Smart Farming for Sustainable Agriculture in Karabakh

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Topics of Discussion

Smart Agriculture, Precision Agriculture, Digitalization of the Sector, Policies, Environment, Social Conditions, and Infrastructure.

Introduction

This document summarizes a roundtable discussion organized by the Institute for Development and Diplomacy at ADA University on 17 October 2023 and moderated by the author on the topic of "Smart Farming for Sustainable Agriculture in Karabakh as an Exemplary Model: Needs for National Strategy and Policies." Participants included representatives from the Ministry of Agriculture (Innovation Center), the UN Food and Agriculture Organization, the Azerbaijan Water Resources Agency; scientists and experts in agriculture, and ADA University students.

Current Situation

The discussion began with an examination of the strategic decisions made in this area of public policy after the liberation of Karabakh. The government of Azerbaijan made a ten year budget allocation of several billions of dollars into the revival of the largely destroyed Karabakh within the program of the 'Great Return."

On 19 April 2023, President Ilham Aliyev signed a decree requiring ministries to prepare the "smart city" and "smart village" concept in compliance with the UN Sustainable Development Goals, with the aim to promote a new exemplary innovational urban

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and rural development approach in Karabakh. This decree states, inter alia: "improve the quality, safety, and efficiency of services provided in the cities and villages of the Republic of Azerbaijan, by applying information technologies in their provision, as well as ensuring the effective use and management of existing resources for those services." Hence, "smart agriculture/farming" has become one of the five priorities in setting up "smart villages."

The discussion involved laying out the concept of "smart agriculture" and going through the similarities and differences between this concept and the related one of "precision agriculture." Both of the approaches apply common technologies, including advanced technologies, software, and equipment like IoT, robotics, sensors, cloud computing, and "deep learning."

Current Conditions: SWOT

The four main indicators (conditions) based on which research is being conducted were introduced: polices (national strategies, laws, regulations), environment (geography, natural resources, business environment, and investments), infrastructure (internet connection, logistical connectivity, equipment, and maintenance), social conditions (demography and education level).

The participants expressed their opinion based on the foregoing indicators while giving their assessment to the current conditions that are speeding up but can also threaten to slow down the process of digitalization of the sector. The main strength that was underscored was strong political will and investments into development of smart farming.

As major conditions in this domain are met in Karabakh, it will be a great example for the rest of Azerbaijan to move to digitalization of the agricultural sector. The first concern the participants shared focused on the continuing dependence of smallholder farmers on government subsidies. This will need more attention in terms of financial support, skills developed, access to technology and technical services.

Thus, the representative from the Ministry of Agriculture, Javanshir Talei, discussed the need to establish an Innovations Fund in Agriculture, which would support and promote innovative approach to agricultural development and smart farming regardless of the size of the farmers.

The representative from the Water Resource Agency, Akif Guliyev, shared how several largescale agricultural production companies (e.g., Agropark Shirin Agro) are applying precision agriculture technologies in the irrigation process in Karabakh. Guliyev also confirmed that support to small-scale farmers is being provided. For example, Dost Agropark shares its unmanned tractors with local returnee farmers from Aghali Village,

who escaped from the mine explosion during the production. As this is a good example, there will be more need to provide such technical support with the expansion of smart farming.

The representative from FAO, Shahin Huseynov, spoke of a new pilot project launched in Aghali village: "The project will lay the ground for technical support and provision of capacity development for the rural population on community development planning practices, as well as demonstrate examples of innovative approaches and best practices through exploring economic initiatives in a participatory way (production units that are planned to be established, agri-food sectors to be promoted, and opportunities for green/digital rural business development) in Aghali, Zengilan." Huseynov also noted his observations on how small-scale family farmers need stronger farmers' communities to join under big projects as smart agriculture.

During the discussion, the importance of completing land reforms was also mentioned, since it is included in the law on cooperatives. This would help small farmers to improve their financial and technological conditions as well as establish a better enabling environment for producing agricultural products not only for the local market but also for export purposes.

Last but not least, the participants underscored the importance of digital skills and competencies in overcoming today's agricultural production challenges.

Participants' Recommendations:

At the end of the roundtable discussion, the participants provided recommendations based on the international best practices. For example, they thought that Azerbaijan can look into the Turkish best practices on land reforms. Another recommendation was to deliver education and training programs to help farmers accessing necessary digital skills. In this regard, the Korean example of skill training programs was mentioned. Finally, the participants discussed the Chinese experience on accessing the needed infrastructure as a part of the smart farming program to ensure smooth transition to the digitalization of the agricultural sector.