Austrian Development Cooperation

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EUROPEAN UNION FOR ARMENIA

Austrian Development Agency

FINAL EVALUATION

"EU Green Agriculture Initiative (GAIA)"

in Armenia

FINAL EVALUATION REPORT

21/02/2024

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AGT INTERNATIONAL

« The present Final Evaluation Report has been prepared by the Evaluation Team of AGT S.p.A. The content of this Report and the information provided reflect the views of the Consultants and do not necessarily reflect those of the ADA and the European Union »

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ACRONYMES AND ABBREVIATIONS

AB	Advisory Board
ADA	Austrian Development Agency
ADC	Austrian Development Co-operation
ANAU	Armenia National Agricultural University
CARC	Center For Agricultural Research and Certification
CARD	Centre for Agribusiness and Rural Development
COVID 19	Coronavirus Disease 2019
CSA	Climate Smart Agriculture
CSOs	Civil Society Organizations
DoA	Description of the Action
EE	Evaluation Expert
EXFE	External Final Evaluation
EMx	Evaluation Matrix
EQ	Evaluation Question
ET	Evaluation Team
EU	European Union
EUD	Delegation of the European Union
EUR	Euro
FAO	Food and Agriculture Organization
GA	Green Agriculture
GAIA	Green Agriculture Initiative in Armenia
GAP	Good Agricultural Practices
GoA	Government of Armenia
Green	See bellow (*)
HQ	Headquarter
IDP	Internally Displaced People
IFI	International Financial Institutions
IL	Intervention Logic
ILO	International Labour Organization
IR	Inception Report
M&E	Monitoring and evaluation
MoE	Ministry of Environment
MoEC	Ministry of Economy
NGO	Non-Governmental Organisation
OA	Organic Agriculture
OASI	Organic Agriculture Support Initiative
OO	Overall Objective

RA	Republic of Armenia
SAP	Support for Agribusiness Programme
SDGs	Sustainable Development Goals
SO	Specific Objective
TL	Team Leader
ToC	Theory of Change
ToR	Terms of Reference
UNDP	United Nations Development Programme
VCs	Value Chains
WGs	Working Groups
(*) In the text the word "green" is used with the same extensive meaning and broad significance used in the Project title and documents where it often comprehends also the word "organic"	

EXECUTIVE SUMMARY

Evaluation background and objectives

The present final independent evaluation has started on 25/08/2023 with the signature of the Service Contract for Consultant Service between the Austrian Development Agency (ADA) and AGT S.p.A. (Italy). The actual operations started on 1st September 2023 with the kick-off meeting during which the Evaluation Team (ET) met online with the EU-GAIA team, including the Vienna based Project Manager and the representative of the ADA Office for Technical Cooperation in Yerevan. The total duration of the assignment was of 22 weeks, lately extended of 5 weeks (the period of implementation of the assignment is 01/08/2023 – 29/02/2024) with a total consultants' input of 83 working days (TL 45 w/d, EE 35 w/d, CSA Exp. 3 w/d).

The purpose of the present final evaluation was to provide the donors, the implementing agencies and the EU-GAIA project team, the Armenian Ministry of Economy as well as project stakeholders with an account concerning the use of funds and results achieved at the time of reporting, and to propose future interventions in the field of Climate Smart Agriculture.

The objectives of the evaluation are:

- To assess the relevance, effectiveness and (prospects for) sustainability of the EU-GAIA project from its start in October 2019 to the time of this evaluation (September-December 2023) – building on the insights of the mid-term evaluation undertaken in 2022;
- To review and, if needed, to suggest revision of the Theory of Change behind the project;
- To identify lessons learned during implementation so far and provide actionable recommendations for possible follow-up interventions in Climate Smart Agriculture (CSA).

This last objective was partially reconsidered in view of the lack of funding from the EU for the envisaged follow-up project. This new scenario resulted from the decision of the EU Delegation to allocate significant funds, with a direct contribution in the form of Budget Support, to the GoA's. The reallocation of funds was decided to help the country to deal with the humanitarian crisis related with the influx, starting from September-October 2023, of almost 100.000 people from Nagorno-Karabakh. This decision implied the need to cancel the financial support that was originally destined to sectoral interventions, including the multi-annual large EU-GAIA follow-up project that was already in pipeline. In view of the possible implementation of a smaller scale follow-up intervention, the evaluators have adjusted the scope of the evaluation accordingly and have produced a set of recommendation based on this new prospective. In addition, we have also produced a Concept Note on CSA in Armenia, which is appended as Annex 5 to this report.

The scope of the evaluation has covered all the project activities implemented and the realisations produced by the EU-GAIA Project from October 2019 to the cut-off date that was agreed to be September 2023. The evaluation team has asked the Project team to produce an updated document to cover the period from the date of the latest Progress Report (PR), that was September 2022, to September 2023. In terms of geographical coverage/scope, the focus has been on the Northern Marzes of Shirak, Lori and Tavush and on the activities and realisations that have taken place in Yerevan and in other regions of the country.

Approach, methods and evaluation activities

The Standards and Principles for Good Evaluation as well as the gender-sensitive and human rights-based approach have always been at the forefront of the implementation of the present evaluation exercise. Care was posed to ensure data quality and validity of findings. In particular, the evaluation has assessed how and to which extent the cross-cutting issues related to the environment, climate change and the involvement of the women, and people belonging to vulnerable groups have been addressed in the implementation of the Project activities. At this end, as baseline, the evaluation made use of the information produced in the EGSIM appraisals (environmental, social, and gender) produced by the ADA experts. Quality assurance was achieved through crosschecking and triangulation of information using alternative primary and secondary sources. In particular, the collaboration and intense dialog between the Evaluation team and the Project team has been the first method to ascertain the reliability of the sources and the quality of the information gathered in general. In order to enhance the "usability" of the results, the evaluation team has carefully analysed

the information needs of the primary users and the other key stakeholders of the evaluation and has adjusted the approach accordingly to better target the results of the evaluation.

The Inception Phase lasted one week and the Inception Report was approved on 27/10/2023. At the conclusion of the Inception Phase, a field mission was conducted in the period 13-24 November. This was prepared and finalised with the support of the Project team, who was also helpful for the organisation of the meetings. During this period, the experts conducted semi-structured online and offline interviews and organised focus group meetings with relevant stakeholders who were selected using the sampling methodology proposed in the Inception Report. In total interviews were conducted one-on-one and in group with 63 interviewees including Project team members, national and regional authorities, project stakeholders and other key informants. Two separate online surveys were also conducted using the Alchemer platform focussing on the EQ2, EQ5.1, and EQ5.2. The combination of fieldwork interviews and online surveys allowed the evaluation team to carry out a thorough analysis that offered a detailed and nuanced understanding of the EU-GAIA project's effects.

The whole set of information acquired was processed during the Data Analysis Phase at the conclusion of which, the Evaluation team produced a first set of preliminary findings and presented them to the ADA staff on 14th December 2023. The slides presented at that meeting are annexed to the present report. During the two subsequent weeks the MTE team has finalised the findings and produced conclusions and recommendations that are summarised hereafter. Conclusions and recommendations are presented in the relevant chapters related to the findings that were drawn up in relation to the judgement criteria that we have used to answer the ten EQs.

Key findings

The present evaluation has identified overall 34 key findings in relation to the 10 EQs that the ToR asked us to answer. These findings are summarised here below structured according to the evaluation criteria of: i) relevance; ii) effectiveness; and iii) sustainability. The Tor also included two evaluation questions related to the Project follow-up.

Relevance

The objectives of the EU-GAIA project demonstrate strong alignment with: i) the Armenia's current and prospective policies related to agriculture, environmental protection, and rural development; ii) the farmers and agribusinesses needs to acquire skills and knowledge on sustainable agricultural practices: and iii) with the growing aspiration of the consumers to have better and healthier products on their tables. Only the Objective 4 on Organic Agriculture demonstrates to be less relevant because this subject is not a primary focus for the Armenian government that has expressed concerns about its sustainability, in the present conditions, without an onerous public financial support. In addition, in the country, consumers demand for products certified as organic is still very marginal.

The objectives of the EU-GAIA Project were relevant also in the light of the effects of the COVID-19 pandemic and the conflicts of 2020 and 2023 over Nagorno-Karabakh. On the contrary, the project's immediate response has helped to mitigate the impact of these events.

The effective policy dialogue established at the Advisory Committee level and the informal consultations at the working group level have been instrumental in supporting the further and continuous alignment between the project's and the government priorities. These has resulted in the drafting of sectoral development strategies in the three Northern pilot regions. The themes of sustainable agriculture and natural resource management are also embedded in the objectives of the sectoral State Support Programmes presently offered by the Ministry of Economy.

Effectiveness

As mentioned above, the Project has contributed to produce consistent outcomes in terms of policy, legal and institutional environment aiming at conducing to green, inclusive, and right-based agriculture development. The Advisory Committee and the working groups have demonstrated to be active fora where, through an effective dialogue, public bodies, key research and educational institutions as well as private stakeholders were able to express their needs and propose solutions.

The Project has continued, and further enhanced, the excellent work done under the OASI Project. In particular on procuring better equipment and production techniques and improving their marketing through branding, packaging and labelling and establishing new market linkages. The results of supporting selected agribusinesses were achieved for all five value chains. On the other hand, the organic agricultural sub-sector, as mentioned above, remains a very marginal reality in Armenia, limited to some large wineries and few fresh and processed fruit export traders or to some Project beneficiaries that have acquired the certification only because this was a precondition to access to the SAP.

Project awareness and capacity building activities have created and enhanced propensity of the operators to move toward the adoption of greener technologies. The Project has also strongly supported the activities of the National Agrarian University, the regional colleges and several training institutions, contributing to their further growth. On the other hand, these efforts have not resulted yet in a consolidated scheme that better connects research and practice, and it is capable of boosting innovation and knowledge flows in the sector. Therefore, farmers and agribusinesses cannot fully access information and advice needed in a systematic way. In our view there is scope to promote, at agribusinesses level, a more systematic approach on green practices including concepts of circular economy, water management, waste management etc. During the field visits to selected beneficiaries, we observed several cases where, alongside the application of good green practices, other practices were detrimental to the environment or even harmful to the health of the operators. We have also observed several cases of farmers that obtained the certification of organic for their products but, besides complying with the checklist for certification, still adopt non-sustainable practices in their farms, simply because they lack the knowledge.

In terms of cross-cutting issue, the Project outcomes have largely contributed to results in environmental, gender and social inclusion but no major achievements have been observed in the implementation of the ILO conventions on labour rights by the GoA as anticipated in the DoA. The synergetic effect of the EU-GAIA Project and its predecessor, the OASI Project, have led to the established of a cohesive community of stakeholders who share and sustain the cross-cutting objectives of environmental, gender, and social inclusion that these two projects have aimed to achieve.

Sustainability

The EU-GAIA Project has contributed to establish a policy, legal and institutional framework ensuring the sustainability of the achievements after the Project completion. In addition, the support provided to the organisations and institutions involved within the Project activities has contributed to their empowerment and reform. This enables them to better contribute to the promotion of a greener and more inclusive agricultural sector in Armenia. The sustainability is further ensured by the fact that there is a consolidated group of stakeholders, including operators, organisations, institutions and public bodies, that represent a “critical mass” that is able to continue to advocate for a greener and more sustainable agriculture as well as for improved food quality and safety.

The sustainability of the results achieved under the SO4 seems less evident under the present conditions. From what we have observed, the motivation to maintain organic production certification disappears from the moment in which the entrepreneur considers the balance between the advantages of certification with its costs.

As mentioned in our findings related to effectiveness, the full transition towards a greener agriculture requires a systematic and holistic approach supported by the provision/availability of advanced technical and managerial knowledge to the operators.

Follow-up

In relation to the opportunities for a next phase to build upon the achievements of the EU-GAIA project in the field of Climate Smart Agriculture, we have assessed that Armenia, given its geographic and climatic conditions, could significantly benefit from the widespread introduction of CSA methodologies. In addition, the results achieved by the EU-GAIA may pave the road for a growing attention on CSA in the near future in as far as the stakeholders will understand that this could lead to increase sustainable productivity, strengthen farmers’ resilience, and support food security at sub-national/national levels.

The Concept Note produced by the Project team for the next phase of the EU-GAIA project that we have assessed includes a draft Logical Framework that comprehensively frames the intervention logic. On the other hands, the set objectives are very ambitious; therefore, it seems advisable to start operating at small/pilot scale before extending the activities to a larger geographical area in the country.

Conclusions

Presented below are the conclusions drawn from the key findings of the evaluation (more details in main report).

Relevance

The EU-GAIA Project has faced the challenge of three important external factors such as the COVID-19 pandemic and the 2020 and 2023 conflicts over Nagorno-Karabakh. Despite the occurrence of these factors of such historic importance and whose event could not have been foreseen in the planning phase, the Project objectives have remained highly relevant to the Armenia's sectoral evolving needs, government priorities and consumers' demand. The Project governance structure, and in particular the Advisory Board, has demonstrated to be capable of dealing with unforeseen events by implementing effective measures to moderate the consequences of these major factors.

Effectiveness

The Project has contributed to produce consistent outcomes in terms of policy, legal and institutional environment and for the development of a more inclusive, and right-based agriculture sector, including enhancing the propensity of the operators to move toward the adoption of greener technologies and production systems. The support provided to agribusinesses in the five target value chains has improved their competitiveness, efficiency and access to inputs, equipment, infrastructure and services. On the other hand, due to the almost negligible internal demand for certified organic products and the high cost of certification, the organic agricultural sub-sector remains a very marginal reality in Armenia.

In relation to the cross-cutting objectives, the Project outcomes have largely contributed to results in environmental, gender and social inclusion. Environmental considerations have grown among operators, policy makers and consumers. Social inclusion issues have been correctly addressed by the Project, in line with the recommendations presented in the EGSIM report. On the contrary, no major achievements have been observed in the implementation of the ILO conventions on labour rights.

The Project capacity development component has provided the stakeholders with novel skills and knowledge on sustainable agriculture and majority of stakeholders reported that they have frequently applied them at their ends. On the other hand, we have observed that often farmers and agribusiness, for lack of a comprehensive knowledge, apply punctual good green practices next to other practices that may result detrimental to the environment or harmful to the health of the operators.

Sustainability

The sustainability of the Project achievements and the pursuing of the objectives after the Project completion is ensured by the fact that the Project was able to mobilise a *"critical mass"* of stakeholders, a large proportion of which are women, around the concept of greener and more sustainable agriculture as well food quality and safety. Again, the sustainability of the results achieved under the SO4 seems less promising for the simple reason that, for the majority of the agribusinesses the cost of the organic certification is higher than the benefits. In any case, there is still the need to boost into the sector further advanced technical and managerial knowledge to fill the present existing gaps.

Follow-up

Although the large-scale follow-up Project that was in pipeline is now put on hold, we believe that the Armenian agricultural sector could significantly benefit from the widespread introduction of CSA methodologies already in the prospected so-called Bridging Phase (from April 2023 to April 2024). The Concept Note produced by the EU-GAIA Project team for the next phase provide a rather comprehensive preliminary framework for any follow-up intervention focussing on CSA. Obviously, there is the need to scale down the magnitude of the objectives that appeared already rather ambitious for the large-scale project and focus more on preparatory actions with rapid demonstration effect, possibly realised at pilot level.

Recommendations

The recommendations summarised hereafter are formulated in view of the prospected Bridging Phase but taking into account also the possible reactivation of the EU/ADC funds for financing the large-scale project on CSA.

The functional policy and operational dialog with the Project stakeholders should be continued with the twofold objective to further disseminating the positive results achieved at pilot scale on sustainable agriculture as well as identifying the most effective measures to address the subject of Climate Smart Agriculture in Armenia for future interventions.

During the incoming period, the Project should shift the focus from punctual to systemic interventions introducing badly needed concepts like waste management, circular economy, sustainable agricultural practices, and environmental collective responsibility. This last aspect could be handled jointly with the projects currently financed by ADC in Armenia, dealing with community development through the LEADER approach.

The support to gender and social issues should be sustained. The need to draft and enforce improved labour related regulations and their enforcement in agriculture, in line with the ILO conventions on labour rights, is clearly emerged. In parallel, the Project could contribute to the issue related to the Internally Displaced People from Nagorno-Karabakh providing capacity building measures to support the initiation of sustainable agricultural activities where they will settle.

The Project should consider supporting the establishment of a new and efficient extension system providing a better connection between research and practice and capable of boosting innovation and knowledge flows in the agricultural sector in a systematic way. This system could replace the previous outdated extension service and could be built on the basis of the network of institutions and organisations that have participated in the EU-GAIA Project.

In order to extend the results of the Project, it is advisable to disseminate the knowledge and good practices, which emerged in the pilot regions and with selected beneficiaries, targeting other regions and other beneficiaries. As mentioned above, among these new targets should be considered the IDPs flowing from Nagorno-Karabakh, most of which have a background in the agricultural sector.

In order to pave the road for a larger Project on CSA, the Project should focus on the identification of strategic priorities, the definition of target groups and stakeholders, and creation of the platform for agreements between partners and actors involved in the value chains under the prevailing climatic conditions.

1 INTRODUCTION

1.1 Purpose, objectives, and scope of the evaluation

The purpose of the present Final Evaluation is to provide an independent, substantiated, and detailed account on the use of funds and the results achieved by the EU-GAIA Project to the donors, the implementing agencies, the Armenian counterpart Authorities and the project stakeholders. The Terms of Reference (ToR) have defined three main objectives of the EXFE, namely:

- To assess the relevance, effectiveness, and the prospective sustainability of the EU-GAIA project from its start in October 2019 to the time of this evaluation – also building on the insights of the mid-term evaluation undertaken in 2022;
- To review and if needed suggest revision of the Theory of Change behind the project;
- To identify lessons learned during implementation so far and provide actionable recommendations for possible follow-up interventions in CSA.

About this last objective, the latest developments of September 2023 of the conflict with Azerbaijan and the consequent exodus of the Armenian population from the Nagorno-Karabakh region, including the consequent need to address the problem of almost 100.000 Internally Displaced People (IDP), has led the EU to envisage relocating the funds for the country, that were originally destined to sectoral interventions, to focus on humanitarian assistance through budget support allocations to the Government of Armenia. The lack of the EU financial support undermines the feasibility and whole concept of the prospected multi-annual large follow-up project aiming to promoting in Armenia such a complex issue as CSA. Nevertheless, there is a clear scope to continue providing support toward the development of the agricultural sector producing better and more secure food for the population and for a more environmentally sustainable and climate resilient production system. The reasons for this are several including the fact that the prospected outcomes of the EU-GAIA Project, and those of its predecessor Organic Agriculture Support Initiative (OASI), are gaining momentum and the project team has become a recognised reference point for the sustainable agricultural community in the pilot regions and, at all levels, including authorities and policy makers, in Armenia. A sharp interruption of the support could entail the risk of dispersing the critical mass of knowledge, institutions and motivated people built up to now and a new possible future project would find itself in a position of starting all over from scratch. The Austrian Development Cooperation (ADC) is in the process of deciding to grant € 1,0 million that, together with other funds resulting from savings on the current budget of the EU-GAIA Project, would allow financing a Bridging Phase to continue the current Project activities up to May 2025.

These decisions, not yet officialised, were anticipated to the evaluation team from different sources, therefore we take them for granted and consider them in view of partially redirecting also our recommendations about the future/follow-up actions of the EU-GAIA project after the Project end date of January 2024.

This new scenario has led to partially shift the focus of the answer to the Evaluation Question 7.2 that envisaged the “Review, in light of the findings of the evaluation, the quality of the Theory of Change (ToC) the next phase of the EU-GAIA project, and the causal logic chain connecting inputs, outputs and outcomes and aspired impact”. Therefore, our assessment will continue to be instrumental to understand and learn how and why the activities implemented by the Project have led to the achievement of the actual outputs and outcomes versus what was originally planned and their contribution to the achievement of the project objectives. In parallel, the EXFE, by providing an assessment of the use and deployment of project resources and project implementation focussing on their effectiveness and prospected sustainability of the results, will contribute to the dialogue for future decision making and programming at different levels for immediate actions (bridging phase) and possible future interventions in CSA. For the latter, considering that the originally envisaged financial mechanism of the prospected project on CSA will need to be reconsidered in the light of the availability of EU funds, we have developed a concept paper that may provide a general framework to identify a range of possible interventions to introduce CSA concepts and pilot actions in Armenia.

The scope of the EXFE, which has set the boundaries of our assignment, has remained as planned in the ToR. Therefore, the evaluation has covered all the project activities implemented and the realisations produced by the EU-GAIA Project from October 2019 to the cut-off date. The cut-off date was agreed upon during the Inception Phase to be September 2023. The evaluation team has asked the Project team to produce an updated document to cover the period from the date of the latest Progress Report (PR) that was September 2022 to September 2023.

In terms of geographical coverage/scope, the focus has been on the Northern Marzes of Shirak, Lori and Tavush, where the project activities on green agriculture have been undertaken. In addition, the EXFE had also covered those activities (e.g. agribusiness support for organic production, policy dialogue, information/dissemination events, etc.) that have taken place in Yerevan and in other regions of the country.

1.2 Quality standards and criteria applied

In implementing the assignment, the evaluation team has taken in due account the “Standards and Principles for Good Evaluation” on ADA development cooperation published in the document Evaluation Policy of the Austrian Development Cooperation (2019). In such document, a total of 10 standards and principles are presented. They match and comply with those standards and principles issued by the OECD/DAC. These principles, which are not included here for concision and simplicity, have always been at the forefront of the implementation of the present evaluation exercise.

The evaluation has been conducted respecting the international evaluation principles and standards as well as the gender-sensitive and human rights-based approach, that is: utility, objectivity, independence of evaluators, participation of all parties concerned, transparency, accountability, inclusiveness, reliability, completeness, and clarity of reports.

In order to ensure data quality and validity of findings, a number of measures were taken, including the adoption of interview guidelines and observation tools and thorough cross-checking and triangulation of the information using alternative primary and secondary sources.

1.3 Primary users and the intended use of MTE

The primary users of the EXFE are the donors, mainly the EU and ADA but also other International financial Institutions (IFI) and other development agencies that may have an interest on the results of the project for present and future purposes (e.g. FAO). Primary users are also the two implementing agencies ADA and UNDP and the EU-GAIA project team as well as the Government of Armenian primarily represented by the Ministry of Economy and the other government bodies and institutions represented in the Advisory Board. Other users of the EXFE comprise the other private stakeholders (direct and potential beneficiaries), academic and research institutions, and public project stakeholders (Ministry of Environment and Ministry of Territorial Administration and Infrastructure, regional administrations, etc.).

Within the above-mentioned standards and principles for good evaluation, the concept of “utility” of the evaluation results based on the lessons learned is of utmost importance in relation to analysis of the users and the intended use of the EXFE. Therefore, we have interpreted the word “learning” in the broadest meaning of this term in as far as the independent evaluation is expected to provide a solid base and credible advice contributing to the dialogue for future decision making and programming at different levels.

The reason for this approach is twofold. The first reason is that the EXFE shall provide an account on the use of the Project resources, the Intervention Logic (IL) and the implementation modalities and to determine whether these have produced the prospected changes according to the Theory of Change. The second reason is related to the fact that the Project, in these last 4 years of implementation has supported a large number of agribusiness operating in the green agriculture and organic sector. Therefore, a large number of results is available, in terms of lessons learned, practical experiences and best (and worst) practices that would be worth to highlight for dissemination and for undertaking follow-up actions.

In fact, there is an advanced discussion between the donor organisations and the Armenian counterparts on the possible action representing the follow-up of the EU-GAIA Project and of its predecessor the OASI Project. This action is in pipeline, and a preliminary Concept Note has already

been prepared by the Project team. The new action, starting for the consideration that Armenia is highly vulnerable to climate change in relation to high risks of climate-related natural disasters affecting livelihoods, economic and social sustainability, foresees to address the impacts of the climate change on agriculture issues using a combination of adaptation and mitigation measures. Therefore, as clearly stated in the Terms of Reference (ToR), the present EXFE is expected to provide in the recommendations, proposals for follow-up interventions in CSA.

The ToR do not have explicitly foreseen the organisation of a final workshop to present the EXFE conclusions but, during the kick-off meeting it was proposed and agreed to organise an on-line event. This will allow to inform the largest possible group of stakeholders on the content and results of the evaluation report and to share a common knowledge and understanding of the conclusions and recommendations.

2 BACKGROUND AND CONTEXT ANALYSIS

2.1 Key social, political, economic, demographic, and institutional factors

The Republic of Armenia (RA), while progressing in various sectors, continues to face significant socio-economic and political challenges. The aftermath of the 2018-2019 Velvet Revolution promised a new era of development. However, the impact of the COVID-19 pandemic and the 2020 Nagorno-Karabakh conflict has had profound effects on the country's socio-economic scenario. These events have exacerbated existing issues such as economic instability, social inequality, and internal displacement. The need for international support remains critical for Armenia to navigate through these complex challenges effectively. The rural areas, in particular, have been disproportionately affected, grappling with issues like child poverty, labour migration, and a lack of integration for vulnerable groups including women and people with disabilities.

In this challenging context, the EU-GAIA project has been instrumental in addressing some of these challenges, particularly in the agricultural sector. The project's focus on promoting green agriculture aligns with Armenia's need for sustainable development and resilience in the face of environmental and economic challenges. This project aligns with Armenia's broader goals of environmental protection and rural development, aiming to bolster the agricultural sector's resilience and sustainability.

2.2 Key stakeholders, other development partners and their roles

The EU-GAIA project has engaged a diverse range of stakeholders, reflecting its comprehensive approach to promoting green agriculture in Armenia. Key stakeholders include the European Union Delegation (EUD) and the Austrian Development Cooperation (ADA), which have been pivotal in funding and guiding the project. The EU-GAIA project team has been crucial in implementing the project's activities and ensuring their alignment with the broader objectives. Their expertise and insights (including those from OASI project) have been vital in adapting the project to the local context and ensuring its effectiveness.

Other significant stakeholders include the Government of Armenia, regional authorities, local NGOs, and beneficiaries such as farmers, agribusinesses, and educational institutions. Their active involvement has been essential in tailoring the project to meet local needs and ensuring the project's relevance and effectiveness at both national and regional levels.

2.3 The Project Intervention Logic

The reconstruction of the Intervention Logic was carried out during the Inception Phase, and it was based, exclusively, on the project documents, complemented with a preliminary consultation with the Project team. Since the information acquired during the subsequent Phases of the evaluation confirmed the original analysis of the IL done in the Inception Phase the content of this chapter does not essentially differ from the text presented in the Inception Report. In our view, it is important that the wording of this section is as close as possible to the one used in the Project documents because it makes easier, to all parties, to understand and recognize the Project structure even if it is presented in a different manner.

For the reconstruction of the IL we have applied the standard methodology of the Theory of Change with the purpose to understand the casual chain of results and effects (from inputs to outputs, outcomes and impact), that, at Project design level, the intervention was supposed to generate to get from the situation/scenario before the intervention to the desired situation/scenario after the intervention and what the intervention was planned to do (input, activities, etc.) to trigger these changes. This analysis was the fundamental backbone for the overall structuring of the evaluation during the inception phase and, in the synthesis phase (answering the EQ and drawing findings and conclusions), has allowed us to assess whether the intervention was implemented as planned, has produced the intended outputs and assess whether these outputs have generated the expected changes (outcomes and prospected impact) in the given conditions.

The EU-GAIA Project started on 1st October 2019 with an initial Inception Phase that lasted until 29th February 2020. The mobilisation of the project staff and resources was prompt since this new project could avail of the office inventory and premises in Yerevan of its predecessor project called Organic Agriculture Support Initiative (OASI). Five staff of the OASI project joined the EU-GAIA project. A second project office was established in Vanadzor, Lori Marz, to serve the three Northern Marzes of Shirak, Lori and Tavush where the support to selected value chains in green agriculture are implemented by ADA (Fruits and berries, vegetables) and by UNDP (Legumes, herbs and sheep breeding). Project support for the organic agricultural sector covers the entire country and is solely implemented by ADA.

The ***Project impact*** is:

- To contribute to the realization of shared and balanced inclusive growth in the Northern regions of Armenia through boosting green agriculture and enhancing local value added.

The ***Project outcomes*** are:

1. Greener, more inclusive and rights-based agriculture is developed as a result of an improved policy, legal and institutional framework;
2. Selected agribusinesses have better access to infrastructure, green technologies, good agricultural practices, and markets creating also better employment conditions;
3. Selected agribusinesses are more competitive through improved efficiency and access to inputs, equipment, infrastructures, and services;
4. Selected organic agri-businesses are more competitive through access to inputs, equipment, infrastructures, and services.

The ***Project outputs*** are:

1.1 - Sector wide policy documents and regulatory instruments have been developed/enhanced;

1.2 - Increased capacities of the public sector and non-state actors in green agriculture in terms of awareness and sound understanding of green agriculture policies, legislation, and regulations. Public and private sector, non-state actors have increased capacities to implement and monitor green agriculture interventions;

2.1 - Preconditions for a pipeline of investable and high added value agri-businesses are set;

2.2 - Agribusinesses have increased capacities to apply green technologies and effective agricultural practices through demo sites;

2.3 - Agribusinesses have improved access to post-harvest and quality infrastructure;

2.4 - Agribusinesses have improved access to local, national, and international markets;

3.1 - Pipeline of investable and high added value agribusinesses created;

3.2 - Agribusinesses have improved productivity through access to inputs, equipment, infrastructure and services;

3.3 - Increased productivity in selected Value Chains (VCs) though application of resource efficient and resilient farming practices;

3.4 - Agribusinesses have improved access to local, national and international markets (through the establishment of market linkages);

4.1 - Pipeline of investable and high added value organic agribusinesses created 15% increased number of agribusinesses, 30% of which owned/managed by women, efficiently utilizing the inputs, equipment, infrastructure and services;

4.2 - Organic agribusinesses have improved access to inputs, services, equipment, and quality infrastructure;

4.3 - Organic agribusinesses have improved access to local, national, and international markets (through establishment of linkages).

The ***Project inputs*** are:

Financial resources:

Total project budget is Euro 12.300.000,00 (original Euro 11.700.000,00 + Euro 600.000,00 additional ADA top up for the extended phase) of which:

  - EU contribution: Euro 9.700.00,00
  - ADA Euro 2.000.000,00 + Euro 600.000,00
- Budget breakdown
  - Human resources Euro 1.371.460
  - Travel: Euro 100.310
  - Equipment and supplies: Euro 337.300
  - Cost of procured services (e.g. audit, evaluation, etc.): Euro 321.990
  - Budget allocated for the activities for SO1: Euro 1.266.200
  - Budget allocated for the activities for SO2: Euro 2.958.160
  - Budget allocated for the activities of UNDP for SO3: Euro 2.000.000
  - Budget allocated for the activities of ADA for SO3: Euro 1.200.000
  - Budget allocated for the activities for SO4: Euro 1.500.000
  - Provision for contingency and other indirect costs (up to): Euro 634.580
- Indirect costs
  - The budget allocated to cover the ADA Indirect Cost is Euro 634.580, equal to ca. 7% of the EU contribution
  - The indirect costs of the United Nations Development Programme (UNDP) are Euro 160.000, equal to 8% of the budget allocated for the activities of UNDP for SO3 (i.e. Euro 2.000.000)
- Support for Agribusiness Programme (SAP) – Total amount is Euro 2.400.000 broken down as follows:
  - The budget for the SAP under SO3 managed by UNDP was Euro 700.000 targeting 70 beneficiaries
  - The budget for the SAP under SO3 managed by ADA was Euro 500.000 targeting 50 beneficiaries
  - The budget for the SAP under SO4 managed by ADA was Euro 1.200.000 targeting 80 beneficiaries

Management and technical inputs

The Project is jointly implemented by ADA and UNDP. The Project is jointly implemented by ADA and UNDP Armenia with the following staff:

- ADA Staff
  - Team Leader
  - Green technology expert
  - Policy & Advocacy expert
  - Marketing expert
  - Grant manager
  - Procurement officer
  - Finance & administration manager
  - Communication officer
  - Administrative officer
  - Driver
  - 1 Field officer based in Yerevan
  - 2 Field officers based in Vanadzor
  - Various pools of short-term consultants

The ADA project staff is supported by the Office for Technical Cooperation of the Austrian Embassy in Yerevan and by the Programme manager based at the ADA Headquarters in Vienna.

- UNDP Staff
  - Project Coordinator

- Project assistant
- Project expert
- Driver
- Partnership & communication officer

Advisory Board

The Advisory Board is the Project top management body and has the function to provide strategic guidance and to steer the implementation of the Project. It is composed of:

1) Ministry of Economy of the Republic of Armenia (voting member)
2) Delegation of the European Union to Armenia (voting member)
3) United Nations Development Programme (UNDP) (Voting member)
4) Austrian Development Agency (ADA) (voting member)
5) Representative of the Shirak regional administration (voting member)
6) Representative of the Lori regional administration (voting member)
7) Representative of the Tavush regional administration (voting member)
8) EU-GAIA Project Team leader (voting member)
9) EU-GAIA Project UNDP Component Coordinator (voting member)
10) Representatives from other institutions and individual experts may be invited by the members of the AB to attend if regarded as needed and / or suggested by the AB members EU delegation in Armenia.

The Project team has set up a Project Monitoring System, including indicators, with baseline and target values, associated with each element of the Logical Framework. At this preliminary stage of the evaluation, the proposed indicators appear to be “Specific”, “Measurable”, “Attainable”, “Relevant” and “Time-bound” (SMART).

2.4 The Project implementation status

The EU-GAIA Project is in the final stage of implementation that will be completed by the end of January 2024. As mentioned in chapter 2.1, the changes in the background have led the Project team to submit a request to the ADC to grant additional € 1,0 million that, together with other funds resulting from savings on the current budget of the EU-GAIA Project, would allow financing a bridging phase to continue the current Project activities up to May 2025.

At present, the two Project offices of Yerevan and Vanadzor are fully functioning, and the ADA Project team is operational. The UNDP team concluded their activities in 30/06/2023.

As of the current evaluation, the EU-GAIA project, despite initial setbacks due to the pandemic and regional conflicts, has made significant strides in its implementation. Despite initial challenges posed by the pandemic and regional conflicts, the project has adapted and continued to advance its objectives. The project has focused on developing and supporting green agriculture practices, enhancing the capacity of stakeholders, and establishing demonstration sites and post-harvest facilities.

The project has also facilitated policy dialogue and collaboration between various stakeholders, contributing to the development of a more sustainable and resilient agricultural sector in Armenia. One of the key achievements of the project has been its ability to facilitate policy dialogue and collaboration between various stakeholders. This has contributed to the development of a more sustainable and resilient agricultural sector in Armenia. The ongoing challenge remains in ensuring the sustainability and scalability of these initiatives, requiring continued engagement and support from both national authorities and international partners. The project's success in navigating these challenges and adapting to the evolving needs of the Armenian agricultural sector underscores its importance and relevance in the current socio-economic context of Armenia.

3 EVALUATION DESIGN AND APPROACH

3.1 Methodological Approach

In line with the consultant's technical offer, our evaluation methodology was tailored to assess the results and prospective sustainability of the EU-GAIA Project within its specific socio-economic context. Our approach was not rigid; instead, it was open-minded and flexible, allowing us to understand the rationale behind the implementation of activities, the influence of internal and external factors on outputs, and to calibrate information before forming any judgments.

Our strategy and approach were developed in compliance with the ADA Guidelines for Programme and Project Evaluations (July 2020). Both the Team Leader (TL) and the Evaluation Expert (EE) have extensive experience with these guidelines, having implemented them in previous assignments in Armenia. The evaluation methodology adhered to the "Standards and Principles for Good Evaluation" as outlined in the 2019 Evaluation Policy of the Austrian Development Cooperation, ensuring objectivity, independence, participation, transparency, accountability, inclusiveness, reliability, completeness, and clarity of reports.

In implementing the evaluation methodology, we diligently adhered to the principles and standards of a gender-sensitive and human rights-based approach. This commitment was reflected in our practices of objectivity, independence of evaluators, participation of all parties concerned, transparency, accountability, inclusiveness, reliability, completeness, and clarity of reports. To ensure inclusiveness, we actively sought and incorporated diverse perspectives, particularly focusing on engaging women, vulnerable groups, and underrepresented stakeholders. This approach allowed us to capture a comprehensive range of experiences and insights, ensuring that the evaluation reflected the realities and needs of all groups affected by the EU-GAIA project. In terms of reliability, our methodology involved rigorous data collection and analysis processes. We cross-verified information from multiple sources and used triangulation to validate findings, thereby enhancing the credibility and dependability of our evaluation outcomes. This thorough approach ensured that our conclusions and recommendations were grounded in accurately gathered and analyzed data, reflecting the true impact of the project.

A key aspect of ADA-supported projects is the emphasis on addressing cross-cutting issues such as non-discrimination, inclusiveness, do-not-harm, and human rights considerations. We paid special attention to assessing the EU-GAIA project's impact on these issues and the measures taken to ensure their sustainability. We utilized the environmental and social assessment by ADA EGSIM Staff as a baseline, particularly focusing on the participation of women and vulnerable groups in the project activities.

In terms of the three evaluation outputs, our Inception Report, Draft Final, and Final Evaluation Report complied with the content indicated in the Quality Checklists of Annex 5 and Annex 6 of the ADA Guidelines. The Evaluation Matrix in Chapter 2.5 of our Inception Report followed the structure in Annex 7 of the ADA Guidelines. The evaluation process adhered to the operational steps 8 to 13 in the ADA Guidelines, with a focus on disseminating the evaluation outputs (step 14) and supporting coordinated management response and follow-up (step 15).

Quality assurance was achieved through cross-checking and triangulation of information from various primary and secondary sources. The collaboration and dialogue between the Evaluation Team and the Project Team were crucial in ascertaining the reliability of sources and the overall quality of information gathered.

The ten Evaluation Questions (EQ) proposed in the ToR were thoroughly analyzed against the aims and objectives of the Project and the background and baseline documents received. Our analysis of the project's baseline information and Progress Reports (PR) confirmed that evaluating the 10 EQs and achieving the objectives of the EXFE were both realistic and achievable. The Evaluation Matrix detailed the criteria and related reference framework, including data and information requirements and their potential sources.

Each EQ was analysed, interpreted, and broken down into a set of judgment criteria with corresponding verifiable indicators. The methods of data collection, analysis, and information

sources (observation) were processed and formulated to answer each evaluation question, as outlined in our Evaluation Matrix (EMx). While visually different, our EMx adhered to the structure in Annex 7 of the ADA Guidelines for Programme and Project Evaluations.

3.2 Data Collection and Analysis Tools

This chapter outlines the methodology and data collection and analysis tools employed for both fieldwork interviews and online surveys conducted as part of the EU-GAIA project evaluation. The methods for data collection, analysis, and formulation of responses to the evaluation questions were defined in the Inception Report (IR).

Fieldwork Preparation and Execution: The list of interviewees for the field mission was prepared with the support of the EU-GAIA Project team, facilitating the organization of meetings in Yerevan and six Marzes in Armenia. Guidelines for conducting interviews and focus group meetings were established prior to the field mission.

Data Analysis Approach: The evaluation primarily relied on mixed qualitative data, supplemented by quantitative data where necessary. Both secondary and primary data sources were used to formulate preliminary findings and triangulate information for finalization. Document reviews included project documents and external sources like government strategies and programs. Deductive and inductive approaches, along with narrative analysis, were applied. This involved focusing on facts, stories, and experiences shared by interviewees to support or refute preliminary hypotheses. Preliminary hypotheses, formulated based on secondary data analysis, were verified through specific questions posed during individual and group interviews.

Fieldwork Insights: Using purposive and convenience sampling, the Evaluation Team (ET) conducted semi-structured interviews with relevant stakeholders for deeper insights into the ten (10) evaluation questions. Interviews were conducted from November 13th to November 24th, spanning ten working days, with 61 individuals across six Marzes in Armenia (Lori, Shirak, Tavush, Kotayk, Armavir, and Aragatsotn), providing a comprehensive view of the project's impact.

Table 1. *Total number of interview participants, disaggregated by sex.*

Method/Tool	Men	Women	Total
EU-GAIA Project Team (Yerevan and Vanadzor)	5	6	11
Representatives of the EUD, ADA and UNDP	3	3	6
Representatives of the Government of Armenia and local authorities	5	1	6
Beneficiaries (SAP, Demo Sites, etc.)	17	7	24
Contractors and other key informants	4	10	14
Total by demographic	**34***	**27***	**61**

**Note on Discrepancy in Interview Participant Numbers: The annex lists Ms. Hasmik Altunyan from the ADA/EU-GAIA Team twice due to meetings on the 13th and 23rd of November. This results in the annex showing 28 female participants, while the actual unique count is 27. The double mention of Ms. Altunyan accounts for the discrepancy between the annex and Table 1.*

Online Surveys: Two distinct online surveys were conducted using the Alchemer platform, targeting specific evaluation questions: EQ2 (Relevance), EQ5.1, and EQ5.2 (Effectiveness). These surveys, crucial for assessing the project's impact and effectiveness, were available in both Armenian and English from November 25th to December 12th, ensuring inclusivity and comprehensive participation.

Survey Distribution and Response Rate: The surveys were emailed to all beneficiaries and training participants who had provided email addresses. Our aim was a response rate of at least 40-50%, encompassing a diverse range of stakeholders for broad representation.

Survey on Relevance (EQ2): This survey assessed the relevance of the support provided by the EU-GAIA project. It garnered 39 responses (3 in English, 36 in Armenian).

Survey on Effectiveness (EQ5.1 and EQ5.2): Focused on evaluating the project's contribution to capacity development and the practical application of disseminated knowledge. This survey received 14 responses (1 in English, 13 in Armenian).

Survey Design and Data Analysis: The surveys were crafted to collect both quantitative and qualitative data, with questions designed to capture comprehensive insights about the project's impact. We closely monitored roles/positions and sectors of operation to ensure a representative sample. The collected data were processed using automated methods for efficiency and analysed to provide statistical insights, complementing the qualitative findings from interviews and focus groups.

Contribution to Evaluation Findings: The surveys offered a broader view of stakeholder sentiments and allowed for data triangulation, enhancing the validity of the evaluation findings. The quantitative data from the surveys provided valuable insights that complemented the in-depth qualitative data gathered from other methods.

Conclusion: The combination of fieldwork interviews and online surveys offered a detailed and nuanced understanding of the EU-GAIA project's results and effects. This robust methodology allowed the Evaluation team capturing a wide range of experiences and perspectives across Armenia, ensuring a thorough analysis.

3.3 Risks, Limitations and Mitigations Measures

During the Inception Phase of the present assignment the current geopolitical situation in Armenia was affected by the large-scale offensive by Azerbaijan against Nagorno-Karabakh that started on September 19 and that created an unstable environment in the region. While a ceasefire agreement was established on September 20, the subsequent accord for the withdrawal and disarmament of the Artsakh Defence Forces added further complexities to the situation and forced the exodus of almost 100.000 people from the region seeking refuge in Armenia. Given these circumstances, the local international organisations and embassies had strongly advised against long-distance travel within Armenia.

The Evaluation team closely monitored the evolution of the situation and carefully arranged the logistic of the Data Collection Phase, in full coordination with the Project team and the ADA staff, in order to avoid any possible risk and, at the same time, to carry out the foreseen activities in the most effective way. The Evaluation team also studied the content of the document Risk management in projects and programmes of ADA (ver. 14/10/2021) and implemented the recommendation.

Another risk associated with travelling was associated with the fact that the visits had to be organised in the middle of the month of November, when the weather conditions could have been severe, especially for traveling in the northern regions. To moderate this risk, we have rented a car equipped with winter tyres and driven by an expert driver. We also monitored the weather forecast, on a daily basis, before taking off the road.

The potential risk of positivity bias of in the representatives of the public sector and CSOs and Project beneficiaries interviewed presenting an overly positive or optimistic view of the Project’s performance and portraying an overly positive image of their achievements, was moderated through the triangulation of the information received against physical evidence and other objective variables. For example, during the interviews and in the surveys, the respondents were be asked to provide in their answers, next to each quantitative scoring, also a brief qualitative justification for it.

To overcome or mitigate the risk of poor or lack of confidentiality and anonymity of the interviewees the Evaluation team has carefully explained the purpose and scope of the evaluation, promised confidentiality for shared data, and emphasized that possible personally identifiable information would remain confidential and would not be shared beyond to any third party.

The risk of accessibility of local and national government representatives and project stakeholders in general was mitigated by anticipating the questions in writing (mainly for the representatives of the main public bodies), and by planning interviews well in advance to accommodate their schedules.

In some cases, the Evaluation team made repeated efforts to schedule interviews with these stakeholders.

The careful analysis of the above-mentioned risks and the measures that we adopted to moderate their effects allowed to carry out the filed mission without any inconvenience of any kind occurring.

4 FINDINGS

4.1 Relevance

EQ 1: To what extent are the objectives of the EU-GAIA project still valid for the partner country, the partner organisation and the beneficiaries? (Especially considering the impact of COVID-19 and the 2020 war over Artsakh.)

1 - The EU-GAIA Project's objectives align with and complement the Government of Armenia's development priorities and strategic vision.

The objectives of the EU-GAIA project demonstrate strong alignment with Armenia's current and prospective policies related to agriculture, environmental protection, and rural development. This alignment is evident in the correlation between the project's goals and the objectives of the 10 current operational State Support Programmes for Agriculture, which are approved by the GoA within the framework of the Strategy of the Main Directions Ensuring Economic Development in the Agricultural Sector of the Republic of Armenia for 2020-2030. These programmes, forming a crucial part of Armenia's agricultural policy framework, share common themes with EU-GAIA, such as enhancing agricultural productivity, promoting sustainable practices, and improving rural livelihoods.

While Organic Agriculture (OA) is an integral part of the EU-GAIA project, it is not a primary focus for the Armenian government due to concerns about its sustainability without public financial support. However, individual private agribusinesses are encouraged to pursue organic practices if they deem it a worthwhile investment.

The COVID-19 pandemic and the 2020 war over Artsakh have not diminished the relevance of the EU-GAIA project's objectives. On the contrary, the project's immediate response, such as the supply of legume seeds to the Northern Regions and the inclusion of food security issues, has helped to mitigate the impact of these events.

The war of September 2023 and the subsequent displacement of approximately 100,000 people from Artsakh to other regions of Armenia have further emphasised the relevance of the EU-GAIA project. A significant portion of the Internally Displaced Persons (IDPs) from Artsakh are from rural backgrounds, with many having agricultural expertise. The project's objectives align with the government's efforts to integrate these IDPs into Armenia's economy, particularly in the agricultural sector.

2 - The EU-GAIA Project has influenced regional agricultural strategies. Despite some limitations in action plans and budget allocations, these strategies are guiding the sector towards adopting greener and more sustainable practices, contributing to the sector's sustainability and profitability.

The project has established effective collaboration with both national and local government levels. Policy dialogues at the Advisory Committee level and informal consultations at the working group level have been instrumental in supporting the alignment between the project's and the government priorities. The ongoing Regional Agricultural Strategies for the three Northern Regions (Lori, Shirak, Tavush), developed in collaboration with the project, are a testament to this effective partnership. However, these regional strategies are not supported by dedicated Action Plans and related budget allocations, which may limit the achievement of the identified specific objectives.

3 - The EU-GAIA Project's objectives are in line with the growing consumer demand for high-quality agricultural products.

There is a growing demand among consumers, especially in urban and developed areas, for better and healthier products. This trend is not limited to organic products but includes a general preference for higher quality agricultural produce. The EU-GAIA project's emphasis on improving product quality aligns with this emerging consumer trend.

4 The project is a key contributor to Armenia's agricultural development, addressing both immediate needs and long-term goals.

For direct beneficiaries like farmers and agribusinesses, green agriculture, natural resource management, and climate change are critical concerns. The project addresses these by providing knowledge on better agricultural inputs, soil fertility maintenance, and more efficient use of natural resource, particularly water.

EQ 2: How relevant is the support provided and planned to the beneficiaries, agribusinesses, demonstration sites, post-harvest facilities in promoting green agriculture?

5. - The EU-GAIA project has excelled in identifying and adapting to the evolving needs of stakeholders, providing a broad spectrum of relevant support.

Alignment with Stakeholder Needs: The EU-GAIA project demonstrated a remarkable ability to identify and adapt to the evolving needs of its stakeholders. The overwhelming majority of survey responses indicated that the project not only accurately recognized these needs at its inception but also adapted effectively as these needs evolved. This was evident in the wide range of support provided, from infrastructural improvements to educational and branding initiatives.

6. - The support provided has effectively met the unique requirements and challenges in promoting green agriculture, leading to significant improvements.

This statement is evidenced by the positive feedback received during field visits and survey responses, indicating a universal recognition of the project's impact. The support provided by the EU-GAIA project was highly effective in meeting the specific requirements and challenges of beneficiaries. Participants reported significant positive changes, including improved agricultural practices, increased efficiency and productivity, and enhanced market competitiveness. This underscores the project's success in addressing the multifaceted aspects of green agriculture.

7. - The EU-GAIA project has significantly contributed to the promotion of green agriculture in Armenia.

The success can be attributed to its effective identification and adaptation to the evolving needs of beneficiaries, its ability to address specific agricultural challenges, and its alignment with ongoing policy development efforts. Although the survey responses did not provide detailed data on the project's direct impact on local authorities and policy-making, the EU-GAIA project's initiatives are in line with national policies. This alignment suggests that the project has potentially influenced policy development in this area. The project's emphasis on sustainable agricultural practices likely supports and complements the Armenian government's efforts to develop and implement green agriculture policies.

4.2 Effectiveness

EQ 3: To what extent has the EU-GAIA project achieved its outcome(s)? In this context, it should be considered to what extent have the outcomes contributed to results in environmental, gender and social inclusion?

8. SO1 - The Project has contributed to produce consistent outcomes in terms of policy, legal and institutional environment conducive to green, inclusive, and right-based agriculture development.

The Evaluation Team has reviewed the relevant documents produced at both national and regional level in the three Northern pilot regions (see Annex 5 “Bibliography”). The Project has substantially contributed to produce the Regional Agricultural Development Strategies for the three Northern Marzes and to improve/finalise normative documents, among which, the laws on Agricultural Activities, Law on Organic Agriculture and Law on Seed and Plan Material. The related capacity building activities have involved 480 people (of which 61% women), largely exceeding the target value of 300. Participants were gathered from the most relevant institutions, including; MoE, CARC, ANAU and their regional colleges, the Food Safety Inspection body, etc.

The Project has facilitated the establishment of an effective policy dialogue on green agriculture between the policymakers of the GoA and the other stakeholders of the sector in the form of Sectoral Working Groups (WG). These are active fora where stakeholders are called upon to participate through formal and informal meetings, for consultative purposes. The effect of this is evident in the

content of the current 10 Operational Programmes implemented by the MoE that address more and more environmental issues, considering also aspects of gender and social inclusion.

9. SO1 - The lack of autonomy in managing directly the funds by the regional respective governments have partially reduced the effectiveness of the implementation of the regional strategies.

The regional strategies are not associated to an Action Plan supported by a financial allocation; therefore, any initiative cannot be governed autonomously by the regions but is managed under the schemes and the central budget of the Ministry of Economy.

10. SO1 - The objective of promoting systematic linkages among education, science, extension services and agribusinesses remains partially unresolved.

The Project has certainly addressed the need to improve the flow of technical information and has enhanced the related capacities at research and academic level. The Project has also established a strong relationship and collaboration with ANAU, the regional colleges and several training institutions (e.g. ICARE, Green Lane, etc.), contributing also to their further growth. In addition, best practices in agricultural extension services in the EU were presented. On the other hand, these efforts have not resulted yet in a consolidated scheme that better connects research and practice, and it is capable of boosting innovation and knowledge flows in a systematic way.

11. SO2 - Project awareness and capacity building activities have created and enhanced propensity of the operators to move toward the adoption of greener technologies in the pilot regions. The support provided to seed breeders and producers has had a positive effect also on improving the food security of the country.

The number of agribusinesses that have access to green technologies and practice for the selected value chains is in line with the target value of 180 but the percentage of women beneficiaries of the SAP is slightly lower than the target (ca. -15%). The response to the 3 calls has been very high and this shows that there is a good propensity of the sector to moving toward the adoption of greener technologies in the pilot regions. It is important to point out that several participating agribusinesses have organised open days to showcase their operations as well as that the participation at the events organised at the demonstration sites has been high. The support provided to seed breeders and producers has had a positive effect also on improving the food security of the country.

12. SO3 - The results obtained in supporting selected agribusinesses, in terms of improved competitiveness, efficiency and access to inputs, equipment, infrastructure and services, are evident for all five value chains. On the other hand, there is scope to promote a more systematic approach of green practices at agribusinesses level including concepts of circular economy, waste management etc.

The Logframe indicators show an increase in production volumes that, in the surveyed agribusinesses and based on their declarations is more than 3 times higher than the target set (+45% vs. 15%). Although these figures are certainly positive, we have observed that there is still scope to increase the competitiveness of the supported agribusinesses through the introduction of a more systematic approach. For example, we saw that in a certain farm the use of the equipment supplied by the Project has improved and made more environmentally sustainable some soil operations. On the other hand, some farmers keep producing only one crop (e.g. cereal monoculture) and have not introduced any crop rotation in their farms. Therefore, the observed increase, in terms of production volume, may not occur in the subsequent years at the same level due to these negative agronomic practices.

13. SO4 – The Project has continued, and further enhanced, the excellent work done under the OASI Project. In particular on procuring better equipment and production techniques and improving their marketing through branding, packaging and labelling and establishing new market linkages. On the other hand, the organic agricultural sub-sector remains a very marginal reality in Armenia.

The Project activities have produced remarkable results in terms of designing and implementing the support scheme for selected organic producers, supporting them through branding, packaging and labelling and facilitating their market linkages both domestically and internationally. On the other

hand, the positive and evident effects have been basically limited to the selected agribusinesses that is, and remains, a "small word" compared to the reality of the Armenian agricultural sector. Therefore, the implicit object to expand the scope of the OASI Project to also include better employment conditions and facilitate the further extension of organic agriculture and its potentials was not achieved and the effects remain at pilot scale. The indicators quantified in the monitoring system related to the increase of the production and sales volume of selected organic agribusinesses (+ 81,6% and +166% respectively) appear to be too optimistic in relation to the possible improvements produced by the Project activities and not consistent with the indicator related to the increase in income that shows only a modest increase of +0,79%

The assessment of the achievement of the outcome related to the Specific Object 4 on Organic Agriculture requires reconsidering some assumptions that were indicated in the DoA of the Project that have demonstrated to be partially wrong. In particular, the DoA states that: i) the emerging organic agriculture sector is a priority of the GoA; ii) OA is considered an attractive business opportunity among farmers; iii) the number of organic farmers has increased as well as their productivity; and iv) the market for organic product has been strengthened.

Our observations indicate that:

- OA is not a priority of the GoA that has no plans to support it directly. During our meeting at MoEc it was clearly stated that none of projects supported in the Action Plan for the sector aims at providing any form of support to OA producers and those agribusinesses that intend to be certified are free to do so but at their own cost. Conversely, food safety is regarded by GoA as a high priority, but the two things not necessarily go together.
- OA is considered a priority only for those farmers who can or aim to access organic markets abroad. Organic Armenia, the organic producers' association, established under the OASI project, has only 20-30 members and the number has not grown in recent years. On the other hand, the consumers' demand for quality food product is growing, both in the main cities and in the rural areas, and the consumers' propensity to pay a premium price for these products is manifest. The demand for techniques and technologies that are more sustainable for the environment and more profitable in the medium/long-term for their companies is also increasing among farmers.
- According to EcoGlobe, the only Armenian organic certifying company, the number of agribusinesses requesting OA certification has sharply decreased in the last years. Also, some of the SAP beneficiaries stated that they keep their certification, even if it represents a major cost for them, only because it is requested by the Project and, if and when the Project will not be there, they would not invest in renovating the certification further.
- The domestic demand for certified organic products is almost negligible and the number of Armenian agribusinesses is limited to some wineries and few fresh and processed fruit export traders.

14. Cross-cutting issue - The Project outcomes have largely contributed to results in environmental, gender and social inclusion but no major achievements have been observed in the implementation of the ILO conventions on labour rights by the GoA as anticipated in the DoA.

Environmental concern has grown among the farming and agribusiness community, public and private institution and local administrations as assessed at the meetings held during the field visits. The gender and social inclusion issues have been correctly addressed by the Project, in line with the recommendations presented in the EGSIM report. The Project initiated a sensitive campaign specifically addressed to women based on 15 success stories about women leaders in green agriculture who are beneficiaries of the EU GAIA project to enhance their level of involvement.

The synergetic effect of the EU-GAIA Project and its predecessor, the OASI Project, have led to the established of a cohesive community of stakeholders who share and sustain the cross-cutting objectives of environmental, gender, and social inclusion that these two projects have aimed to achieve. The use of the word "community" wants to underline the fact that the largest part of the Project stakeholders has a strong feeling of participation and want to contribute to the changes that the Project has intended to produce. The comprehensive composition and the size of this community indicate that, in Armenia, there is a "critical mass" of stakeholders that aim to contribute to elevate

the agricultural and agribusiness sector for the seek of preserving the environment, produce better and healthier food and provide a decent income to the rural populations.

EQ 4: What were the major factors influencing the achievement or non-achievement of the out-come(s)/outputs? (Also consider any factors which were possibly beyond the control of the EU-GAIA project) and to which extent have these factors been addressed by the project, i.e. in terms of steering measures?

Preamble

During the rather long period of implementation of the Project three major external factors have occurred that have influenced the implementation of the Project activities, namely: i) the outbreak of the COVID-19 epidemic and the resulting lockdown and other limitations on travel and operations; ii) the conflict over Nagorno-Karabakh/Artsakh of September-November 2020; and iii) the last conflict over the same region of September 2023 and the consequent exodus of tens of thousands of Armenians fleeing out of the Lachin corridor as part of a large flight of Nagorno-Karabakh Armenians.

15. - The Project, in close collaboration with the Advisory Board, has promptly adopted effective measures to face and overcome the consequence of the two major external factors, i.e. outbreak of the COVID-19 epidemic and the conflicts over Nagorno-Karabakh/Artsakh, that could have hampered the achievement of the set objective.

In relation to the COVID-19 outbreak, the Project Advisory Board decided to allocate 465,000 EUR to mitigate the negative impact of the crisis and to commission a study of the possible rapid response to the impact on food supply in the country. The most significant activities were the provision of support packages, up to Euro 2.000, to organic agribusinesses and the supply to farmers of the Northern Regions of legume seeds to overcome the problem of shortage of these inputs and ensure a certain level of food production for the incoming season, especially for the most vulnerable groups. The Project also adopted remedial measures to overcome the problems related to the limitation to travel both domestically and internationally, mostly related to the positioning of Armenian organic and green agricultural products in markets abroad. The synergetic effect of the EU-GAIA Project and its predecessor, the OASI Project, have led to the established of a cohesive community of stakeholders who share and sustain the objectives, in terms of environmental, gender, and social inclusion that these two projects have aimed to achieve. The use of the word “community” wants to underline the fact that the largest part of the Project stakeholders has a strong feeling of participation and want to contribute to the changes that the Project has intended to produce. The comprehensive composition and the size of this community indicate that, in Armenia, there is a “critical mass” of stakeholders that aim to contribute to elevate the agricultural and agribusiness sector for the seek of preserving the environment, produce better and healthier food and provide a decent income to the rural populations. The provision of technical and advisory service and capacity building was organised through on-line events and technical meetings.

As indicated in the Mid-Term Evaluation, the restrictions imposed by the COVID-19 outbreak resulted in slowing down the process of procurement and delivery of the assets assigned to SAP beneficiaries. The time lost was recovered during the subsequent months, including the extended period.

The above-mentioned conflict of 2020 and the consequent tensions between Armenia and Azerbaijan, imposed some limitation to travelling to the Eastern part of the country. In particular in the Tavush marz, large portions of land, where the most fertile pastures are located, were not accessible for animal grazing with and evident effect on the sheep value chain. In relation to this limitation, the Project has introduced a pilot hydroponic unit to produce grass to increase the availability of the feed for the animals. On the contrary, the Project could not do much in terms of direct humanitarian assistance to the refugees because this function was outside its intervention boundaries and scope.

The socio-economic catastrophic effects of the exodus of tens of thousands of ethnic Armenians from Nagorno-Karabakh/Artsakh region resulting from the conflict of September 2023 still have to emerge in all their tragedy. On the other hand, this factor has already led the international donor community to rethink the cooperation strategy with Armenia. In particular, the EU has decided to redirect their budget from technical projects to humanitarian aids through the provision of an

untagged envelop to the GoA to help facing the resulting financial burden. The main effect for the Project has been related to the plans for a possible large multi-annual follow-up intervention, focussing on Climate Smart Agriculture (CSA), which was already in pipeline. In particular, the Project team had already prepared a concept note and there were advanced discussions between the EU, ADC and other possible international donors for the allocation of the funds to finance it. At the moment of the preparation of the present evaluation report ADA/ADC is considering the allocation of a budget of Euro 1 Mln. to finance a follow-up phase of the EU-GAIA Project until May 2025. This phase, could be seen as a bridging period, allowing to continue the support provided by the EU-GAIA Project and maintaining the positive momentum relating to the themes of the Project**.**

16. - The level of participation of the stakeholders in the Project activities has been very high. This has largely and positively contributed to achievement of the set targets and results.

The participation of the stakeholders to the meetings of Project Advisory Board has always been high and qualified, as demonstrated by the list of participants and the outputs described in the minutes of the meetings. Therefore, this body has demonstrated effective in acting as Project steering and governing body.

Regional and national authorities have also actively collaborated with the Project in the working groups established to enhance and harmonise the policy, legislation and regulatory framework and instruments for green agriculture related sectors. The resulting documents and minutes of the meetings proof evidence of tis positive collaboration.

Potential beneficiaries and SAP beneficiaries have actively participated to information and training events. The number of applications presented under the calls was high. This has allowed to select and support a set of projects that have been of a good quality and with high demonstration potential.

ANAU, the regional colleges, research institutions and laboratories, CSOs and training centres have had an active role and have demonstrated a pro-active attitude in proposing possible activities to the Project. The Evaluation team visited several projects implemented at their locations.

17 - The consolidated experience of the EU-GAIA Project team, most of which was already part of the OASI Project, allowed to speed up the implementation of the activities and effectively mobilise the project input/resources.

More than half of the staff of the EU-GAIA Project had previously worked for the OASI Project. Therefore, they were already familiar with the Project aims and objectives, procedures as well as the institutional framework. The SAP procedures implemented by the EU-GAIA Project were directly derived from those already elaborated and implemented for the OASI Project.

EQ 5.1: How has the project contributed to capacity development of all stakeholders as planned?

18. - The project has significantly enhanced stakeholders' abilities to understand and effectively apply green agriculture techniques, reflecting a successful capacity development effort.

During the filed mission and the visit to selected beneficiaries we have observed that through the hands-on training and comprehensive knowledge transfer, participants have adopted more efficient and eco-friendly practices in their agricultural endeavours. As assessed during the meetings with both trainers and trainees and, as declared by the addressees of the survey: i.) farmers and agribusiness representatives, have demonstrated measurable improvements in their abilities to understand and apply green agriculture techniques; ii.) the project’s capacity development and training programmes have been crucial in providing stakeholders with the skills and knowledge on sustainable agriculture; and iii) new knowledge and skills have led to a significant positive impact on sustainable agricultural practices among stakeholders

19. - The project's capacity-building activities have been crucial in providing stakeholders with essential skills and knowledge for sustainable agricultural practices, demonstrating a strong focus on practical application.

Survey results from the EU-GAIA project clearly indicate that stakeholders have significantly increased their knowledge and are actively applying green agriculture techniques in their daily

operations. The training sessions, focusing on sustainable agricultural practices, have successfully translated theoretical knowledge into practical skills. This increased proficiency is evident in the stakeholders' enhanced ability to implement environmentally friendly farming practices, contributing to the project's overall goals of promoting sustainable agriculture.

20. - There is a clear and effective alignment between the capacity development initiatives and the project's objectives, leading to a notable positive impact on the adoption of sustainable agricultural practices among participating stakeholders.

As indicated by the results of the survey, many participants to the capacity development programme expressed strong agreement that the capacities developed during the project would continue to be relevant and applied beyond the training period. This demonstrates a lasting impact of the project on stakeholders' agricultural practices. The majority of stakeholders reported frequently applying the green agriculture techniques learned from the training sessions. This frequent application suggests that the training content was highly relevant and has been effectively integrated into their daily agricultural practices**.**

EQ 5.2: Is the knowledge that is disseminated during the trainings applied in practice?

21. - A significant portion of stakeholders, particularly those in direct agricultural roles, have applied the training content in their daily operations, showcasing the practical effectiveness of the training sessions.

The hands-on and practical approach of the training sessions has led to a significant application of the learned knowledge in the stakeholders' daily operations as observed in, practically, all the selected beneficiaries visited.

22. - The practical application of training outcomes has yielded tangible benefits, including enhanced agricultural productivity and sustainability.

The gross margin calculations, carried out by the UNDP team, has shown an increased productivity in the analysed sample of beneficiaries. The introduction of good agricultural practice, such as the crop rotation, has certainly also enhanced the agricultural sustainability.

23. - There is scope to promote a more systematic approach of green practices at agribusinesses level including concepts of circular economy, waste management etc.

While the knowledge disseminated during the training covered a wide spectrum of agronomic practices, there is scope to promote a more systematic approach to green practices at the agribusiness level. During field visits to selected beneficiaries, we observed several cases where, alongside the application of good green practices, other practices were detrimental to the environment or harmful to the health of the operators. This included improper waste management and inefficient irrigation systems, highlighting the need for a more holistic approach to implementing sustainable practices.

4.3 Sustainability

EQ 6.1: How did the project ensure sustainability of its planned results?

24. - The EU-GAIA Project has created a favourable policy, legal and institutional environment and capacity development measures that ensure the sustainability of the achievements and the pursuing of its objective also after the Project completion.

The Project has directly supported local governments in the three Northern marzes to develop their Regional Agricultural Strategies until 2030. These strategies incorporate elements of food security, environmental sustainability, gender equality, and social inclusion, continuing to support the EU-GAIA objectives in the medium term. However, the lack of operational action plans with specific financial allocations may limit the effectiveness of these policies.

At National Level, a total of 10 multi-annual State Support Programmes for Agriculture of the Ministry of Economy is currently implemented and financially supported. Although none of them is providing financial means directly to green or organic agricultural activities, they are all inspired by the objective to boost agricultural production and processing, ensuring that products meet international quality and safety standards and preserve the environment. The stakeholders of the EU-GAIA Project were

consulted during the formulation of these projects by the Ministry through the above-mentioned working groups.

25. - The support provided to the organisations and institutions participating to the Project activities have contributed to reform and empower them to enable them to better contribute to the promotion of a greener and more inclusive agricultural sector in Armenia.

The capacity development component of the EU-GAIA Project has supported the further development of research and training organizations, such as ANAU, which has advanced its teaching, training, and research areas with a stronger focus on advanced technologies (drones, satellite image and big-data management) to improve productivity and reduce the impact of agriculture. Similarly, private organisations such as Green Lane and ICare, by collaborating with the EU-GAIA Project have developed training courses that will continue to be offered also after the Project completion. Similar considerations can be done for the research institutes and laboratories (e.g. Seed Selection Institute, Food Safety Lab, etc.) that have started to provide badly needed services that were not available before (soil analyses, food contaminants, chemical residues, etc.).

26. - The EU-GAIA Project has mobilised a "*critical mass*" of stakeholders, including women, around the concept of greener and more sustainable agriculture as well food quality and safety.

The number of people, organisations and institutions involved by the Project is definitely large. In our opinion, it represents a critical and cohesive mass that is likely to ensure the sustainability of the Project outcomes and continue the promotion of greener and more sustainable agricultural practices after the project.

EQ 6.2: How likely is the sustainability of the project's results?

27. - The EU-GAIA Project, together with its predecessor OASI Project, have created a fertile ground for the sustainability of its results in the medium-term.

The sustainability strategy of the EU-GAIA Project was implicitly included in its design where it was foreseen that the Project team would have acted "only" as a facilitator, while national/local partners and beneficiaries (public, private and civil society organisations) would have been the implementers and owners of all activities.

One key element of the sustainability of the Project results is related to the demonstration that boosting green agriculture may lead to enhancing local value added, reducing production costs and meeting the consumers' demand for better and heathier food.

28. - The sustainability strategy of the EU-GAIA Project has demonstrated to be successful thanks to the managerial capacities of the Project team to maintain the full control of the strategy and to pursuing the Project objectives.

The success of the above-mentioned approach is not always granted. The difficulty is related to the need for the Project to maintain in the team's hands the overall management of the activities without losing control of the strategy, while delegating the implementation to third parties. All these requires strong managerial capacities and skills, a cohesive and committed Project team and an effective monitoring system.

29. - In relation to the 4 Specific Objectives (Outcomes).

The Evaluation team has observed evidence of results indirectly generated by the Project outside its present technical and geographical scope in relation to the Project Specific Objectives. For the SO1, we have already mentioned the 10 projects currently implemented and financially supported under the State Support Programmes for Agriculture of the Ministry of Economy. For SO2 we have observed agribusiness beneficiaries of the SAP that, later on, have replicated the investment with their own financial resources. For SO3, we have observed agribusinesses that, after having seen the results achieved by the SAP beneficiaries, have decided to replicate the investment in their location (e.g. purchase of several heads of Blanche sheep breeds).

The sustainability of the results achieved under the SO4 seems less evident. From what we have observed, the motivation to maintain organic production certification disappears from the moment in which the entrepreneur considers the balance between the advantages of certification with its costs.

While for large fruit processors and traders and large wineries the international market might provide an incentive to them to get their products certified as organic, for the largest majority of those operating in the domestic market such certification, no matter if it is related to EU, Russian or Armenian standards, does not represent a marketing tool worth its cost.

30. - The transition towards a greener agriculture still requires a systematic and holistic approach supported by the provision/availability of advanced technical and managerial knowledge (boosting knowledge and innovation flows, building bridges between practice and research, etc.)

It should be emphasized that the observed replications of project results, particularly within SO3 and even more so within SO4, are rather sparse exercises. That is, some good practices that have proven effective in one farm or agribusiness operation have been replicated elsewhere. This is certainly positive but not sufficient to affirm that a transition process from traditional agriculture to green/sustainable agriculture is already underway and is sustainable.

We have observed several cases of even farmers that obtained the certification of organic for their products that still adopt non-sustainable practices in their farms simply because they lack some knowledge. This was the case of the several examples illustrated under the finding 5.2.3.

The reason for this is that the transition towards a greener agriculture, to be fully realized, requires a systematic and holistic approach supported by the provision/availability of advanced technical and managerial knowledge.

4.4 Follow-up

Introduction

As far as the EQ 7.1 and 7.2 are concerned, these cannot be associated to any of the OECD/DAC criteria and imply a more comprehensive answer that provides the basis for the design of the envisaged follow-up intervention. In particular these questions are more relevant for an ex-ante evaluation that is normally carried out in parallel with the activities of the team in charge of the project design. For this reason, and for the reason that the new follow-up project has been suspended and it is no longer in pipeline, in this section, we have only briefly presented our findings. In parallel, as anticipated in the Inception Report, we have produced a Concept Paper that, building on the results and related lessons learned of the EU-GAIA Project presents a set of recommendations for future follow-up interventions in the country, focusing on Climate Smart Agriculture (CSA).

EQ 7.1: What are the opportunities for a next phase to build upon the achievements of the EU-GAIA project in the field of Climate Smart Agriculture?

31. - Armenia could largely benefit from the widespread introduction of CSA methodologies, including adaptation and mitigation measures and techniques. By adopting a CSA project in the three target Northern regions of Shirak, Lori and Tavush, the expected and emerging results can be scalable and replicable in other regions across the country.

An analysis of the EU-GAIA project's achievements indicates that Armenia, given its geographic and climatic conditions, could benefit significantly from the widespread introduction of CSA methodologies.

32. - The evidence of results achieved by the EU-GAIA may pave the road for a growing attention on CSA in the near future in line with the Armenia sector strategy for the incoming period.

Even though the EU-GAIA project has already introduced some CSA methodologies, for which the obtained results are promising, a specific Project focusing on CSA could lead to increase sustainable productivity, strengthen farmers' resilience, and support food security at sub-national/national levels.

EQ 7.2: Review, in light of the findings of the evaluation, the quality of the Theory of Change of the next phase of the EU-GAIA project, and the causal logic chain connecting inputs, outputs and outcomes and aspired impact.

33. - The Concept Note produced by the EU-GAIA Project team for the next phase of the intervention, which includes also a draft Logical Framework, although preliminary, already frame in a rather comprehensive manner the intervention logic and the objectives that the follow-up phase will be pursuing

The Concept Note for the next phase of the EU-GAIA project includes a draft Logical Framework that comprehensively frames the intervention logic and objectives. The Evaluation team has reviewed this note and has provided recommendations based on our evaluation findings and knowledge of CSA.

34. - The Theory of Change proposed in the Concept Note for the next phase of the EU-GAIA project is conductive to achieve the planned outcomes and prospected impact, at the medium/long term.

The objectives set for the EU-GAIA follow-up IL are ambitious and require the adoption of an holistic approach and a relatively long time to achieve the planned outcomes. We consider worth to begin the activities at pilot level, possibly in the same regions where the EU-GAIA Project has concentrated its activities and has already achieved visible results, before extending the operations to a larger geographical area in the country

5 CONCLUSIONS

The conclusions presented in this section are related to the findings presented in the previous chapter. In order to trace this correlation conclusions are presented here below in table format associated with the, one or more, relevant findings. Please note that the number of the findings may not be always consecutive because some of the conclusions may apply to more than one finding.

Conclusions	Related findings
Relevance	
C.1. - The EU-GAIA Project has faced the challenge of remaining relevant amidst dynamic external factors such as the COVID-19 pandemic and the 2020 and 2023 conflicts over Artsakh. We have assessed that the Project objectives remain highly relevant to Armenia's evolving needs, government priorities, consumers' demand and the challenges posed by these significant external factors. The project's objectives align with national policies and address the concerns and needs of direct and indirect beneficiaries. The project's continued relevance is a testament to its effective design and implementation strategy as well as the functional dialog with the Project stakeholders as demonstrated in the proceedings of the Advisory Board.	From 1 to 4
C.2. - The EU-GAIA Project played a crucial role in addressing and enhancing the relevance of support provided to various stakeholders in promoting green agriculture in Armenia. The project successfully identified and adapted to the evolving needs of its beneficiaries, efficiently addressed specific challenges, and likely contributed positively to the development of the sector policy in Armenia. In essence, the EU-GAIA project has played a key role in advancing greener and more sustainable and inclusive agriculture in Armenia, not only through direct support to stakeholders but also by potentially influencing broader policy initiatives in the agricultural sector.	From 5 to 7
Effectiveness	
C.3. - The project inputs and the resources deployed as well as the activities implemented have produced most of the planned results in line, or even exceeding the level of the indicators set in the logical framework. The Project has contributed to produce consistent outcomes in terms of policy, legal and institutional environment. The latter, together with the capacity development activities and the SAP, have fostered the development of a more inclusive, and right-based agriculture sector and have enhanced the propensity of the operators to move toward the adoption of greener technologies and production systems. The results obtained in supporting selected agribusinesses for all five value chains, in terms of improved competitiveness, efficiency and access to inputs, equipment, infrastructure and services, are evident. The project results have contributed, to a large extent, to the achievement of the first three expected outcomes. The Project results in relation to Objective 4, Organic Agriculture, have continued, and further enhanced, the excellent work done under the OASI Project. On the other hand, for Organic Agriculture the positive and evident effects have been basically limited only to the selected agribusinesses. Contrary to what was indicated in the Project DoA, due to a very modest internal demand for organic products and a high cost of certification, the certified organic agricultural sub-sector remains a very marginal reality in Armenia, limited to some wineries and few fresh and processed fruit export traders.	From 8 to 13
C.4. – In relation to the cross-cutting objectives, the Project outcomes have largely contributed to results in environmental, gender and social inclusion. The level of environmental concern has grown among the farming community and local administrations at national level, in the pilot regions and across the selected value chains. The level and quality of women's participation in Project activities has been as planned or higher and social inclusion issues have been correctly addressed by the Project, in line with the recommendations presented in the EGSIM report. As for the latter issue, no major achievements have been observed in the implementation of the ILO conventions on labour rights by the GoA as anticipated in the DoA.	14

Conclusions	**Related findings**
C.5. - The Project governance structure demonstrated being solid, cohesive and capable of dealing with unforeseen events by implementing effective measures to moderate the consequences of major factors influencing the achievement of the Project outcomes and outputs such as the consequences of the outbreak of the COVID-19 epidemic and the conflicts over Nagorno-Karabakh/Artsakh.	15
C.6. - The high level of participation of the private and public stakeholders in the Project activities has led to an effective collaboration between the Project team, the counterpart authorities at national and regional level and the other institutions and private organisations in the country. This has largely contributed to the achievement of the set targets and results. This positive attitude of the stakeholders was also the result of the fact the EU-GAIA project could avail of the good relationships and consolidated methodologies established by the predecessor EU-OASI Project and was able to further develop them.	16 and 17
C.7. – The Project capacity development component has provided the stakeholders with novel skills and knowledge on sustainable agriculture and has enhanced their capabilities to understand and apply green and more sustainable agriculture techniques.	From 18 to 20
C.8. - The majority of stakeholders reported that they have frequently applied the newly acquired green techniques and have observed significant positive impacts on their agricultural activities. This suggests that the offer was highly relevant, has been effectively integrated and would have a lasting impact in terms of productivity and sustainability on their agricultural practices.	From 21 to 22
C.9. – There is still scope to promote a more systematic approach to green practices at the agribusiness level because it was often observed that, alongside the application of good green practices, farmers and agribusiness representatives still adopt other practices that may result detrimental to the environment or harmful to the health of the operators.	23
Sustainability	
C.10. - The support provided to the organisations and institutions participating to the Project activities have contributed to reform and empower them to enable them to continue contributing to the promotion of a greener and more inclusive agricultural sector in Armenia.	24 and 25
C.11. - The EU-GAIA Project has created a favourable policy, legal, and institutional environment and has mobilised a *"critical mass"* of stakeholders, including women, around the concept of greener and more sustainable agriculture as well food quality and safety that ensure the sustainability of the achievements and the pursuing of the Project objectives also after the Project completion.	26
C.12. - The sustainability strategy of the EU-GAIA Project has demonstrated to be successful thanks to the managerial capacities of the Project team to maintain the full control of the strategy and to pursuing the Project objectives through a well-designed accounting and monitoring system and related procedures.	27 and 28
C.13. – The sustainability is highly probable for the Project results obtained under the first 3 SOs. On the contrary, the sustainability of the results achieved under the SO4 seems less promising for the simple reason that, for the majority of the agribusinesses the cost of the certification is higher than the benefits.	29
C.14. – Although the EU-GAIA Project, and its predecessor the EU-OASI Project, have paved the road to the introduction of greener and more sustainable agricultural practices, there is still the need to boost into the sector further advanced technical and managerial knowledge to fill the gap.	30
Follow up	
C.15. – The evidence of the results achieved by the EU-GAIA lay concrete basis for an increasing focus on Climate-Smart Agriculture (CSA) in Armenia. The Armenian agricultural sector could significantly benefit from the widespread introduction of CSA methodologies already in the so-called Bridging Phase (from April 2023 to April 2024) that is supposed to anticipate the full-scale follow-up Project.	31 and 32

Conclusions	**Related findings**
C.16. - The Concept Note produced by the EU-GAIA Project team for the next phase of the intervention provide a rather comprehensive preliminary framework for the follow-up project focussing on CSA that describe the causal logic chain connecting inputs, outputs and outcomes and likely impact.	33
C.17 - The objectives set for the EU-GAIA follow-up Intervention Logic are ambitious and require the adoption of a holistic approach and a relatively long time to achieve the planned outcomes. An activity carried out at a pilot level, with targeted investments, could better respond to the need to introduce new and complex concepts such as those linked to CSA. Working at the same three pilot regions where the EU-GAIA Project has already established excellent relationships with the local administrations and the private agribusinesses may facilitate the undertaking.	34

6 RECOMMENDATIONS

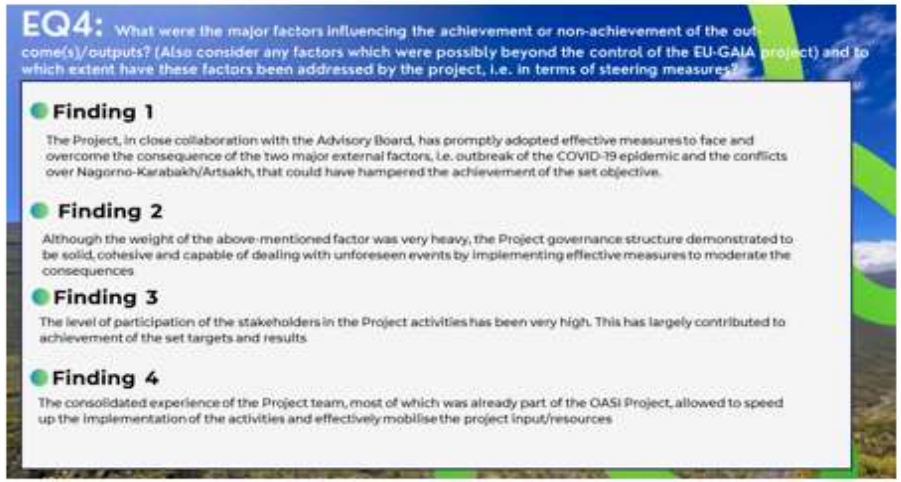
The recommendations provided here below are focused on the possible Project follow-up, which, at the moment, seems to take the form of a Bridging Project that could last until May 2025. We see this follow up as an initiative addressing the prospected subject of Climate Smart Agriculture, that is a growing need for the climate sensitive and vulnerable Armenian agriculture, but it shall also consolidate the results achieved by the EU-GAIA Project in promoting greener and more environmentally sustainable practices.

Recommendations	Related conclusions
R.1. - The functional policy and operational dialog with the Project stakeholders, including national and regional authorities, farmers' and agribusinesses' representatives, educational and training institutions and CSO representatives should be continued. This should have the following twofold objective of promoting and further disseminating the positive results achieved at pilot scale on sustainable agriculture as well as identifying the most effective measures to address the subject of Climate Smart Agriculture in Armenia for future interventions.	C.1, C.5, C.11, C.16 and C.17
R.2. - The Project shall continue supporting environmental related issue in the agricultural sector shifting the focus from punctual interventions to a systemic approach. In our view, there is scope/opportunity to introduce concepts of waste management, circular economy, sustainable agricultural practices, and environmental collective responsibility. For the latter, in view of the recent developments of the LEADER approach in the country, thanks also to the EU and ADA supported interventions, the theme of environmental collective responsibility could be handled jointly with the projects dealing with LEADER.	C.4, C.9
R3 - The Project shall continue supporting gender and social issues in the agricultural sector. We see two main areas where gender and social issues may require further attention. **R.3.1 -** The first area is related to the drafting and implementation of improved labour related regulations and their enforcement in agriculture, in line with the ILO conventions on labour rights, as they were anticipated in the DoA. These improved regulations may include, but not be limited to, the problems and rights related to female, youth and disadvantaged people employment in the agricultural sector and to the labour safety regulations. **R.3.2 -** The second area is linked to the support provided to internally displaced people in Nagorno-Karabakh. Since this subject is the most crucial socio-economic issue that the country is facing at the moment and a large proportion of the IDP have substantial knowledge and background in the agricultural sector, the Project could contribute by providing capacity building measures to support their initiation of sustainable agricultural activities.	C.4, C.9
R.4. - In our view, one key factor that may influence the further achievement of the EU-GAIA Project objectives would be the availability of better connection between research and practice capable of boosting innovation and knowledge flows in a systematic way. The Project should consider supporting the establishment a new and efficient system that can replace the previous outdated extension service. We see the results of the work done by the Project with the Armenia National Agricultural University (ANAU) of Yerevan, the regional colleges and the research organisations as a positive starting point in this direction because these institutions are a potential valid and solid source of technical and managerial information. On the other hand, it is clear the need to build a system that transforms this knowledge into practical advice and conveys it to end-users.	C.9, C.10, C.14, C.17
R.5 - Although there is clear evidence of the Project sustainability, mostly related to the strong ownership of the results by the stakeholders and the empowerment of the local institutions and private organisations, it is advisable to disseminate the knowledge and good practices, which emerged in the pilot regions and with selected beneficiaries, targeting other regions and other beneficiaries. Among these new targets it should also be considered the IDPs flowing from Nagorno-Karabakh most of which have a background in the agricultural sector.	C.7, C.15

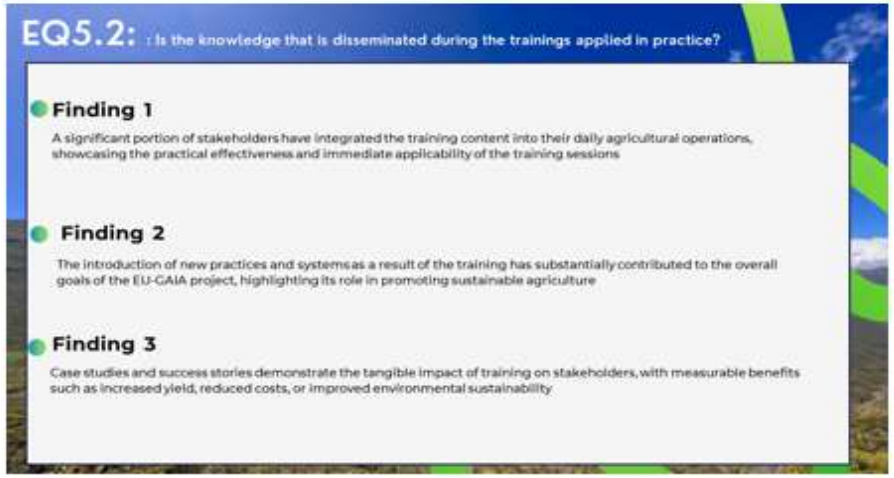
Recommendations	**Related conclusions**
R.6 - The Project Bridging Phase (up to May 2025) shall be focused on the identification of strategic priorities, the definition of target groups and stakeholders, and creation of the platform for agreements between partners and actors involved in the value chains under the prevailing climatic conditions. These are all necessary preconditions to pave the road for a larger project on CSA. Summary of immediate interventions proposed during the EU-GAIA bridging phase: 1. Introduce the concept of CSA pilot programme in the three northern regions (Shirak, Lori, Tavush), possibly consider also other pilot regions; 2. Establish farmer's pilot plots based on crop prevalence in the target regions, and selected value chains; 3. Establish a pilot agrometeorological network in the pilot regions covering the pre-selected value chains. The number of agro-meteorological stations will be determined after conducting a field survey to define the local topography and micro-climate; 4. Establishment of online agro-meteorological platform and test of the first early warning system on pest and diseases; 5. Conduct a training programme, along with training of trainers to advisors/extension service providers; 6. Conduct field days in the pre-selected pilot plots to demonstrate CSA techniques and practices during in-season and off-season periods. A specific report on "CSA in Armenia" is attached to this report as Annex 2 with more detailed recommendations on this subject.	C.15, C.16

ANNEX 1 - Presentation of preliminary findings

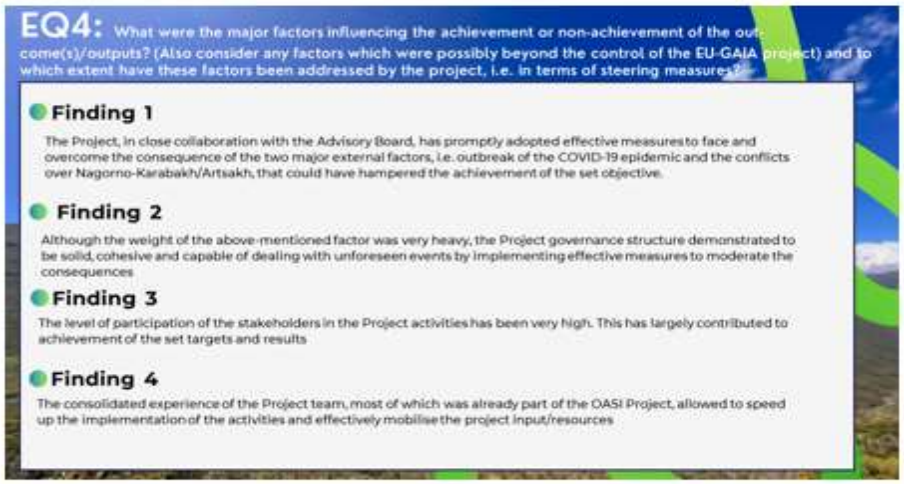

EQ3: To what extent has the EU-GAIA project achieved its outcome(s)? In this context, it should be considered to what extent have the outcomes contributed to results in environmental, gender and social inclusion?
Finding 1
SO1 - The Project has contributed to produce consistent outcomes in terms of policy, legal and institutional environment conducive to green, inclusive, and right-based agriculture development. This was observed at both national and regional level in the three Northern pilot regions. The lack of autonomy in managing directly the funds by the regional respective governments have partially reduced the effectiveness of the implementation of the regional strategies.
Finding 2
SO2 - Project awareness and capacity building activities have created and enhanced propensity of the operators to move toward the adoption of greener technologies in the pilot regions. The support provided to seed breeders and producers has had a positive effect also on improving the food security of the country
Finding 3
SO3 - The results obtained in supporting selected agribusinesses for all five value chains in terms of improved competitiveness, efficiency and access to inputs, equipment, infrastructure and services are evident. On the other hand, there is scope to promote a more systematic approach of green practices at agribusinesses level including concepts of circular economy, waste management etc
Finding 4
SO4 – The Project has continued, and further enhanced, the excellent work done under the OASI Project. I particular on procuring better equipment and production techniques and improving their marketing through branding, packaging and labelling and establishing new market linkages. On the other hand, the organic agricultural sub-sector remains a very marginal reality in Armenia


EQ4: What were the major factors influencing the achievement or non-achievement of the outcome(s)/outputs? (Also consider any factors which were possibly beyond the control of the EU-GAIA project) and to which extent have these factors been addressed by the project, i.e. in terms of steering measures?
Finding 1
The Project, in close collaboration with the Advisory Board, has promptly adopted effective measures to face and overcome the consequence of the two major external factors, i.e. outbreak of the COVID-19 epidemic and the conflicts over Nagorno-Karabakh/Artsakh, that could have hampered the achievement of the set objective.
Finding 2
Although the weight of the above-mentioned factor was very heavy, the Project governance structure demonstrated to be solid, cohesive and capable of dealing with unforeseen events by implementing effective measures to moderate the consequences
Finding 3
The level of participation of the stakeholders in the Project activities has been very high. This has largely contributed to achievement of the set targets and results
Finding 4
The consolidated experience of the Project team, most of which was already part of the OASI Project, allowed to speed up the implementation of the activities and effectively mobilise the project input/resources

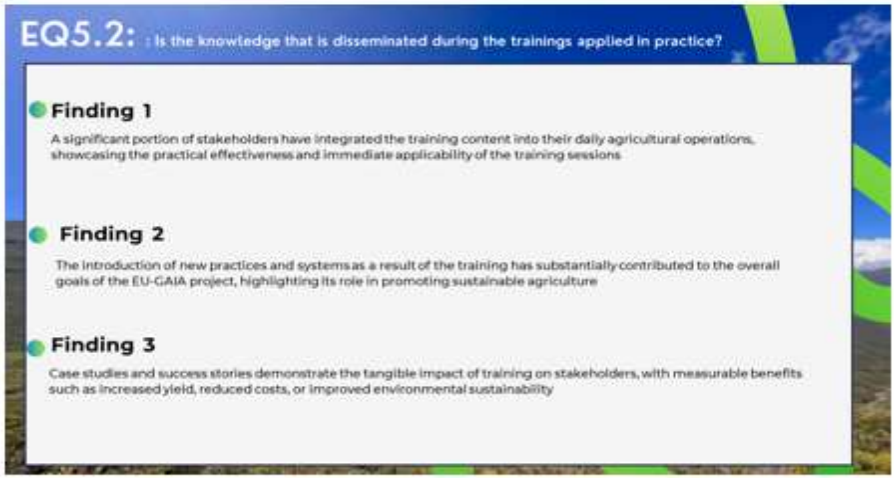

EQ5.1: How has the project contributed to capacity development of all stakeholders as planned?
Finding 1
The project has significantly enhanced stakeholders' abilities to understand and effectively apply green agriculture techniques, reflecting a successful capacity development effort..
Finding 2
The project's capacity-building activities have been crucial in providing stakeholders with essential skills and knowledge for sustainable agricultural practices, demonstrating a strong focus on practical application.
Finding 3
There is a clear and effective alignment between the capacity development initiatives and the project's objectives, leading to a notable positive impact on the adoption of sustainable agricultural practices among participating stakeholders.


EQ5.2: : Is the knowledge that is disseminated during the trainings applied in practice?
Finding 1
A significant portion of stakeholders have integrated the training content into their daily agricultural operations, showcasing the practical effectiveness and immediate applicability of the training sessions
Finding 2
The introduction of new practices and systems as a result of the training has substantially contributed to the overall goals of the EU-GAIA project, highlighting its role in promoting sustainable agriculture
Finding 3
Case studies and success stories demonstrate the tangible impact of training on stakeholders, with measurable benefits such as increased yield, reduced costs, or improved environmental sustainability


EQ3: To what extent has the EU-GAIA project achieved its outcome(s)? In this context, it should be considered to what extent have the outcomes contributed to results in environmental, gender and social inclusion?
Finding 1
SO1 - The Project has contributed to produce consistent outcomes in terms of policy, legal and institutional environment conducive to green, inclusive, and right-based agriculture development. This was observed at both national and regional level in the three Northern pilot regions. The lack of autonomy in managing directly the funds by the regional respective governments have partially reduced the effectiveness of the implementation of the regional strategies.
Finding 2
SO2 - Project awareness and capacity building activities have created and enhanced propensity of the operators to move toward the adoption of greener technologies in the pilot regions. The support provided to seed breeders and producers has had a positive effect also on improving the food security of the country
Finding 3
SO3 - The results obtained in supporting selected agribusinesses for all five value chains in terms of improved competitiveness, efficiency and access to inputs, equipment, infrastructure and services are evident. On the other hand, there is scope to promote a more systematic approach of green practices at agribusinesses level including concepts of circular economy, waste management etc
Finding 4
SO4 – The Project has continued, and further enhanced, the excellent work done under the OASI Project. I particular on procuring better equipment and production techniques and improving their marketing through branding, packaging and labelling and establishing new market linkages. On the other hand, the organic agricultural sub-sector remains a very marginal reality in Armenia


EQ4: What were the major factors influencing the achievement or non-achievement of the outcome(s)/outputs? (Also consider any factors which were possibly beyond the control of the EU-GAIA project) and to which extent have these factors been addressed by the project, i.e. in terms of steering measures?
Finding 1
The Project, in close collaboration with the Advisory Board, has promptly adopted effective measures to face and overcome the consequence of the two major external factors, i.e. outbreak of the COVID-19 epidemic and the conflicts over Nagorno-Karabakh/Artsakh, that could have hampered the achievement of the set objective.
Finding 2
Although the weight of the above-mentioned factor was very heavy, the Project governance structure demonstrated to be solid, cohesive and capable of dealing with unforeseen events by implementing effective measures to moderate the consequences
Finding 3
The level of participation of the stakeholders in the Project activities has been very high. This has largely contributed to achievement of the set targets and results
Finding 4
The consolidated experience of the Project team, most of which was already part of the OASI Project, allowed to speed up the implementation of the activities and effectively mobilise the project input/resources


EQ5.1: How has the project contributed to capacity development of all stakeholders as planned?
Finding 1
The project has significantly enhanced stakeholders' abilities to understand and effectively apply green agriculture techniques, reflecting a successful capacity development effort..
Finding 2
The project's capacity-building activities have been crucial in providing stakeholders with essential skills and knowledge for sustainable agricultural practices, demonstrating a strong focus on practical application.
Finding 3
There is a clear and effective alignment between the capacity development initiatives and the project's objectives, leading to a notable positive impact on the adoption of sustainable agricultural practices among participating stakeholders.


EQ5.2: Is the knowledge that is disseminated during the trainings applied in practice?
Finding 1
A significant portion of stakeholders have integrated the training content into their daily agricultural operations, showcasing the practical effectiveness and immediate applicability of the training sessions
Finding 2
The introduction of new practices and systems as a result of the training has substantially contributed to the overall goals of the EU-GAIA project, highlighting its role in promoting sustainable agriculture
Finding 3
Case studies and success stories demonstrate the tangible impact of training on stakeholders, with measurable benefits such as increased yield, reduced costs, or improved environmental sustainability

ANNEX 2 - List of interviewed partners (anonymised)

Date	Position/ Role	Sex	Location	Comment
13-nov-23	Counsellor, Head of Office	Male	Coordination Office for the Technical Cooperation of the Austrian Embassy, Yerevan	
13-nov-23	Deputy Head of Office	Female	Coordination Office for the Technical Cooperation of the Austrian Embassy, Yerevan	
13-nov-23	ADA/EU - GAIA Team Leader	Male	ADA/EU - GAIA Office	
13-nov-23	ADA/EU - GAIA Team	Male	ADA/EU - GAIA Office	
13-nov-23	ADA/EU - GAIA Team	Male	ADA/EU - GAIA Office	
13-nov-23	ADA/EU - GAIA Team	Female	ADA/EU - GAIA Office	
13-nov-23	ADA/EU - GAIA Team	Female	ADA/EU - GAIA Office	
13-nov-23	ADA/EU - GAIA Team	Female	ADA/EU - GAIA Office	
13-nov-23	ADA/EU - GAIA Team	Male	ADA/EU - GAIA Office	
13-nov-23	ADA/EU - GAIA Team	Female	ADA/EU - GAIA Office	
13-nov-23	ADA/EU - GAIA Team	Female	ADA/EU - GAIA Office	
14-nov-23	Post - Harvest Facility	Male	Zovuni, Kotayk	Fresh and dried fruits
14-nov-23	SAP beneficiaries	Male	Aragyugh, Kotayk	High value fruits and vegetables/ Doctor
14-nov-23	SAP beneficiary	Male	Yeghvard, Kotayk	quince production (1 ha), and applied for organic certification
14-nov-23	SAP beneficiary	Female	Kamaris, Kotayk	Kamaris poultry farm near the house / eggs
14-nov-23	President Green Lane	Female	Green Lane NGO	Green Training Centers - Demo site
15-nov-23	Creo	Female	Creo Office	Service Contractor, Marketing, awareness
15-nov-23	Creo	Female	Creo Office	Service Contractor, Marketing, awareness

Date	Position/ Role	Sex	Location	Comment
15-nov-23	Alvarium / Non - Gravity - Director	Female	Non Gravity LLC office	Service Contractor, Marketing, branding
15-nov-23	Alvarium / Non - Gravity	Female	Non Gravity LLC office	Service Contractor, Marketing, branding
15-nov-23	Alvarium / Non - Gravity	Female	Non Gravity LLC office	Service Contractor, Marketing, branding
15-nov-23	Ecoglobe Director	Male	Ecoglobe	Organic certification Service provider
15-nov-23	Coordinator of EU - GAIA UNDP Component	Male	UNDP	ADC co - funded component is completed
15-nov-23	Project Assistant of EU - GAIA UNDP Component	Female	UNDP	ADC co - funded component is completed
15-nov-23	President	Female	Dzoragbyur, Kotayk	Green Training Centres - Demo site
16-nov-23	SAP beneficiary	Male	Aparan reservoir area	Bee Corner
16-nov-23	SAP beneficiary	Female	Aparan reservoir area	Bee Corner
16-nov-23	SAP beneficiary	Female	Agarak, Aragatsotn	"Green dream" - organic high value greens production in greenhouse
16-nov-23	SAP beneficiary	Male	Byurakan, Aragatsotn	Wine production of organic honey
16-nov-23	Rector	Male	Armenian National Agrarian University (ANAU)	Strategic/sectoral educational institution
17-nov-23	Deputy Marzpet	Male	Lori marz Territorial administration office/ Vanadzor	Support in the development of modelling - marz scale project on green agriculture with provision of agri - drone for promotion of precision agriculture services in Lori marz
17-nov-23	Head of Dpt Agriculture Lori - Regional Working Group	Female	Lori marz Territorial administration office/ Vanadzor	Support in the development of modelling - marz scale project on green agriculture with provision of agri - drone for promotion of precision agriculture services in Lori marz
17-nov-23	Field Officer	Female	Vanadzor, EU - GAIA/ADA Field Office in Yerevan near Marzpetaran	

Date	Position/ Role	Sex	Location	Comment
17-nov-23	Field Officer	Male	Vanadzor, EU - GAIA/ADA Field Office in Yerevan near Marzpetaran	
17-nov-23	Deputy Director, Vanadzor Agri - college	Female	Vanadzor Agricultural college (ANAU brunch)	Technical support in the establishment of soil analysis laboratory/chemical classroom in the Vandzor college with provision of high - tech precision equipment for soil analysis
17-nov-23	"Famma Food" LLC	Male	Vanadzor, Lori	Post - Harvest Facility - food preserves
17-nov-23	SAP beneficiary	Male	Vanadzor, Lori	Greenhouse
17-nov-23	SAP beneficiary	Male	Lernapat, Halavar, Lori	Honey Farm
20-nov-23	Agricultural Expert, Shirak - Regional Working Group (RWG) leader	Male	Shirak marz Territorial administration office/ Gyumri	Establishment of Shirak RWG - platform, policy dialog/development of new Regional/Shirak Green Agri - development strategy and modeling marz scale project on green agriculture.
20-nov-23	Ashotsk community leader, board member of Ashotsk community service CBO	Male	Ashotsk community service CBO	Support in the development of modeling community scale project on green agriculture with technical support in provision of stone picking machine.
20-nov-23	Demo machinery	Male	Karnut, Akhuryan, Shirak	potatoes, wheat
20-nov-23	SAP beneficiary	Male	Arevik - Akhuryan, Shirak	Strawberry - Greenhouse
20-nov-23	“Maqi " sheep breeding genetic center	Male	Azatan, Shirak	new services in the centre, including veterinary services, artificial insemination, and pregnancy diagnosis.
20-nov-23	Wageningen University and Research, Wageningen Economic	Female	Zoom	Education / Implementation Partner/Research
21-nov-23	Deputy Marzpet, Tavush - Regional Working Group (RWG) leader	Male	Tavush Regional Administration	Establishment of Tavush RWG - platform, policy dialog/development of new Regional/Tavush Green Agriculture development strategy and

Date	Position/ Role	Sex	Location	Comment
				modelling marz scale project on promotion of hydroponic greenfodder production.
21-nov-23	SAP beneficiary	Male	Ijevan, Tavush marz	Mushroom production
21-nov-23	Demo site	Male	Hovq, Tavush marz	Green Training Centre
22-nov-23	Managing Partner, AM Partners Consulting Company	Male	AM Partners office	Service Contractor / Research Partner (Value - Chains, Extension services., etc)
22-nov-23	Demo site	Male	ICARE, Proshyan, Kotayk Marz	Implementation partners / Demo site / Training organizer
22-nov-23	Former Executive Director of Economic Research and. Development Support	Male	Zoom	Service Contractor, Research
22-nov-23	Third - Party Funding Unit, ADA	Female	Zoom	ADA, Headquarters, Vienna, Austria
22-nov-23	Director	Male	CARD Office	Centre for Agribusiness & Rural Development (CARD)
22-nov-23	USAID projects coordiantor	Female	CARD Office	Centre for Agribusiness & Rural Development (CARD)
22-nov-23	Deputy Minister of Economy	Male	MoE, Deputy Minister's office	Ministry of Economy of the Republic of Armenia (MoE); Co - Chair of Advisory Board, Government counterpart
23-nov-23	EUD International Aid/Cooperation Officer	Male	Yerevan / EUD office	Delegation of the European Union to Armenia
23-nov-23	Director of "Republican Veterinary - Sanitary and Phytosanitary Centre of La - boratory Services" SNCO	Male	Republican Veterinary and Phytosanitary Laboratory Services Center SNCO (Food Safety Inspection Body of The Government of The Republic Of Armenia)	Capacity development training program to members of "Republican Veterinary - Sanitary and Phytosanitary Centre of Laboratory Services" SNCO to introduce and implement multidisciplinary methods for the detection and validation of residual quantities of pesticides in agri - food

Date	Position/ Role	Sex	Location	Comment
23-nov-23	Food Safety Inspection Body, ArmLab	Female	Republican Veterinary and Phytosanitary Laboratory Services Center SNCO (Food Safety Inspection Body of The Government of The Republic Of Armenia)	Capacity development training program to members of “Republican Veterinary - Sanitary and Phytosanitary Centre of Laboratory Services” SNCO to introduce and implement multidisciplinary methods for the detection and validation of residual quantities of pesticides in agri - food
23-nov-23	Center for Agricultural Research and Certification (CARC)	Male	Merdzavan community, Armavir marz	Technical support in the establishment of new seeds quality testing laboratory with provision of high - tech precision equipment.
23-nov-23	President	Female	Zoom	Organic Armenia Association
23-nov-23	Grant Scheme Manager	Female	ADA/EU - GAIA Office	SAP
23-nov-23	Gender Mainstreaming partners	Female	Erebuni Plaza Business Center's	Gender Mainstreaming partners
23-nov-23	Gender Mainstreaming partners	Female	Erebuni Plaza Business Center's	Gender Mainstreaming partners
24-nov-23				

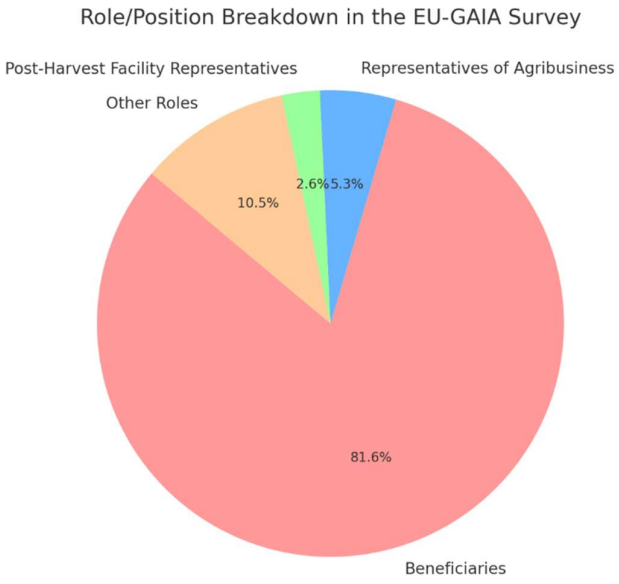
ANNEX 3 – Report on results of the surveys (EQ 2, EQ 5.1 and EQ 5.2)

Survey Analysis for EQ2:
How relevant is the support provided and planned to the beneficiaries, agribusinesses, demonstration sites, post-harvest facilities in promoting green agriculture?

Introduction:
The survey for Evaluation Question 2 (EQ2) was part of the "EU Green Agriculture Initiative in Armenia" final evaluation. Conducted using the Alchemer platform, it ran from November 25th to December 12th in Armenian and English. Out of 112 targeted recipients, 16 emails were invalid, and 39 responses were received (3 in English, 36 in Armenian), resulting in a 40% response rate. The survey aimed to assess the relevance of support provided to beneficiaries, agribusinesses, demonstration sites, and post-harvest facilities in green agriculture. Participants included representatives from these groups, who provided feedback on the project's support effectiveness.

Diverse Stakeholder Engagement and Agricultural Practices
The survey collected responses from 39 participants, reflecting various roles in the EU-GAIA project:

- Beneficiaries: 31 responses
- Agribusiness Representatives: 2 responses
- Post-Harvest Facility Representatives: 1 response
- Other Roles: 4 responses



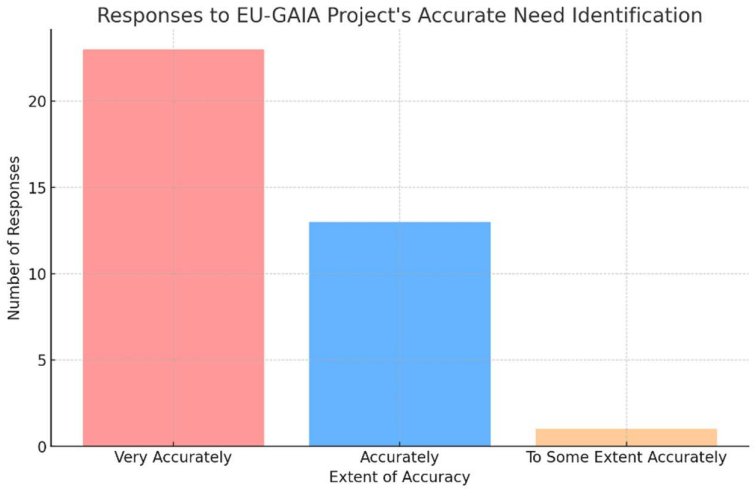
Visualization 1 displays a pie chart of the participants' roles.

The survey responses covered a range of agricultural activities, including beekeeping, fruit and vegetable production and processing, strawberry and tea production, winemaking, fig garden establishment, and recycling. These responses illustrate the diversity of the agricultural sector in Armenia and the project's reach across different areas.

Question 1: To what extent do you believe the EU-GAIA project accurately identified the evolving needs of your entity regarding promoting green agriculture at the project's inception?
Question 1 asked participants to assess how accurately the EU-GAIA project identified their needs in promoting green agriculture at the project's inception. The responses were as follows:

- 'Very Accurately': 23 participants

- 'Accurately': 13 participants
- 'To Some Extent Accurately': 1 participant

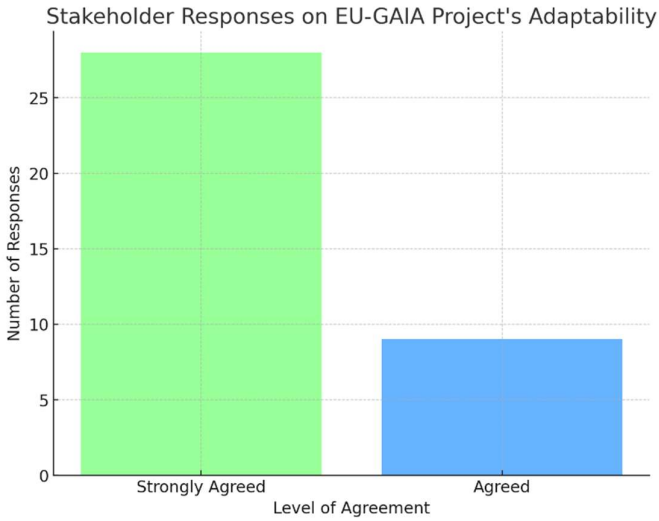


Visualisation 2: Bar chart presents the distribution of responses to this question, indicating the majority view on the project's accuracy in need identification.

Question 2: During the course of the project, do you feel the EU-GAIA project adapted to the changing needs of your entity regarding promoting green agriculture?

Question 2 sought feedback on whether stakeholders felt the EU-GAIA project adapted to changing needs in promoting green agriculture during the project. The responses were:

- 'Strongly Agreed': 28 participants
- 'Agreed': 9 participants



Visualization 3: This bar chart displays the survey responses, showing the majority's perspective on the project's adaptability in meeting changing needs in green agriculture.

Question 3: Briefly explain which specific need the EU-GAIA Project has addressed and how the Project adapted to the changing needs:

In response to Question 3, the EU-GAIA project participants reported on specific needs addressed by the project, highlighting its adaptability and diverse impacts across Armenia's agricultural sectors. Key areas of impact included:

1. **Support for SMEs and Start-Ups**: Assistance in business development, particularly for new ventures in green agriculture.

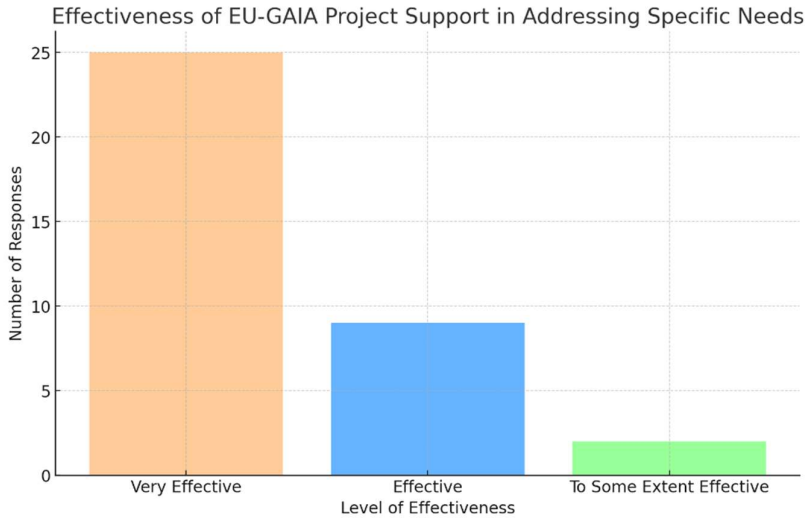
2. **Technological and Infrastructure Enhancements**: Introduction of advanced technologies and infrastructure improvements in agriculture.
3. **Equipment Provision and Process Optimization**: Supplying essential agricultural equipment and streamlining processes.
4. **Educational and Training Programs**: Providing knowledge and skills development for sustainable agricultural practices.
5. **Focus on Organic and Eco-Friendly Practices**: Emphasis on organic production and green technologies.
6. **Market Expansion and Networking**: Facilitating market access and partnership development.
7. **Support for Diverse Agricultural Practices**: Encouraging a range of activities, from beekeeping to the cultivation of medicinal plants.

These responses indicate the project's comprehensive approach to addressing various agricultural needs and its effectiveness in adapting to changing requirements.

Question 4: How effectively do you think the support provided by the EU-GAIA project addressed the specific requirements and challenges your entity encountered in promoting green agriculture?

Question 4's survey responses on the EU-GAIA project's effectiveness in addressing green agriculture challenges showed:

- 'Very Effective': 25 respondents
- 'Effective': 9 respondents
- 'To Some Extent Effective': 2 respondents



Visualization 4: A bar chart showing the distribution of these ratings, with most participants finding the support very effective.

This data indicates the project's success in meeting stakeholders' needs in green agriculture.

Question 5: Please provide specific examples or insights on how and why the support was (or was not) suited to the needs of your entity:

Question 5 elicited feedback on the EU-GAIA project's alignment with participants' needs, revealing its broad impact in Armenian agriculture. Key areas included:

1. Expansion and diversification into areas like organic production.
2. Infrastructure upgrades and technological enhancements.
3. Transition to organic practices, particularly in beekeeping.
4. Addressing equipment and labor challenges through mechanization.
5. Educational and market support for skills development and market expansion.
6. Tailored solutions for specific agricultural needs.
7. Increases in production volumes and efficiency.

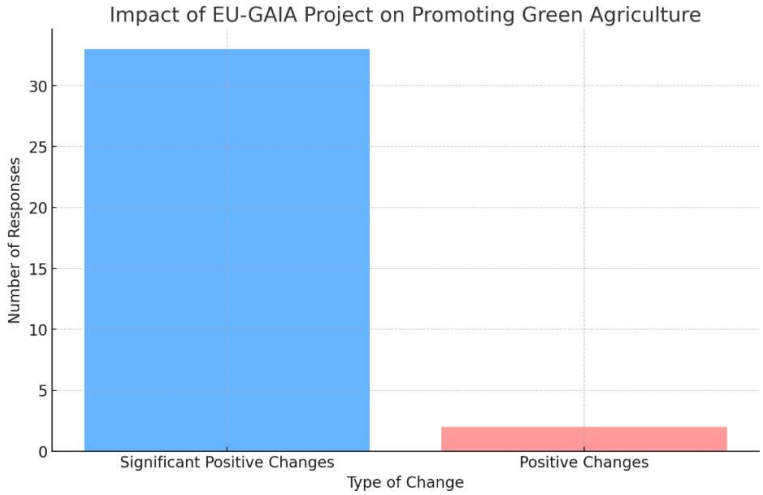
8. Enhanced storage and processing capabilities.
9. Support for transitioning to organic production.

These responses reflect the project's effectiveness in meeting varied agricultural needs.

Question 6: Has the support from the EU-GAIA project resulted in any observable positive changes in promoting green agriculture within your entity?

Question 6's survey responses about the EU-GAIA project's impact on green agriculture showed all respondents observing positive changes. Specifically:

- 'Significant Positive Changes': 33 participants
- 'Positive Changes': 2 participants



Visualization 5: A bar chart depicts these responses, indicating a majority experienced significant positive changes due to the project's support.

This data highlights the project's effective role in advancing green agriculture practices.

Question 7: Please provide any additional comments or feedback on the support provided by the EU-GAIA project and which changes has it produced within your entity:

Question 7 elicited additional comments on the EU-GAIA project's support, revealing diverse positive impacts in Armenia's agriculture sector. Key areas highlighted included:

1. Improvement in product quality and market competitiveness.
2. Valuable educational and branding support.
3. Provision of essential infrastructure and technical assistance.
4. Notable increases in production and efficiency.
5. Enhanced marketing capabilities and networking opportunities.
6. Tailored support for specific agricultural needs.
7. Significant influence on the development of green agriculture.
8. Emphasis on sustainability and soil health.
9. Direct and targeted support addressing beneficiary needs.
10. Effective resource utilization and cost savings.

These insights underscore the project's comprehensive and strategic support, contributing to a more sustainable and competitive agricultural sector.

Question 8: Please provide any additional comments or feedback on the positive changes that resulted from the support received from the EU-GAIA project to your entity:

The additional comments on the EU-GAIA project's impact revealed significant enhancements in various agricultural aspects. Key outcomes included:

1. Improved reputation and market expansion.
2. Development of infrastructure, boosting agricultural capabilities.

3. Gains in efficiency and productivity.
4. Cost reduction and access to new technologies.
5. Enhanced branding and networking.
6. Shift towards organic production and certification.
7. Training and skill development benefits.
8. Better harvests and income stability.
9. Energy savings and access to new markets.
10. Accelerated business growth.

These outcomes underscore the project's holistic impact on Armenia's green agriculture sector.

CONCLUSION

The conclusion of the EU-GAIA project's final evaluation, focusing on Evaluation Question 2 (EQ2), clearly indicates the project's significant impact in promoting green agriculture in Armenia. It highlights the overwhelmingly positive feedback from various aspects such as infrastructural and technological development, training, and market growth. The positive changes noted by participants, like improved production quality and efficiency, market expansion, and sustainable practices adoption, demonstrate the project's successful alignment with the agricultural sector's evolving needs. This underscores the project's role in advancing green agriculture in the region, fulfilling and surpassing the objectives of EQ2.

Survey analysis for EQ 5.1: "How has the project contributed to the capacity development of all stakeholders as planned?"
and
EQ 5.2: "Is the knowledge disseminated during the trainings applied in practice?"

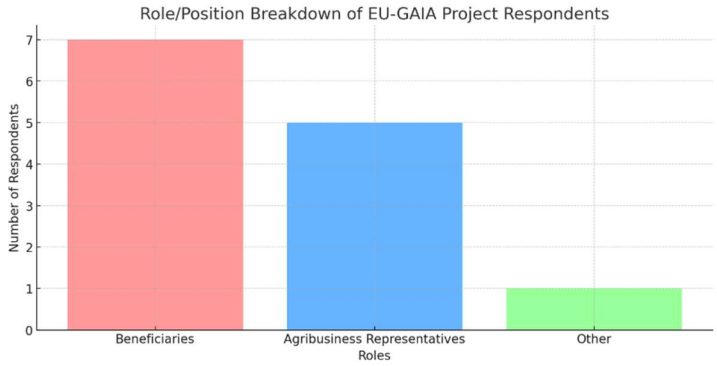
Introduction:

The survey for Evaluation Questions 5.1 and 5.2, part of the "EU Green Agriculture Initiative in Armenia," aimed to assess the project's contribution to capacity development and the practical application of training knowledge. Conducted via the Alchemer platform, the survey targeted 72 stakeholders and received 14 responses, yielding a 30% response rate. The survey focused on understanding the impact on stakeholder capacity (EQ5.1) and the application of training knowledge in practice (EQ5.2). It included questions about participants' roles, sectors, involvement in capacity development activities, skill growth, and application of these skills in green agriculture. Stakeholder feedback was sought to evaluate the effectiveness of the project's training and capacity-building efforts.

Demographic Breakdown: Roles and Agricultural Sectors

The survey for the EU-GAIA project collected responses from 14 participants, indicating a range of roles and sectors in Armenia's agricultural landscape:

- Beneficiaries: 7 responses
- Agribusiness Representatives: 5 responses
- Others: 1 response



Visualization 6: The bar chart shows the breakdown of roles and positions among the respondents, highlighting the number of beneficiaries, agribusiness representatives, and others.

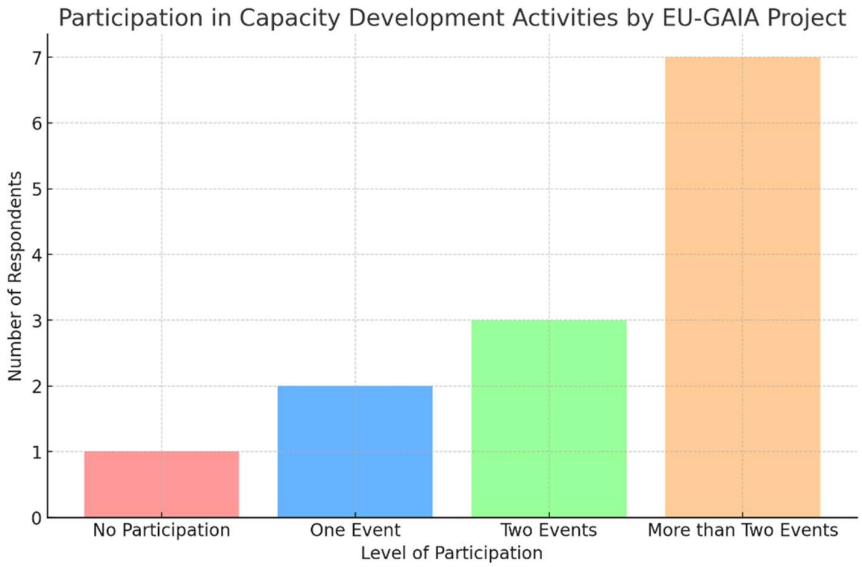
Sectors represented include sheep breeding, vegetable and legume production, veterinary services, primary vegetable production in specific regions, cultivation of non-traditional crops, herbs and tea herbs, and fruits and berries.

Question 1: Participation in Capacity Development Activities

Question 1 on the participation in capacity development activities by the EU-GAIA project shows:

- No Participation: 1 respondent
- Attended One Event: 2 respondents
- Involved in Two Events: 3 respondents
- Participated in More than Two Events: 7 respondents

This indicates varied engagement levels among stakeholders in the project's capacity development initiatives.



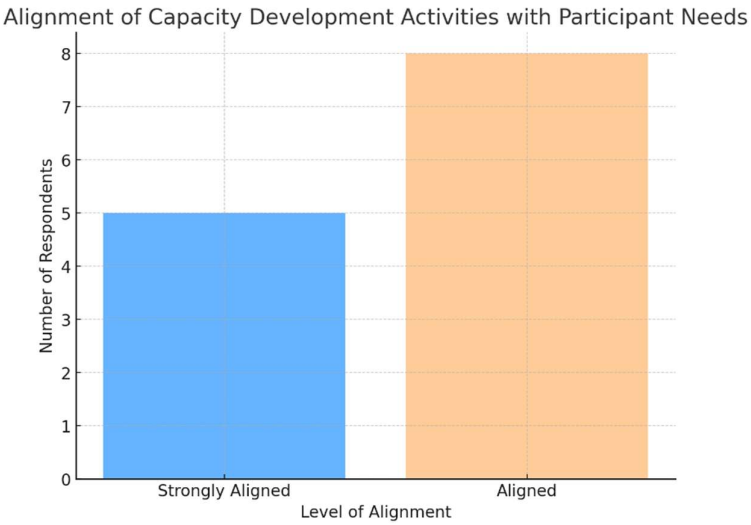
Visualization 7: A bar chart likely categorizes respondents based on their level of participation in these activities, illustrating the diverse involvement of survey respondents in the project's capacity-building efforts.

Question 2: Participation in Capacity Development Activities

Question 2 on participation in the EU-GAIA project's capacity development activities reveals:

- 'Strongly Aligned': 5 respondents felt the activities closely matched their capacity building needs and expectations.
- 'Aligned': 8 respondents believed the activities generally met their expectations and contributed to their capacity development.

This suggests the project's success in aligning capacity development activities with participant needs and expectations.

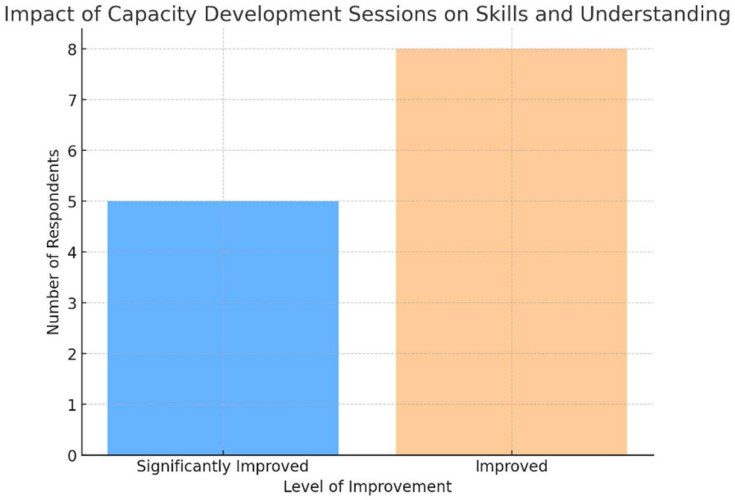


Visualization 8: A bar chart likely displays the distribution of responses, categorizing participants into 'Strongly Aligned' and 'Aligned' groups, reflecting the project's effectiveness in meeting stakeholder requirements.

Question 3: Impact on Skills and Knowledge

Question 3 on the impact of the EU-GAIA project's capacity development sessions on skills and understanding of green agriculture shows:

- 'Significantly Improved': 5 respondents experienced substantial enhancement in their skills and understanding of green agriculture.
- 'Improved': 8 respondents noted improvement in their skills and understanding, indicating beneficial outcomes from the sessions.



Visualization 9: Bar chart likely showing the distribution of these responses, categorizing them into 'Significantly Improved' and 'Improved'.

Question 4: Please, kindly provide examples or insights illustrating how these sessions enhanced your proficiency in green agriculture?

The feedback on the EU-GAIA project's capacity development sessions provided by participants included:

1. Improved practices and efficiency in green agriculture.
2. Adoption of sustainable farming techniques.
3. Enhanced understanding of green agricultural practices.
4. Insights into value chains and food quality certification.
5. Emphasis on natural agricultural processes.
6. Exposure to new technology and branding strategies.

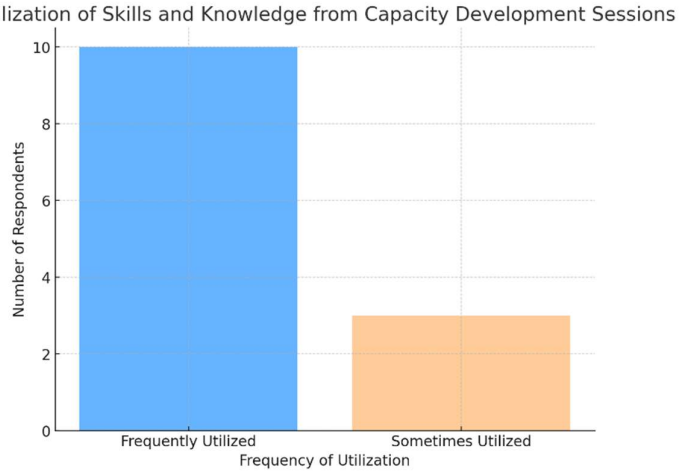
7. Learning from demonstration farms and peer experiences.
8. Modern techniques for pesticide residue detection.
9. Understanding export challenges and solutions.

These responses indicate the practical benefits and diverse impacts of the training sessions.

Question 5: Application and Sustainability of Developed Capacities How often have you utilized the skills and knowledge gained from the capacity development sessions?

Question 5 regarding the application of skills and knowledge from the EU-GAIA project's capacity development sessions shows:

- 'Frequently Utilized': 10 respondents regularly apply the skills and knowledge in their agricultural practices.
- 'Sometimes Utilized': 3 respondents use the skills and knowledge occasionally.



Visualization 10: A bar chart likely depicts the frequency of skill and knowledge application among the respondents, categorized into 'Frequently Utilized' and 'Sometimes Utilized'.

Question 6: Please, elucidate on the nature and frequency of application of the skills and knowledge acquired.

Question 6 on the nature and frequency of application of skills and knowledge from the EU-GAIA project's capacity development sessions indicates diverse usage in agricultural practices. This includes:

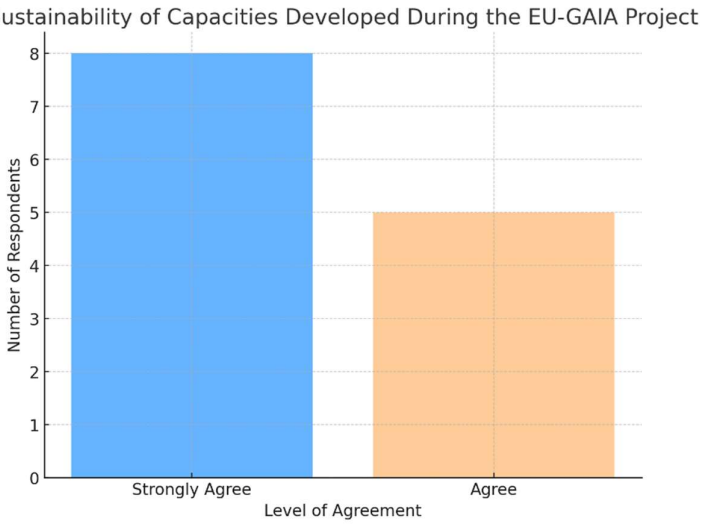
1. Frequent use of composting and organic fertilization techniques.
2. Application of marketing skills in market research and sales.
3. Implementation of planning and agricultural activities.
4. Use of eco-friendly plant nutrition and treatment mixtures.
5. Demonstration and comparison of new and traditional technologies.
6. Regular application in routine farm management.
7. Daily testing for pesticide residues for state control purposes.
8. Application of skills in export and product formation processes.

These insights show the training's practical impact and its integration into various agricultural activities.

Question 7: Do you believe the capacities developed during the project will be sustained beyond the project's duration?

Question 7 asked whether the capacities developed during the EU-GAIA project will be sustained beyond its duration. The responses indicate a positive outlook among the participants:

- 8 respondents strongly agree that the capacities developed will be sustained.
- 5 respondents agree with the sustainability of the capacities.



Visualization 11: Bar chart visualizing the responses to the question about the sustainability of capacities developed during the EU-GAIA project. The chart categorizes respondents into two groups: those who 'Strongly Agree' and those who 'Agree' that the developed capacities will be sustained beyond the project's duration.

Question 8: Please, provide reasons why you agree or disagree.

Question 8 asked participants to provide reasons for their agreement or disagreement regarding the sustainability of capacities developed during the EU-GAIA project:

1. Effective and Helpful Practices: One respondent finds the practices effective and helpful for sustainable agriculture.
2. Timeless Applicability of Knowledge: Another participant believes the knowledge is universally applicable.
3. Technical and Methodological Advancements: The National Agrarian Institute of Armenia has benefited from technical advancements.
4. Observable Results: A participant has observed clear and obvious results from the knowledge.
5. Innovation and Health: Knowledge of green agriculture is seen as important for a healthy life.
6. Expertise of Trainers: The quality of training by knowledgeable professionals enhances applicability.
7. Laboratory Methodological Improvements: Improved laboratory methods facilitate experiments and pesticide residue detection.
8. Preservation of Investments: Participants believe that investments in knowledge and approaches will be preserved in the future.

These reasons reflect the participants' perspectives on the sustainability of the knowledge and skills acquired through the project.

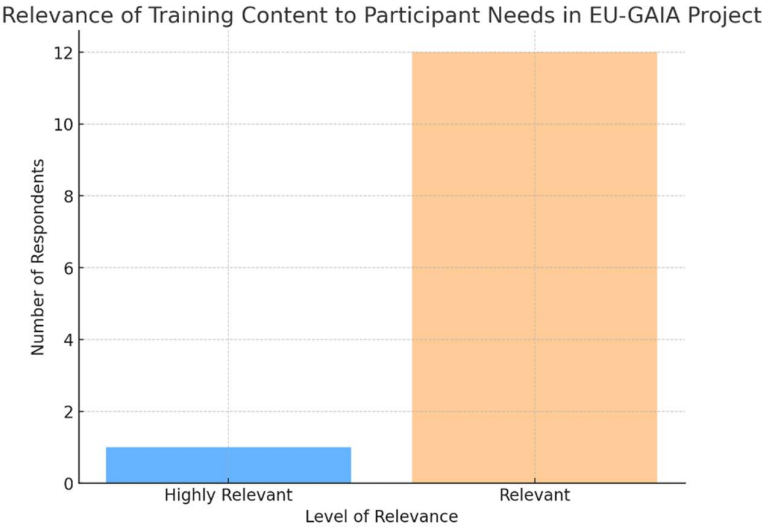
Question 9: Relevance of Training Content

How relevant was the training content to your needs?

The responses to the question about the relevance of the training content to the participants' needs in the EU-GAIA project are as follows:

- 1 respondent described the training content as Highly Relevant to their needs.
- 12 respondents found the training to be Relevant.

This feedback provides insights into the perceived relevance of the training content without any interpretations.



Visualization 12: Bar chart visualizing the responses to the question about the relevance of the training content to participants' needs in the EU-GAIA project. The chart categorizes respondents into two groups: one that described the training content as 'Highly Relevant' and the majority who found it to be 'Relevant'.

Question 10: Could you provide a brief rationale?

The participants provided various rationales for why they found the training content in the EU-GAIA project relevant to their needs. Here's a summary of their explanations without any interpretations:

1. Comprehensive Satisfaction of Requirements: One participant noted that the training content satisfied all their requirements at the time.
2. Well-Organized and Informative Courses: The courses were described as organized, competent, and informative.
3. Applicability in Current Work: The knowledge and skills acquired were directly applied to current work.
4. Alignment with Future Plans: For one respondent, the courses matched their next steps and helped in implementing future plans.
5. Practical Training for Trainers: The availability of training specifically designed for practical trainers enabled quick understanding and application.
6. Two-Stage Training with Expert Selection: The training involved some of Europe's best laboratories and qualified experts in Armenia.
7. Essential Role in Work Field: Another participant emphasized the essential role of the training in their field of work.

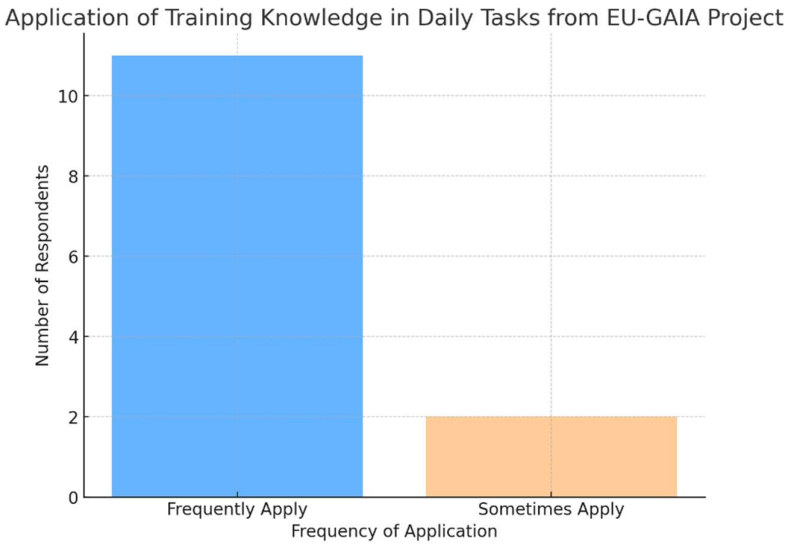
These responses provide insights into the participants' rationales for finding the training content relevant without any interpretations.

Question 11: Application of Training Knowledge

How regularly have you applied the information and insights gained from the training sessions to your daily tasks?

The survey results reveal how participants have incorporated the knowledge and insights acquired from the EU-GAIA project's training sessions into their everyday agricultural activities:

- 11 respondents indicated that they frequently apply the knowledge and insights gained from the training sessions in their daily tasks.
- 2 respondents reported applying the acquired knowledge and insights sometimes in their daily tasks.



Visualization 13: Bar chart visualizing the responses to the question about the regular application of knowledge and insights gained from the EU-GAIA project's training sessions in daily tasks. The chart categorizes respondents into two groups: those who 'Frequently Apply' the knowledge and insights, and those who reported applying them 'Sometimes'.

Question 12: Please, provide examples briefly describing what and how you have applied this knowledge in practice.

The participants of the EU-GAIA project provided various examples illustrating how they have practically applied the knowledge and insights gained from the training sessions:

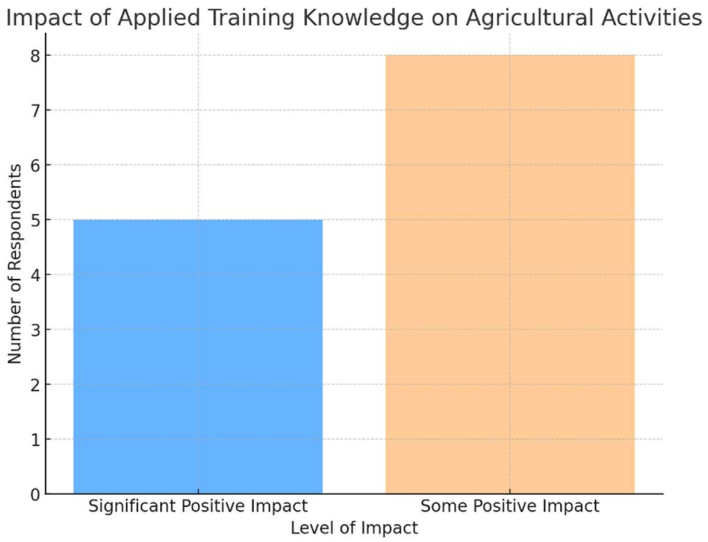
1. Natural Pest Control: One respondent applied the training by preparing a natural pesticide using horsetail plants.
2. Daily Farm Routines: Another participant found the training directly applicable to day-to-day farm operations.
3. Sustainable Land Use and Value Chains: A respondent working in sustainable land use mentioned that knowledge about value chains is frequently applied.
4. Improved Plant Care and Processing: The courses helped a participant reduce errors in plant care and processing.
5. Establishment of an Intensive Garden: The establishment of an intensive blackberry garden is an example of applying training to initiate a specific agricultural project.
6. Laboratory Testing: Regular laboratory tests using methods introduced in the training.
7. Addressing Specific Issues: Whenever issues covered in the training arise, the knowledge is applied.

These examples reflect the diverse ways in which the training provided by the EU-GAIA project has been applied in practice.

Question13: Impact and Sustainability of Applied Knowledge

Have you observed any positive impact in your activity due to the application of the knowledge obtained from the training sessions?

The responses indicate that participants have observed positive impacts in their activities as a result of applying the knowledge gained from the training sessions: • 5 respondents reported a significant positive impact. • 8 respondents noted some positive impact. Overall, participants have experienced positive influences on their activities by applying the knowledge obtained from the training sessions, highlighting the practical benefits of the training in enhancing their agricultural practices and operations.



Visualization 14: Bar chart visualizing the responses to the question about the observed impact of applying knowledge gained from the EU-GAIA project's training sessions on participants' agricultural activities. The chart categorizes respondents into two groups: those who observed a 'Significant Positive Impact' and those who noted 'Some Positive Impact'.

Question 14: Could you shed light on these observed impacts or the lack thereof? Please briefly explain why (positive or negative or not yet any)

The participants provided insights into the impacts observed in their agricultural activities due to the application of knowledge gained from the EU-GAIA project training sessions. Here's a summary of these impacts:

1. Natural Pest Control: One respondent implemented pest control using natural methods, indicating a shift towards more sustainable and environmentally friendly practices.
2. Cost Coordination and Long-Term Goals: A participant started coordinating costs as part of the transition to business agriculture, showing a strategic approach to agricultural business management influenced by the training.
3. Enhanced Daily Work and Experience Exchange: Daily work and experience exchange with project partners have improved, reflecting the practical application of knowledge in routine activities and collaboration.
4. Awareness Leading to Better Results: The training provided awareness that changed the approach to certain tasks, leading to better results in agricultural practices.
5. Increased Contact with Plants: A participant noted more contact with plants, suggesting a more hands-on, involved approach in agricultural activities.
6. Introduction of New Technologies: The application of new technologies in agricultural practices was a key impact, showing an advancement in operational methods.
7. State Control Level Enhancement: The training contributed to the enhancement of state control levels in Armenia, indicating a broader impact beyond individual practices.
8. Increased Knowledge and Relevance to Activities: The knowledge gained was directly relevant to activities and increased understanding of key issues, leading to improvements in work.

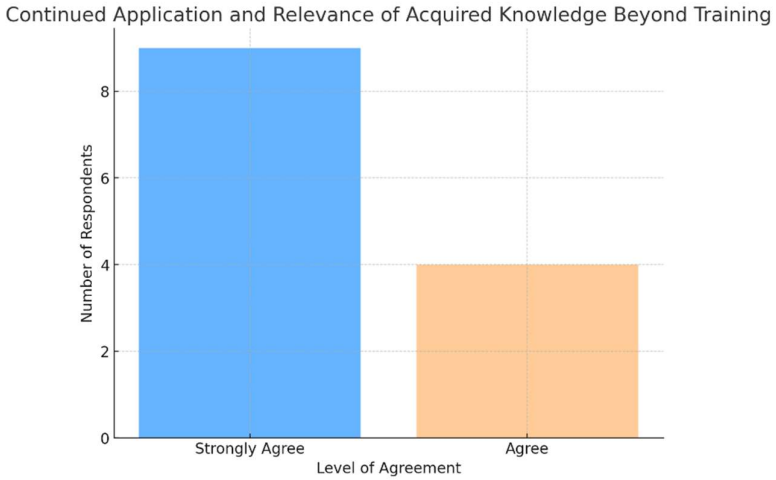
These responses provide insights into the impact of the training on participants' agricultural practices without including any interpretation.

Question 15: Do you believe you will continue to apply the knowledge acquired and remain relevant beyond the training period?

The survey results show that participants have a positive outlook on the continued application and enduring relevance of the skills and knowledge they gained from the EU-GAIA project:

- 9 respondents Strongly Agree with the likelihood of continuing to apply the knowledge acquired and its remaining relevant beyond the training period.
- 4 respondents Agree with the continued application and relevance of the knowledge.

Overall, these responses suggest that a majority of participants believe that the training has equipped them with valuable skills and knowledge that will continue to be relevant and useful in their future agricultural endeavours.



Visualization 15: Bar chart visualizing the survey responses regarding the belief in the continued application and enduring relevance of the knowledge acquired from the EU-GAIA project. The chart categorizes respondents into two groups: those who 'Strongly Agree' and those who 'Agree' with the likelihood of continuing to apply the knowledge and its remaining relevant beyond the training period.

Question 16: Please provide a brief explanation.

The participants provided explanations for their belief in the continued application and relevance of the knowledge acquired from the EU-GAIA project. Here's a summary of their explanations:

1. Effectiveness and Experience-Based Improvement: One respondent plans to continue applying the knowledge because of its effectiveness and is open to making improvements based on experience, especially if circumstances change.
2. Current Applicability: Another participant affirms that the knowledge gained is still applicable today, suggesting its enduring relevance.
3. Access to Continued Resources: The EU-GAIA project's Facebook page and other informational resources are cited as valuable for future relevance, indicating an appreciation for ongoing access to knowledge and updates.
4. Agricultural Challenges and Solutions: A participant notes that agriculture involves many challenges, and the courses have helped prevent mistakes in crop cultivation, demonstrating the practical application of training in solving real-world problems.
5. Need for Constant Improvement: The dynamic nature of agriculture requires continual improvement, and one respondent recognizes this as a reason to keep applying the training knowledge.
6. Necessity in Food Laboratory Research: The widespread use of pesticides and the need for multi-method detection techniques in food lab research are highlighted. The participant sees the training as essential and relevant to current global trends in agriculture.
7. Enduring Use of Acquired Knowledge: Another respondent believes that the knowledge gained will not be lost and will always be used when relevant issues arise, emphasizing the lasting value of the training.

These explanations reflect the participants' recognition of the training's practical benefits and its alignment with ongoing and future agricultural challenges. Participants cite specific reasons related to effectiveness, current applicability, and the evolving nature of agricultural practices.

Question 17: Additional Feedback

Please provide any other comments, insights or suggestions for improvement about the quality and effectiveness of the project's capacity development efforts and training sessions.

The participants provided feedback, insights, and suggestions for improvement regarding the quality and effectiveness of the EU-GAIA project's capacity development efforts and training sessions. Here's a summary of their additional feedback:

1. Practical Site Visits: One suggestion involves conducting visits to beneficiary gardens as part of the courses to gain on-site understanding of gaps and opportunities, enhancing the practical application of training.
2. Appreciation for Program Management: A participant expressed gratitude for the support and direct approach from the program managers and course implementers. They appreciated the organized and high-quality delivery of the program, especially thanking the Austrian Development Agency for implementing the EU "Green Agriculture Initiative in Armenia".
3. Monitoring and Continued Engagement: The importance of regular monitoring and continued engagement with those who apply the knowledge acquired from the course was emphasized, suggesting a need for ongoing support and collaboration.
4. Publishing Project Results: Another participant suggested the publication of a summary of the project results in Armenian and English, which could provide broader access to the project's achievements and learnings.
5. Program Stability and Impact: The EU "Green Agriculture in Armenia" program was praised for its stability and positive impact, particularly in helping potential entrepreneurs discover their abilities and driving agricultural development during challenging times.
6. Need for Professional Guidance and Continuous Systems: The need for ongoing professional guidance and the opportunity for continuous work in creating green systems were highlighted. This feedback reflects a demand for sustained support and development of sustainable practices.
7. Desire for Continuous Cooperation: A respondent expressed a desire for continuous cooperation and suggested that orientation trainings should also be carried out, indicating the value of sustained relationships and ongoing educational initiatives.

This feedback provides insights into the participants' views on the EU-GAIA project's efforts and their suggestions for potential improvements.

CONCLUSION

This survey assessed the impact of the EU-GAIA Project on EQ 5.1 (capacity building) and EQ 5.2 (practical application of knowledge) among stakeholders involved in green agriculture. The survey gathered data on improvements in knowledge, skills, and capabilities, as well as the practical application of training outcomes, demonstrating the project's contributions to these areas.

ANNEX 4 - Bibliography

This annex is divided in three sections, namely: i) Section 1 - list of documents provided by the EU-GAIA Project team to the Evaluation team. These documents are listed with the name of the original files for easier recognition by both teams: ii) Section 2 - the list of strategic documents consulted (e.g. relevant national strategies and programming documents); and iii) Section 3 - the bibliography for Annex 2 “Concept Paper on CSA in Armenia”.

Section 1 – Documents provided by the EU-GAIA Project team

Description of Actions and annexes

- Annex A.2. EU-Contract-Annex I - Description of the Action
- EU-GAIA_ENI_2019_408-058_-_Annex_I_-_DoA_extension
- 03a)_EU-GAIA_ENI_2019_408-058_-_Annex_I_-_DoA_extension_15_11_22
- Annex A.6. EU-Contract-Annex III - Budget for the Action
- EU-GAIA Budget
- 03b) Annex_III_-_Budget_for_the_Action_addendum_1_EUD_version
- 03c) ANNEX 3 EU GAIA Extension workplan Oct 2022 - Jan 2024
- Annex A.9. EU-Contract-Annex VI - Communication and Visibility Plan
- 03)_Request_Letter_EU-GAIA_Addendum__1

Project Reports

- EU-GAIA_Inception_Report_GAIA
- EU-GAIA_1st_Annual_Progress_Report
- EU-GAIA_2nd_Annual_Progress_Report
- EU-GAIA_3rd_Annual_Progress_Report
- EU-GAIA Achievement of project outcomes Oct 2022 Sept 2023
- Update Logical Framework at November 2023

EGSIM Documents

- EGSIM Manual_180405
- EGSIM Staff Guidance Note_180405
- Environmental assessment AUTS301 V1
- Social assessment AUTS301 V1

Risk Assessment document

- Handbook for Risk Management in Projects and Programmes

Previous MTE

- EU-GAIA project_Final Mid Term Evaluation Report_20220818
- EU-GAIA_RAF_MTE_final_DEPA
- Management Response_GAIA MTE

ADA trip reports

- Kick-off workshop 1.2020
- 02) Agenda_RP_ARM_1.23
- 02b) Template_Monitoring_Report_INTERNAL_6546
- 02) Agenda_Study_Tour_Austria_GAIA
- 02a) Template_Monitoring_Report_for_PUBLICATION_6546 R.Preukschat

Studies

- EU-GAIA Baseline Survey Report final, 09.10.2020
- EU-GAIA_Agric Value Chain Assessment_REPORT
- Recommendations on EU GAIA Project Gender Mainstreaming

Deliverables ADA Templates

- Annex7_EvaluationMatrix_Template_inception report
- Annex9_Results_AssessmentForm_Template_Final report
- Guidelines_for_Programme_and_Project_Evaluations_ADA_2020

Minutes EU-GAIA advisory board

- Minutes_EU-GAIA_1st Advisory Board Meeting
- Minutes_EU-GAIA_2nd Advisory Board Meeting
- Minutes_EU-GAIA_3rd Advisory Board Meeting
- Minutes_EU-GAIA_4th Advisory Board Meeting
- Minutes_EU-GAIA_5th Advisory Board Meeting
- Minutes_EU-GAIA_6th Advisory Board Meeting

Section 2 - List of documents consulted

ADC - Armenia Country Strategy 2012-2020

www.entwicklung.at/fileadmin/user_upload/Dokumente/Publikationen/Landesstrategien/CS_Armenia.pdf

EU-Armenia Deep and Comprehensive Free Trade Area
https://ec.europa.eu/commission/presscorner/detail/en/MEMO_13_728

European Council – Various documents about EU relation with Armenia
https://www.consilium.europa.eu/en/policies/eastern-partnership/armenia/

European Commission – Various documents about the EU assistance to Armenia
https://eu4armenia.eu/

European Commission – European Neighbourhood Policy and Enlargement Negotiations (DG NEAR) - Eastern Partnership
https://neighbourhood-enlargement.ec.europa.eu/european-neighbourhood-policy/eastern-partnership_en

European Commission - European Neighbourhood Instrument (ENI) EU Single Support Framework for Armenia 2017-2020
https://neighbourhood-enlargement.ec.europa.eu/system/files/2018-10/armenia_ssf_2017-2020_final.pdf

Eu Official Journal - Comprehensive and Enhanced Partnership Agreement between the EU and the Republic of Armenia
https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:22018A0126(01)&from=EN

ARMSTAT Statistical Committee Republic of Armenia – Various documents consulted
https://www.armstat.am/en/

Ministry of Economy of the Republic of Armenia - State Support Programmes for Agriculture
https://mineconomy.am/en/page/1338

Ministry of Economy of the Republic of Armenia - The Strategy of the Main Directions Ensuring Economic Development in Agricultural Sector of the Republic of Armenia for 2020-2030
https://mineconomy.am/en/page/1467#:~:text=The%20vision%20of%20%E2%80%9CThe%20Strategy,care%20of%20natural%20resources%2C%20producing

Section 3 - Bibliography of Annex 2 – "Concept Paper on CSA in Armenia"

1. Agriculture and Climate Change. OECD. Trade & Agriculture Directorate. 2015.
2. Casey, J., A., Bisaro, A. Valverde, M. Martinez and M. Rokitzki. 2021. Private finance investment opportunities in climate-smart agriculture technologies. Commercial Agricultural for Smallholders and Agribusiness (CASA). UK Aid.
3. Climate Smart Agriculture Insights from Practice. 2019. UNDP, GEF, SGP (The GEF Small Grants Program). Botswana Institute for Technology Research and Innovation (BITRI).
4. EIP-AGRI Agriculture & Innovation. 2022. Focus Group Nature-based Solutions for water management under climate change. Final Report. European Commission.
5. FAO. CLIMATE_SMART AGRICULTURE Sourcebook. 2013. Rome.
6. FAO. Climate-Smart Agriculture. Training Manual. A reference manual for agricultural extension agents. 2018. Rome.
7. FAO. COMPENDIUM Climate-smart agriculture & extension. Supporting agricultural extension towards climate-smart agriculture: An overview of existing tools. 2016. Rome.
8. Guidance Note 1.1: Project Design and Theory of Change. Pillar 1: Enabling Good Conditions for Evaluations. 2020. ILO.
9. Michigan State University Extension. Good Agricultural Practices (GAP) Assistance Manual. Produced on collaboration with Michigan Agricultural Cooperative Marketing Association Inc. 2011.
10. The World Bank. Climate-Smart Agriculture: A Call to Action. 2010.
11. UNESCO. Climate Change in the Classroom. UNESCO course for secondary teachers on climate change education for sustainable education. 2013. Paris.

ANNEX 5 – Concept Paper “Climate Smart Agriculture in Armenia”

Austrian Development Cooperation

EUROPEAN UNION FOR ARMENIA

Austrian Development Agency

2023

EU Green Agriculture Initiative in Armenia EU-GAIA (ENI 2018/408-058)
Final Report
Concept Paper
"Climate-Smart Agriculture in Armenia"

FADI KARAM

Expert in Climate-Smart Agriculture

11/25/2023

TABLE OF CONTENT

LIST OF ACRONYMS

AAMS	Automatic Agro-Meteorological Station
AES	Agricultural Extension Services
AMN	Agro-Meteorological Network
CA	Conservation Agriculture
CH_4	Gas methane
CO_2	Carbon dioxide
CSA	Climate-smart agriculture
EASS	Extension and Advisory Service Systems
EWS	Early Warning System
EXFE	External Final evaluation
EU	European Union
FTG	Farmer's Target Groups
FTP	Farmer's Training Program
GAIA	Green Agriculture Initiative in Armenia
GAP	Good Agricultural Practices
GHG	Greenhouse Gases
INM	Integrated Nutrient Management
IPM	Integrated Pest Management
MoA	Ministry of Agriculture (of Armenia)
MoE	Ministry of Environment
N2O	Nitrous oxide
OA	Organic Agriculture
PPP	Public-Private-Partnership
SO	Specific Objective
SOM	Soil Organic Matter
ToT	Training of Trainers
UN-FAO	Food and Agriculture Organization of the United Nations
VCD	Value Chain Development

EXECUTIVE SUMMARY

This report has been prepared within the frame of the External Final Evaluation (EXFE) of the "EU Green Agriculture Initiative in Armenia (GAIA)" project, with the expectation to identify and produce a set of recommendations for future project's follow-up interventions, focusing on Climate Smart Agriculture (CSA), and building on the Project's results and related lessons learned. It aims to elaborate the outline and methodology for implementing a CSA, during the project's bridging phase, based on the activities fulfilled by the project in the three target regions of Northern Armenia (Shirak, Lori and Tavush), and results achieved during the project lifetime (Oct 2019 – Sep 2023).

As stressed in the project's baseline information and Progress Reports, and mid-term report, Armenia is highly vulnerable to climate change, in terms of high risks of climate-related natural disasters, urging the need to tackle the impacts of climate change on the agricultural and food production sector, by a combination of adaptation and mitigation measures. A vulnerability assessment to climate change shows that agriculture and food production is among the most vulnerable sector to climate change in Armenia.

In more terms, a country-specific CSA program is designed to identify and operationalize sustainable agricultural development, under the prevailing climate change and climatic parameters, to increase sustainable productivity, strengthen farmers' resilience, and support food security at sub-national/national level. As a result, the CSA program is intended to provide a detailed assessment for priority interventions and activities, in terms of adaptation and mitigation measures in the three target regions of northern Armenia (Shirak, Lori and Tavush), which present opportunities for addressing climate change challenges, as well as for economic growth and development of the agricultural sector. The expected and emerging results can be scalable and replicable in other regions across the country.

The project supports farmers of five selected value chains in three Northern regions of Armenia. The value chains were selected through a value chain assessment and were: Fruits and berries, vegetables (in collaboration with ADA), grapes, Legumes, herbs and sheep breeding (in collaboration with UNDP). Value Chain Development (VCD) emplaces at a first rank vegetables in Shirak, grapes (vineyards and table grapes) in Tavush and fruit trees in Lori. The latter recently recognized establishment of new orchards, mainly peach, with intensive cultivation practices. Post-harvest techniques, such as pre-cooling, are still to be explored in clusters where the production of fruit trees is dominant. To be noted that in the three target regions, fruit trees and vegetables are traditionally planted as backyard gardening.

The evidence of results achieved by the EU-GAIA project paved the road for a growing attention on CSA, with the aim of promoting more resilient agricultural sector in Armenia. As such, efforts to strengthen resilience need to be based on the levels of exposure and vulnerability of the abovementioned value chains to the likely impacts of climate change. Therefore, for smallholders and agribusinesses, a successive implementation phase of the EU-GAIA project may contribute to sustainably develop the pre-selected strategic value chains, and consequently increase the profitability of the agricultural sector under the prevailing climatic constraints.

The present report is aligned with the project specific object (SO2) on '*Selected agribusinesses have better access to infrastructure, green technologies, good agricultural practices and markets creating also better employment conditions'*, and more precisely with the results (R2.2) on '*Agribusinesses have increased capacities to apply green technologies and good agricultural practices*', and with project specific objective (SO3) '*Selected agribusinesses are more competitive through access to inputs, equipment, infrastructures and services, considering a rights-based approach', (*partially implemented by UNDP), and more precisely with results (R3.3) on '*Increased productivity in selected VCs through application of resource efficient and resilient farming practices*'.

The content of this report provides insights and recommendations for implementing a climate-smart agriculture program at National level, with a focus on the three target regions (Shirak, Lori, and Tavush);

firstly suggesting sustainable agricultural approaches with the best response to the impacts of climate change, and, secondly, identifying sets of Good Agricultural Practices (GAPs) for climate adaptation and mitigation, in terms of soil, crop and water management practices, to replace the commonly practices used by farmers for long-time, with an emphasis on the five selected value chains. Thirdly, a Farmer's Training Program (FTP), alongside a technical assistance program to farmers, cooperatives involved in agri-businesses and other actors involved in the development of the value chains.

A cross-cutting feature for the CSA program for Armenia consists in the establishment of an Agro-Meteorological

Network (AMN) in the project target areas, replicable and scalable at national scale. The proposed AMN will serve a benchmark for the whole country, as the first step towards establishing an Early Warning Systems to farmers and contribute to improving the capacity of the regional extension services to provide agro-meteorological and climate/weather data and other information in an easy form to farmers.

Knowing that Extension and Advisory Service Systems (EASS) are lacking their basic role in facilitating innovation processes, and empowering marginalized and poor-resource farmers through technical assistance, a series of Training of Trainers (ToT) are proposed here in this report for the regional extension agents.

1. CSA: COUNTRY VISION FOR SUSTAINABLE FOOD PRODUCTION

Climate-smart agriculture seeks to increase sustainable productivity, strengthen farmers' resilience, reduce agriculture's greenhouse gas emissions, and increase carbon sequestration. It strengthens food security at subnational and national levels and delivers environmental benefits. It includes practical field management techniques, such as soil mulching, intercropping, zero or minimum till, crop rotation, integrated crop-livestock management, agroforestry, improved on-farm water management practices, and innovative practices for weather forecast information and Early Warning System (EWS).

The proposed methodology in this EXFE for implementing a CSA program in three target regions in Northern Armenia, aims to increase sustainable productivity, strengthen farmers' resilience, and support food security at subnational/national levels. The proposed methodology has been built on three main axes: (i) sustainable agricultural approaches with the best response to climate change, (ii) selection of sets of Good Agricultural Practices (GAPs) with relation to soil, crop and water management practices, and (iii) technical assistance program to extension services, farmers and cooperatives.

For sustainable agricultural approaches, Conservation Agriculture remains at the forefront of all actions.

For GAPs, demonstrations to a large spectrum of end-users, are proposed as field days, involving farmers, public extension services, and the private sector, namely input suppliers, private companies and associations. The demonstrations are projected to be carried out in pilot plots owned by the farmers themselves, during different growth stages of the crop/tree cycle, as well as in the off-season, and dealing with different agricultural practices and handling techniques of the local farming systems.

Concerning the proposed technical assistance program, a series of training targeting farmers and extension service providers are to be conducted on CSA techniques, mainly with respect to Conservation Agriculture (CA), agricultural innovation, and Value Chain Development.

As agricultural intensification allows farmers to increase food production while emitting less CO_2 to the atmosphere, improvement of crop yields should be prominent in any adaptation/mitigation strategy of a CSA program. Therefore, a list of key and **immediate actions** are needed at the field/farm level to adapt to climate change in the agricultural sector, and mitigate its effects.

To enable evidence on the proposed sets of immediate actions and bring extension and advisory service systems and farmers into the loop of agricultural innovation in light of the prevailing climate change, field demonstrations should be organized intermittently in plots owned by farmers, to share knowledge and disseminate information on adaptation/mitigation measures. These demonstrations enable the collaborative environment with farmers and service providers and endorse the scope and provision of learning in the system. At the outcome level, the acquisition of skills and changes in farmer's behavior and livelihood's transformation are important topics to be addressed in any post-project follow up.

Section 5 presents sets of actions that apply to Armenia climate context and farming systems, in term of soil, crop and water management practices, based on the five selected value chains (berries, fruits, vegetables, grapes and sheep breeding) in the three target regions (Shirak, Lori and Tavush).

2. METHODOLOGIES TO DEVELOP A CSA PROGRAM

Before planning any CSA program, a strategic assessment should begin by taking stock of what is already in place at the national/subnational level and identifying the key gaps that need to be addressed to better manage risks due to climate change in the agricultural sector. This also requires a legal frame to promote policy coherence by drawing on the ability to use the proposed CSA methodologies and tools, and assess the appropriate farming systems, technologies and other transitions based on the local environmental, social and economic context. Different stakeholders can play different roles in formulating policies, notably the Ministry of Agriculture (MoA) and Ministry of Environment (MoE).

On the other hand, increasing the resilience of farmers and agricultural communities to climate change involves strengthening their capacity to effectively respond to climate risks and natural hazards. Therefore, farmers education and training programs enhance their ability and willingness to make successful changes to their management practices.

However, despite the wide variety of climate-smart agriculture options available to farmers, there is a clear need for incentivizing CSA practices and technologies throughout the country, since the adoption of practices and technologies with high climate smart challenges is generally low among small-scale and poor resources farmers. For that, subsidies and incentives to farmers and smallholders, as well as access to micro-finance, remain important investment opportunities to be explored within any CSA program.

For the adoption of CSA methodologies, including climate related knowledge, know-how transfer on innovative technologies and practices to farmers and end-users, and promotion of joint learning by farmers and extension services, the dissemination of the proposed CSA practices needs to be undertaken in a 3-step framework:

1. Approaches used;
2. Technology and innovation;
3. Knowledge and participation.

One of the most recognized approach in a CSA program is field demonstration, to show technology and innovation and deliver information to farmers, and build on community initiatives to determine what types of adaptive changes farmers need to make, through active participation in training programs.

3. CHALLENGES IN ADOPTING A CSA PROGRAMME

Despite its many benefits, farmers are still facing difficulties in implementing CSA, mainly due to:

- **Lack of knowledge and awareness**, and lack of access to the established approaches;
- **High costs** - CSA practices may call for expensive agricultural technology or infrastructure, which are out of reach for poor-resource farmers;
- **Financial barriers** – Investment and financial opportunities for CSA are still limited, so farmers need a support to adopt the suggested practices and technologies;
- **Policy and regulation** - Under some circumstances, farmers may find it challenging to embrace CSA strategies due to governmental and regulatory hindrances;
- **Cultural and social burdens** – Inexperienced farmers with the new proposed technologies may hesitate to implement them, taking into account in some cases farmers attempting to implement CSA approaches may encounter pushback from other farmers.

For all the above mentioned challenges, governmental and non-governmental organizations bear the primary responsibility for raising the feasibility of climate-smart agriculture programs and other sustainable farming practices at national and sub/national level.

4. SUSTAINABLE AGRICULTURE AND RESPONSE TO CLIMATE CHANGE

In the context of climate-smart agriculture, the three pillars of sustainable land management are (i) conservation agriculture, (ii) crop rotation and (iii) incorporation of organic matter into the topsoil layers. Practices such as (i) intercropping, *i.e.* planting cover crops in the off-season, (ii) soil mulching, (iii) integrated crop-livestock management, (iv) improved on-farm water management and (v) Integrated Nutrient Management (INM) are considered good practices to increase the resilience of soils to climate change.

- Conservation agriculture, as defined by Food and Agriculture Organization of the United Nations (UN-FAO), is "*a farming system that promotes maintenance of a permanent soil cover, minimum soil disturbance, and diversification of plant species*". Hence, conservation agriculture helps increase the soil health and fertility to become resilient to climate change, by (i) increasing the soil organic matter (SOM), (ii) minimizing tillage or Zero tillage, and (iii) rotating crops. CA reduces nitrogen mineralization and helps soil aggregation. It involves planting cover crops, mainly legumes, in the off-season, to keep nitrogen from being lost from the soil.
- Practicing no-tillage farming, while maintaining continuous soil cover and rotating cropping patterns, which provides enough structural carbohydrates, and allow nitrogen to contribute to the growth of the following crop and minimize nutrient losses.
- Minimizing soil compaction by involving less deep tillage and heavy machinery in the field, reduces soil erosion and the dispersion of soil particles, and lower the risks of waterlogging. Compacted soils may waterlog easily and then dry out quickly.
- Increasing the Soil Organic Matter (SOM) by maximizing the use of organic matter sources, like compost, animal manure and green manure, to replenish soil organic matter content, improves the soil health, boosts nutrient retention capacity, enhances soil biodiversity, and increases the resilience of soils to climate change. SOM enhances soil structure, increase water holding capacity and improve nutrient availability.

- Crop rotation is the practice of planting different crops sequentially on the same plot of land to improve soil health, optimize nutrients in the soil, and combat pest and weed pressure. An ideal crop rotation is when farmers plant beans on the same plot after harvesting corn, since the latter consumes a lot of nitrogen, and beans return nitrogen to the soil.
- Intercropping: Planting cover crops during the off-season, like winter legumes, known to be nitrogen-fixing crops, increases soil fertility, reduces soil erosion, enhances the efficiency of nutrient uptake by plants prevents pests and diseases to spread throughout the field.
- Reducing the use of nitrogen and other synthetic fertilizers reduces nitrous oxide (N_2O) emissions, and the consequent ammonia volatilization. Instead, using enhanced efficiency fertilizers, such as slow-release fertilizers, reduces ammonia volatilization and nitrous oxide emissions.

5. GOOD AGRICULTURAL PRACTICES

Good examples of actions and interventions to build resilience in the face of uncertainties due to climate change can be found in the sustainable management of soil, crop and water. These actions propose a series of good agricultural management strategies to better adapt to climate change, and recommended measures to reduce greenhouse gases emission in agriculture. Therefore:

- The promotion of Good Agricultural Practices (GAPs) is a way to provide secure and safe agricultural production, maintain and improve soil quality and reduce degradation; and promote an approach based on Climate Smart Agriculture (CSA) practices. They aim to address three challenges; (i) assure food security through increased productivity and income, (ii) assure food safety by less involving agro-chemical in the field management practices, (iii) adapt to climate change and (iv) contribute to mitigating the effects of climate change.
- While rain fed crops are expected to be particularly affected under climate change conditions, if irrigation water continues to be available in sufficient quantities, crop yields are expected to continue to increase in spite of climate change. Agricultural intensification combined with good soil and water management practices allowed farmers to increase food production.
- Good agricultural practices are proposed to farmers to maintain acceptable yield levels, in spite of climate change.
- A Farmer's Training Program (FTP) in selected demonstration plots within the project target areas is proposed to show farmers good agricultural practices and raise awareness on the importance of farmers' resilience to climate change. Some mitigation measures, such as reducing CO2 emission in the agricultural sector also have to be discussed.

The implementation of the suggested activities also envisages close collaboration with input suppliers & service providers of the private sector in the target areas.

At technological level, the proposed follow-up phase of the EU-GAIA project foresees field days for farmers and extension services on the use of some innovative techniques that help reducing the impacts of climate change on food safety and production. These innovative techniques will include:

Use of electrical shredders to incorporate the pruning residues of fruit orchards into soil organic matter;

- Electrostatic Spraying (ESS), known as innovative technique as it reduces the use of agro-chemicals in the farmer's spraying programs. This technique also involves less volume of water;
- Use of disc plough and chisel plough in orchard farming to replace the conventional plough techniques;
- Use of electro-mechanical pruning shears to better shape the tree;
- Use of mechanical weed cutters, instead of the widespread use of herbicides.

6. TECHNICAL ASSISTANCE PROGRAMME

A Farmer's Training Program (FTP) tackling various topics on the CSA techniques has to be conducted within welldefine timeframes. In addition to farmers, the FTP targets cooperatives, women associations, and extension service providers. The main axis have to be (i) Conservation Agriculture, (ii) Agricultural Innovation, and (iii) Value Chain Development. The FTP will show the existing agricultural practices used by farmers, and the needs for adopting innovative techniques to adapt to climate change.

With this FTP farmers will be able to learn:

- What are the effects of climate change on the agricultural sector?
- How is agriculture contributing to climate change?
- Why is it important to understand the relation between climate change and food security?

The training and learning sessions are planned to be conducted in farmer-owned plots, with the participation of a wide spectrum of farmers, extension service providers, and input suppliers. The participation of representatives and agents of the private companies has the objective to boost the public-private partnership (PPP). Field days and demonstration activities have to be organized by the project's team and consultants at different periods of the crop growing season. The involvement of private sector in field demonstration activities has the role to improve the farmer's technical skills on technologies that are commonly used in modern agriculture, with the aim to assure food safety, increase production and promote environment-friendly practices. Managers showed eagerness to collaborate with the project and readiness to move machinery for demonstration purposes in the field.

FTP will include a series of trainings on GAPs at the project target communities in Shirak, Lori and Tavush, with respect to good soil, crop and water management practices. The scheduled field demonstration activities and related technical training program should be synchronized in such a way to cover the different farming activities of the major value chains (Pome and stone fruits, berries, vegetables, and grapes) in the project target areas. Field demonstrations in spring aim to controlling soil management practices, while activities in summer have the role to provide information on water management aspects and fertilization programs. Activities in the in-between-seasons will focus on the importance of intercropping and planting cover crops to improve the soil fertility and health.

6.1 General training topics

For farmers:

- Climate-smart agriculture: Definition & Practices (Making agricultural practices more climate-smart).
- Conservation Agriculture: Adaptation & Mitigation practices (Comparing current farming and CA).
- Organic Farming: Principals and practices.
- Good Agricultural practices for fruits & vegetables (With relation to good soil, crop and water management practices.

For agribusinesses and cooperatives:

- Value Chain Development: From a certified seed/plant to consumers.

6.2 Specific training topics for extension service providers

- Soil test analyses.
- Integrated Pest Management (IPM).
- Integrated Nutrient Management (INM).
- On-farm water management (with an emphasis on post-harvest irrigation of stone fruits).
- Use of agro-meteorological information for Early Warning Systems on pests & Diseases.

7. STRATEGIES TO ADAPT TO CLIMATE CHANGE

7.1 Soil management practices

The below soil management practices are proposed to be carried out in selected small-scale farmer's-owned pilot plots to be established in the three target regions to show farmers good agricultural practices and raise awareness on the importance of farmers' resilience to climate change. The involvement of the private sector in field demonstration activities has the role to improve farmer's technical skills on technologies that are commonly used in modern agriculture to increase production and promote environment-friendly practices.

- Soil surface tillage, such as chisel and disk plough, concerns shallow tillage practices to produce an increased roughness on the soil surface permitting short time storage of rainfall;
- Conservation tillage, including no-tillage or minimum tillage, where residuals of the previous crop are kept on the soil at planting. Conservation tillage helps to maintain high levels of organic matter in the soil thus it is highly effective in improving soil infiltration and controlling erosion;
- Contour tillage, where soil cultivation is made along the land contour and the soil is left with small furrows and ridges that prevent runoff. This technique is also effective to control erosion and may be applied to row crops and small grains provided that field slopes are low;
- Raised bed, which concerns cultivation of wide beds and is typically used for horticultural row crops;
- Mulching with crop residues on soil surface which shades the soil, slows water overland flow, improves infiltration conditions, reduces evaporation losses and also contributes to control of weeds and therefore of non-beneficial water use;
- Increasing the amount of soil organic matter in the upper soil layers, since it provides for better soil aggregation, reduced crusting or sealing on soil surface and increased water retention capacity of the soil; Returning of straw and cover crops or to the soil as green manures; Incorporating grass or herbal leys into the arable rotation.
- Adoption of appropriate weed control techniques to alleviate competition for water and transpiration losses by weeds.
- Replace chemical weed control with mechanical weed removal that can serve natural soil mulching to prevent weed development during on/off season;
- Establishing a quick-growing cover crop in autumn that provides at least 60% ground cover across the whole field;
- Cultivating cover crops as natural mulching in fruit tree orchards.

7.2 Crop management practices

For crop management practices, topics like crop intensification and its related aspects, such as trellis-grown trees, pruning and tree training, Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) will be used as tools to better adapt to climate change and maintain balanced shoot/fruit development. The importance of spring disk plow, and/or chisel plow, can be demonstrated to farmers as a practice to control weed development and incorporate added green manure value into the top layer of the soil profile. In addition, post-harvest irrigation and post-harvest fertilization have been shown to be adaptive measures under the prevailing dry weather conditions during summer growing season, the first to keep trees alive and the second to prepare vigorous trees for next year.

- Use of certified seeds and plant material of guaranteed origin;
- Use of dwarf fruit trees species that require less plantation spacing and water;

- Introduce trellis technique in fruit trees orchards and table grapes groves that are easily drip-irrigated, pruned and harvested;
- Introduce new pruning techniques that maintain small tree growth, and balances shoot/fruit development that better adapt to climate change;
- Use of electrical shredders to incorporate the pruning residues of fruit orchards into soil organic matter;
- Electrostatic Spraying (ESS) is an innovative technique to reduce the loads of agro-chemicals in the farmer's spraying programs. This technique also involves less volume of water;
- Apply Integrated Pest Management (IPM);
- Apply at larger scale Integrated Nutrient Management (INM) in fruit trees orchards and field crops;
- Introduction of post-harvest fertilization and post-harvest irrigation for stone fruits (peach and nectarine) that help tree adapting to hot summer waves;
- Use pre-cooling techniques in fruit trees orchards and fruit vegetables to reduce the heat effect and maintain good quality product before the transportation to the storage facilities.

7.3 Water management practices

Climate change impacts on irrigation water availability is one of the greatest concerns for agricultural sustainability. Thus, under scarcity conditions and climate change, considerable effort has been devoted to increase water efficiency based on the assertion that more can be achieved with less water through better management. The latter usually refers to improvement of water allocation and/or irrigation water efficiency, which itself depends on the type of irrigation technology. Farmers' participation in water management also is important.

Any action that increases the capacity of the farming system to access water when needed increases the resilience of the system to climate variability.

Public and private agencies involved in water management should make every effort to disseminate knowledge, upgrade education and training at all levels, transfer technology, incite decision-makers to changes, involve the farmers in the decision process and urge the funding agencies to set up the financial means required.

At the irrigation scheme level, actions for adapting to climate change need to be considered in the context of irrigation modernization:

- Reduction of water losses in the conveyance, distribution and application networks;
- Improve the efficiency of irrigation system used. Improvements in sprinkler irrigation systems include the adoption of smaller sprinkler spacing. Improvements in drip irrigation systems include the use of a single drip line for a double row crop, the use of micro-sprayers in high infiltration soils;
- Improve water use efficiency, by applying proper irrigation scheduling according to actual needs of the crops, and the establishment of an irrigation advisory system to farmers;
- Application of water tariffs for a proper water pricing based on water metering.

At the field/plot level, the following actions are proposed:

- Shift from traditional irrigation systems to modern irrigation systems such as drip and micro sprayer;
- Promotion of technologies and practices to use on-farm water more efficiently, by encouraging the use of drip irrigation;

- Lining irrigation canals in areas where earth channels are used to distribute water to the farms/plots;
- Ban the use of sprinkler irrigation in areas prone to wind drift;
- Use the double ditch technique in fruit trees orchards using surface irrigation water to reduce the occurrence of water-borne diseases;
- Where drip irrigation is used, the application of fertilizers through the irrigation system, called fertigation, is a common practice in modern irrigated agriculture, with high fertilizer distribution and nutrients' by the plants;
- Introduction of post-harvest irrigation in stone-fruit orchards;
- Establish water harvesting techniques in mountain areas, such as earth ponds, hill lakes, check dams and terraces to store rainwater for further use during summer period.

7.4 Practices to reduce agricultural greenhouse gas (GHG) emissions

The main direct sources of GHG emissions in the agricultural sector are not only carbon dioxide (CO_2). Agriculture is a source of nitrous oxide (N_2O), accounting for 58% of total emissions, mostly by soils and through the application of fertilizers, and of methane (CH4), accounting for 47% of total emissions, essentially from livestock. Therefore, greenhouse gas (GHG) emissions from agricultural activities can be reduced through more efficient management of carbon and nitrogen flows in the current farming systems.

On the other hand, shifting to conservation tillage reduces the amount of nitrogen fertilizer applied to crops, changing livestock and manure management practices. Soil conservation promote carbon sequestration by either increasing storage of carbon in the soil or reducing the loss of stored carbon.

The following farm practices are considered beneficial management practices recognized for reducing GHG emission in the agricultural sector:

- Enhance nitrogen management through Integrated Nutrient Management (INM). With the adoption of INM, it is expected that the N_2O gas emission to the atmosphere will be reduced;
  - Reduce tillage;
  - Decrease bare fallow and promote planting cover crops in the off-seasons;
  - Return crop residues to the soil;
  - Establish agroforestry systems; ○ Implement rotational grazing;
- Ban burning of tree pruning residues and other plant residues to reduce CO2 emission to the layer of the atmosphere;
- Practice rotational grazing to sequester carbon in the soil;
- In animal husbandry, select high quality feed that will reduce methane released from enteric fermentation;
- Cover manure storage facilities to reduce methane and nitrous oxide.

8. ESTABLISHMENT OF AN EARLY WARNING SYSTEM

Agrometeorological data is of high importance to farmers for improving agricultural practices and implement Integrated Pest Management programs. This has the privilege to reduce costs of agro-chemical inputs, mainly phyto-sanitary products and fertilizers, and increase production both quantitatively and qualitatively.

Within the frame of agrometeorological applications and services, there is a need to establish in the project target regions an agro-meteorological system that collects at in-real time basis weather data and provide relevant and timely information to extension services and farmers. This has the role to strengthen the capacity of small farmers and farmers' organizations to manage their agricultural practices in a sustainable manner and would result in improved agricultural production and secured food production.

Digital platforms that bundle together climate-smart advisory services with other products, such as crop disease models and irrigation advisory, are helping to minimize transaction and marketing costs for companies and providing a more integrated and holistic offering to farmers. Building on existing trusted relationships, successful platform technologies enable farmers to access stress-tolerant inputs and climate information services alongside financial products and services. With the worldwide spread of smart phones, farmers can regularly receive alerts with the indicated recommendations on their phones, without the need to check information on Internet.

Suggested actions for priority actions

- Establishment of a pilot Agrometeorological Network (AMN) in the project target regions, and installation of automatic Agro-Meteorological Stations (AAMS) in the communities deserved by the project in Shirak, Lori and Tavush. The aim of the AMN is to collect and disseminate information on current weather to farmers and other agricultural end-users;
- The number of AAMS to be installed depends on the topography, micro-climate, type of crops, and number of framer's groups in the three target regions;
- Create a digital platform accessible on Internet that bundle climate-smart advisory services, mainly crop disease models and irrigation advisory, to help farmers better coping with their handling practices. The digital platform also can be accessible on smart phones, so that farmers receive regularly alerts on phytosanitary treatments and irrigation supply;
- Organize farmers into small Farmer's Target Groups (FTGs), based on crops and geographic production clusters in the three northern regions;
- Support the regional extension services of the Ministry of Agriculture to monitor the break out of pests and diseases through the use of pest disease models, and assist them to prepare the early warning alerts to farmers and end-users;
- Conduct a ToT to regional extension service agents on agro-meteorological instrumentation and data collection to adapt to Climate Change and Risk Management (Extreme events, flood, drought, etc. …);
- Conduct a ToT to regional extension service agents on Integrated Pest Management (IPM) and use crop disease models;
- Conduct a ToT to regional extension service agents on on-farm water management and irrigation advisory;
- Conduct training at the community level to improve the knowledge of farmers on the use and interpretation of weather data and information to improve crop production under the prevailing climate change;

- Promote more partnership and collaboration between Governmental institutions and the private sector, namely agricultural service providers, on monitoring agro-meteorological applications to better help dissemination of weather information to farmers and rural households, and for developing and evaluating the corresponding intervention decisions.

9. VALUE CHAIN DEVELOPMENT

The EU-GAIA project placed 5 main value chains in the three target regions of Northern Armenia. These value chains are fruits, berries, vegetables, grapes and cattle. Their importance varies from a region to another, depending on the planted acreages and level of technology used. Developing each of these value chains and increasing linkages between the different segments of the value chain, i.e. farmers, growers, aggregators, packagers, processors, buyers and exporters, should be undertaken as a private sector–led approach with returned benefits to smallholders.

Common to all value chains are interventions to encourage the development of interlinked vertical contracts between smallholders (farmers) and buyers, and investments to improve the operations of actors downstream, i.e. aggregators, packagers and processors. The objective is to explore ways to scale up the value chain activities to reach a significant portion of farmers and growers. Training and education programs are needed to facilitate technology transfer, participatory development of the value chain actors, and identification of some indicators to examine the outcomes of probable value chain interventions. These interventions aim to build competitiveness of the selected value chains, by adopting a market-oriented approach. The expected outcome is a sustainably increase rural households' income, through the development of inclusive and profitable food value chain to generate growth, increase income and benefit from access to markets.

For example, the rise of cold storage facilities of potato tubers in Lori and Shirak can bring higher incomes for potato farmers and growers, and all-season access for potato consumers, and promotes food industry and agribusiness development and market competitiveness, under the slogan of food security. In addition, improving pre-cooling conditions of fruits and vegetables in the three target regions keeps the produce away of field heat, and put fruits and vegetables at an optimal temperature after harvest, and before the transportation to wholesale markets or to a cold storage warehouse.

As a result, improvements should be made to the value chain segments, from the farm gate to consumer. These improvements imply introducing rapid changes, such as using innovative production technologies, and assuring cold transportation means of the produces from the farm gate to the wholesale markets. Traceability, labeling and marketing remain important features in any value chain development program.

In Armenia, a major part of the agricultural production comes from small-size plots owned by farmers, and in some cases from backyard gardening. This is because of land fragmentation, which is a significant feature of the Armenian farming systems. For that, gathering the farmers into target groups, based on crop and production cluster, is a way to promote modernization in the food production sector, taking into account the below evidences concerning the selected value chains:

Shirak

- Berries (strawberries, raspberries, currants) are grown in backyard gardening. New plantations with new technologies are recently established with the support of international development programs;
- Pome fruits (apple and pear) and cherry are cultivated on backyard gardening, and only a few orchards adopt innovative technologies;
- Grown vegetables are cauliflower, cabbage, table beets, carrot, and garlic as intensive cultivations with regular supply of irrigation water;

- Broccoli is the most non-traditional cultivated vegetable in Shirak;
- Certified potato seeds are imported from Germany and the Netherlands. Harvest takes place in small-sized plots, varying between 1.5 ha and 2.0 ha;
- Grown legumes are lentil, green pea, and chickpea. Soybean has recently been introduced in Shirak with the support of EU-GAIA project;
- Cultivation of herbs is not widespread engagement in Shirak region. When found they comprise peppermint, oregano, tea and spices.

Tavush

- Leading region with lands cultivated with fruits, namely peach, apple, pear, plum, persimmon, and grapes. New fruit orchards are being established with intensive cultivation practices (reduced spacing between rows and trees, dwarf species, drip irrigation, and anti-hail nets);
- Tropical trees are cultivated. No indications on the species used;
- Vineyards are well spread;
- Table grapes are planted. New plantations have been established.

Lori

- Fruit trees are mostly stone fruits (peach, cherry and plum);
- Farmers sow winter legumes as cover crops in the off-seasons;
- Crop rotations are practiced but at a small scale. Farmers only in Shirak have the habit to keep land as fallow during the off-seasons, while not in Lori and Tavush:

In addition to the above, the following crop rotations are commonly practiced:

- Shirak: wheat - potatoes – fallow;
- Lori: wheat - potatoes – no land is kept as fallow;
- Tavush: alfalfa - fodder beets – no land is kept as fallow.

At value chain level, the opportunity of establishing supply chain resilience has the benefits of (i) minimizing supply chain disruption from climate shocks and weather stresses, (ii) maximizing profitability of value chains, and (iii) ensuring business continuity. In other words, climate risk adaptation reduces risk sensitivity, and enable investees to pivot to new supply chain opportunities. To this extent, CSA technology investments are a means of engaging in emerging markets and building new networks and identifying further investees. This will result in better response to consumer and shareholder sustainability demands at sub-national/national level.

It should be known that the economic benefits of agricultural value chains largely depend on the ability to achieve price premiums from domestic and niche markets. However, achieving these price premiums depends very much on the ability of producers, packagers, and processors to apply product quality, so that buyers and exporters are willing to pay premiums for such products. This means that export-oriented companies in Armenia may be more viable in the near term.

10. FINAL REMARKS AND RECOMMENDATIONS

Climate change risks are expected to continue to increase and their effects on food security to be even more evident. This calls for more focus on adaptation interventions.

The implementation of climate change adaptation projects requires capacity assessments that engages policymakers, extension service officers and farmers, in order to benefit from the gained knowledge and experiences in this field. Fostering such a relationship between the project and public stakeholders ensure that endusers, mainly farmers, are entailed for participation in the project and that the project proponents are viewed to heighten adoption of CSA practices and technologies.

In the case of the EU-GAIA project, the implementation phase resulted in key lessons that would guide adaptation programming and any upcoming future projects, or a follow-up of the project. However, the EU-GAIA project, like any other climate adaptation project implemented by development agencies, run the risk of being unsustainable. The reason is that the project was not fully mainstreamed in the national development agenda. Hence, any future project targeting adaptation to climate change has to heighten the understanding and adoption of climate smart technologies and practices by the local public authorities before the project's inception. This approach is a critical step in ensuring continuity beyond the project lifetime.

Following the learned lessons, the project makes the following recommendations:

1) Climate Change is an emerging concern for smallholder farmers, and there is need to create awareness of the phenomena among them in order to heighten the potential for adoption of Climate smart technologies.
2) Agricultural Extension Services (AES) are principal stakeholders for engaging farmers and guiding them on approaches to increase agricultural production. However, most went through training programs, while climate change education was not taught as a subject or even a topic in their curriculum. For that, extension agents have to be trained to enhance their knowledge and awareness of climate change, its impacts and what can be done about it, such as adaptation/mitigation strategies.
3) Extension Officers should be considered for further training in climate change and its implications, so that they can transfer information about climate change adaptation to farmers.
4) Communication material and dissemination of the obtained results can be used for public information provision and awareness on climate change, its impacts and adaptation. On the one hand, this helps upraising the community about the project approach, objectives and activities, and anchor the project's activities around the community, and, on the other hand, assures a follow-up of the project as an opportunity to tackle climate change in a collective way, and bring up sustained recommendations.
5) Within the frame of agrometeorological applications and services, there is a need to establish in the project target regions an agro-meteorological system that collects at in-real time basis weather data and provide relevant and timely information to extension services and farmers has the role to strengthen the capacity of small farmers and farmers' organizations to manage their agricultural practices in a sustainable manner. This would result in improved agricultural production and secured National food security.

Summary of immediate interventions proposed during the EU-GAIA bridging phase:

1. Introduce the concept of CSA pilot program in the three northern regions (Shirak, Lori, Tavush);
2. Establish farmer's pilot plots based on crop prevalence in the three target regions, and farmer's target groups;

3. Establish a pilot agrometeorological network in the three target regions covering the pre-selected value chains. The number of agro-meteorological stations will be determined at a later stage and after conducting a field survey to define the local topography and micro-climate in the three target regions;
4. Establishment of online agro-meteorological platform and test of the first early warning system on pest and diseases;
5. Conduct a training program to farmers and cooperatives, along with training of trainers to extension service providers, upon the general and specific topics indicated in section 7;
6. Conduct field days in the pre-selected pilot plots to demonstrate to farmers CSA techniques and practices during the in-season off-season.