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THE AGRICULTURAL INNOVATION PROJECT (AIP)
BASELINE ASSESSMENT

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Content

List of Acronyms

BOM	Business Opportunity Mapping
CBE	Central Bank of Egypt
CAPMAS	Central Agency for Public Mobilization and Statistics
EGP	Egyptian Pounds
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FO	Farmer Organizations
GDP	Gross Domestic Product
IDI	In-Depth Interviews
ITC	International Trade Centre
M&E	Monitoring and Evaluation
MALR	Ministry of Agriculture and Land Reclamation
MAP	Medicinal and Aromatic Plants
MSA	Market System Analysis
NFSA	National Food Safety Authority
NGO	Non-Government Organizations
ToR	Terms of Reference
USD	United States Dollar
VC	Value Chain

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Executive Summary

Egypt's agricultural sector is one of the country's most important economic assets, significantly contributing to the livelihoods of the rural population. Despite ongoing efforts, the sector still has a lot of unrealized potential and opportunities for growth. Hindrances to realizing this potential include the lack of supporting services to smallholder farmers as well as a shortage in the availability of accurate technical information. In this context, the Egyptian-German Agricultural Innovation Project (AIP), a bilateral GIZ technical cooperation programme, is being implemented under the supervision of the Egyptian Ministry of Agriculture and Land Reclamation (MALR) with the primary objective of increasing the income of smallholder farmers in Upper Egypt, particularly in the governorates of Minya and Beni Suef, with an additional focus on the inclusion of women.

The AIP selected the onion, garlic, pepper, and Medicinal and Aromatic Plants (MAPs) - namely fennel, basil, marjoram, and chamomile – value chains to be the focus of the project. They were selected for having the highest potential for market growth, highest development impact and inclusiveness and ability to stimulate change. Interventions were then designed based on a market system analysis (MSA) that identified the main constraints facing the selected value chains as well their root causes.

In this regard, this baseline study was conducted to serve the monitoring and evaluation of the project. It allows for the overseeing of the project's progress against the outcome and outputs of the planned interventions. The purpose of this baseline study is to lay the groundwork for a sound monitoring and evaluation system to monitor progress, measure change, understand the project's contribution to achieving this change, and aid subsequent reviews in drawing lessons for the future.

Methodology

To achieve this, the baseline study used quantitative and qualitative research in addition to the desk review. Using a Market System Analysis (MSA) approach, the study aims to provide a full understanding of the selected value chains and, in addition, highlight challenges and opportunities. The primary data was collected using 314 surveys targeting

smallholder farmers from the selected value chains in Upper Egypt's Minya and Beni Suef, 13 in-depth interviews (IDIs) targeting key stakeholders, including representatives of public and non-governmental farmer organisations (FOs), traders of agricultural inputs, and processors, and 10 focus-group discussions (FGDs) with smallholder farmers (males and females), graduates, entrepreneurs, and workers in processing units.

Main challenges

The study revealed a number of constraints on the value chain level that reduces the income of farmers and adds unnecessary production costs. These include (1) poor agricultural practises in all the farming stages, (2) input purchasing decisions based solely on cost, and (3) a mismatch between the supply and the demand of the selected crops, which, along with (4) the low bargaining power of farmers, results in (5) the prevalence of high rejection rates and (6) low crop prices.

Meanwhile, on the market level, several underlying challenges influence the behaviour of farmers on the value chain level, reducing the quality and productivity of their harvest and decreasing their income.

These include: (1) the understaffing of public FOs and the weak administrative capacities of both public and non-governmental FOs which makes them unable to provide farmers with the needed technical information and extension service. As a result, farmers rely on incompetent knowledge sources that provide them with incorrect information, either because these sources are not equipped to provide such information or provide wrong information on purpose to monopolise the production of certain crops or to sell farmers inadequate inputs.

 (2) the lack of suitable and sustainable information platforms that can link farmers to other market actors and provide them with accurate market information (e.g., data on the supply and demand, quality requirements and smart practises, existing financial services that may help farmers improve agricultural practises).

(3) the absence of contract farming to regulate the cultivation process. This leaves farmers dependent on their intuition and personal experience to decide on which crops to cultivate. This, in turn, creates a mismatch between supply and demand and accordingly causes extreme price fluctuations that leave farmers unable to manage their selling prices and cause significant losses to both farmers and processors.

Main opportunities

Market information channels and contract farming solutions will help provide farmers with knowledge of good agricultural processes that are based on existing standards and requirements. They would provide farmers with access to trustworthy sources of input, eliminating the problem of sourcing poor and inadequate inputs that harm crops. This, in turn, would reduce the high rejection rates and the unnecessary costs that farmers currently suffer from.

The lack of good and sustainable information platforms, linking the different market actors and providing accurate market information, is also the main reason there is a lack in agronomists and technical experts available to farmers. Graduates and potential calibres are available but do not have access to work opportunities despite there being a demand. Thus, providing such information channels would bridge this gap, providing the farmers with the skilled workers they need, and the latter with job opportunities.

Baseline findings against the AIP's outcome and outputs

To meet the objective of the AIP project, GIZ has identified areas for intervention across the selected value chains to increase the income of farmers. These areas include building the capacities of FOs to provide the needed support to farmers, introducing contract farming through FOs, introducing innovative techniques to increase crop productivity, introducing organic farming, establishing demonstration fields for farmers to monitor improvements of the crops, building the capacities of graduates and entrepreneurs and connecting them with the FOs, and establishing virtual platforms to disseminate information on good practices, sources of inputs and market needs.

While the planned interventions will lead to the aspired project objective when successfully implemented, some of the indicators set to measure the success of these interventions have not taken into consideration the context in which they are being implemented. For example, this study shows that the quota set for women beneficiaries will be hard to achieve by increasing their agricultural income as some of the women working in the sector are not paid, namely in cases when the land is family owned, and, according to the fieldwork, many women generate the main bulk of their income from

other sources. Therefore, this study proposed that the project should be more flexible when aiming to meet the set targets.

The below section summarizes the current baseline state shown against the indicators of the outcome and outputs of the project.

OUTCOME AND OUTPUTS

Outcome objective: to increase the income of smallholder farmers through improving current agricultural practices, especially through the application of new innovative techniques.

Three indicators are put forth to achieve the identified outcome, they are

1. Increasing the income of 10,000 smallholder farms (of which 33% are women) from the sale of products of the selected value chains by an average of 20%.
2. Increasing the number of members (FO employees and independent farmers) in the 30 supported farmer organizations by 500 persons (of which 30% are women).
3. Increasing the productivity per unit area of the 10,000 smallholder farms by 30 percent.

The baseline state of the outcome indicators is as follows:

1. The baseline income of farmers across the selected value chains in Minya and Beni Suef:

	Onion	Garlic	Chili pepper (dry)	Chili pepper (fresh)
Profit in EGP/ Feddan	15,280	13,280	7,400	15,900

	Basil	Marjoram	Fennel	Chamomile
Profit in EGP/ Feddan	16,790	16,600	12,710	16,300

Table 1: The average profit per feddan of farmers

2. The number of members (FO employees and independent farmers) in the supported farmer organizations is currently estimated at 1,000 persons. The number of self-employed (members and workers) is planned to increase by 500 (including 30% women) by 2023, to be achieved by partnering with NGOs to introduce new business models (business grants) that would create job opportunities for new members.

3. The current average productivity of the selected crops, calculated using the surveys conducted with farmers is as follows:

	Onion	Garlic	Chili pepper (dry)	Chili pepper (fresh)
Tons/Feddan	20	15	2	12

	Basil	Marjoram	Fennel	Chamomile
Tons/Feddan	1.7	1.8	1.2	0.6

Table 2: The average productivity of crops (tons per feddan)

Output 1: Selected farmer organizations have diversified their customer structure/distribution channels.

The two indicators put forth to attain output 1 are:

1.1. In 10 farmer organization, improved or new demand-oriented IT applications were rolled out to strengthen transparent access to market information.

1.2. 85 contracts concluded between smallholder farms or farmer organizations and buyers (exporters, processing companies, hotels etc.)

The current baseline state of the set indicators under output I is as follows:

1.1 No IT applications have yet been introduced. The envisioned IT applications aim to help link farmers with trusted market channels, which would minimize the market gap between the supply and the demand in the selected value chains. Existing successful examples include, mozare3 and Shary, both provide farmers with such services and can be good benchmarks for the project to follow. Also, building the

capacity of FOs and farmers to be able to use such platforms would be crucial to reach the intended objectives.

1.2 No contracts have been signed. Out of the surveyed sample of farmers, only 1 percent stated being contracted to sell their produce, Lack of contract farming constitutes a challenge as it creates a mismatch between the supply and the demand of crops, resulting in a drop in prices. Capacity building trainings targeting FOs will help farmers reach potential buyers and increase the number of contracts signed.

Output 2: Selected farmer organizations have improved their management capacities.

The two indicators put forth to attain output 2 are:

2.1 6,000 out of 10,000 members of farmer organizations (60% of whom are female members) who took part in the project's qualification measures on topics such as marketing, certification, administration, production, logistics and personnel management, use case studies to demonstrate an increase in skills for the management of their farms.

2.2 15 new business models funded under the *Matching Grant Facility* (MGF) are established at the level of smallholder farms and/or farmer organizations, 30% of which were specifically for women (groups).

The current baseline state of the set indicators of output 2 is as follows:

2.1 A business skills assessment study was carried out to identify the needs of FOs and tailor capacity building programs accordingly. FO members will be trained according to the needs assessment.

2.2 Proposals presented by FOs to the Matching Grant Facility that do not support the communities nor create job opportunities in the area were rejected. However, the study identified a couple of FOs with eligible business ideas that evidently matched the needs expressed by farmers and other relevant market actors. The objective is to reach 15 new business models under the grant.

Output 3: Selected farmer organizations use innovations that increase productivity and income.

The two indicators put forth to attain the output 3 are:

3.1 In each selected value chain, a technical innovation to improve productivity and quality is introduced by 70% of the supported smallholder farmers (30% of whom are women), one of which increases food safety.

3.2 The area that is organically farmed has been expanded by 1,200 feddan (about 500 smallholder farmers).

The current baseline status of the set indicators of output 3 is as follows:

3.1 Poor agricultural practices leading to poor productivity in the selected value chains. Four main areas, namely input sourcing, farming, irrigation, and land preparation, suffered from poor agricultural practices. These varied from the quality of fertilizers used to the quantities of water used. The target is to increase the number of farmers adopting productive practices, by carrying out field-visits, study tours, capacity building programs and ToTs.

3.2 Organic cultivation is seen on a very small scale and only among MAPs farmers. The process of transforming farming land to organic takes three years or more, which explains why it is limited. However, GIZ has identified organic farming as a main innovative practice that would lead to increase in productivity.

Recommendations

Finally, the report provides recommendations on what should be taken into consideration by GIZ when carrying out the planned interventions.

1. Contract farming is key to counteract the marketing and pricing challenges facing farmers. FO should act as mediator in such contracts to increase the bargaining power of farmers. The contracts should account for the agricultural cycle, to preserve and sustain the quality of the soil and harvest and should specify the required quality of the produce and the required agricultural practices to realise this quality – as to retain trust and confidence in such systems.

2. Innovation techniques can include drip irrigation, which can be implemented through organized cost sharing, formal or informal, and farmer coalitions. They will still need backing from national policies and will require financial support in addition. Introducing new varieties of crops, introducing new digital solutions, and facilitating access to information and machineries are also activities that GIZ should consider as innovation interventions that would increase productivity and quality.

3. Organic farming can be supported by the provision of capacity building trainings to FOs and incorporating the regulations of the National Food and Safety Authority (NAFSA). These requirements can be introduced using the 12 demonstration fields planned by the project. Additionally, the project should identify certified suppliers of pesticides and fertilizers and encourage farmers to seek them.

4. While the Matching Grant will only accept projects serving farmers, some of the projects rejected by the grant may hold potential for other market actors and should be passed on to investors and interested entrepreneurs. Identifying good business opportunities that will be of interest to entrepreneurs and investors will help improve the performance of the targeted value chains and will eventually be of benefit to farmers as well. An example of such an opportunity that will not be accepted under the grant but is beneficial to the community at large is the establishment of testing labs in Upper Egypt.

5. Information that helps in accessing new market channels will encourage prominent processors to produce higher quality products. This can be done by connecting processors with exhibitions and networking events.

Introduction

Context and background

Agriculture is one of Egypt's largest economic sectors, accounting for 11.5 percent of the country's gross domestic product (GDP) in 2020.[1] It provides for 28 percent of the national workforce's occupations and 45 percent of female employment. Moreover, 55 percent of all jobs in Upper Egypt are tied to agriculture.[2]Egypt's agricultural exports have increased over the previous few years, as shown in the table below.[3]

According to a statement made by Egypt's Minister of Agriculture, agricultural exports have increased by 12 percent since 2020.[4]

However, land fragmentation among small landowners, of 1-3 feddans, who are responsible for nearly 90 percent of horticulture output (i.e., fruit and vegetable) in Egypt, continues to severely impede agricultural development.[5]

Although horticulture crops and medicinal and aromatic plants (MAPs) contribute significantly to the national economy - with horticulture crops contributing for nearly 36% of total agricultural GDP and 80% of MAPs production exported to European, American, and far Eastern markets - they account for only 13% and 1% of Egypt's cultivated land.

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[1] Egypt - GDP distribution across economic sectors 2010-2020 | Statista. (2022). Retrieved 19 May 2022, from https://www.statista.com/statistics/377309/egypt-gdp-distribution-across-economic-sectors/

[2] Agriculture and Food Security | Egypt | U.S. Agency for International Development. (2022). Retrieved 19 May 2022, from https://www.usaid.gov/egypt/agriculture-and-food-security

[3] Value Chain Analysis Report - 2nd Draft (3)

[4] Egypt's agriculture exports increased by 14% in 2021: Agriculture minister - Politics - Egypt. (2022). Retrieved 19 May 2022, from https://english.ahram.org.eg/NewsContent/1/64/422039/Egypt/Politics-/Egypts-agriculture-exports-increased-by--in--Agric.aspx

[5] Value Chain Analysis Report - 2nd Draft (3)

Agricultural Exports Value (in USD)
(Agricultural Export Council)

Agricultural Exports Quantity (in tons)
(Source Agricultural Export Council)
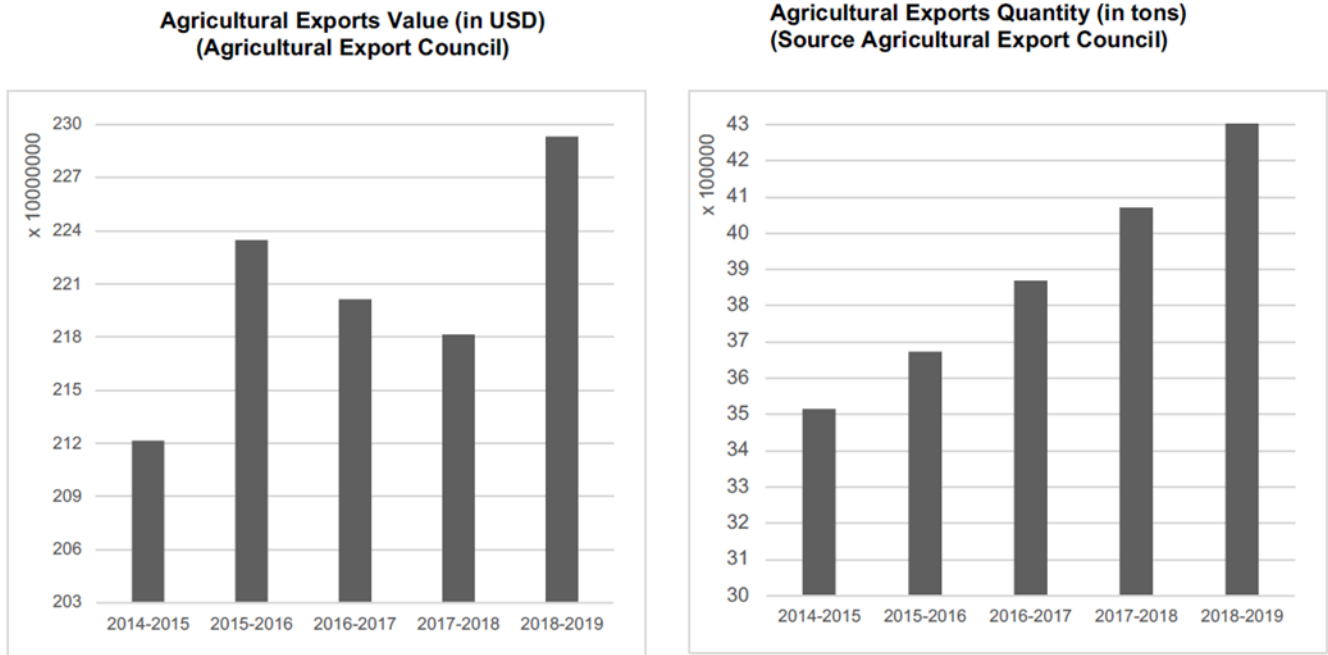
Figure 1: Agriculture exports quantity & value (in tons and in million USD)

Horticulture and MAPs crops are largely concentrated in parts of Upper Egypt. Although Upper Egypt's agricultural area remains dominated by traditional field crops (i.e., wheat, corn, rice, cotton), it produces 92 percent of Egypt's MAPs production, of which 50 percent is farmed and harvested in Beni Suef and Minya. Upper Egypt also greatly contributes to the national production of horticultural crops, including sweet and chili peppers (13.6 percent), onions (31.5 percent), and garlic (68.8 percent). Minya and Beni Suef also contribute to a big percentage of this production as shown by the graph below.
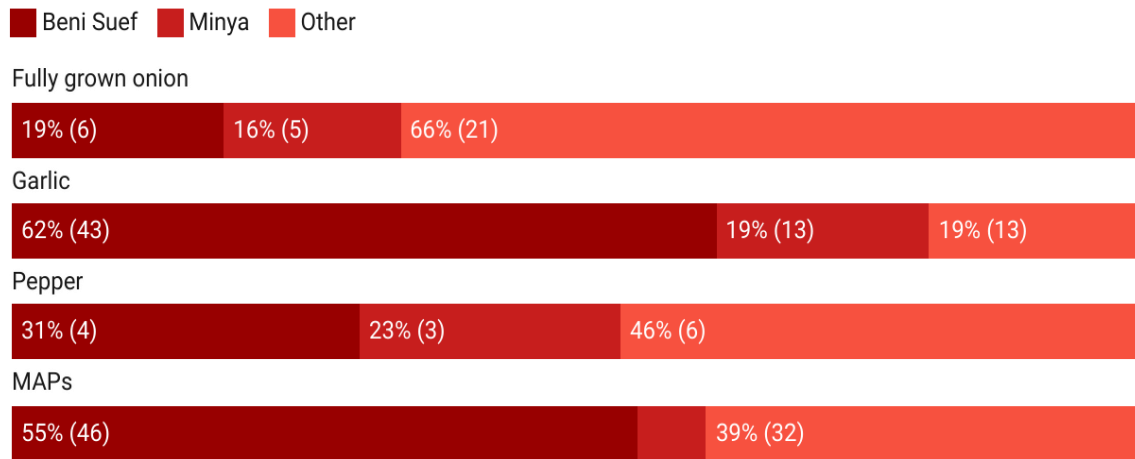
Figure 2: Distribution of targeted crops in UE – share of total national production

The project's objective and rationale

Despite the importance of the agricultural sector for the communities of Upper Egypt, and for Egypt as a whole, the sector remains underdeveloped, lacking in support, and rife with inefficiencies, misinformation, and unfulfilled potential. In line with that, the Egyptian-German Agricultural Innovation Project (AIP), a bilateral GIZ technical cooperation program under the guidance of the Egyptian Ministry of Agriculture and Land Reclamation (MALR), was launched in an attempt to develop the agriculture clusters in Upper Egypt, especially in Minya and Beni Suef. A thorough evaluation was conducted to select the value chains based on their potential for market growth, inclusiveness, and potential for change, accordingly garlic, onion, pepper, and MAPs were selected and analysed through the Market System Analysis (MSA) approach.

The outcome objective of the project is to increase the income of smallholder farmers in Upper Egypt through the usage of agricultural innovation and promotion of agribusiness, paying special attention to the inclusion of women. It attempts to do so by expanding market access and linkages, improving the institutional capacity of farmer organizations, and promoting innovation and productivity-enhancing solutions across the targeted value chains. In addition, the project integrates digital solutions and innovations across all three components by upgrading or introducing IT or digital technologies that service the supported value chains. Although the project focuses on supporting smallholder farmers,

the system in which they operate must be taken into account. Therefore, to ensure maximum effectiveness and benefit to smallholder farmers, the project must extend its outreach to other agents, such as lead farmers, smallholder farmer groups, farmer organisations, farmer associations, traders/aggregators, input suppliers, processors, and other key value chain actors.In addition to the outcome objective, three output objectives have been formulated for the project:

a. "Selected farmer organisations and farmers have diversified their sales structure/channels"
b. "Selected farmer organisations have improved their management capacities"
c. "Selected farmer organisations and farmers use innovations that increase productivity and income"

The objective of the baseline study

The objective of the baseline study is to support the AIP project in setting the foundations for a solid monitoring and evaluation system. It provides it with a base against which it can monitor progress, measure change, understand the project's contribution to achieving this change and conduct evaluations upon which lessons may be drawn.

As part of AIP's monitoring and evaluation, this assignment is conducted to enable the project to measure its progress in achieving the intended outcomes and evaluate its effectiveness and success. The baseline report maps the current state by collecting relevant data and information about the environment in which the project is being implemented and about its beneficiaries, to act as a guide for the M&E system. The baseline study abided by the ToR as follows:

a. Collected and analysed the verifiable indicators from the project matric indicators.
b. Collected and analysed the relevant information on the targeted beneficiaries (including the women and youths), service providers, and stakeholders.
c. Assessed production and productivity of the MAPs, Onion, Garlic, and Peppers value chains in the selected governorates of Beni Suef and Minya.
d. Observed and documented the socio-economic conditions (including poverty and income) of the farmers working in the selected value chains.
e. Assessed the engagement of Farmer Organizations (FOs) and key market players of the selected value chains, including their contribution to enhancing the economic opportunities of smallholder farmers.

f. Prepared a baseline against which the project's impact could be measured and reported.

The baseline, hence, collected all information relevant to the project's output and outcome indicators, as demonstrated in the following table:

Level	Objective	Indicator
Outcome	Increase the income of smallholder farmers through improving current agricultural practices, especially through the application of new innovative techniques.	Increasing the income of 10,000 smallholder farms (of which 33% are women) from the sale of products of the selected value chains by an average of 20%.
		Increasing the number of members (FO employees and independent farmers) of the 30 supported farmer organizations by 500 persons (including 30% women).
		Increasing the productivity per unit area of the 10,000 smallholder farms by 30 percent.
Output 1	Selected farmer organizations have diversified their customer structure/distribution channels.	In 10 farmer organization, improved or new demand-oriented IT applications were rolled out to strengthen transparent access to market information.
		85 contracts concluded between smallholder farms or farmer organizations and buyers (exporters, processing companies, hotels etc.)

Output 2	Selected farmer organizations have improved their management capacities	6,000 out of 10,000 members of farmer organizations (60% of whom are female members) who took part in the project's qualification measures on topics such as marketing, certification, administration, production, logistics and personnel management, use case studies to demonstrate an increase in skills for the management of their farms.
		15 new business models funded under the *Matching Grant Facility* (MGF) are established at the level of smallholder farms and/or farmer organizations, 30% of which were specifically for women (groups).
Output 3	Selected farmers' organizations use innovations that increase productivity and income	In each selected value chain, a technical innovation is introduced to improve productivity and quality by 70% of the supported smallholder farmers (30% of whom are women), one of which increases food safety.
		The area that is organically farmed has been expanded by 1,200 feddan (about 500 smallholder farmers).

Table 3: The AIP Project Indicators

As shown in the previous table, the logical framework includes three outcome indicators that will be used to measure the progress of achieving the desired outcome. It also includes three outputs, each having two indicators that measure their progress. Achieving the outputs will lead to achieving the project's outcome. To gather the necessary information and data needed to form the baseline for the indicators outlined above, the baseline study used a range of data collection methods and tools, detailed in the following section.

Methodology

The methodology used, has been tailored and consistently reviewed, in line with the ToR, the technical proposal, the inception report, and the back-and-forth meetings and discussions with GIZ's AIP team. It used both primary and secondary sources in order to gain a holistic understanding of the selected value chains, their most significant challenges and opportunities and the relevance of the latter to the AIP logical frame and workplan.

Inception → **Implementation** → **Reporting & Presentation** → **Finalization**

Inception
- Inception report
- Information areas identification
- Data collection tools

Implementation
- Desk review
- Qualitative data collection - Minya
- Quantitiative data collection (314 surveys)
- Quality checks and debriefing sessions
- Qualitative data - Beni Suef

Reporting & Presentation
- Content analysis
- Validation meetings with experts
- Draft baseline report
- Validation workshop with AIP team
- Presenting findings to the team

Finalization
- Finalizing the baseline report after the end of the assignment

Figure 3: The Methodology of the Baseline Study

A Market System Analysis (MSA) approach was carried out to identify the activities and main actors within the selected value chains and assess their interlinkages. It was also used to assess the surrounding environment (e.g., supporting functions, rules and regulations) to identify positive and negative influences affecting these activities and actors. The MSA approach is especially beneficial as it helps decision makers tailor interventions so that they do not only address symptoms of a particular problem but rather address its root causes on a market system level, and, therefore, create sustainable change. While the objective of this study did not include formulating interventions for the AIP project, the MSA approach was still useful in that it helped to either justify or refute the project's proposed interventions and provide, accordingly, the project team with key considerations to take into account.

DATA COLLECTION

Main information areas were identified based on the study's objectives and were assessed using primary and secondary sources. The Information Areas table is attached in Annex II.

Secondary sources aided the study in gathering the economic indicators needed to get a market overview of the selected value chains. They were also useful in gathering the needed information on the current socio-economic status of farmers in Upper Egypt. It is important to note that secondary sources also included the studies carried out under the auspices of the AIP project.

Primary sources were beneficial in capturing perceptions of the different market actors regarding what the prevailing challenges and opportunities in the sector are and whether they see themselves capable of adopting the change GIZ aspires to achieve. In addition, primary data was useful in identifying the income of smallholder farmers from agriculture. To acquire this information, both qualitative and quantitative tools were deployed.

Desktop Research

The main documents and sources reviewed included:

- Egypt in figures – Central Agency for Public Mobilization and Statistics FAOSTAT Data and statistics on crop production and exports
- International Trade Centre (ITC) exports potential maps on the selected value chains
- Trade map statistics
- Agricultural exports council data
- Agricultural Innovation Project snapshot analysis – Medicinal and Aromatic Plants
- Agricultural Innovation Project snapshot analysis – Garlic and onion
- Snapshot report for chili pepper AIP project
- Business skills assessment report
- Success stories and lessons learned – inclusive supply
- Value Chain Analysis report
- Gender value chain analysis report
- Business Opportunities Mapping in Minya

In-depth Interviews (N=13)

To gain an understanding of the different perceptions and experiences of the relevant key actors across the selected Value Chains, various versions of the discussion guide –

attached in Annex III - were developed, targeting input suppliers, processors, exporters, traders, FOs and incubators. Accordingly, a total of 13 In-Depth Interviews (IDIs) were carried out in both governorates, as follows:

Type of actor	Details	Governorate	Units
Key expert	GIZ coordinators	Minya & Beni Suef	2
NGOs	Representative of Tokh El Nakheel association Representative of Ebda' bnafsak association	Minya & Beni Suef	2
Public Farmer Organization	Representatives of public FOs affiliated to the MALR	Minya & Beni Suef	2
Processors	Pepper and MAPs processors	Minya & Beni Suef	2
Agribusinesses	Entrepreneur in agribusiness	Beni Suef	1
Collection facility	Onion and garlic	Beni Suef	1
Input supplier	Trader of pesticides, fertilizers, seeds and seedlings, etc	Beni Suef	1
Trader	Trader/exporter	Beni Suef	1
Incubator	Providing business development services - NGO	Beni Suef	1

Table 4: The List of In-depth Interviews

Focus Group Discussions (N=10)

Focus Group Discussions (FGDs) were carried out with male and female farmers, graduates, entrepreneurs, existing agribusinesses, lead farmers and workers in processing and post-harvest facilities to identify the needs and gaps from the perspective of the project's beneficiaries. This helped in identifying some key considerations for the GIZ to build on in their upcoming activities.

A total of 10 FGDs were carried out in both governorates, as follows:

Type of actor	Governorate	Units
Female farmers	Minya & Beni Suef	2
Male farmers	Minya & Beni Suef	2
Lead farmers and input supplier	Minya	1
Graduates	Minya & Beni Suef	2
Entrepreneurs	Minya	1
Existing agribusinesses	Beni Suef	1
Workers in processing units	Beni Suef	1

Table 5: The List of Focus Group Discussions

Surveys (n= 314)

Quantitative data collection methods were used to obtain valid, reliable, and representative responses from the project's beneficiaries. Closed-ended questionnaires were used for this purpose. The selected sample covered beneficiaries from the two targeted governorates while accounting for the distribution of the targeted value chains in the two governorates. Moreover, the sample surveyed also included a control group, which included farmers who will not be among the project's beneficiaries. To ensure that members of the control group will neither be directly nor indirectly affected by the project's interventions, they were selected from neighbouring districts that fall outside the scope of the project.

It is important to note that women representation was relatively low as the sector is highly dominated by men with women being engaged primarily as labourers in farming activities. Furthermore, farmers were compensated for the time they invested in completing the survey.

The table below shows the surveyed sample, segregated by governorate, value chain and gender.

Governorate	District	Association	Sample size	Crop	#Females
Beni Suef	Beni Suef	Dandil	15 Farmers	Onion & Garlic	2
		Abshana	15 Farmers	Onion & Garlic	3
	Ihnasia	Qai	15 Farmers	Pepper	2
		Qela	15 Farmers	Pepper	4
		AlNahda	15 Farmers	Pepper	2
	Somosta	Alshantoor	15 Farmers	MAP	3
		Mazora	15 Farmers	Onion & Garlic	
		Bedhl	15 Farmers	MAP	
		Ibda Benafsk	15 Farmers	MAP	7
	Beba	Geziert Beba	15 Farmers	Onion & Garlic	
Minya	West Mattay	El Taqwa	15 Farmers	MAPs	
	West Edwa	El Safa	15 Farmers		
	Abo Qorqas	El Tawasol El Egtma3y	15 Farmers	Onion and Garlic	
		Shams El Horya	15 Farmers		
	Villag 8	El Kawthar	15 Farmers	Maps	
	Talla	Talla for development	15 Farmers	Onion and Garlic	
	Samalout	El Ropy	15 Farmers	MAPs	7
		El Hoda	15 Farmers	MAPs	

		IDI El Hoda Association	15 Farmers	Onion and Garlic	
		El Ragaa	15 Farmers	Onion and Garlic	
	Der Mawas	Dalga	15 Farmers	Pepper	

Table 6: Farmers surveyed by district, association, value chain and gender

Main Baseline Findings

As this study is conducted to serve the monitoring and evaluation system for the project, this section will further assess the baseline findings against the project's outcome and outputs and their indicators. In line with the objectives of the M&E assignment, the outcome and outputs, detailed in table 2 are demonstrated in this section against the study's main findings, in order to provide the AIP project with a baseline for its annual assessments and endline evaluation.

This section contains a more detailed description of each indicator, its strengths and weaknesses, in relevance to the conducted MSA and relevant examples for each of the indicators.

Outcome: The income of smallholder farms in Upper Egypt increased through the application of agricultural innovations.

In line with the project objectives, the main outcome – or long-term goal – that GIZ seeks to achieve is to increase the income of smallholder farms in Upper Egypt by improving agricultural practices, via the application of new innovative techniques. In line with that, three main indicators were set out to measure progress, namely (1) increasing the income of 10,000 smallholder farms (including 33% women) from the sale of products of the selected value chains by an average of 20%, (2) increasing the number of members (FO employees and independent farmers) of the 30 supported farmer organizations by 500 persons (including 30% women), and (3) increasing the productivity per unit area of the 10,000 smallholder farms by 30 percent.

OUTCOME/INDICATOR 1: THE INCOME OF SUPPORTED SMALL FARMS FROM THE SALE OF PRODUCTS FROM THE SUPPORTED VALUE CHAINS

As shown by the figure below, farmers rely on different sources of income to support their families. Farming activities remains their highest source of income, followed by animal breeding, daily work and renting agricultural equipment to neighbours, respectively (calculated according to responses from the quantitative surveys targeting 314 farmers in Beni Suef and Minya).
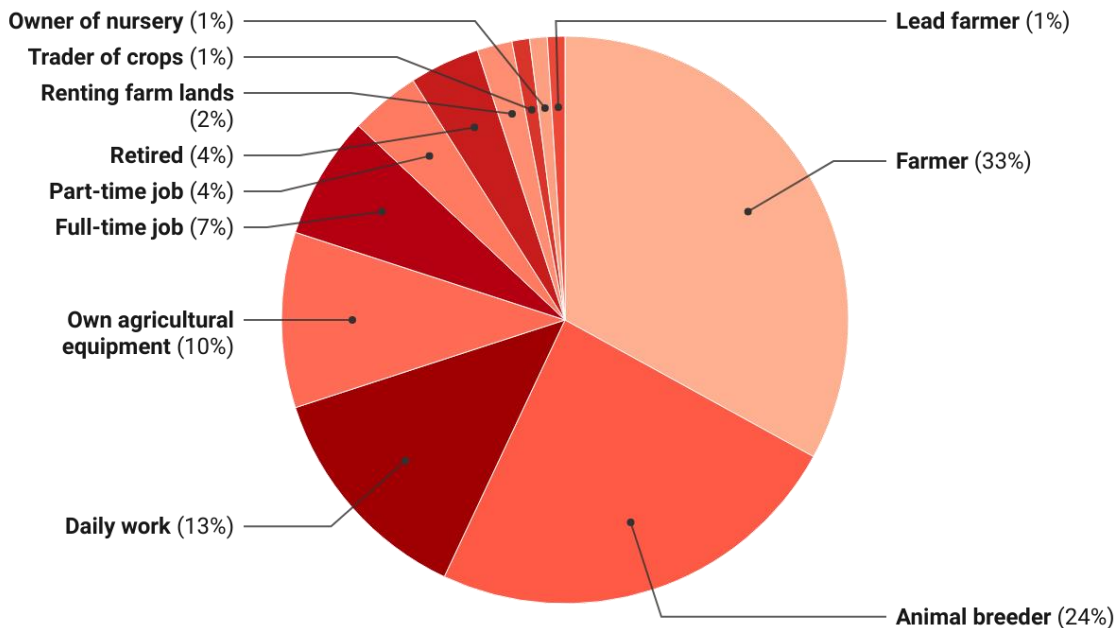
Figure 4: share of income per activity (calculated from survey data, N=314)

Considering that farming is the highest income contributor to the project's target beneficiaries, the long-term outcome aspires, therefore, to increase the income of farmers from the selected value chains.

For that objective to materialise, the project aims to increase the productivity of crops cultivated by introducing innovative and improved techniques, reduce or eliminate unnecessary costs, and/or open new channels to high-end local and global markets.

Egypt is one of the largest importers of agricultural inputs (fertilizers, pesticides, and seeds). In 2020, Egypt was the 16th largest importer of Sowing seeds ($119M) majorly from Netherlands, Germany and France.[6] The 47th largest importer of pesticides ($202 M) primarily from China, India and France.[7] The 60th largest importer of fertilizers ($226 M) mainly from Jordan, Spain and China.[8] However, the current supply chain crises that started in 2021 is expected to have an impact on the quantities of inputs produced and distributed globally. This would inevitably have tangible effects on the cost of production, and consequently the income of farmers.

In addition, the March 2022 currency devaluation, meant an increase in input costs, which is also expected to affect the income of the targeted farmers. However, the currency devaluation also means that Egyptian crop exports may become more attractive to international markets as they become cheaper, which could provide an opportunity for farmers despite prevailing challenges.

To set the baseline for the annual assessment(s) and end-line studies, the current income of farmers from the selected value chains was calculated using a quantitative survey which included 314 farmers from the two governorates of Minya and Beni Suef. The results of the survey showed a very high standard deviation, which was due to the significantly different estimations provided by farmers of the costs and income of all production activities. A reason for this may be lack of trust from the farmers' side and/or their unwillingness to provide accurate information about their income levels due to multiple considerations. Accordingly, the data collected was further validated using key agricultural experts – who relied on quantitative surveys conducted in the same year with farmers from both governorates. Additionally, the pepper cost analysis breakdown included in the table below was based on the average cost of the production of chili peppers.

The table below depicts the cost analysis of the VCs in detail, showing the final cost and profit margins for all seven crops.

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[6] Sowing Seeds in Egypt | OEC. (2022). Retrieved 19 May 2022, from
https://oec.world/en/profile/bilateral-product/sowing-seeds/reporter/egy
[7] Pesticides in Egypt | OEC. (2022). Retrieved 19 May 2022, from
https://oec.world/en/profile/bilateral-product/pesticides/reporter/egy
[8] Fertilizers in Egypt | OEC. (2022). Retrieved 19 May 2022, from
https://oec.world/en/profile/bilateral-product/fertilizers/reporter/egy

Average production cost / feddan	Basil	Fennel	Chamomile	Marjoram	Onion	Garlic	Chili pepper	
Market product	Dry	Dry	Dry	Dry	Dry	Fresh	Dry	Fresh
Rent	6000	6000	6000	9000	8000	8000	5000	5000
Organic compost	2000	1000	2000	4000	2000	4000	1000	1000
Land preparation	1200	1200	1200	1200	1200	1700	1200	1200
Seeds/Seedlings	1250	90	500	200	0	6000	5000	5000
Nursery	0	0	0	1000	3000	0	0	0
Labour (cultivation)	1000	600	1000	1000	2300	2000	1000	1000
Irrigation	1400	1200	1200	2000	1200	1400	1400	1400
Weeding	1680	1200	1200	3000	2420	2420	0	0
Fertilizers	3500	1600	1600	5000	7000	6100	5000	5000
Pest management	1500	600	1000	1500	4100	4600	2000	2000
Harvesting labour	3000	800	6000	3000	1500	1500	2000	3000
Harvesting machines	0	1500	0	0	0	0	0	0
Drying	2240	0	1200	500	500	0	0	0
Post-harvest	240	0	500	1200	0	0	1000	0
Packaging	1200	300	1500		0	0	1200	0
Transportation	1200	0	800	1200	1500	1500	800	1500
Total cost	**27410**	**16090**	**25700**	**33800**	**34720**	**39220**	**26600**	**26100**
Yield (ton/feddan)	**1.7**	**1.2**	**0.6**	**1.8**	**20**	**15**	**2**	**12**
Price	**26000**	**24000**	**70000**	**28000**	**2500**	**3500**	**17000**	**3500**
Yield (value EGP)	**44200**	**28800**	**42000**	**50400**	**50000**	**52500**	**34000**	**42000**
Net profit	**16790**	**5510**	**28300**	**16600**	**15280**	**13280**	**7400**	**15900**

Table 7: Income of smallholder farmers in the selected VCs (Unit = Feddan)

However, it is important to note that increasing the income of women farmers will be hard to achieve by increasing agricultural income, since most women working in agriculture suffer from a considerable gender-pay gap or, in cases where they are working on family-owned land, are not compensated at all for their work. Meanwhile, women targeted by this project generally have two or more sources of income for supporting their families.

Many of the interviewed women who had more than one source of income, said that they mostly relied on non-agricultural jobs and said that such jobs were generally better income generators in comparison to farming and harvesting. These included animal breeding, the production of handicrafts, trading, managerial jobs, to name a few.

Therefore, the study proposes that, considering the context in-hand, the project should also aim to increase women's income from non-agriculture forms of labour instead of focusing on agricultural related jobs alone. In other words, the indicator should also include new jobs created for women, training services provided to women enabling them to start their own businesses and new market linkages benefiting women in the targeted community.

Measuring Unit	Current Baseline State	Indicator
The income of supported small farms from the sale of products from the supported value chains	Detailed in table 6	Average contribution margin per production unit of 10,000 small farms (including 30% women) + 20% disaggregated by value chain, gender, and corrected for inflation.

Table 8: Outcome/Indicator 1

OUTCOME/INDICATOR 2: THE NUMBER OF (SELF-) EMPLOYED PERSONS (MEMBERS AND WORKERS) IN THE SUPPORTED FARMER ORGANIZATIONS

The Business Assessment report (July 2021) estimated the current number of members in the 30 targeted farmer organizations (employed by the FOs or independent farmers) at a minimum of 1,000 persons. This number is projected to expand by 500 by 2023 (150 of which are anticipated to be women) with the

introduction of new business models to the targeted FOs, that will necessitate the appointment of more personnel to carry out the new activities and responsibilities.

Legal consideration related to the hiring process for NGOs, and, in case of public FOs, those related to public extension services, may hinder GIZ's attempt in meeting the aspired target.

Out of the 30 FOs targeted by the project, only 13 are registered in compliance with the NGO law. (A list of the registered associations/NGOs can be found in the Annex IV). The new NGO Law 149/2019, passed by the Egyptian Cabinet in 2021, conditions that for an NGO to gain its legal recognition, and accordingly carry out any activity, it must comply to the new Law by January 2022.[9] This period was extended to January 2023, to provide NGOs more time due to the delays that have been caused by the COVID pandemic and to allow them to become more familiar with the new electronic system and the newly introduced organisational procedures.

Therefore, for GIZ to enable FOs to increase their number of employed persons, it may also need to provide them with assistance in the compliance process.

Meanwhile, the MSA showed that employment in public FOs is constrained by the government's decision to suspend public sector hiring. Therefore, Increasing the number of (self-) employed members and workers in public FOs would require a policy-level intervention to facilitate public sector hiring within public extension services.

An alternative solution to increasing employment could be for GIZ to create, as part of the project, additional activities that will generate project-based employment. For example, contracting entities that provide better storage solutions for agricultural crops and hiring workers in the storage facility. In other words, GIZ could generate employment through additional services or supply chain activities.

Furthermore, GIZ – through the assigned service provider - can facilitate new employment by creating suitable communication channels that link the FOs, and the pool of qualified calibres. Most FOs have, for example, a shortage in agronomists and accordingly fail to meet the farmers' need for technical assistance, while the new graduates, on the other hand, frequently report not being able to find a job in this sector.

GIZ should also consider, in addition, to provide excessive support to NGOs to comply to the new NGOs Law, rather than just capacity building programs on better

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[9] Egypt's National Council for Human Rights welcomes extending the deadline to legalise NGOs for one year - Society - Egypt. (2022). Retrieved 19 May 2022, from https://english.ahram.org.eg/News/456658.aspx

managerial skills. Nonetheless, the contracted non-governmental FOs showed great potential to improve their current capacities.

Also, the Matching grants, contract farming through FOs, and building the capacities of the farmers through the FOs together constitute great incentives to engage FOs in achieving the greater outcome (i.e., increasing the income of farmers).

Measuring Unit	Current Baseline State	Indicator
The number of (self-) employed persons (members and workers) in the supported farmers' organizations**.**	Minimum of 1,000 self-employed persons	Increasing the number of members (FO employees and independent farmers) of the 30 supported farmer organizations by 500 persons (including 30% women).

Table 9: Outcome/Indicator 2

OUTCOME/INDICATOR 3: THE PRODUCTIVITY PER UNIT AREA OF SMALL FARMS IN THE SELECTED VALUE CHAINS HAVE INCREASED

The project aspires to increase productivity by 30 percent in the selected VCs. Accordingly, the table below indicates the current productivity of each VC, calculated using the quantitative survey carried out as part of this assignment and validated with key expert interviews.

	Onion	Garlic	Chili pepper (dry)	Chili pepper (fresh)
Tons/Feddan	20	15	2	12

	Basil	Marjoram	Fennel	Chamomile
Tons/Feddan	1.7	1.8	1.2	0.6

Table 10: Productivity of the selected value chains

Measuring Unit	Current Baseline State	Indicator
The productivity per unit area of small farms in the selected value chains	See table 10	Average productivity X + 30%

Table 11: Outcome/ Indicator 3

Output 1: Selected farmer organizations have diversified their customer structure/distribution channels

To support FOs in diversifying their sales channels and structure, the GIZ decided on two main indicators to measure this, namely the number of improved or new demand-oriented IT applications rolled out, and the number of new contracts between FOs and buyers. Both indicators are explained in more detail below.

OUTPUT 1/INDICATOR 1: NUMBER OF IMPROVED OR NEW DEMAND-ORIENTED IT APPLICATIONS ROLLED OUT

Considering that the lack of market information, technical information and innovation knowledge constitute a significant challenge to farmers and FOs in the selected value chains, introducing demand-oriented IT applications can be highly beneficial. It will help minimize the mismatch between the supply and demand and improve agricultural practices. Such IT tools will help build the capacities of FOs, connect farmers with a pool of qualified knowledge agents, and provide them with up-to-date, reliable, and sustainable information channels.

Similar projects that have been successful in meeting the abovementioned objectives in Upper Egypt include Mozare3 (مزارع)— an agri-fintech application that links food processing companies with small-scale farmers, and Shary (شارى)— a PRIME led initiative, funded by IFAD, which links products directly with end consumers. Both platforms, designed and introduced to the market in 2021, have succeeded in providing farmers with trusted market information channels.

Using the abovementioned IT projects as models, and considering the market needs identified by this study, the project should aim to create platforms that contain

information on inputs needed for the different crops and information on where they may be bought. They can also provide technical information related to good and innovative agricultural practices, like for example how to reach trusted agronomists for consultations, as well as updates on market projections and trends, market standards and requirements and potential buyers.

However, the introduction of such tools should be done while taking into consideration that farmers may be resistant to use them. Such techniques may be very new to the targeted community and high illiteracy in addition to digital illiteracy will likely make it hard for them to be accepted.

Therefore, the planned roll-out-training of farmers should focus on overcoming the possible resistance to change by simplifying the readability, navigability, and interface of such tools. In addition, since only 42 percent of the surveyed farmers reported owning smart phones, alternative to such applications should be considered, like for example SMS services or the dissemination of information through FOs and lead farmers.

Measuring Unit	Current Baseline State	Indicator
Number of improved or new demand-oriented IT applications rolled out.	No IT applications have been introduced yet.	In 10 farmer organization, improved or new demand-oriented IT applications are rolled out to strengthen transparent access to market information.

Table 12: Output 1/Indicator 1

OUTPUT 1/INDICATOR 2: NUMBER OF CONTRACTS CONCLUDED BETWEEN FARMER ORGANIZATIONS AND BUYERS

The lack of contract farming creates a mismatch between the supply and demand of crops which, in turn, can cause prices to drop. In addition, farmers could adopt better agricultural practices if they get the necessary information from the contracted buyers. Only 1 percent of the surveyed farmers said that they were contracted to sell their produce. However, there is a prevailing mistrust between the different market actors, especially between farmers and potential buyers. It is recommended, therefore, to introduce mediating parties during the negotiation and finalization of contracts between farmers and buyers. This may work to create more trust between the two parties and provide a more reliable foundation for such a practice. Those interviewed in the study

confirmed that having farmer organizations as the mediating party is the best way to encourage contract farming.

However, the survey also revealed that FOs find it challenging to reach potential buyers. GIZ can, therefore, focus on that in the capacity building training planned for the FOs.

It is also important to note that for this indicator it will be challenging to reach the targeted percentage of female beneficiaries since female land ownership in the targeted areas is significantly low, and almost non-existent. The project should, instead, aim to benefit women in other stages of the value chains, especially through entrepreneurial services and the training-of-trainers program.

Measuring Unit	Current Baseline State	Indicator
Number of contracts concluded between farmer organizations and buyers	Zero contracts have been signed.	85 contracts concluded between smallholder farms or farmer organizations and buyers (exporters, processing companies, hotels etc.)

Table 13: Output 1/Indicator 2

Output 2: Selected farmer organizations have improved their management capacities

The second output of the AIP project is to support the selected FOs in improving their management capacities. An extensive business skills assessment study has already been carried out to identify areas that need improvement in the management structures of the FOs, in order to provide customized capacity building training services to efficiently and effectively achieve the required output.

OUTPUT 2/INDICATOR 1: NUMBER OF MEMBERS OF FARMER ORGANIZATIONS THAT CAN DEMONSTRATE AN INCREASE IN SKILLS FOR THE MANAGEMENT OF THEIR FARMS

An institutional capacity assessment conducted as part of the project focused on capturing the performance of FOs in several areas, including production capacity,

general data, governance, operation systems, human resources, infrastructure, marketing capacities, financial management, relations with stakeholders, gender issues, cost sharing, working with other donor agencies and the sustainability of those activities. Based on this assessment, capacity building programs were tailored for the targeted FOs.

To be able to measure the progress of FOs, several quantitative indicators will be used, as listed in the table below.

Measuring Unit	Current Baseline State	Indicator
Number of members of farmer organizations that can demonstrate an increase in skills for the management of their farms	A business skills assessment study was carried out to identify the needs of FOs, and capacity building programs were tailored accordingly.	6,000 out of 10,000 members (60% of which are female members), 1 case study each on improved management skills

Table 14: Output 2/Indicator 1

OUTPUT 2/INDICATOR 2: NUMBER OF NEW BUSINESS MODELS SUPPORTED UNDER THE MATCHING GRANT FACILITY ESTABLISHED ON THE LEVEL OF FARMERS OR FARMER ORGANIZATIONS

An opportunity frequently identified for value chain development (VCD) in all the regions targeted by the project was the need for facilities that would add value to products, benefiting not only service providers, traders, and processors, but primarily smallholder farmers whose income would increase from the sale of their improved products. The GIZ has effectively capitalised on this opportunity by enabling FOs to establish new business models via the Matching grant facility.

For these grants to be awarded, FOs must present a good business proposal that demonstrates both the area's need for the proposed initiative and the project's feasibility. In accordance with this, ideas that do not help farmers were rejected in the first round of the Matching grant, and a second round is planned.

The study identified FOs with viable business concepts matching the needs expressed by farmers and other relevant market system actors. Examples of such business concepts included establishing MAPs collection facilities that ensure maintaining the

crops' quality during the farming, harvesting, and post-harvesting and increasing its shelf-life, allowing farmers and FOs to sell to high-end local and international buyers.

Another promising concept was to establish waste management facilities to serve manufacturing industries, such as those for compost production, biogas, and handicrafts. The latter concept would provide a service that is significantly underdeveloped in Upper Egypt and, thus, has great potential.

To ensure that no ideas are wasted, the GIZ can pass on rejected business proposals to other market actors (e.g., entrepreneurs, businesses, traders, and well-established facilities in the sector) who may find them of interest and would be willing to provide the necessary support. While these rejected business models might not directly be of benefit to smallholder farmers, and thus fall out of the support scope of the GIZ project, they could be of benefit to other actors and, if implemented by other market actors, may indirectly also benefit smallholder farmers.

Measuring Unit	Current Baseline State	Indicator
Number of new business models supported under the Matching Grant Facility established on the level of farmers or farmer organizations	No business models established. Proposals are being submitted. Those that do not meet the criteria were rejected and another round is planned.	15 newly established business models

Table 15: Output 2/Indicator 2

Output 3: Selected farmer organizations use innovations that increase productivity and income

An integral component of the AIP project is to increase productivity and income through innovation. In this context, innovation encompasses a wide range of activities, from enhancing market access through certification processes and organic farming to increasing productivity and income through the introduction of improved varieties and/or the adoption of better agricultural techniques.

Accordingly, the third output is measured by two key indicators: (1) the growth in the percentage of farmers adopting a productivity-enhancing technical innovation in the

targeted value chains, and (2) the increase in the size of farmlands under organic farming.

OUTPUT 3/INDICATOR 1: PERCENTAGE OF FARMERS (DISAGGREGATED BY GENDER) WHO ADOPTED A PRODUCTIVITY ENHANCING TECHNICAL INNOVATION IN THE SELECTED VALUE CHAINS

As stated previously, technological innovation encompasses a vast array of potential options, such as introducing new varieties, implementing better land preparation procedures, enhancing irrigation systems, and generally implementing better agricultural practises. Accordingly, this subsection examines the currently adopted practises in the different stages, to enable the annual assessment(s) and endline study to measure improvements.

Input sourcing

Farmers in the areas under study face difficulty in obtaining quality inputs from suitable input suppliers and instead rely on unregistered input supply businesses that offer unregistered, low-quality pesticides, fertilisers, seeds, and seedlings. This affects the productivity and quality of the end harvest of smallholder farmers. Annex I includes a list of varieties now utilised in each governorate. This list can aid GIZ when introducing new types to boost productivity, if necessary.

Land preparation

Due to the lack of knowledge among farmers, soil testing and preparation are ineffectively implemented. In addition, the decision to cultivate particular crops is not determined by the kind of soil or the agricultural cycle, with only 1% of farmers interviewed citing agricultural cycles as a determining factor. In other words, and as depicted in the graph below, farmers rely on their personal experience in producing crops or on that of their neighbours to assess which crops have a better market, better

selling prices, and a better yield. In turn, this often leads to land depletion, diminished production, poor quality of crops, and an inability to sell outputs at reasonable prices.
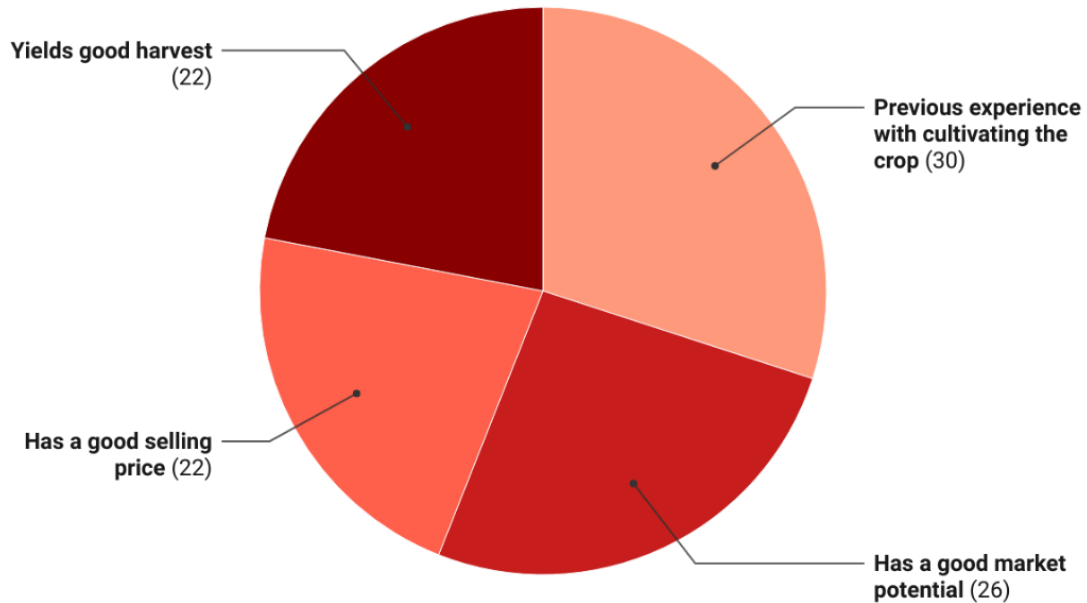

Figure 5: Reason behind the selection of crops to grow (Source: Quantitative surveys. N=314)

Irrigation

Old farmlands rely heavily on flood irrigation. This leads to the excessive use of fertilisers, related to the amount of water used, and pesticides, particularly to combat the illnesses affecting the crops as a result of excessive irrigation.
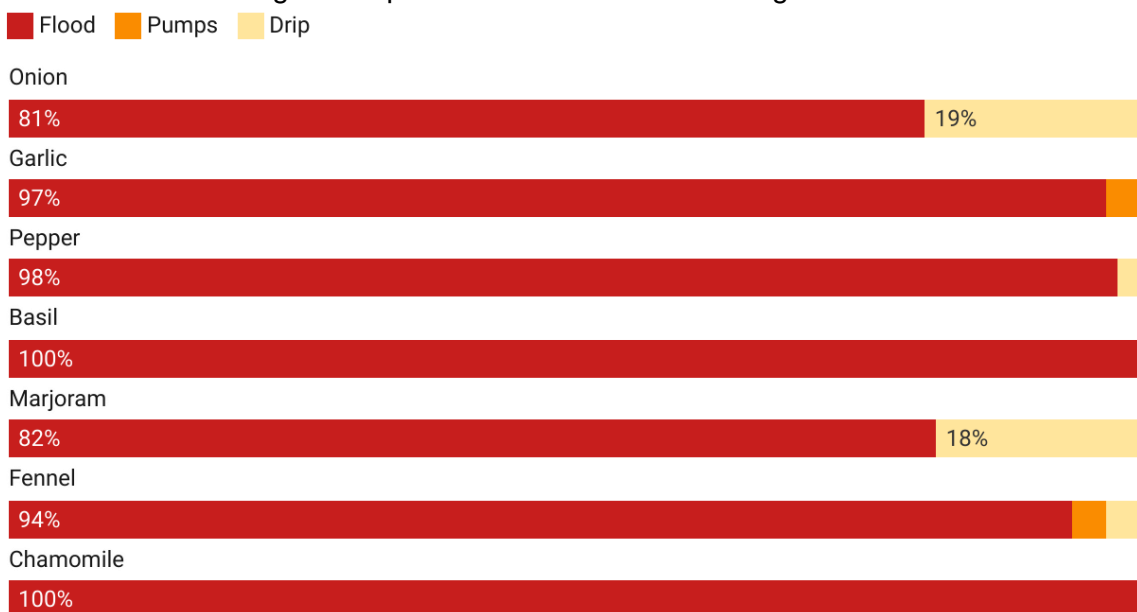
Figure 6: Irrigation techniques used in the selected value chains (Source: Quantitative surveys. N=314)

Only 10 percent of farmers testing the quality of water applied. Poor irrigation practices, thus, negatively impact productivity as well as the quality of the end harvest.
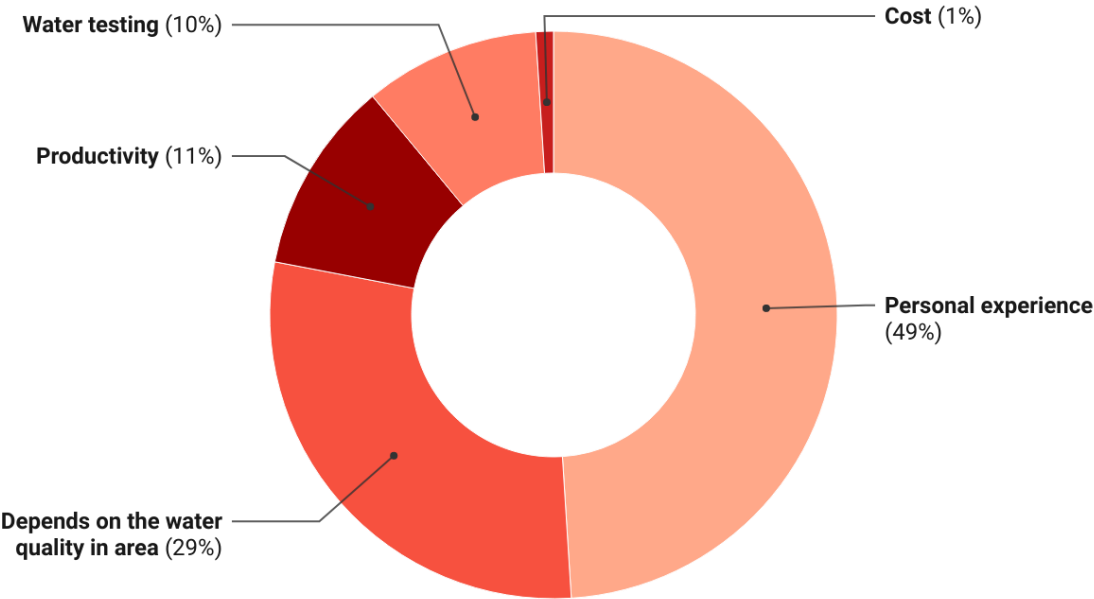
Figure 7: Response to: How do you assess the quality of water used in irrigation? (Source: Quantitative surveys. N=314)

Farming

Poor farming practises due to a lack of technical and market information, result in low productivity, low quality of the final products, high rejection rates, and a decline in harvest selling prices. Examples causing low productivity include the high waste of damaged garlic, the tiny size of chamomile leaves, the reduced oil extract in MAPs, or the incapacity of the land to produce the product to its full potential.

Measuring Unit	Current Baseline State	Indicator
Percentage of farmers (disaggregated by gender) who adopted a productivity enhancing technical	No technical innovations have been introduced yet.	In each selected value chain, a technical innovation is introduced to improve productivity and quality by 70% of the

innovation in the selected value chains		supported smallholder farmers (30% of whom are women), one of which increases food safety.

Table 16: Output 3/ Indicator 1

OUTPUT 3/INDICATOR 2: CHANGE IN THE SIZE OF THE AREA UNDER ORGANIC FARMING

As stated previously, organic farming is considered by GIZ as the primary innovative approach for boosting production and income in a sustainable way. The study mapped the current cultivation methods in the two targeted governorates of Minya and Beni Suef and identified the areas using traditional, organic, and PGS cultivation methods. The graph below shows the share (in percentage) of each of these three farming methods for all the selected crops in the targeted regions, revealing that traditional agriculture is prevalent in the selected value chains.

Due to the fact that converting farmland to organic requires three years, not even the end-line study will capture the complete transition. It is therefore recommended that this indicator is measured by the area of farmland newly undergoing the conversion process.
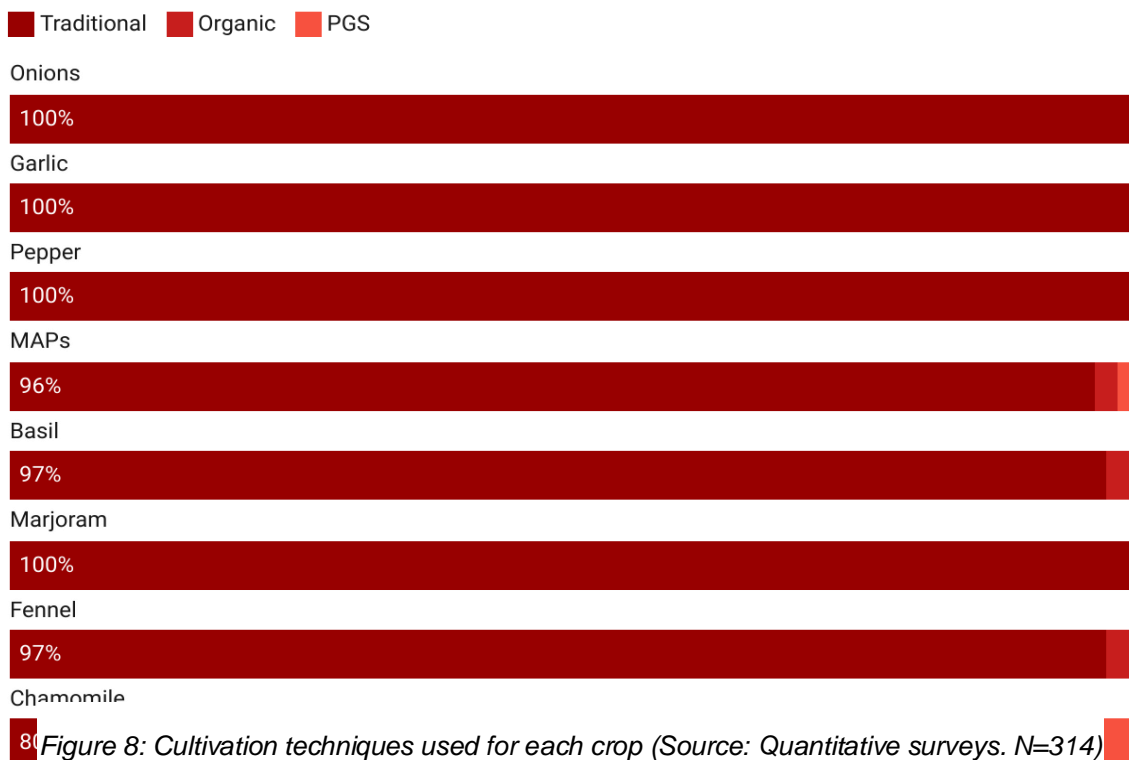
Figure 8: Cultivation techniques used for each crop (Source: Quantitative surveys. N=314)

Measuring Unit	Current Baseline State	Indicator
Change in the size of the area under organic farming.	Traditional cultivation (associated with the poor agricultural practices) is the most prevailing cultivation approach taking place. Organic and transformative cultivation is seen on a very small scale among MAPs farmers.	The area that is organically farmed has been expanded by 1,200 feddan (about 500 smallholder farmers).

Table 17: Output 3/Indicator 2

Recommendations

This section provides general recommendations that can aid GIZ's AIP project. The recommendations are mainly related to the planned interventions targeting farmers, FOs, and other stakeholders in the market system. They are detailed in the table below.

Contract farming

Marketing has been identified as a main constraining factor to farmers. Contract farming, therefore, should be promoted and encouraged as a solution.

FOs should also be enabled to play a mediating role in contract farming in order to mitigate the lack of trust currently dominating relations between farmers and traders. FOs can be of benefit to farmers in providing them with bargaining power and, on the

other hand, will act as a guarantee to buyers that products will meet the desired quality.

Meanwhile, contracts should clearly state price categories that are linked to product quality (having different price categories depending on the quality test results) and have both parties stick to the agreed-on price categories. As it is now, both farmers and traders constantly negotiate price and do not stick to an original agreement.

Finally, contracts should be linked with the agricultural cycles in order to retain and sustain soil and harvest quality.

Innovation

Introducing drip irrigation for small plots is an innovative technique that would significantly improve productivity and income of smallholder farmers. However, installing its equipment is too costly for smallholder farmers to be able to afford. In line with that, GIZ can help farmers form organized cost sharing, formal or informal, and coalitions to install it in their regions. Introducing such innovation would require a national policy and financial support to be enforced.

Additionally, other innovations could include applying new crop varieties, introducing digital solutions and facilitating access to information and new machineries.

Organic farming

The local market crop requirements that are planned to be introduced by the National Food Safety Agency of Egypt (NFSA) can be integrated within the GIZ capacity building programs. The farmers can be trained on how to adapt to market requirements using regulated approach for clean and organic production.

The project plans 12 demonstration fields that can be used to incentivize farmers to adopt similar new agricultural practices. Making FOs take up the responsibility of supervising these demonstration fields will also be important in giving them a feeling of ownership and, therefore, guarantee their sustainability after the AIP project ends.

Creating organic plots while neighbouring plots are still applying pesticides can be problematic since the wind transmits the pesticides. An easy solution would be to build windbreak barriers to prevent that from happening.

Introducing organic fertilizers and pesticides purchased from reliable input suppliers should also be considered when shifting to organic production.

Potential business ideas

While the Matching grant only accepts projects serving farmers, some of the projects rejected might hold potential for several other market system actors. Identifying business opportunities that may be of interest to entrepreneurs and investors and passing them on may work to serve other actors in the area, improving the performance of the value chain and, therefore, benefit farmers as well.

For example, establishing testing labs in Upper Egypt would be of high benefit to the area, as all market stakeholders complain about having this service only provided by one lab in the country, located in Giza, and complain that the tests are of poor quality.

Networking and market linkages

The conducted market system analysis identified several processors that have great potential for export, and could, accordingly, create   job opportunities to workers in Beni Suef and Minya. However, they are limited by the lack of adequate information channels to aid in export and in expanding to global markets. It will, therefore, be of benefit to provide prominent processors with new channels, such as exhibitions and networking events. For example, Gomaa Mohamed El Awam, the owner of one of the biggest pepper mills in Beni Suef has great potential to export but lacks the knowledge as well as the financial resources to install the machinery needed. Awam pays an annual cost of more than 1 million EGP for household-based women labourers alone and helping him reach the necessary knowledge would further increase the income of workers in Beni Suef.

Annexes

Annex I: Varieties of the selected crops planted in Minya and Beni Suef

		Onion	Garlic	Pepper	MAPs	Basil	Marjoram	Fennel	Chamomile
Varieties cultivated in Beni Suef	Onion	100%	-	-	-	-	-	-	-
	Giza 6	68%	-	-	-	-	-	-	-
	Giza 20	18%	-	-	-	-	-	-	-
	Giza - Red	12%	-	-	-	-	-	-	-
	70	2%	-	-	-	-	-	-	-
	Garlic	-	100%	-	-	-	-	-	-
	Baladi	-	100%	-	-	-	-	-	-
	Pepper	-	-	100%	-	-	-	-	-
	Omega	-	-	2%	-	-	-	-	-
	Shatshat	-	-	4%	-	-	-	-	-
	702	-	-	16%	-	-	-	-	-
	710	-	-	18%	-	-	-	-	-
	Baladi	-	-	2%	-	-	-	-	-

				Pepper	MAPs	Basil		Fennel	Chamomile
	Broken seeds	-	-	22%	-	-	-	-	-
	Roumi	-	-	29%	-	-	-	-	-
	فلفل بارد	-	-	7%	-	-	-	-	-
	Chamomile	-	-	-	32%	-	-	-	100%
	Bad gold (In Beni Suef)	-	-	-	32%	-	-	-	100%
	Basil	-	-	-	64%	100%	-	-	-
	Baladi	-	-	-	62%	97%	-	-	-
	French basil	-	-	-	2%	3%	-	-	-
	Fennel	-	-	-	2%	-	-	100%	-
	White baladi	-	-	-	2%	-	-	100%	-
	baladi	-	-	-	2%	-	100%	-	-

		Onion	Garlic	Pepper	MAPs	Basil	Marjoram	Fennel	Chamomile
Varieties cultivated in Minya	Garlic	-	100%	-	-	-	-	-	-
	Baladi	-	97%	-	-	-	-	-	-
	Seds 40	-	3%	-	-	-	-	-	-
	Fennel	-	-	-	45%	-	-	100%	-
	White fennel	-	-	-	38%	-	-	85%	-

-baladi Bitter fennel	-	-	-	7%	-	-	15%	-
baladi	-	-	-	55%	-	100%	-	-
Pepper	-	-	100%	-	-	-	-	-
Shatshat	-	-	100%	-	-	-	-	-
Onion	100%	-	-	-	-	-	-	-
Giza 6	69%	-	-	-	-	-	-	-
70	25%	-	-	-	-	-	-	-
Giza 11	6%	-	-	-	-	-	-	-

Annex II: Information Areas Exercise

Information areas	Type of Information	Tools of Data Collection
Insights on current farming, post-harvesting and processing activities and the challenges faced. Discuss previous knowledge and experience in the application of innovation applications.	Qualitative	FGD DG, IDIs with processors, traders, exporters
Currently used varieties in each VC	Qualitative	
Gender roles across VC stages	Qualitative and desk research	FGD with farmers
Cost breakdown of VC stages and activities	Qualitative and quantitative	
Challenges that farmers face across different stages of the value chain and possible solutions to these challenges from their perspective	Qualitative and quantitative	FGD DG, IDIs with processors, traders, exporters
Supporting services	Qualitative and desk research	
Root causes of existing challenges	Qualitative and desk research	IDIs with extension service providers and incubators
The income of supported small farms from the sale of products from the supported value chains	Qualitative and Quantitative	FGD DG (other sources of income)
Challenges and opportunities to increasing income as seen by farmers	Qualitative	FGD DG

Current marketing channels and market access, challenges and possibilities	Qualitative and Quantitative	FGD DG, IDIs with processors, traders, exporters
The number of (self-)employed persons (members and workers) in the supported farmer organizations	Desk research	
The productivity per unit area of small farms in the selected Value Chains	Quantitative	
Number of improved or new demand-oriented IT applications rolled out	Desk research	
Insights on previous contract farming experiences, preferences, challenges, and willingness of farmers to engage in contract farming agreements	Qualitative	FGD farmers and IDIs with FOs and traders
Number of contracts concluded between farmer organizations and buyers	Quantitative	
Number of farmers/farmer organizations (disaggregated by gender) introduced to the applications and tools developed	-	
Number of farmer organizations, group of farmers, lead farmers or individual farmers (disaggregated by gender) able to establish agreements with buyers	Qualitative	IDIs with FOs to identify perceptions of what are the challenges and opportunities affecting agreements with buyers
Number of new businesses launched or supported **Number of existing businesses that have links to domestic or export market**	Qualitative	FGD with entrepreneurs and farmers to identify enabling and disabling factors
Number of members of farmer organizations that confirm at least one of the following: **(1) An increase in the quantities sold** **(2) A rise in the prices of goods sold**	Desk research	

(3) An increase in products sales margin **(4) An increase in the number of contracts mediated by the farmer organization** **(5) An increased in resource efficiency of farmer organizations**		
Number of new business models supported under the Matching Grant Facility established on the level of farmers or farmer organizations	-	
Number of farmer organizations able to implement tools and practices introduced by the provided training **Number of farmer organizations able to adopt the capacities building programs and improve their services**	Desk research	
Number of service providers able to improve the quality of their services and outreach	Desk research	current quality of services and outreach
Perceptions about the current performance, benefits, challenges, strengths, and weaknesses of farmers organizations	Qualitative	FGD with farmers
Perceptions on the quality and satisfaction with current services provided by farmers organizations	Qualitative	FGD with farmers
Number of farmer organizations that improved their capacities to develop	Desk research	

proposals and business plans to participate in the grant		
Percentage of farmers (disaggregated by gender) who adopted a productivity enhancing technical innovation in the selected value chains	Qualitative and Quantitative	FGD with farmers
Change in the size of the area under organic farming	Quantitative	
Number of farmers who have adopted the practices that have been introduced during training	Qualitative and Quantitative	Questionnaire - FGD with farmers
Number of farmers (disaggregated by gender)/farmer organizations that have improved the post-harvesting process to produce high quality products	-	
Number of food safety innovations introduced and adopted (disaggregated by gender) **Number of food safety standard pilots supported by the project (disaggregated by gender)**	Qualitative	
Number of farmers (disaggregated by gender) and farmer organizations (to facilitate dissemination) that are able to use E-extension service platforms	Qualitative and Quantitative	
Availability of active and useful digital tools or platforms, willingness to use similar platforms, and challenges they face in using them		
Number of new innovation tools developed/promoted/ introduced to small holder farmers	-	

Type and number of current productivity-enhancing and food safety innovations implemented by farmers	Qualitative	
Willingness and readiness of farmers to adopt any new technologies or practices	Qualitative	

Annex IV: Discussion guides

Farmers FGD:

Information Area	Comments
Target crops and cultivated varieties	
Current income from farming and other sources of income	Share of other sources of income to total farmer income
Challenges and opportunities to increase income according to farmers	
Insights on previous contract farming experiences, preferences, challenges, and willingness of farmers to engage in contract farming agreements	
Current marketing channels and access to identify challenges and possibilities	
Availability of active and useful digital tools or platforms, willingness to use similar platforms, and challenges they face when using them	
Perceptions about the current performance, benefits, challenges, strengths, and weaknesses of farmer organizations	
Perceptions on the quality and satisfaction with current services provided by farmer organizations	

Type and number of current productivity-enhancing and food safety innovations implemented by farmers	
Insights on current farming, post-harvesting and processing activities and their challenges. Discuss knowledge of and experience with innovation applications.	Identify how farmers overcome these challenges. MAPs farmers: ask them about problems in the sieving, sorting, grading, and packaging (including the materials used in packaging). All crops: ask if there are problems with the materials used for packaging.
Willingness and readiness of farmers to adopt new technologies or practices	
Challenges that farmers face across different stages of the value chain and possible solutions to these challenges from their perspective	

Businesses FGD:

FGD with fresh-grads, start-ups, agripreneurs, and existing businesses	
Information areas	Notes
Type of actor (fresh-grad, entrepreneur, start-up or established businesses)	
Type of activity	
Challenges faced by businesses	
Suggestions to improve current challenges	Also focus on suggestions to improve availability and accessibility from a gender perspective.
Opportunities to join the sector	

Supporting services	What are the services provided? (market linkages, launching businesses, BDS, entrepreneurial training, etc) By whom? When? (Time and location) Cost? Benefits? Challenges? Suggestions to improve?

Processors FGDs:

FGD processors	
Information areas	Notes
Insights on current processing activities and their challenges. Discuss knowledge of and experience with innovation applications.	Need to put more emphasis on the use of innovation applications and lessons learnt from previous experience. Reflect on how they learned the skills to carry out processing activities. Which activities are carried out by men and which by women
Challenges faced during processing activities (e.g., high waste, poor product quality, lack of market access, etc)	

How do they cope with existing challenges?	

Incubators IDI:

Information areas	Notes
Supporting services in detail (e.g., access to market, help with launching businesses, business plans, etc)	What are the services that they provide and who do they provide it to. Manuals adopted
Why do you think these services are important in the sector of focus	
Challenges faced during service provision	Name 5 most critical challenges affecting your service provision Ask about outreach and quality of services provided
Suggestions for improving current performance	
Other incubators in the region	
Will and skill assessment	

Input suppliers IDIs:

IDI Input suppliers	
Information areas	Notes
Target VC	
Varieties in each VC	
Cost breakdown	Who sets the price (fixed?) and what are the payment methods
Challenges that farmers face across different stages of the value chain and possible solutions to these challenges from their perspective	What challenges do farmers face and resort to you to solve? What service do you provide to counteract these challenges? Including food safety requirements and productivity increasing techniques Reflect on skills and particularly the skill of farmers to adopt new technologies or practices
Root causes of existing challenges	Identify enabling and disabling factors affecting input suppliers when assisting farmers with their challenges.
Insights on previous contract farming experiences, preferences, challenges, and willingness of farmers to engage in contract farming agreements	Are there contracts binding farmers and input suppliers? Identify positive and negative experiences with such contracts. Examine the willingness and ability of input suppliers to improve the situation.
Change in the size of the area under organic farming	Special considerations to farmers cultivating organic crops
Number of farmers who have adopted the practices introduced during training.	How do you follow-up with farmers that are provided technical assistance.

Traders, collection facilities, processors, and exporters IDIs:

IDIs with collection facilities/processors/Traders/exporters

Information areas	Notes
Current post-harvest and processing activities conducted by farmers, and those conducted by processors/trader/exporters/collection facilities	Including food safety innovations and productivity enhancing techniques
Challenges in VC affecting the quality of the crops from the perspective of processors, traders, exporters	Need to put emphasis on the use of innovation applications and the lessons learnt from previous experience. Also, reflect on the challenges identified across all stages, challenges faced with the end-market, challenges traders face when dealing with smallholder farmers, and possible areas of intervention. MAPs farmers: ask them about problems in the sieving, sorting, grading and packaging (including the materials used for packaging). All crops: ask if there are problems with the materials used for packaging.
Currently targeted/used varieties in each VC	Mohem awi n identify the exact varieties in each crop
Activities within scope of work, gender segregated	Collection facilities → mohem ne3raf dol affiliated l eh?
Cost breakdown	How are agreements carried out, who sets the price, based on what, profits of farmers and traders/exporters
Supporting services	What services do you provide to farmers? How do you counteract currently existing challenges? Services that traders/exporters provide to farmers, and other services in the region if they have information on surrounding service providers. Identify enabling and disabling factors to service provision. Identify willingness using indirect questions.

Current marketing channels and access to marketsto identify challenges and possibilities	channels, and relevant challenges and opportunities
Insights on previous contract farming experiences, preferences, challenges, and willingness of farmers to engage in contract farming agreements	Identify perceptions on challenges and opportunities affecting agreements with buyers.

Farmer organizations IDIs:

IDIs with Farmer Organizations (FOs)
Information areas
Targeted VCs in the region and exact varieties cultivated
Cost breakdown of VC stages and activities
Challenges that farmers face across different stages of the value chain and possible solutions to these challenges from their perspective
Current marketing channels and access to markets to identify challenges and possibilities
Supporting services
Number of service providers that can improve the quality of their services and outreach
Insights on previous contract farming experiences, preferences, challenges, and willingness of farmers to engage in contract farming agreements
Number of members of farmer organizations confirm at least one of the following: (1) an increase in the quantities sold (2) a rise in the prices of goods sold (3) an increase in products sales margin (4) an increase in the number of contracts mediated by farmer organizations (5) an increase in resource efficiency of farmer organizations

Number of farmers organizations able to implement tools and practices introduced by trainings # of farmer organizations able to adopt the capacities building programs and improve their services
Number of farmers (disaggregated by gender) and farmer organizations (to facilitate dissemination) that are able to use E-extension services platforms
Availability of active and useful digital tools or platforms, willingness to use similar platforms, and challenges they face in using them
Knowledge and experience in the application of innovation applications

Annex V: List of NGOs complying to the new 2019 NGO Law

FO	District
	Minya
Women & Society Association	Samalot
Social communication association in El-Foka'ay	Abu Qurqas
Al Nour Al Sate'a organization	Minya
Karma Foundation for Humanitarian Services	Minya district
Community Development Association	Samalot
Beni Suef	

Community Development Association in Taha Al Beisha	Beba
Association for the Development and Marketing of Agricultural Crops in Meyaneh	Ihnasia
Ebda' Bnafsak Integrated Development Association	Simsta
Association for Community Development in Beba island	Beba
Al-Nahda Association for Integrated Development in Nuweira	Ihnasia
Better Life Association	Beni Suef
Farmers Development Association in Dandil	Ihnasia
Association for Community Development in Qala	Ihnasia