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“Promotion of employment opportunities
through exchange of good practices and active participation”

Peer-To-Peer Cooperation with Iraqi Governorate – Al Anbar

under the Programme

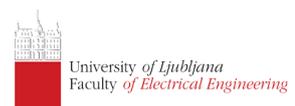
‘Supporting Recovery and Stability in Iraq through Local Development’

Funded by the European Union and Implemented by UNDP

Agriculture Development Centre Sustainability Action Plan

Deliverable D. 7b.2 – Sustainability action plan

September 2022



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Executive summary

The document was elaborated in the framework of the Peer-To-Peer Cooperation project with Iraqi Governorate – Al Anbar - project aiming to address the needs of the agricultural sector in Al Anbar, focusing on establishing equipped and functioning Agriculture Development Center. The project was developed and implemented by the Consortium of partners that consists of the Association of Municipalities and Towns of Slovenia (lead partner), ZaVita consulting (partner, Stritih Sustainable Development (partner) and the Faculty of Electrical Engineering, University of Ljubljana (partner), under the UNDP supervision.

Agriculture Development Center (ADC) was officially established by the Anbar Governorate and is functioning within the Directorate for Agriculture of Anbar Governorate, who will also continue to provide financial support for its functioning and operations.

ADC employs five members of the board: director, deputy-director and three employees, supervised by specialists in different areas who monitor their work. Main field of work are: topics of agriculture, virtual market and women affairs.

Hereby, the Sustainability Action Plan identifies the strategic orientation, activities and future projects that would not only support but develop the agricultural sector of Anbar province on different fields of agriculture. It is based on the supporting and background activities that were performed within the project and on the basis of which the future orientation of the ADC has been drafted.

Long-term functioning of the ADC and its development highly depends on the future projects. Therefore, this document includes a non-exhaustive list of project ideas and donor programs that could support their realization. Also from this perspective, this document (as the entire implemented Peer-To-Peer Cooperation project) represents a solid ground for the work that lays ahead.

1 Introduction

The aim of the Sustainability Action Plan is to set strategic orientations and actions for the operation of the Agriculture Development Center, which was established within the Peer-To-Peer Cooperation project with Iraqi Governorate – Al Anbar, financially supported by the European Union and coordinated by the UNDP.

The document is a reflection of more than a year long process of mutual interactions and work done, by the partners from Iraqi province of Al Anbar and Slovenia, Europe. Within the scope of the project and in participative and interactive manner, the project has:

- defined key stakeholder groups in Al Anbar and Slovenia,
- assessed key strategic issues in the field of agricultural development in Al Anbar province,
- presented identified good practices and lessons learned in Slovenia,
- enabled and promoted in-depth exchange of knowledge in selected priority areas,
- presented and transferred the framework of good practices to Al Anbar,
- established Agriculture Development Center,
- site visit in Ramadi, Anbar province, Iraq,
- site visit in Slovenia

The presented document therefore leans on the previous project results as an outline of the future work of the ADC and seeks to ensure sustainability of project results (i.e. developed methods, material and tools), achievements (Agriculture Development Centre) and practices (i.e. networking opportunities, dissemination of presented good practices, and modern agriculture and marketing techniques).

Sustainability Action Plan is a document that sets the purpose, aim and development direction of the Agriculture Development Centre. It has been developed through a close cooperation of Iraqi and Slovenian project partners, where the Slovenian team facilitated the process and the Iraqi team contributed vital information. Consequently, this represents a relevant document that is based on relevant needs (GAP Analysis), identifies the development heading (Strategic orientation), proposes activities how to go there (Activities), which methods to use (Trainings), how to benefit from networking and connections between farmers and stakeholders (Marketing possibilities), proposes development of additional funding opportunities (Future projects), states financial sources for its implementation (Funding), and evaluation of the success of this plan (Monitoring).

2 Situation analysis

Within the preparational activities that were performed at the beginning of the project, the circumstances, characteristics and actual needs of the agricultural sector in the province of Al Anbar were identified. This included the identification of relevant stakeholders, important for the development of next actions and gap assessment, in order to characterize the most pressing challenges and gaps that needs to be addressed.

2.1 Stakeholder Analysis

Iraqi partners have identified different stakeholder groups and individual stakeholders on the basis of their importance for implementing modernization and further development of agricultural sector. The identified stakeholder groups were then ranked according to their importance in the project, resulting the figure below.

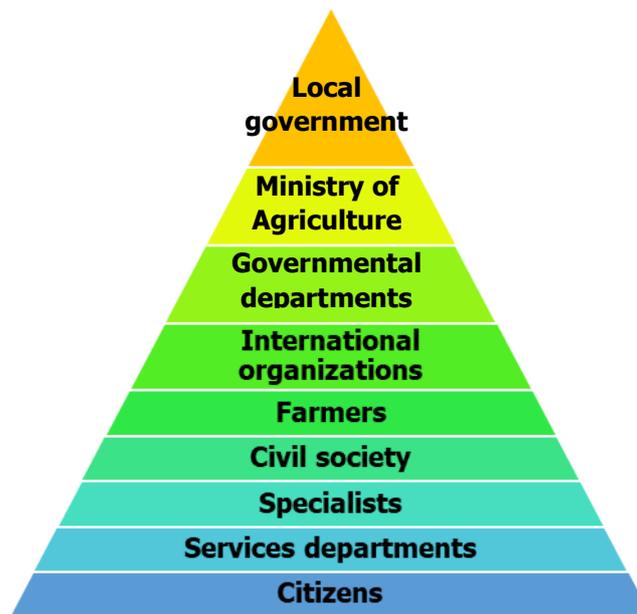


Figure 1: Stakeholder groups, according to their importance for the Project (Deliverable 3.1, 2021).

Stakeholders were additionally assessed according to their **attitude, interest, and power** regarding the virtual market and the farmers' association as two main best practices previously identified by the project partners. We firstly analyzed farmers' point of view in a common radar chart where farmers are grouped according to their field of work and the deviations of their response.

As indicated in figure 2, we can see that farmers mostly have a very positive attitude towards local food production, with few exemptions such as green windbreak expert, horticulture and plant nursery farmer and tissue culture expert's attitude on local food production. **Farmers, in general, are very interested in establishing an association of farmers, and moderately interested in establishing a virtual market. Farmers have been identified to have a moderate power to establish an association of farmers and low power to establish a virtual market.**

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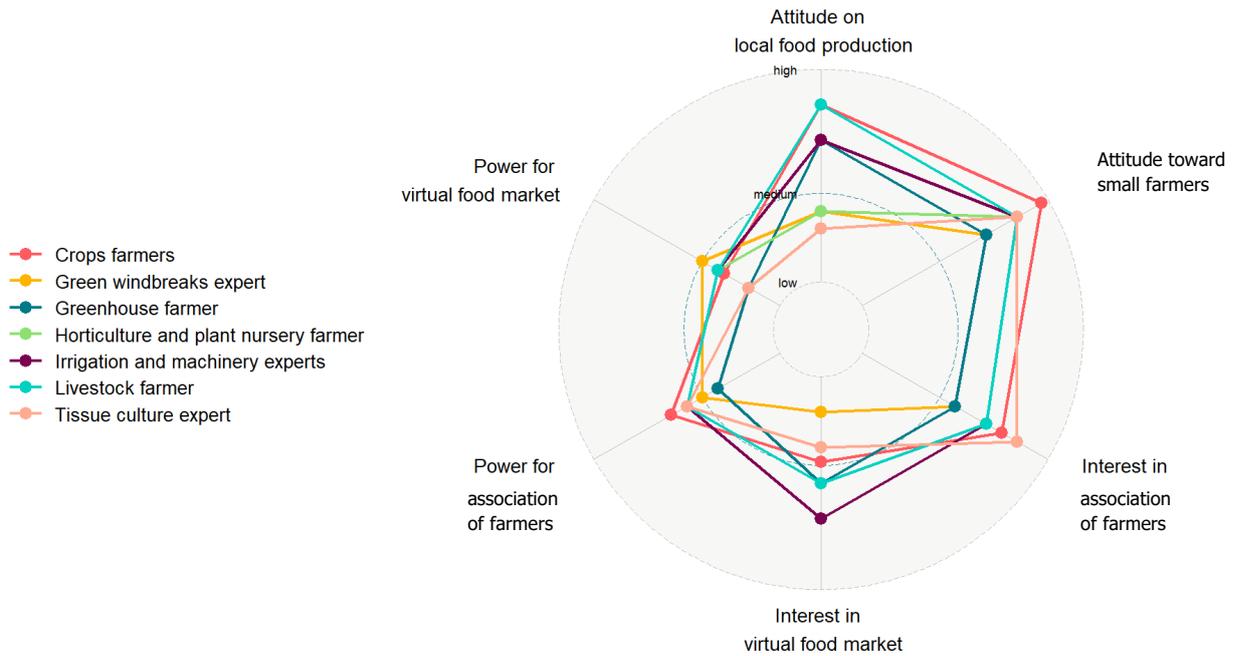


Figure 2. Radar chart of the farmer groups' attitude, interest, and power regarding the virtual market and farmers cooperatives (Deliverable 3.1, 2021).

The following figure represents the orientation of all identified stakeholder groups from figure 1, where the farmers in figure 2 are all merged into one line.

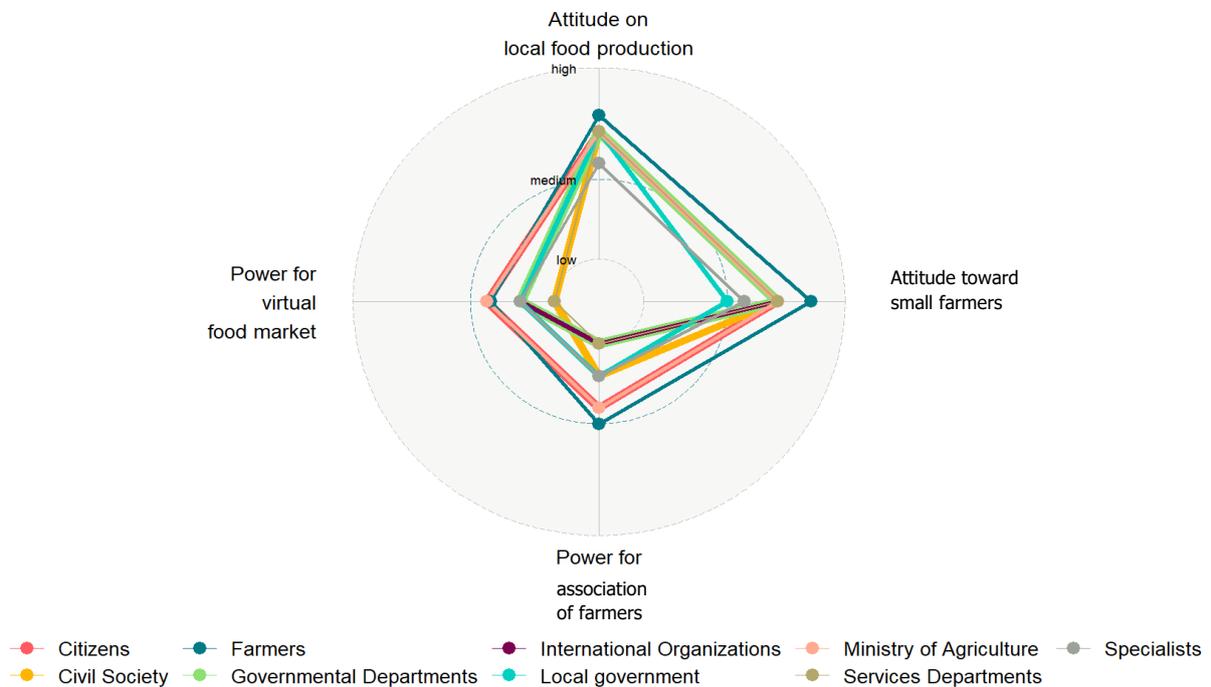


Figure 3. Radar chart of all identified stakeholder groups' attitudes and power. Interest was not plotted due to an absence of data points (Deliverable 3.1, 2021).

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As seen in Figure 3, the stakeholders have a positive attitude towards virtual markets and association of farmers. However, they possess medium to low power for establishing an association of farmers, and even lower power to establish a virtual market.

Farmers and consumers need to be appropriately motivated to join such initiatives, whereas a suitable communication strategy is a key to success. The project has so far (through the communication activities performed by the ADC staff) aimed at small farmers and presented them the ADC center, activities and good practices from Slovenia.

2.2 Gap Analysis

The Gap Assessment for Al Anbar Province was performed by the group of Al Anbar Governorate officials, providing for three cases with identified gaps (

Table 1 1).

Table 1. Gap assessment of the agricultural sector in Al Anbar (Deliverable 3.1, 2021).

N	Current Situation	Ideal Situation	Identified Gaps	Existing Opportunities	Action Plan
1.	Farmers are not organized within associations of farmers.	Establishing associations in different agricultural sectors.	Associations: 96 %.	Existing interest among farmers in joining associations.	Setting up a database of farmers.
2.	Virtual markets are not widely present.	Enhanced farmers' capacities for involvement in virtual markets.	Virtual market: 75 %.	Existing interest among farmers and producers in a virtual market.	Trainings of farmers and producers on virtual market management.
3.	Lack of manufacturing plants.	Build manufacturing plants.	Manufacturing plants: 80 %.	Surplus of seasonal agricultural products.	Promoting the establishment of manufacturing plants.

All three examples are highly relevant for Al Anbar agricultural sector. The Gap Analysis here identifies the lack of associations of farmers and the virtual market as gaps that should be addressed. Within the projects, farmers were approached by the ADC team to present them the activities of the ADC and how can support them on the way towards establishment of such associations.

Concerning virtual markets, the first step was to provide training to interested stakeholders on its functioning and use (provided example from Slovenia and provided material for further use).

The last example aims to address the lack of manufacturing plants and the surplus of seasonal agricultural products. This can be addressed in future activities by promoting the establishment of manufacturing plants. Nonetheless, the seasonal surplus of food can be effectively addressed by establishing virtual markets or farmers' associations, and through them offer the surplus to the consumers that are experiencing food shortages (Fathallah, 2015). Thus,

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functioning and successful associations may in the long run enable also better infrastructural and manufacturing conditions for farming (i.e., addressing the problem of a seasonal surplus of agricultural products).

Findings of the rapid food security assessment from 2015 for Anbar Province (Fathallah, 2015) point out that besides reduced agricultural production in the recent decade (40% of farmers reported a severe reduction in wheat and barley production) due to the conflict, supply chains for transportation and storage in agriculture are often disturbed leading to higher food prices as well as food shortages, affecting consumers. From the farmers' view, this means that even the reduced production is more difficult to market due to conflict and disrupted supply chains. This contributes also to the declining number and activities of indoor and outdoor markets. The linkages between small farmers and consumers were weak even before the conflict, resulting in high post-harvest losses. Fathallah (2015) concluded that "*markets for connecting farmers to wholesalers and consumers need rehabilitation*".

The overall objective for the agricultural sector in Al Anbar is therefore to achieve food security and to facilitate the framers' efforts to produce and sell their products, therefore improving the livelihood of the communities in Al Anbar.

With these indications, the key strategic issues of the Agriculture Development Centre were identified and are presented in the following chapter.

3 Strategic orientation

The Agriculture Development Centre (ADC) was established within the project in order to address the before mentioned gaps and stimulate the development of agriculture in Al Anbar province, Iraq.

It has been established as a new factor for the stimulation of the agriculture development in the region, it first needs to have a defined identity a clear purpose and theoretical overview. For that reason, in close cooperation between the Slovenian and Iraqi peers, **purpose, values, objectives and activities** of the Agriculture Development Centre have been identified.



PURPOSE:

Establishing friendly supporting environment for farmers

The identified purpose of the ADC is, that it becomes a friendly supporting environment for farmers, where they would be able to address the employees with their questions, challenges, problems and needs. The ADC will build the activities and actions on the common value that the ADC is a trusted partner in addressing challenges of farmers.

Trough the interaction between the project partners from both peers and interaction between the ADC members and the farmers with they have already established contact with, common values that the ADC will pursue have been defined. The values derive from the purpose and relate to creating a supportive and development environment that would be capable to advise to farmers in relation to their questions, challenges, problems, needs, etc. Therefore, that the ADC is recognized and accepted as a trusted partner in addressing challenges of its partners.



VALUES:

ADC as a trusted partner in addressing challenges of partners

Objectives are wide and can be merged in two groups. One is strategic objectives of the ADC, related to its continuing functioning and implementation of activities for identified stakeholders. The second group of objectives relate to specific agriculture thematic field, therefore to the impact of the activities that the ADC will perform, thus triggering and facilitating the development of specific agricultural sector by providing support to the farmers by implementing necessary activities. These objectives will be presented in the following chapter.

Strategic objectives of the ADC that will be implemented in the future relate to assuring adequate agricultural expertise, equipment, human and financial resources for achieving its purpose (connecting farmers).



OBJECTIVES:

Connecting farmers
Seeking funding sources

Activities, that will lead towards the achievement of set objectives first relate to the introducing the ADC to identified stakeholders. This activity has already started within the Peer-to-Peer project and was implemented by the employees of the ADC. However, this is a continuous activity that needs to be performed constantly. Presence of the ADC employees on the field and providing assistance and support to the farmers is a key message, especially needed in the first years of the ADC functioning, as it need to be recognizable and acceptable by a numerous and wide group of stakeholders.

Coordination of producers and merging their needs in specific thematic fields creates a solid ground for operational functioning of the ADC. Knowing the stakeholders and their specific needs is a first precondition for planning support actions in order to address them. The actions that the ADC should undertake should be orientated towards increasing production of farmers in all thematic fields. However, it is important that the increased production goes hand in hand with processing capabilities and capacities of consumers in order to avoid surplus of products that lower the price of agriculture products and even their decay.



ACTIVITIES:

Coordinating producers
Increasing production
Stimulating joint marketing
Preparation of project proposals

In relation to that, stimulating and well-planned joint marketing is an important activity that should run in parallel, when the capacities to implement such activities will be available. As can be observed from the good practices from Slovenia in relation to marketing in the Peer-to-Peer project, well planned marketing can influence also to the dispersal of crops in order to mitigate surplus on one side, and ensure diversity of offer and satisfy demand on the other.

All needs of the stakeholders would not be able to be achieved within the current financial and human resources of the Agriculture Development Centre. Therefore, it is necessary that the ADC is open to various donor opportunities that are available in Anbar province and wider Iraq. With following projects, innovative and additional methods, knowledge and practices can be introduced to stakeholders and also international cooperation fostered. The list of potential donors and funding opportunities, together with indicative fields of support is available as an appendix to this document.

4 Thematic objectives

Within the implemented P2P project, a continuous communication and exchange of information, knowledge, visions and needs took place. As a consequence of all interactions (e-mails, on-line meetings, two site visits, support to both sides by regional coordinator, informal calls, etc.), specific agricultural thematic objectives have been identified.

On the basis of regional needs on the field of agriculture, that are nowadays present in the Al Anbar governorate, the contact that the Iraqi peers (notably the employees of the ADC) in the project lifetime, the following five specific thematic agricultural fields have been identified:

- Rationalization of freshwater use
- Aquaculture
- Tissue culture
- Production in greenhouses
- Marketing of agriculture products

For above stated thematic fields, thematic objectives have been set, stakeholders identified and resources defined.

The figure on the following page represents a schematic framework of the activities, that the Agriculture Development Centre can perform in order to reach thematic objectives in relevant specific agricultural fields.

For some specific agricultural fields, concrete future projects have been drafted in order to set concrete actions in reaching the set thematic objectives. See chapter 7 for such example.

For all other specific thematic fields, it is the task of the Agriculture Development Centre, and the experts in the field of agriculture who supervise the work of the center, to prepare project proposals in order to implement concrete actions for reaching set objectives. In order to support this process, potential donor programmes have been identified that can financially support the implementation of such projects. See Appendix 1 for more details.

Following the purpose, values, objectives and resources that the Agriculture Development Centre has gained and benefitted with within the Peer-to-Peer project, it has the capabilities to support the implementation of actions, needed to reach the set objectives of specific fields. With the horizontal activities: coordinating producers, increasing production, stimulating joint marketing and preparation of project proposal it can support stakeholders on respective thematic fields in order to trigger the development of agriculture sector in Al Anbar governorate.

AGRICULTURE DEVELOPMENT CENTER
مركز تنمية الزراعية

PURPOSE
الغرض

- Establishing friendly supporting environment for farmers
- خلق بيئة صديقة داعمة للمزارعين

VALUES
القيم

- ADC as a trusted partner in addressing challenges of farmers
- مركز التنمية الزراعية كشريك موثوق به في معالجة تحديات المزارعين

OBJECTIVES
الأهداف

- Seeking funding sources / البحث عن مصادر التمويل
- Connecting farmers / ربط المنتجين

ACTIVITIES
الأنشطة

- Coordinating producers / ربط وتنسيق المنتجين
- Increasing production / زيادة الإنتاج
- Stimulating joint marketing / تحفيز التسويق المشترك
- Preparation of project proposals / إعداد مقترحات المشاريع

RESOURCES
الموارد

- Human resources / الموارد البشرية
- Financial resources / الموارد المالية
- Agricultural experts / خبراء زراعيين
- Equipment / معدات
- Transportation / المواصلات

SUPPORT
الدعم

SPECIFIC AGRICULTURAL THEMATIC OBJECTIVES
أهداف موضوعية زراعية محددة

THEMATIC FIELD المجال الموضوعي	THEMATIC OBJECTIVE الهدف الموضوعي	STAKEHOLDERS اصحاب المصلحة الرئيسيين	RESOURCES الموارد
Rationalization of freshwater use ترشيد استخدام المياه العذبة	Better use of freshwater استخدام أفضل للمياه العذبة	Farmers Breeders Producers	Financial resources Equipment Seeds Agricultural pesticides & fertilizer
Aquaculture تربية الأحياء المائية	Implementation of innovative fishing farms تنفيذ مزارع الصيد المبتكرة	المزارعين المربين المنتجين	الموارد المالية معدات بذور مبيدات واسمدة زراعية
Tissue culture زراعة الأنسجة	Better and fast production of mature plants انتاج النباتات الناضجة بشكل افضل و سريع		
Production in greenhouses الإنتاج في البيوت البلاستيكية	Production of many agricultural crops in the off-season انتاج الكثير من المحاصيل الزراعية في غير موسمها		
Marketing of agriculture products تسويق المنتجات الزراعية	Supply the markets with local agricultural products تزويد الاسواق بالمنتجات الزراعية المحلية	Producers Experts? Buyers? منتجين الخبراء؟ المشترون؟	

SUPPORT / الدعم

Figure 4. Specific Agricultural Thematic Objectives.

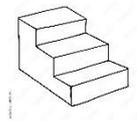
5 Trainings

Within the Peer-to-Peer project, training method was used in order to identify strategic orientations of the newly established ADC and furthermore to empower Iraqi partners (notably the ADC employees and those interested in development of the agricultural sector and those directly or indirectly affiliated to the ADC) on various topics. Within these trainings, also the training material was developed (ppt presentations, videos, examples of good practices, etc.) that can now be used by the ADC employees to disseminate further on among the identified farmers and other stakeholders.

Trainings are a highly useful and adaptable tool that can serve (if used and implemented in correct and efficient manner) all identified stakeholders, needed to achieve objectives in the chapter mentioned before.

In order to facilitate the organization of each training, a useful check list has been prepared.

Step by step to do list on how to implement a training



Each training has three steps in its implementation:

1. Preparation
2. Implementation
3. Follow-up

1. Preparation



1.a What is the purpose of the training?

What will be the main topic of the training? The ADC staff should identify the main topic, according to the requirements of the target group.

Example: How to plant vegetables in green houses.

1.b Which problem(s) is the training addressing?

Training in order to be efficient needs to address specific problem or topic. In this way, it will increase the knowledge and expertise of the target group and find suitable solutions in different fields. If implemented well, it will encourage the trainees on continuous cooperation with farmers and the ADC

1.c What will be the benefit of the training for the participants?

What are the key messages or methods or activities that the organizer of the training would like that the participants benefit from? It is necessary that the key messages are concrete, punctual and only a few. Expectations of the training must meet with the available time, resources and capacities of all involved in the training.

1.d Who is the target group?

Who would we like to address with the training? What is their background? When preparing the content, it is necessary not to underestimate or overestimate the knowledge of the target group. What are their needs and expectations?

1.e Motivation

How will the target audience be addressed and motivated to join the training? Good motivation and proactive atmosphere are crucial for the success of the training.

1.f Methods

A variety of different methods can be used to implement the training and they can all be found on-line. It is recommended to put the focus on the methods that bring the most effect in relation to the available resources (place, time, budget, etc.) and the size of the training participants.

Classic examples of the methods include presentations, workshops and brainstorming. It is recommended that the trainings are as interdisciplinary and active as possible. This can be reached with preparation and dissemination of videos that can be used as a training material as well as for media. Field exercises are beneficial since they are practical and create a creative and communicative working environment.

1.g Location and date

Where and when will the training take place? Is the location accessible to majority of target audience? Is the timing acceptable for the target audience (planting time? Harvest time? Religious holidays?). How long will the training will be (calculate also time needed for the target group to reach the venue and return home).

Check the place before the training. Is it adequate and can all foreseen methods be implemented or it needs adjusting?

2. Implementation

2.a Equipment and resources

Who will speak on the training? Who will moderate? Is external assistance needed?

Who will take care about the logistics (communication with the venue if needed, transportation, coffee break, lunch, participant list, certificates, etc.), prepare and send the invitations? Arrange the equipment (laptop, beamer, translation if required, internet, flipchart, etc.). Who will inform, invite and accommodate the media? Who is needed for the organization and how many?

Is the plan in line with human and financial resources?

2.b Implementation of the training

If all the steps and task before were implemented adequately, then the training is on a good path toward success. Everyone knows its role and has the tools and resources to implement it.

During the training, it is necessary to communicate with the audience in order to receive first feedback on the acceptance of the topic, comfort on the method used, etc. Timekeeping is of the essence in order not to be too long and exhausting.

3. Follow-up

3.a What to do after the training?

Was the training successful? Make an evaluation. It can be an informal discussion with several participants or a survey with short questions. This is a good step forward and necessary learning procedure so that each training is even better.

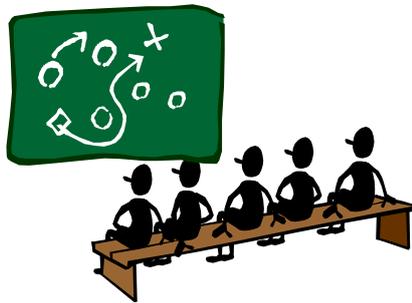
Is a report needed? It would be useful since it can serve as minutes and explain the challenges and needs that have been identified and suggestions for future tasks.

3.b Media coverage

During the event it is necessary to take pictures and share them with media (along with a press release). This positively contributes to the visibility of the ADC among the general public and informs potential target groups about the benefits of the events, organized by the ADC.

3.c Stay in contact with the participants

Benefits of the training can be observed later on. Stay in contact with the participants. It is not necessary with all but with a few in order to gain feedback of the disseminated knowledge later on and identify together with them the topics that would be useful to address in the future.



Within the project, the ADC employees have been introduced with this method through all implementation phases. Within the following period, it is essential that, benefiting from the gathered know-how, the ADC team develop and implement trainings on the topics listed in Figure 4 and explained in the previous chapter. By doing that, the ADC will enhance its position and role among the stakeholders (notably farmers) as a relevant supporting and development agriculture institution. If needed, external experts should be included in the implementation of trainings, thus expanding the network of knowledge within the team and ensuring the highest quality and relevance of disseminated knowledge and practices.

6 Marketing possibilities

Within the Peer-to-Peer project, virtual market has been identified as a key good practice that is transferrable to the Anbar Governorate. Therefore, a lot of focus, trainings and notably the field visit in Slovenia have been devoted to this topic.

What is a virtual market?

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A virtual market is an online website or a mobile app, through which suppliers advertise or even sell their products. Therefore, at such a website/app, consumers can gain the contact information of sellers or even buy their products directly. The development of such platforms is facilitated by the increase in internet availability and online shopping in recent years. One type of virtual market is also the virtual market for food, focused on selling various agricultural products.

It is important because it is simple to implement and it is not only a marketing tool but also a communication channel that connects farmers and promotes the ADC.

Why establish virtual market?

The functioning virtual market, as it is today, facilitates farmers' entry to the food market and at the same time enables easier access to local healthy agricultural products for consumers. It is lowering the risk of lack of demand to small and middle-sized farmers, and currently, it is so successful that the demand is outnumbering the supply. The Market in its initial phase can be publicly financed by governorate.

How does it work?

Via customer-friendly website, that functions as a billboard with advertisements for all kinds of agricultural products, such as vegetables, dairy, eggs, honey, meat, juice, fish, bread, oil, fruits etc.

All users, registered at the website, can write short advertisements for their products. After the advertisement is approved by the website's manager, it is posted online together with other advertisements for everyone to see.

After a consumer finds a suitable product and clicks on it, a new window with more information on the specific product opens. Here customers learn about the price, description of the product, seller's contact information, type of cultivation (organic/traditional), as well as about the pickup/delivery options.

Types of producers and customers

Most of large farmers do not look for such a virtual market tool, as they have no problem entering the market and ensuring a stable level of sales. However, medium sized and small farmers have proven to be the target audience, as they alone do not have a lot of power to enter the market, and they also want their business to grow. Especially younger farmers, who have proven to adapt easily to new technology of selling are a relevant target group. The vast majority of consumers at the website is private customers.

How to approach farmers and consumers?

By a trustworthy and constructive institution that have previously performed many projects and were able to utilize these experiences and contacts among farmers and consumers. Still, in the beginning there is a lot of field work to be done, to visit farmers and convince them in the idea. Active stakeholders (mostly farmers, but also digital marketing specialists etc.) are essential in the initial phase of the project, and they help to create a user-friendly concept and website.

Throughout the project that was implemented in Slovenia, the local government and the Local Development Agency have collaborated with various stakeholders, such as other

(neighboring) municipalities, agricultural and business experts, users – farmers, and consumers. The funders point out that it is important to include the most important stakeholders (farmers) already in the phase of solution design and not only after the market is already online.

The team that manages the virtual market has regular meetings with producers who use the website with a purpose to stimulate networking, and evaluate the Market's functioning. Furthermore, presentation of the Market and promotional activities are planned to spread the word about the Market to both; consumers and producers.

Today, the virtual market is being promoted using social networks (Facebook, Instagram), institutions' websites, newspapers (Agrobiznis, Finance), radio, email news for registered users, and on different events.

More information and step-by-step implementation manual can be found in the project deliverable titled: Slovenian Good Practices in Field of Farmers' Cooperatives and Virtual Food Markets – Description and Step-by-Step Establishment Manual. August, 2021.

7 Future projects

The Agriculture Development Centre should regularly prepare project proposals for international donor funding opportunities (such as the UNDP, GIZ, USAID, etc). Such projects are important source of innovation opportunities as they enable funding of pilot development projects and initiatives.

In order that the project application is successful, it should have a solid structure that identifies the needs, aim, activities, time plan and budget.

On the basis of interactions and cooperation activities between Slovenian and Iraqi peers, the needs of agriculture sector in Anbar province have been detailed discussed. On that solid ground and benefiting from site visit of Slovenian peers in Anbar province, the following project proposal has been drafted, that can be tailored and amended according to the aims of the funding programme.

7.1 Horticulture Research and Demonstration Center (HRDC)

The project proposes establishment of **Horticulture Research and Demonstration Center (HRDC)**, streamlining that the agricultural innovation is a win for farmers and the climate.

1. Needs

The implementation of innovative and modern techniques of cultivation in agriculture is essential for the development of Iraqi agriculture, as it brings benefits to farmers (producers), local people (consumers) and the environment. The essence of modern production techniques is not only to increase production, but also to use available resources in a rational, sustainable and minimal way in order to achieve greater competitiveness with a significantly lower impact on the environment than in comparison with conventional production.

Horticulture is one of the most production-intensive branches of agriculture in the world, which is unfortunately not the case in Iraq. The main reason for this is the lack of demonstrations of

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modern practices and tools, both on the part of professionals and producers. In the rest of the document, we present the much-needed concept for the operation of a demonstration and learning center for modern horticulture. This is especially necessary in order to make horticulture more competitive in the future and offer new impulses to growers in the form of knowledge transfer with proven modern and the latest cultivation systems, control and management of microclimatic factors and new methods of biotic and technologically sophisticated plant protection.

2. Purpose and aims of the project

The main purpose of the Horticulture Research and Demonstration Center (HRDC) is to transfer the practical knowledge from research institutions (researchers) to practical users (farmers). At the HRDC, farmers are able to learn in a practical way how to manage a modern greenhouse, acquire knowledge in the field of soil-based and non-soil-based cultivation techniques (hydroponics) of vegetables, and see the difference between soil-based (conventional) and non-soil-based (hydroponic) methods of vegetable cultivation with a concrete example. Throughout the growing season, in the greenhouse, which is divided into two areas (soil and non-soil cultivation), all data are recorded separately, which are used for the report on the comparison of soil and non-soil cultivation. The greenhouse will also represent an opportunity to test different vegetable species if they are suitable for growing in local environment. The data obtained will provide an excellent starting point for concrete analyzes between conventional and modern vegetable cultivation in Iraq. The report will show the differences between conventional (soil-based) and non-soil-based (hydroponic) cultivation, evaluated according to economic, cost, environmental, energy and marketing factors. In this way, for the first time, the home grower will receive relevant and verified information about Iraq's agro-climatic and market conditions, which will be of great help in modernizing his own farm or business.

3. Time plan

The project to establish HRDV is designed as a new construction of basic infrastructure, research and teaching activities. The research and teaching activity is divided into a part of research and a part of knowledge transfer to farmers, which will take place throughout the growing season.

Professionally trained personnel responsible for the cultivation of vegetables, will provide technological and operational support for the technical execution of specific work tasks throughout the growing season, depending on seasonal requirements. Prior to the main work, workshops will be organized in which previously registered farmers will be shown specific work tasks in both soil and non-soil vegetable cultivation. In this way, through a predetermined number of annual visits, farmers acquire practical and theoretical knowledge in the field of cultivation, care of plants, handling of machinery and management of greenhouses, etc.

At the end of growing the season, a final workshop is organized where statistically evaluated data (differences) between the cultivation of vegetables with and without soil in a given cultivation year are presented to the farmers. At the end of the year, a brochure will be published for this purpose, which will be available to the general public.

4. Conclusion

Without constant training of stakeholders, monitoring of success factors and introducing new technologies in agriculture, we cannot expect desired and much needed progress. The

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presented project offers the Iraq horticulturist a new, modern way of acquiring practical and theoretical skills through advanced, interesting and modern forms of learning, which have been met with extremely positive response abroad and are noticeable in the industry through improved procedures, lower costs and increased interest for agriculture and efficiency of farms. The concept of a Horticulture Research and Demonstration Center is of interest to both the younger and older populations and will be an important meeting place in the future for the acquisition and transfer of knowledge from experts (scientists) to farmers (practitioners).

In order to facilitate the presentation and interpretation of the Center, the following sketch has been drafted and indicative budget that represents financial framework of costs.

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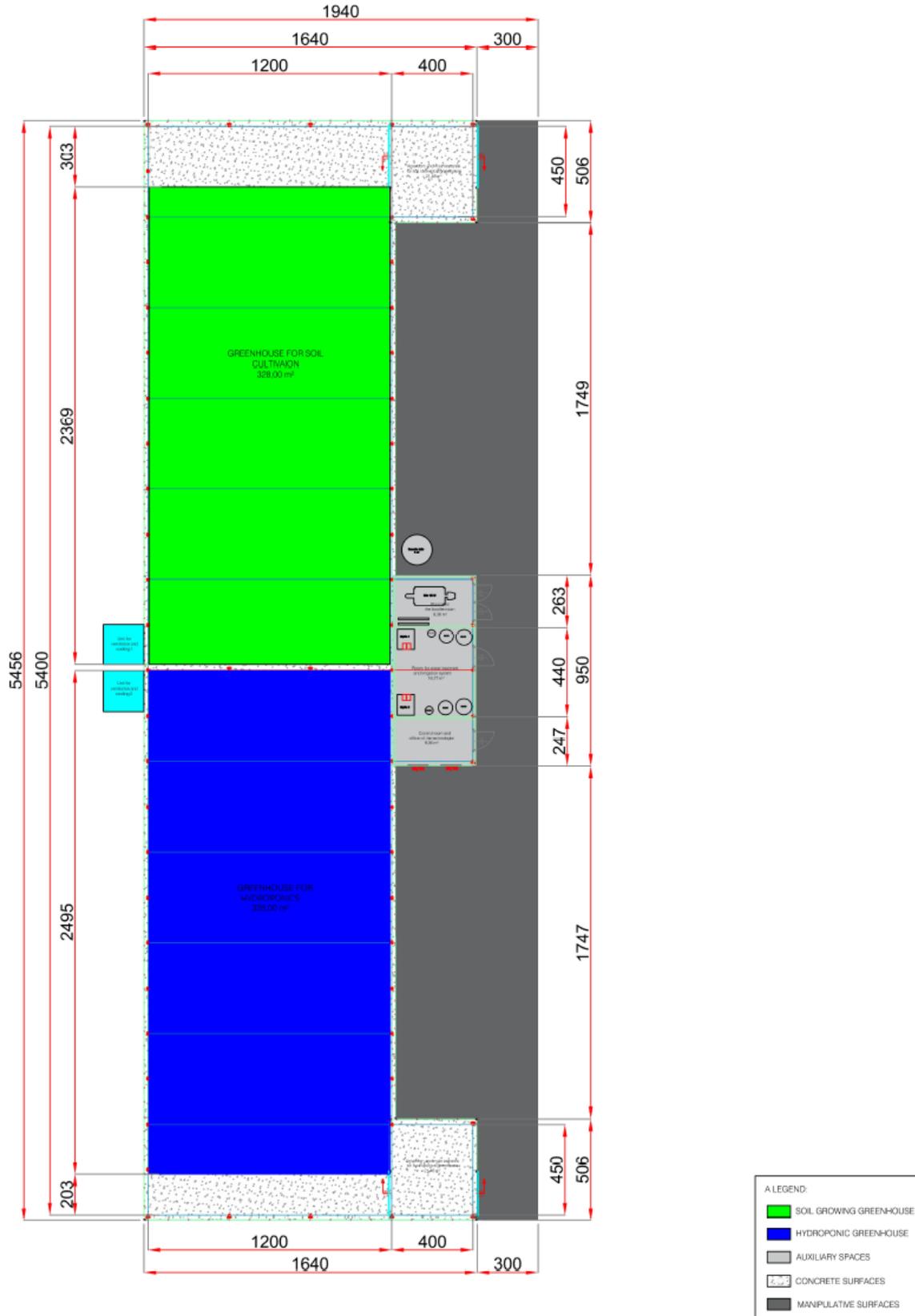


Figure 5: Sketch of the Horticulture Research and Demonstration Center (HRDC)

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Table 2. Framework of costs (excluding VAT) for the Horticulture Research and Demonstration Center (HRDC)

CODE	COST CATEGORY	PCS.	UNIT	COST
A.	Preparatory work	760	m ²	4.560,00 €
B.	Construction work:			
B.1.	Groundwork:			
B.2.	Working of the terrain at a certain angle	1.100	m ²	5.500,00 €
B.3.	Preparation of the surfaces for concreting and asphaltting	400	m ²	4.000,00 €
B.4.	Drainage	1.100	m ²	4.400,00 €
B.5.	Management of the area of the greenhouse after completion of the works	660	m ²	2.640,00 €
B.6.	Management of the environment	600	m ²	2.400,00 €
C.	Masonry works:			
C.1.	Concreting the foundation and footings of the greenhouse	750	m ²	9.375,00 €
C.2.	Concreting of manipulation areas	150	m ²	5.700,00 €
C.3.	Putting up a fence	180	m ²	4.500,00 €
C.4.	Other masonry works	1.100	m ²	6.600,00 €
D.	Asphaltting works	310	m ²	9.300,00 €
E.	Greenhouse:			
E.1.	Construction of the greenhouse h=6,5m up to the gutter + glass	720	m ²	36.000,00 €
E.2.	Roof opening - floor	360	m ²	5.400,00 €
E.3.	Roof opening - hydroponics	360	m ²	5.400,00 €
E.4.	Construction of greenhouse for utility rooms + panels	40	m ²	2.600,00 €
E.5.	Double shading (thermal and solar protection) (ceiling + side)	720	m ²	10.800,00 €
E.6.	Irrigation - soil raising	360	m ²	9.000,00 €
E.7.	Irrigation - hydroponics	360	m ²	11.520,00 €
E.8.	Hydroponic equipment	360	m ²	5.400,00 €
E.9.	Heating - hydroponics	360	m ²	14.400,00 €
E.10.	Heating - floor	360	m ²	10.800,00 €
E.11.	Boiler room	720	m ²	21.600,00 €
E.12.	CO ₂ - hydroponics	360	m ²	5.400,00 €
E.13.	CO ₂ - soil	360	m ²	2.520,00 €
E.14.	Aeration (dehumidification, cooling, recovery) - hydroponics	360	m ²	11.880,00 €
E.15.	Aeration (dehumidification, cooling, recovery) - soil	360	m ²	11.880,00 €
E.16.	Hydroponic lighting	360	m ²	12.600,00 €
E.17.	Soil lighting	360	m ²	12.600,00 €
E.18.	Hydroponic electrical installations	360	m ²	7.200,00 €
E.19.	Wiring in the soil	360	m ²	7.200,00 €
E.20.	Climate computers, diagnostic and control devices for hydroponics	360	m ²	5.400,00 €
E.21.	Climate computers, devices for diagnosis and soil control	360	m ²	5.400,00 €
F.	Mechanization			
F.1.	Trolley for hydroponics, lifting height up to 6,5 m	1	pcs.	28.000,00 €
F.2.	Electric forklift	1	pcs.	6.000,00 €
F.3.	Tractor 40 -70 kW	1	pcs.	55.000,00 €
F.3.	Cultivator	1	pcs.	3.500,00 €
F.4.	Fertilizer spreader	1	pcs.	3.000,00 €
F.5.	Tiller (rotary)	1	pcs.	3.800,00 €
F.6.	Hand-held soil disinfectant and weed killer	1	pcs.	1.200,00 €
F.7.	Bed former	1	pcs.	5.400,00 €
F.8.	Mulching machinery	1	pcs.	4.800,00 €
F.9.	Transplanting machinery	1	pcs.	4.200,00 €

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G.	Technical documentation			
G.1.	Design concept	720	m2	3.500,00 €
G.2.	Project for issuance of a construction permit	720	m2	12.000,00 €
G.3.	Project for implementation	720	m2	15.000,00 €
G.4.	Project of completed works	720	m2	5.000,00 €
G.5.	Construction control	720	m2	7.000,00 €
G.6.	Surveying services	720	m2	3.000,00 €
G.7.	Other engineering services	720	m2	5.000,00 €
	Total:			439.375,00 €

Question for the Iraqi partners, do we have any other ideas that can be similarly elaborated?

Perhaps in relation to the following topics:

- Demonstration beehive?
- Irrigation system (sustainable use of freshwater)?
- Fertilizer, seedsSoil analysis (is this activity in chapter 3 or idea for future project?)?
- Livestock?

8 Resources

Agriculture Development Centre has been established within the framework of the project "Promotion of employment opportunities through exchange of good practices and active participation" Peer-To-Peer Cooperation with Iraqi Governorate – Al Anbar. The project covered the costs of equipment needed for the establishment and functioning of the center. In addition, it covered the stationary costs and the costs of the salary of five employees for the first five months of its functioning.

In order to ensure the functioning of the Agriculture Development Centre, the following resources are needed:

- Human resources
- Financial resources
- Agricultural expertise
- Equipment
- Transportation

9 Monitoring

In order to enable and facilitate the evaluation of this Sustainability Action plan, a series of indicators is proposed. The set of specific, measurable, achievable, relevant and time-bound indicators will facilitate the evaluation process, thus indicating the efficiency of the implementation of the sustainability action plan. They are presented in the table below, while the colours correspond to the actions presented in previous chapters.

Table 3. Indicators

N	INDICATOR	UNIT (source)	BASELINE (year)	TARGET (2023)	TARGET (2025)	TARGET (2027)
1.	Number of registered farmers in ADC	Farmer (Internal monitoring)	0 (2022)			
2.	Number of conducted trainings	Training (Internal monitoring)	5 (2022)			
3.	Number of training participants	Participant (Internal monitoring)	25 (2022)			
4.	Number of advertised products on virtual market	Participant (Internal monitoring)	0 (2022)			
5.	Number of registered users - sellers	Participant (Internal monitoring)	0 (2022)			
6.	Number of registered users - buyers	Participant (Internal monitoring)	0 (2022)			
7.	Number of published news	Participant (Internal monitoring)	0 (2022)			
8.	Number of submitted applications	Participant (Internal monitoring)	0 (2022)			
9.	Number of implemented projects	Participant (Internal monitoring)	1 (2022)			

	Functioning of the ADC
	Implementation of the trainings
	Virtual market
	Future projects

It is recommended, that the indicators are monitored annually and presented in an annual report. On each two years of the implementation (functioning of the ADC) an evaluation conducted, that will present an in-depth overview of the situation, identifies success factors, potential hinderances and proposed recommendation for a better implementation of the sustainability action plan and functioning of the ADC. In 2027, a new strategic document and

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action plan for the ADC should be drafted, in which the objectives and activities should be evaluated and activities and indicators redefined.

10 Literature

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