Highly Satisfactory
	M&E-System	Marginally Satisfactory
	Stakeholders Participation and Partnerships	Highly Satisfactory
	Overall Design& Implementation	Satisfactory
Outcomes' Relevance	Relevance to Adaptation Fund Outcomes	Highly Relevant
	Relevance to National Agricultural Strategy	Highly Relevant
	Overall Relevance	Highly Relevant
Outcomes' Effectiveness	Outcome 1	Highly Satisfactory
	Output 1.1: Community Mobilization	Highly Satisfactory
	Output 1.2: Climate change and adaptation online application	Satisfactory
	Output 1.3: Water saving irrigation	Highly Satisfactory
	Output 1.4: Building resilience in agricultural production	Highly Satisfactory
	Output 1.5: Building resilience through livestock production	Highly Satisfactory
	Outcome 2	Satisfactory
	Output 2.1: Training of government technical staff	Highly Satisfactory
	Output 2.2: Documentation of lessons learned and best practices	Marginally Satisfactory
	Output 2.3: Sharing and mainstreaming project results in local and regional planning	Highly Satisfactory
	Output 2.4: Universities integrate climate adaptation solutions into their academic curriculum	Satisfactory
	Overall Outcomes' Effectiveness	Highly Satisfactory
	Outcomes' Efficiency	Cost efficiency
Time efficiency		Satisfactory
Overall Outcomes 'Efficiency		Highly Satisfactory
Project Sustainability	Financial and economic sustainability	Moderately Likely
	Socio-political sustainability	Likely
	Institutional sustainability	Moderately likely
	Environmental sustainability	likely
	Overall Project Sustainability	likely
Project	Overall	Highly Satisfactory

3.2. Lessons Learned and Recommendations

Since the recommendations in the framework of a final evaluation do not represent corrective actions addressed to the project management (which no longer exists), lessons learned and recommendations are almost two sides of the same coin. Therefore, they are integrated in the following i.e. are extracted from and reflect project experiences and lessons. The recommendations are divided into two parts: a) recommendations directed to the AF to be considered in similar future interventions and within similar contexts, regardless of the region or country; and b) specific recommendations tailored to similar interventions in Egypt which are therefore directed to the GoE and development organizations acting in the country.

General Recommendations

- Climate change aspects and their socio-economic impacts should be the determining factor for defining the project's broad geographic scope at global, macro and meso-levels (e.g. eco-systems and regions and/or countries). However, selecting localities and types of activities should be decided based on a deep analysis of local circumstances and needs as well as national trends, orientation and priorities.
- Since climate change impacts are not gender-neutral, gender aspects/equality should be included in the evaluation framework of the AF as a specific and separate criterion.
- When planning for projects, a clear distinction should be made between impact and pilot activities, which should be reflected in the objectives' statements, targets, indicators and number of beneficiaries. Additionally, an early stage strategy for dissemination and promoting adoption and replication should be put in place, including operational plans.
- Impact assessments for climate adaptation projects should be planned and conducted, particularly when innovative modalities and techniques are introduced.
- The following should be mainstreamed as crosscutting issues that the project has proven to enhance the sustainability of resilience-related interventions:
 - Applying the participatory approach, expanding the circle of stakeholders and relying on local communities and grassroots organizations whenever possible
 - Focusing on awareness-raising activities and physical and human capacity building for partners, stakeholders and beneficiaries on different levels
 - Applying the increasing cost share of beneficiaries to an affordable limit
 - Providing services and benefits which have running costs for fees/prices that cover their costs as a basis for their sustainability (not for free)
 - Integrating project activities with national plans that have the same objectives
- In the framework of interventions that introduce/include CEWSs, the systems should be elaborated, not only to be used for climate related information, but also as an alternative for or complementary to the traditional and usually poor extension and veterinary services. However, this should be contingent on developing appropriate mechanisms to transfer information in a suitable manner to the different levels of users, from decision-makers to end- beneficiaries.
- The adoption of a bottom-up approach and building social capital should be considered as important as the physical achievements of any intervention. Therefore, adequate financial and human resources must be allocated to mobilizing, educating and organizing local communities and integrating them into all work phases. This particularly applies to beneficiaries or potential beneficiaries of any developmental and, above all, adaptation intervention.

- When crop production activities are planned, the following should be taken into consideration:
 - Including marketing plans particularly, when new crops/products to are introduced
 - Relying on origin (mother) seeds to reproduce seeds in the event of growing new crops or varieties, to raise the adoption and sustainability rates
 - Activating and integrating farmers' organizations, if they exist, or supporting the formation of such organizations if they are lacking, and building their capacities in both cases, as an essential factor of institutional sustainability

Egypt-specific Recommendations

In addition to the abovementioned general recommendations (where applicable), the following recommendations are directed to the GoE (mainly the MALR) as well as national and international development actors at large and those working in the context of climate change adaptation and resilience in particular.

- On-going and future agricultural and climate adaptation interventions should generally maintain and build on the results of the climate change project.
- The previous recommendation is particularly relevant for the CEWS as well as the associated Climate Change Information Centers (CCICs) created by the project. The great potential of the CEWS should be utilized in a sustainable way and to its full capacity, through:
 - Expanding the CEWS to include more climate factors, crops and areas
 - Expanding the CEWS to serve as a tool for agriculture and market information, and extension and veterinary services (against fees)
 - Merging the CCICs into the organizational structure of the agricultural or extension directorates to ensure their institutional and financial sustainability
 - Developing a holistic framework for the dissemination of information and instructions, defining vertical and horizontal paths of information
 - Qualifying and integrating the farmers' organizations, including agricultural cooperatives into the dissemination framework
 - Continuing to offer the website and interactive map created by the project for free and engaging in advocacy efforts to encourage agricultural administrations and local associations and cooperatives to use them
 - Integrating links to the CEWS into the MALR and governorates' official websites
 - Transforming the text (mobile) message into paid services, whether through regular financial payments to local farmers' organizations or as an addition to the cost of mobile phones (in agreement with mobile service providers)
- Participatory approach should be adopted and (truly) applied, involving a wide spectrum of stakeholders and beneficiaries, given that their involvement is associated with assigning with specific roles and tasks as integrated elements of the intervention plans.
- Women participation and empowerment should be considered a key factor that significantly increases the likelihood of achieving impact and sustainability. As the project proved, even in the most traditional and conservative societies/communities, well-designed interventions can reach women and gradually achieve real social changes to the benefit of women and gender equality.

- The agricultural cooperatives (cooperative sector) should be developed, activated and gradually relied on, or at least involved in agricultural interventions, which is a pre-condition for agricultural development and supporting small farmers in light of the severe land fragmentation and challenges that the agricultural sector faces, in particular climate change.
- Agricultural development interventions should (as much as possible) digitize data and procedures to be aligned with the future course of national strategic objectives in this regard.
- The agricultural extension and veterinary services, which are greatly deficient, should be enhanced and make use of modern means of communications to increase their outreach in addition to the traditional face to face modalities.
- Greater attention should be paid to the goat production sector (e.g. developing a regulatory framework, providing support and integrating it in MALR's research plans), due to its high potential to diversify sources of income and decrease rural poverty with relatively few resources.
- The procedures of establishing and registration of Water Users' Associations (WUAs) at field level (Mesqas) should be facilitated and simplified.
- The procedures of establishing and running solar energy units should be supported and encouraged, particularly in excepting their establishments from the regulations preventing constructions on agricultural lands, especially in remote reclaimed areas .
- Interventions that target improving irrigation systems should give priority to closed pipes instead of open channels whenever technical aspects permit it, in line with the strategic national plan to develop field irrigation by shifting from farrow/surface irrigation to sprinkle or drop irrigation, which rely on the basic infrastructure of field pipes.
- Interventions that target improving irrigation systems should (where possible) link efforts directed at field canals with land consolidation initiatives, since improving the canals is among the most desired incentives and represents a sustainable physical connection for the land owners using the same canal.