Food and Agriculture Organization
of the United Nations


©FAO/Kamilla Tuleyeva

PROMOTION AND EXCHANGE OF GOOD PRACTICES ON THE USE OF DIGITAL TECHNOLOGIES IN AGRICULTURE

April 2022

SDGs:	1 No Poverty; 2 Zero Hunger; 6 Clean Water and Sanitation; 12 Responsible Consumption and Production
Country:	Republic of Kazakhstan
Project Code:	TCP/KAZ/3704
FAO Contribution:	USD 260 000
Duration:	1 January 2019 – 31 December 2021
Contact Info:	FAO Partnership and Liaison Office in the Republic of Kazakhstan FAO-KZ@fao.org

Implementing Partner

Ministry of Agriculture.

Beneficiaries

Farmers, relevant government institutions, members of academia, non-governmental organizations (NGOs) and civil society organizations (CSOs).

Country Programming Framework (CPF) Outputs

CPF Priority Area 5: Information technologies for agricultural statistics and related data collection and analysis. Outcome 1: Establishment of coordination mechanism for information systems and agricultural statistics supported. Output 1.4: Digitization of agricultural knowledge and information (related to diversification, crop protection, resources saving technologies, drip irrigation, animal and feed production, farm management) supported.

©FAO Kamilla Tul...

Background

The Government of the Republic of Kazakhstan pays significant attention to digitalization as a driver and a means to achieving the SDGs. To this end, it has adopted a five-year national programme, “Digital Kazakhstan” (2017). The aim of the Programme is to accelerate the pace of economic development in the country and to improve the quality of life of the population through the use of digital technologies in the medium term, as well as creating conditions for the transition of Kazakhstan’s economy to a fundamentally new development trajectory, ensuring the creation of a digital economy in the long term.

©FAO/Kamilla Tuleyeva

Several information systems have been successfully developed and deployed in recent years in the area of agriculture and food production. However, despite the importance given to the topic and the progress made in the digitization of government services, there is virtually no information on the adoption rate of Information and Communication Technology (ICT) solutions at farm level. Awareness among medium and smallholder farmers of digital technologies in agriculture remains scarce. In most cases, commercial solutions providers of digital technologies are the main source of information for farmers. Such providers tend to overestimate the benefits and downplay the costs of adoption. As the extension and advisory system is underdeveloped, farmers risk misallocating their scarce financial resources when selecting new technologies.

Access to knowledge and innovative practices in agriculture, above all when combined with digitalization and new technologies, is particularly complicated for rural women working in agriculture. Although gender equality is more advanced in Kazakhstan than in the rest of Central Asian states, particularly in education and economic activity rates, rural women, especially from remote and economically depressed areas, remain at greater risk of social exclusion. In terms of access to new technologies, women and men in Kazakhstan have similar access to mobile telephones but information and data concerning access to the Internet and computers are not available. Time-use surveys conducted by the Agency of the Republic of Kazakhstan on Statistics, however, demonstrated that on average women usually spend more than twice the time on household activities than men.

Given this background, the government requested FAO assistance to enhance the knowledge and capacity with regard to digital agriculture opportunities of farmers, particularly women farmers, relevant government institutions and CSOs, and to ensure their access to information.

Impact

The project has succeeded in laying the foundation for a sustainable framework to help farmers, including rural women working in agriculture, to obtain access to information and knowledge, and to share experiences on digital technologies. It has done this not only by establishing a trusted platform for the dissemination of good practices among farmers but also by helping digital agriculture solutions providers to increase their awareness of farmers’ needs.

Achievement of results

The project had three outputs, all of which were achieved. The first involved an analysis of the issues surrounding the use of digital technologies by stakeholders in order to make recommendations to foster agriculture digitalization in the country. Selected good practices were documented and the documentation was circulated among farmers, members of academia, government officials and NGOs in order to strengthen their capacities with regard to good practices of adaptation and implementation of innovative technologies in agriculture. This was achieved through the second output, dedicated to capitalizing on good or promising practices through the establishment of an exchange platform and the provision of training. The third output concerned knowledge exchange on digital technologies in the agriculture sector. Following the outbreak of the COVID-19 pandemic, the project was extended and the activities planned under the third output were adapted to the changed circumstances. Face-to-face workshops, writeshops and exchange visits were replaced by online meetings with stakeholders and the use of video materials to support the documentation of good practices, while an exchange study tour was cancelled as a result of travel restrictions.

Implementation of work plan and budget

COVID-19 restrictions caused delays in the recruitment of key consultants and the signature of a Letter of Agreement, which led to further delays in project implementation. A no-cost extension was granted to December 2021 to allow activities to be completed. In addition, as a result of the pandemic, face-to-face activities were replaced by online events and writeshops were replaced by videos. The cancellation of a study trip and writeshops, and the use of an online format for the national conference led to a budget reduction from the original USD 300 000 to USD 260 000.

Follow-up for government attention

Kazakhstan has good potential to develop digital agriculture. However, some constraining factors need to be addressed. These include the lack of broadband Internet in rural areas; policy framework (staff turnover among the government workers); the high cost of the technologies; weak computer literacy; and an acute shortage of ICT specialists. It is recommended that every effort be made to remove these constraints.

Sustainability

1. Capacity development

Kazakhstan has prioritized the development of agriculture. In addition, the project is in line with the new strategic document on food security and agriculture: the National Project for the Development of the Agro-industrial Complex for 2021-2025. FAO was directly involved in the development of this strategic document, which provides for public, private and donor funding for a total of USD 15.9 billion. FAO is also responsible for conducting the implementation of the concept of development of Kazakhstan for the next ten years.

Because of COVID-19, government staff turnover created difficulties in communication, which may constrain the sustainability of results. Despite this, the project was able to establish a strong partnership among farmers, service providers (SPs), NGOs, universities and research institutes.

The plan to create a Community of Practice for farmers to exchange their knowledge was impeded by restrictions on face-to-face meetings during the pandemic. However, the project documented several good practices, providing conditions for their adoption and scaling-up by farmers with the support of government stakeholders, the private sector, academia and CSOs. The SP, Growers' Union, has provided its platform (Margin.kz) for further dissemination of the experience.

2. Gender equality

All project activities considered the use of various technologies by both female and male beneficiaries and stakeholders. The documentation of selected good practices and all reports were prepared in accordance with gender mainstreaming, in line with FAO Policy on Gender Equality 2020-2030 operations. Access to the prepared factsheets and video materials was provided to every stakeholder.

3. Environmental sustainability

Generally, ICT supports sustainable development and increased climate change resilience. The good practices identified and documented by the project are focused on the efficient conservation of the national resources and thus support environmental concerns.

4. Human Rights-based Approach (HRBA) – in particular Right to Food and Decent Work

The digital agriculture situational assessment report produced by the project includes an analysis on gaps in the adoption of the technologies by different beneficiaries and stakeholders. It was found that those farms that adopted the technologies created good employment opportunities for rural youth, women and other targeted groups in the project.

5. Technological sustainability

Technologies demonstrated in factsheets and videos are both freely available and flexible in terms of their use by farmers.

6. Economic sustainability

Documentation of the selected good practices was prepared in order to disseminate the success of the implementation of the technology introduced at farm level. This documentation is being circulated among farmers, members of academia, government officials and NGOs in order to strengthen their capacities with regard to good practices of adaptation and implementation of innovative technologies in agriculture. The resources are available for use to all beneficiaries and stakeholders with no payment.


©FAO/Kamilla Tuleyeva

Documents and outreach products

- **Bulkhairova, Z.** 2021. *Analysis of the agriculture strategy and digital strategy of Kazakhstan*. Nur-Sultan, Kazakhstan, 25 December 2021. 29 pp.
- **Makhmutova, M.** 2022. *Report on Mainstreaming Gender in the Use of Information and Communication Technologies (ICT) in Agriculture of Kazakhstan*. Almaty, Kazakhstan, 26 January 2022. 15 pp.
- **Zimmer, Y., Syzdykov, Y. & Li, D.** 2022. *Economics of digital tools in agriculture of Kazakhstan*. Nur-Sultan, Kazakhstan, 17 March 2022. 25 pp.
- **Growers' Union.** 2022. *LoA Final re*port. Nur-Sultan, Kazakhstan, 16 March 2022. 77 pp.
- **FAO.** Nine video materials on usage of the technologies on farm level are under development. (Scripts available on drive, videos to be published on YouTube.)
- Fourteen factsheets on use of the technologies on farm level in English, Russian and Kazakh languages. (Available on drive and to be published on the Growers' Union Web site: Margin.kz).
- One hundred calendars representing digital technologies at farm level.
- Fifty dairy books with FAO logo and digital agriculture print produced for stakeholders.
- One hundred notebooks with FAO logo and digital agriculture print produced for stakeholders.

ACHIEVEMENT OF RESULTS - LOGICAL FRAMEWORK

<table>
<tr><td>Expected Impact</td><td colspan="4">More sustainable agriculture through appropriate use of digital technologies</td></tr>
<tr><td rowspan="5">Outcome</td><td colspan="4">Knowledge and capacity of farmers, the relevant government institutions[1] and CSOs on digital agriculture opportunities enhanced and access to information ensured</td></tr>
<tr><td>Indicator</td><td colspan="3">Stakeholders who gained knowledge and capacities on digital agriculture.</td></tr>
<tr><td>Baseline</td><td colspan="3">0</td></tr>
<tr><td>End Target</td><td colspan="3">50</td></tr>
<tr><td>Comments and follow-up action to be taken</td><td colspan="3">Fourteen good practices factsheets and related videos were produced in order to disseminate the opportunities offered by digital technologies in Kazakhstan at farm level. When fully approved by the FAO communication group in headquarters, these documents will be published on the Web site of the SP, the Growers' Union, to provide full access to the information among farmers, members of academia, government officials and NGOs. Sharing these good practices and related videos will raise awareness and strengthen the knowledge capacities of stakeholders.
Owing to the COVID-19 pandemic, project implementation was delayed. Because of the restrictions imposed, face-to-face workshops, writeshops and exchange visits were replaced by online meetings with stakeholders. To allow activities to be completed, the duration of the project was extended to 31 December 2021.</td></tr>
<tr><td></td><td colspan="4"></td></tr>
<tr><td rowspan="3">Output 1</td><td colspan="4">Situation and capacity analysis of digital technologies used by stakeholders such as farmers, ministries, private sector and CSOs</td></tr>
<tr><td colspan="2">Indicators</td><td>Target</td><td>Achieved</td></tr>
<tr><td colspan="2">Assessments on the use of digital technologies and capacities of stakeholders:
– Situation and capacity assessment on the use of digital technologies, including gender gap.
– Economic returns assessment of selected digital technologies.</td><td>2</td><td>Yes</td></tr>
<tr><td>Baseline</td><td colspan="4">0</td></tr>
<tr><td>Comments</td><td colspan="4">Situational and capacity assessment reports were generated, based on the desk review and surveys undertaken by the SP. With the support of the FAO international expert, a national economist and the economist of the SP conducted the economic assessment based on on-sight farmer interviews, data collection and calculations. Owing to COVID-19 restrictions in response to the Omicron variant, the mission of the international expert on economic assessment had to be cancelled. The team transferred some face-to-face interviews to Zoom format. The unavailability of data also created difficulties in completing the economic assessment of the technologies.</td></tr>
<tr><td rowspan="3">Activity 1.1</td><td colspan="4">Analysis of the agriculture strategy and digital strategy of Kazakhstan</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">An analysis of the agriculture strategy and digital strategies of Kazakhstan was conducted. An analysis of the recently adopted National Project for the Development of the Agro-industrial Complex for 2021-2024 was also considered. Recommendations for the development of the digital agriculture sector were provided.</td></tr>
<tr><td rowspan="3">Activity 1.2</td><td colspan="4">Mapping digital technologies</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">Owing to COVID-19 restrictions, face-to face interviews were converted in online format. An LoA was signed with the SP, the Grower's Union. In order to complete the mapping of existing digital technologies, a call for the collection of good and promising technologies was published at United Nations Kazakhstan and the SP Web site. Taking into account the availability of farmers and their readiness to share the data, the SP conducted 160 telephone interviews focused mainly on plant production farms, although entries on livestock production and greenhouse farms were included.</td></tr>
<tr><td rowspan="3">Activity 1.3</td><td colspan="4">Economic returns assessment</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">Owing to the COVID-19 restrictions, technologies for economic assessment were mostly selected from plant and livestock production farms. Economic assessments were conducted mostly on large farms because of the availability of the data needed for assessment.</td></tr>
</table>

[1] This includes: Ministry of Agriculture, Ministry of Digital Development, Innovations and Aerospace Industry, Ministry of National Economy, Ministry of Finance, Ministry of Ecology, Geology and Natural Resources.

<table>
<tr><td rowspan="3">Activity 1.4</td><td colspan="4">Capacity assessment</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">The capacity assessment report contains information on why farmers use and do not use digital technologies on their farms. The constraining factors in the use of digital technologies were also outlined in the report.</td></tr>
<tr><td rowspan="3">Activity 1.5</td><td colspan="4">Multi-stakeholder meeting</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">Because of COVID-19 restrictions, instead of the multi-stakeholder meeting, separate meetings were conducted with 11 farm owners who implement digital technologies, representatives of the Ministry of Agriculture, Kazakh National Agrarian Research and Kazakh State Agrotechnical Universities, and the Growers’ Union Associations.</td></tr>
<tr><td rowspan="3">Output 2</td><td colspan="4">Capitalization of good or promising practices on the use of digital technologies in agriculture</td></tr>
<tr><td colspan="2">Indicators</td><td>Target</td><td>Achieved</td></tr>
<tr><td colspan="2">Good and promising practices documented.</td><td>5</td><td>Yes</td></tr>
<tr><td>Baseline</td><td colspan="4">0</td></tr>
<tr><td>Comments</td><td colspan="4">Fourteen good and promising practices were documented and related fact sheets were compiled.
In addition, nine videos were produced to illustrate how the technologies are used.</td></tr>
<tr><td rowspan="3">Activity 2.1</td><td colspan="4">Establishment of Exchange Platform</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">A shared Google Drive folder was established for internal team information exchange between the SP and FAO team members.
The SP created a Web page on the Web site Margin.kz to publish good and promising practices factsheets in order to share them with the public (https://margin.kz/info/tsifrovoi-apk/).</td></tr>
<tr><td rowspan="3">Activity 2.2</td><td colspan="4">Training of the selected facilitators on experience capitalization process</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">The Lead Technical Officer held online training for the project team and selected facilitators, involved in the project, to enable them to manage the experience capitalization process. In order to support the process, all project participants completed the experience capitalization course on FAO e-learning and/or Moodle platforms.</td></tr>
<tr><td rowspan="3">Activity 2.3</td><td colspan="4">Webinars introducing capitalization of good practices</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">Owing to COVID-19 restrictions, online Webinars were organized with individual farmers and project team members to involve the holders of good and promising practices in the analysis and documentation of their experience.</td></tr>
<tr><td rowspan="3">Activity 2.4</td><td colspan="4">Writeshops</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">Owing to COVID-19 restrictions, it was impossible to organize face-to-face workshops in selected regions of Kazakhstan to help holders of good and promising practices to better frame and analyse their practice. Writeshops were converted to one-to-one meetings, field visits, interviews, photographs and short films. Nine video materials on good and promising technologies were prepared.</td></tr>
<tr><td rowspan="3">Activity 2.5</td><td colspan="4">Exchange workshops on good practices</td></tr>
<tr><td>Achieved</td><td colspan="3">Yes</td></tr>
<tr><td>Comments</td><td colspan="3">Because of COVID-19 restrictions, the organization of exchange workshops on good practices was impossible; workshops were therefore converted into a series of nine videos on the different technologies used in Kazakhstan to share with stakeholders in the agriculture sector.</td></tr>
</table>

Output 3	Knowledge exchange on digital technologies			
	Indicators		Target	Achieved
	Number of knowledge exchange events organized (i.e. national conference on e-agriculture/digital strategy attended by multi-stakeholders; Webinars on e-agriculture; exchange visits).		6	Partially
Baseline	0			
Comments	The project was delayed because of the COVID crisis. As a result, multi-stakeholder meetings, exchange visits and national conference could not be conducted face-to-face. The writeshops were converted into the production of seven videos related to good and promising technology implemented in Kazakhstan. Following changes in the Ministry, the national conference will be held online after all documented practices have received the approval of the FAO Communication Group in 2022.			
Activity 3.1	Establishment of the community of practice			
	Achieved	No		
	Comments	It was impossible to involve stakeholders face-to-face. In order to support a network for people who share a common knowledge on digital agriculture sector all factsheets and video materials were published on the SP's Web site.		
Activity 3.2	Exchange visits			
	Achieved	Yes		
	Comments	No face-to-face exchange visits were possible owing to COVID-19 restrictions; this activity was converted into a series of videos. Individual farm visits were organized and documented via video by the SP, the Growers' Union.		
Activity 3.3	International study tour			
	Achieved	No		
	Comments	Because of COVID-19 and time restrictions, the study tour was cancelled.		
Activity 3.4	National Conference on e-agriculture/digital strategy			
	Achieved	No		
	Comments	Because of COVID-19 restrictions, the national conference was postponed to 2022.		

Partnerships and Outreach
For more information, please contact: Reporting@fao.org

Food and Agriculture Organization of the United Nations
Viale delle Terme di Caracalla
00153 Rome, Italy