



NATIONAL PATHWAY

FOR FOOD SYSTEMS TRANSFORMATION IN SUPPORT OF THE 2030

AGENDA

THE REPUBLIC OF ARMENIA



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Overview of Agricultural Sector. Brief of the Strategic Approach

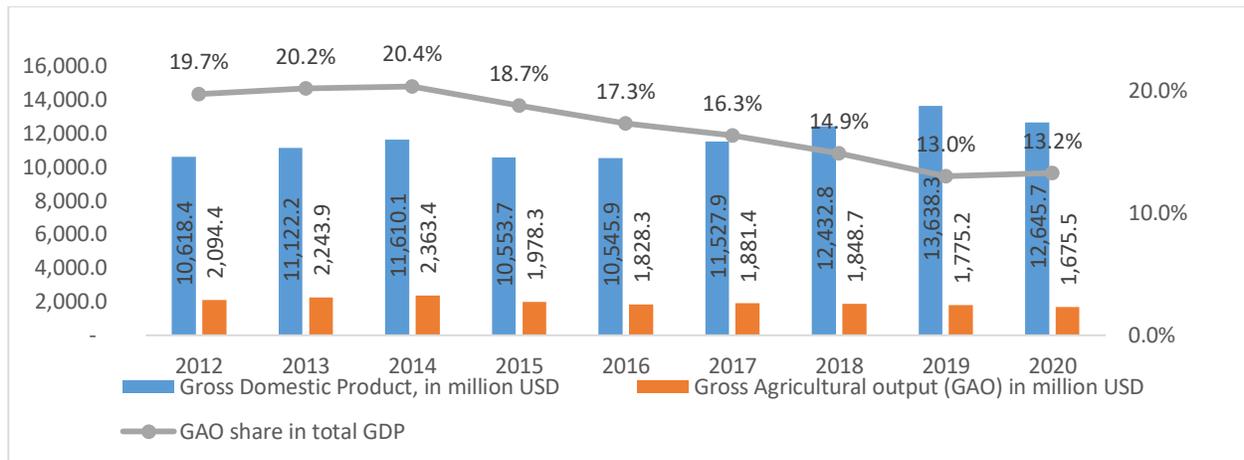
Armenia's agricultural sector has the opportunity to build on several unique competitive advantages. Among them are a history and geographic location that offer privileged access to the large Eurasian Economic Union (EAEU) market; a compact geographic footprint with close proximity between urban and rural markets; long-lasting vegetation period for high-value plants, favorable agri-climatic zones with long growing seasons and early harvest dates for agricultural products; a rich agronomic legacy as the global birthplace of viticulture and products such as apricots and cherries; and – most importantly – advantaged ecological conditions with high quality water and high altitude lands which lend themselves to the production of uniquely tasty and natural produce.

On the other hand, the Armenian agriculture sector suffers from low productivity due to multiple factors, including limited irrigated land, inadequate infrastructure, limited access to finance, a lack of efficient technology, vulnerability to natural hazards, and underdeveloped market mechanisms.

The overall trend in Armenia's economic development before the COVID-19 pandemic has been positive, with a high economic growth rate, a steady increase in exports, decreasing unemployment and increasing GDP per capita in most regions. Following robust growth in the past three years, which continued also in the first two months of 2020, the situation has been changed after the COVID-19 pandemic. According to the publications of the National Statistical Committee of RA, the GDP in 2020 decreased by about 5.8% compared with GDP in 2019. It is an undeniable fact that agriculture in Armenia is the most important sector for the rural environment and in terms of contribution to the country's Gross Domestic Product (GDP). However, like total GDP, the gross agricultural production value decreased by 4% in 2020 compared to 2019 (see [Figure 1](#)).



Figure 1: Volume of GDP and Gross Agriculture Output (GAO), in million USD, (2012-2020)



Source: National Statistical Committee

Overall, in 2020 the GAO amounted to 1,675.5 million USD, where crop production comprised 46.8% of GAO and animal husbandry 53.1% of GAO.

It is worth mentioning that due to the favorable climatic conditions, Armenia has well-established fruits and berries also vegetable production sector. Armenia is mostly a self-sufficient country in terms of agricultural products. Armenia exports agricultural products, where there exist some problems in this context.

Domestic producers prefer to sell their produce domestically as they do not have export-oriented stimulus and there is lack of proper procedures. Market entries will be enhanced by Government investments in phytosanitary enforcement, modernized traceability and certification systems and practices, modern food safety standards. Government of Armenia (GoA) plans to have a success in Eurasian Economic Union (EUEU) market. In addition, Government plans that Armenia is going to enter new high value markets such as EU, Japan, Middle East and North America.

The production area and the volume of the main agricultural sub-sectors

Given that grain and leguminous crops are of strategic importance for the country, they utilize the largest area of agricultural land (121.7 thousand ha in 2020). The producers emphasize the

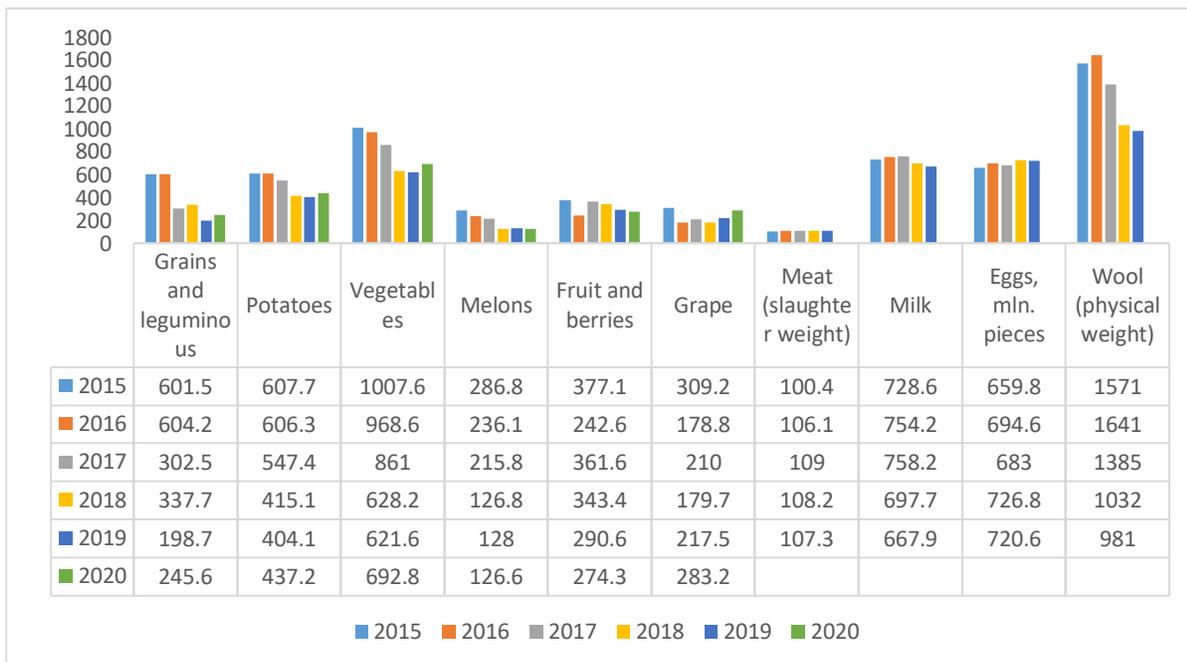


extensive production of the latter compared to the other sector, which is slowly but surely trying to move towards intensive production. In terms of production volume, vegetable crops have been in first place in 2017-2020, followed by fruit and berry production. Meanwhile, the only exception was 2020, when the production volume of grapes was higher than the production volume of fruits and berries together. The production of grape was 283.2 thousand tons in 2020, which increased by 65.7 thousand tons compared to 2017.

According to National Statistical Committee, during the past 6 years of 2015-2020, the production of main types of agricultural output decreased, particularly grain and leguminous crops, potatoes, vegetables, water-melons, fruits, and berries production.

Milk and wool production decreased between 2015 and 2019. In contradiction, the production of meat and eggs had a slight increase for the period of 2015-2019 (see [Figure 2](#)).

Figure 2: Production of main types of agricultural output, 1000 tons, (2015-2020)



Armenia’s agricultural sector has the opportunity to build on several unique competitive advantages. Among them are the history and geographic location that offer privileged access to the large Eurasian Economic Union (EAEU) market; a compact geographic footprint with close proximity between urban and rural markets; long-lasting vegetation period for high-value



plants, favourable agro-climatic zones with long growing seasons and early harvest dates for agricultural products; a rich agronomic legacy as the global birthplace of viticulture and products such as apricots and cherries; and – most importantly – advantaged ecological conditions with high quality water and high altitude lands which lend themselves to the production of uniquely tasty and natural produce.

Challenges and brief strategic approach

First and foremost, the expanse of abandoned land (estimated at more than one-third of all agricultural land in the country) and the prevalence of small land plots constrain agricultural development and act as barriers to efforts to intensify production and attract investment. For Armenia's agriculture sector to advance, the optimisation of the use of one of Armenia's greatest assets – its land – is of critical importance. Given Armenia's geographic position and regional geopolitics, access to export markets has been difficult due to limited trade routes and high transportation costs, leaving the economy and livelihoods of farmers reliant on too few off-take markets. Rural areas of the country have lower levels of education, limited investment and employment opportunities, and low levels of cooperation to face challenges collectively. An aging and shrinking population in rural areas is another related problem, as, over the past few decades, migration of young people from villages to Armenia's urban centres, Russia, and other countries has been increasing.

The agricultural sector must also contend with a legacy under-investment and multiple technical barriers. These challenges include very low levels of mechanisation and irrigation; poorly developed or outdated agricultural extension systems; limited availability of quality infrastructure such as cold-chains, storage facilities, and transport logistics networks; weak food safety and phytosanitary standard monitoring and enforcement; limited access to finance (particularly insurance); and human capacity shortages across the ecosystem.

These challenges are all addressable, but will require significantly increased investment of public, donor, and private resources, as well as careful prioritization and sequencing of



activities. However, the envisaged solutions are based on seven principles and aim at inclusive growth, gender equality, as well as institutional sustainability:

- **Aggregation:** Support the aggregation of small holdings and fragmented value chains via the reduction of abandoned lands and the promotion of farmer-to-farmer and farmer-to-agribusiness linkages to transition to a more economically viable agriculture sector.
- **Commercialization:** Support export-focused growth and private sector investment into more commercial activities, prioritized support for high value commodities, re-orientation to high value export markets, and emphasis on value-add activities, most notably the green agriculture, agro-processing and post-harvest handling subsectors' development.
- **Orientation to quality:** Focus on improving, monitoring, and promoting the quality of Armenian agriculture products and pursue upmarket positioning emphasizing the unique qualities of Armenia's environment (water, mountains, ecologically safe agriculture) and rich and ancient food culture. In parallel, develop geographical identification for traditional products and wine; establish Brand Armenia positioning in priority sectors; and add an Armenian Quality Label for promotion at the local market level.
- **Youth Engagement:** Include young people in all agriculture development activities—from policy making to production, processing, and marketing activities to foster engagement and build a sustainable supply of talent for the sector.
- **Diversification and risk management:** Promote product and market diversification, introduce risk management measures ranging from hail protection systems to universal access to high quality agricultural insurance for producers and agribusinesses.
- **Climate change adaptation, resistance and environmental sustainability:** Increase focus on climate changes awareness, adaptation, and mitigation strategies (e.g., improve agriculture sector climate change monitoring, promote climate smart agriculture practices, and support dissemination of climate adaptation inputs like draught resistant seeds), while also working to ensure that agriculture sector development is informed by



a focus on resource sustainability including, most critically, good water and soil management practices.

- Technology-focused modernisation: Invest in agricultural sector digitalisation, mechanisation/automation, irrigation, the greenhouse sector, and post-harvest infrastructure development (e.g., cold chains, modern storage systems). Build the local ecosystem for agriculture technology innovation and regional digital agriculture services leadership.

These principles translate into numerous concrete objectives and measures across the agriculture strategy, including several that are high priority. Priorities in the agricultural sector are the following:

Land reform: Most critically, land reform will be an important step for unlocking growth in the agriculture sector. Producers and businesses should be able to access and cultivate agricultural land more effectively to encourage the intensification, higher productivity, and increased scale of agriculture-related activities. This should in turn attract additional investment into rural areas. In consultation with all stakeholders and civil society, the government will pursue multiple paths to land market development. These include modernised and accurate land registration, the adoption of new modern land legislation, and the development of technical measures (e.g., digital land trading platforms) to reduce abandoned lands. The overarching objective is to rapidly improve land productivity via rapid land consolidation, focusing on both land rental and sales markets.

Export diversification: Another key ambition of this agricultural strategy is to build on Armenia's success in the Eurasian Economic Union market and to increase overall export market orientation, quality aspirations, and diversification through entry into new high-value markets (e.g., the EU, Middle East, Japan, and North America) via government investments into export promotion and – critically – investments into modern food safety standards, phytosanitary enforcement, and modernised traceability and certification systems and practices.

Commercialisation and value-add activities: The push toward export diversification and select import substitution activities (e.g., poultry production) will be closely linked to the



government's policy support and catalytic grant investments into agro-processing industry creation and growth (e.g., priority horticulture value chains, wine, dairy, meat). Beyond creating a conducive policy environment, support for essential public goods (e.g., irrigation), and targeted support schemes for priority value chains and innovative businesses, the government will actively pursue new international investments into agriculture, including support from donors for transformative programmes and large-scale commercial investments from international agribusinesses and domestic agribusiness sector leaders.

Technology modernisation and innovation: For Armenia's agricultural sector to be globally competitive, progress must be made on the introduction and effective adoption of modern technologies. The government will achieve this by investing in the foundations for digital agriculture infrastructure (e.g., farmer and livestock registries, remote-sensing agricultural observatory, digitalisation of Ministry operations and extension systems), to establish Armenia as a regional leader in agriculture digitalisation. Technology modernisation will also include the scalable introduction of (non-digital) innovative technologies needed for a modern, thriving agriculture sector (e.g., hail protection systems, irrigation systems, innovative greenhouse and post-harvest technologies).

Human capacity and skills training: The development of the agriculture sector will also require further investment in human capacity across all agriculture market segments and levels. This must include educational and vocational training system reform to engage youth and improve farmer skills and training the next generation of Armenian agronomists, agricultural technologists, and entrepreneurs (e.g., investment in building greenhouse management, agro-processing, agricultural product marketing, and financial and business literacy skills).

Rural development: For rural areas to become more prosperous and productive, there must be investment in the diversification of income-generating activities and opportunities to include rural dwellers in the development process. This should include improvements in rural community engagement and inclusion through a focus on attracting young, economically-active segments of the population to farming. This is best done while taking a holistic approach to rural development, such as active support for agro-tourism.



Institutional capacity: For the broader sector to develop, the ability of the Government to deliver on its objectives depends entirely on the capacity of the institutions that support agriculture and rural development. Going forward, continued institutional development and increasing the capacity of agricultural institutions for improved policy creation, implementation and control are of utmost importance. This should draw heavily on the introduction of new tools for the Government to interact with beneficiaries more effectively, including farmer registries and payment systems. The success of these efforts will anchor on improved communication between policy makers and market participants, and among the different actors across value chains.

The Government seeks to apply a coordinated resource and partnerships approach to address the critical constraints in the agriculture sector and in rural areas. As noted in the priorities highlighted above, the focus of this Strategy is to enhance the efficiency of the agricultural sector, improve the level of food safety, introduce modern technologies, increase export volumes, and increase the revenue position of all players along the value chain, notably small commercially-oriented farmers, producers' groups, processors, and exporters.

This focus is articulated in seven strategic priorities that have been defined for Armenia's agriculture sector:

- (1) Increase agriculture sector competitiveness and enhance efficiency
- (2) Ensure food safety
- (3) Develop local markets and increase export possibilities
- (4) Improve food security and nutrition
- (5) Develop institutional and human capacity
- (6) Support sustainable rural development
- (7) Promote digital agriculture and technology innovation. The latter are interconnected and will support the others.



The Effect of COVID-19 on Agriculture

The Government of Armenia used non-tariff measures to contain the spread of the pandemic, prevent supply shortages and reduce supply chain disruptions. The COVID-19 containment restrictions during the first wave significantly complicated the logistics and distribution of agricultural products and caused certain disruptions in the supply chain. As Armenia's foreign trade relies heavily on road transport, the border closures and travel restrictions inflated transportation costs and caused significant delay. However, the impact of these restrictions depended on the destination country. For instance, the border closures with Iran and the national travel ban severely disrupted exports which were done by air cargo. The major impact came in form of domestic movement restrictions during the onset of lockdown measures. An interviewed dairy processor reported that in March-April 2020 public transport was stopped due to the travel restrictions. The processor had to face additional costs due to the organization of daily private transportation to bring workers to the enterprise. The first strict lockdown measures in spring 2020, which were eased in May 2020, led to two-month interruptions in the import of inputs. However, these delays in input imports related to the border customs services did not disrupt the supply of agricultural inputs as most local suppliers and processors dispose of stocks. For instance, an interviewed dairy processor reported that the own stocks could allow him to operate without purchasing additional inputs for six months if the lockdown measures would have been extended. As the lockdown measures were eased, agricultural and connected sectoral activities and movements in rural areas were permitted if they were related to farming. The input supply was more severely undermined by Armenia's limited access to transport routes and lockdown measures in partner countries (UNECE 2020).

In 2020, due to the COVID-19 containment measures the consumption of wine fell both in the domestic, mainly with the closure of HoReCa sector and decline in tourists, as well as in foreign markets, e.g. in Russia. As a result, Armenian wine companies operated only at half capacity or did not purchase grapes at all for wine production (expert interview). The expert interviews revealed that wine producers had to reduce their purchase from farmers as their sales at domestic and foreign markets shrank. Furthermore, the respondents reported about difficulties



in accessing labor during the 2020 grape harvesting due to movement restrictions. Furthermore, the interviews reported about the difficulties that farmers faced in product realization. This can be seen in the official statistical data that reported about the 15%-decline in wine production in 2020 compared to 2019. The lockdown measures during the first wave of pandemic resulted in the decline in the processing and production of food and beverages. The monthly data on wine production in Armenia show lower amounts of wine produced between March and June 2020 compared to the respective months of 2019. For instance, wine production almost halved in April and June compared to the same months in 2019. This decline in wine production can directly be traced back to the COVID-19 containment measures which disrupted transportation and exports in the second quarter of 2020. Among the agricultural sectors in Armenia, the coronavirus pandemic posed the most acute challenge to the wine sector. Restaurants and hotels were closed for the major part of 2020 and the tourism experienced a steep decline. The pandemic could have worked against small-scale producers of high-quality wine. According to the expert interview, the local and foreign lockdown measures strongly affected the small producers of boutique wine as they market mainly to domestic and foreign HoReCa sectors, depending on demand by tourists. Due to the extensive closure and restrictions on hotels and restaurants both domestically and abroad, the sales of high-quality wine dropped almost to zero, and only some sales occurred due to the operation of restaurants. The producers of standard wine market in regular shops domestically and abroad and thus were not affected substantially. The producers of standard wine and brandy could benefit from overproduction of grapes in 2020. The war starting from October 2020 had more severe effects on the wine sector as the level of consumption almost zeroed.

In general, according to National Statistical Committee of RA, the gross domestic production increased in 2020 . Crop cultivation increased by 2.3%, and the livestock production by 0.6%, which on average contributed to 1.4% increase of Gross Domestic Production.

The export of Armenian agricultural products:

	Unit	2019	2020	2020 vs 2019 / % /



Total export of Agricultural products	Mln AMD	800.3	774.3	97
Livestock	Mln AMD	3,550	7,742	220
Fish	Mln AMD	12,929	24,389	190
Fresh fruits and vegetables	Mln AMD	21,647	29,598	137
Fresh fruits and vegetables	Ton	142,900	145,800	102
Canned products	Mln AMD	11,69	15,20	130.0
Juices	Mln AMD	1,0	1,39	138
Wine (from grape)	Mln AMD	5,42	4,16	77
Brandy	Mln AMD	116,2	95,35	82

However, eventually, as a result of the pandemic and the consequent quarantine-related situation, alterations in dietary quality can be expected. From this perspective, the collection, analysis, and management of data about the nutrition situation and the development of appropriate policies in the context of COVID-19 should be considered a national priority issue.

Based on surveys conducted by different international organizations, the Diet Survey-COVID-19 questionnaire was developed for this case study. There were 471 of these surveys conducted among the adult (aged 18–65 years old) and elderly (aged 66 years old and above) population of Yerevan. The survey results highlight the fact that, during the state of emergency, the majority of Yerevan's population has not faced any food availability problems. However, 29.9 percent of the people have had a food deficit and 42.5 percent have been forced to change their favorite food to a cheaper alternative because of financial reasons. Overall, during the COVID-19 confinement, the dietary habits of the population of Yerevan have deteriorated to a greater extent than they have in more developed countries.

The following elaborated policy options are applicable:



- Collect evidence-based data for the assessment of the COVID-19 impact on dietary patterns and quality.
- Craft nutrition policies.
- Establish a multilevel framework of action to support nutrition.
- Invest in e-commerce to support local businesses and reduce the spread of COVID-19.
- Prevent panic buying and hoarding.
- Facilitate financial support for agriculture.
- Implement social protection and food assistance programs.
- Promote enhancing consumer awareness on nutrition.

The stakeholder groups are consumers, including target groups; agricultural producers; state authorities; and donor organizations.



Food self-sufficiency

Agriculture plays a primary role in maintaining national food security in Armenia. The country achieved high self-sufficiency levels in fruits, melons, grape, vegetables, potatoes, as well as lamb and eggs. However, the country still relies on imports of major food products like wheat, meat and milk.

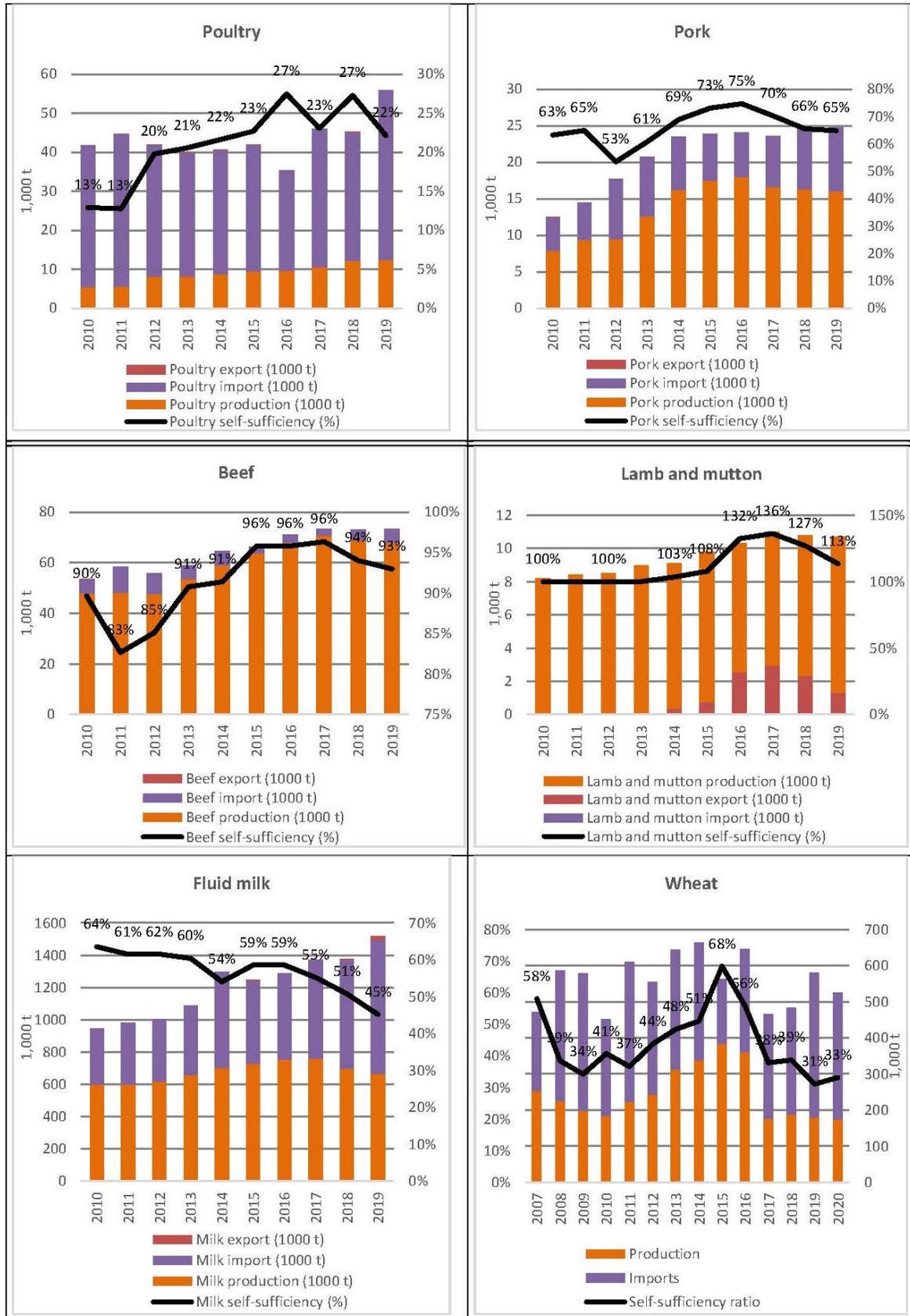
In 2019, one-third of national wheat consumption was covered through domestic production, while the rest was imported.

Armenia's self-sufficiency level in meat and milk improved in 2010-2016, reaching the highest level for beef meat: 96% of consumption covered by domestic production. In general, domestic production covered almost three-fourth of the national consumption level in 2016, while it declined to 60% in 2010. Despite its steady growth, production of poultry meat in Armenia is well below its national consumption level, with the maximum self-sufficiency degree reaching 27% in 2016. Since 2017, the number of livestock has dropped and self-sufficiency in meat and milk stagnated and returned to its 2010 level in 2019.

According to the World Food Programme (WFP 2019), 15% of the population of Armenia is food insecure. Also, 6% of the population is undernourished as they don't eat diversified food nor consume nutritious products; despite this fact, food availability has improved in 2010-2019. Since Armenia is a net food importer, it is prone to the risk to food availability, particularly in the event of an emergency (WFP 2019). The coronavirus pandemic is among such emergency shocks. WFP (2020) study on food security and vulnerability assessment showed the coronavirus pandemic significantly affected households' income as well as their access to food and resources.



Production, trade and self-sufficiency rates of selected products, 2010-2019



Source: Authors' illustration; ARMSTAT (2021).



Food Safety

The food safety system reform program of the Republic of Armenia takes into account the provisions approved yet not implemented by the previous strategy.

The project must be realistic, considering the available resources to be able to establish a new strategy and get measurable results in due time.

The goal is to gradually overcome the sectoral gaps, problems and give consideration to the international obligations of Armenia.

1. Armenia has been a World Trade Organization (WTO) full member since 2003, has joined the WTO agreements, including the Agreement on the Application of Sanitary and Phytosanitary Measures, the Agreement on Trade-Related Aspects of Intellectual Property Rights, the Agreement on Technical Barriers to Trade, the Agreement on Agriculture, thus the national legislation must comply with international requirements.

The mandatory requirements in this context include the introduction of risk-based food safety systems and science-based decision-making in the field of veterinary and phytosanitary. Legislative requirements must be met, as these provisions are already fixed in the RA Law on Food Safety, but there are no designated scientific centers in the field of risk assessment. Currently, the RA Ministry of Economy acts as the policy-making authority, so the risk management function should also be assumed by the Ministry.

2. Establishment and development of a food safety system (including sanitary-phytosanitary measures). Funds are allocated from the RA State Budget for the implementation of programs in the field of plant protection, veterinary, food safety. However, as in previous years, the funds currently allocated under the Medium-Term Expenditure Framework of the Republic of Armenia are still insufficient to establish a functioning food safety system in line with the requirements of the International Union. For the export of animal products of EU origin, an animal numbering register, a traceability system, monitoring of residues of veterinary medicines in live animals, a national residue plan should be in place, and the development vision must be realistic and in line with the available financial resources. For this purpose, it's proposed to introduce a separate export system for EU countries according to



the sectors with the inclusion of those economic entities that have large export potential and can co-finance the costs of examination of residual materials.

3. The current structure of the Food Safety Inspection Body does not allow for full implementation of food safety system reforms. The structure and functions need to be reviewed. If the FSIB continues functioning as an inspection body solely, then the RA Ministry of Economy should be responsible for the strategy development and implementation, and close cooperation with the FSIB is needed, as the latter is responsible for the import and export. Besides, the application for getting an EU export permit includes several measures, particularly related to the monitoring of residual materials, that are under the responsibility of the FSIB, so for the completion of the export application, most of the information is to be provided by the FSIB.

4. According to the RA Prime Minister's Decree No. 711 dated July 26, 2011, SPS interdepartmental working group was established. Even though the Decree wasn't repealed and amended except for the amendment in 2012, the composition hasn't been revised so far. The working group hasn't functioned factually, so it's necessary to establish a new group to include all beneficiaries.

5. By the RA Prime Minister's Decree No. 1145 – A dated November 30, 2011, the Coordinating Council for the Implementation of the Food Safety Strategy, was established. The mentioned Decree needs to be invalidated, there is a need to create a new Council, which will be responsible for approving a new strategy and evaluating the implementation of the activities.

6. At present, national standards, as well as EEU and Russia Standards (GOST), particularly regarding the food safety testing methods, are more widespread in the Republic of Armenia. The accreditation of the laboratories is mostly based on mandatory testing methods per technical regulations. Laboratories for international, particularly for EU exports should perform examinations according to the standard of the exporting country or using internationally accepted, particularly ISO methods. It's also important to apply labeling standards, as in Armenia labeling is carried out under the requirements of the EAEU Technical Regulation, which may differ from the requirements of the exporting country, such as mandatory labeling of trans-fatty acids in processed products or additional nutrient labeling requirements, etc.



7. In the last decade, several foodborne diseases, food poisoning cases have been registered in Armenia, as good hygienic practice, good manufacturing practice systems are not yet widely used in the production and processing stages, as well as in public food outlets. It's necessary to establish strict control over the implementation of prerequisite programs and impose administrative sanctions on the businesses failing to introduce the system.
8. Good agricultural practice program, which is one of the essential preconditions for the export of plant products, in particular fresh fruits and vegetables, isn't widespread in the Republic of Armenia. In Armenia, fruits and vegetables are sold without proper laboratory examinations, the collection is also carried out without an Accompanying Safety Document. Fresh fruits and vegetables are sold in supermarkets without a conformity assessment. It's necessary to regulate the sector and promote the mechanisms for the voluntary introduction of the system through support programs or by introducing a mandatory requirement during the Government procurement process.
9. Development of alternative solutions for pesticides, animal growth stimulants, prohibited veterinary medicines, both in primary production and in the field of processing through the use of modern technologies. For example, in the field of fish farming, the banned malachite green is used, but no alternative medicines registered in Armenia are available.
10. By the RA Government Decree No. 531-N, dated May 3, 2007, the schedule for the introduction of a safety management system in the field of food production, based on hazard analysis and critical control points, has been approved, though it wasn't implemented due to limited funding opportunities. Later, according to the RA Government Decree No. 827-N dated July 23, 2015, the schedule for introduction of the proper hygienic and manufacturing practice and hazard analysis and critical control points at the stages of food production, reprocessing, and distribution (following the prerequisite programs), as well as the hazard analysis and critical control points system by the manufacturers of the feed and feed additives (by production stages), has been approved. Given that Armenia is currently a member of the EAEU, it's no longer possible to set additional deadlines, so a deadline should be set for businesses to complete the system implementation.
11. One of the essential functions in improving the food safety system is the diagnostic and laboratory capacity building, the development of reference laboratories in the food safety



sector. A reference laboratory is needed for ensuring the food safety and monitoring of infectious and non-infectious diseases of domestic animals, in particular the diagnosis of diseases identified by the OIE.

12. The introduction of the ISO 22000 food safety management system is a cornerstone for export. The system must be introduced by the companies with international accreditation, whose certificates are accepted in different countries and international networks. Companies that have already completed the implementation should be inventoried and a support program should be developed to complete the introduction in all companies with export potential within the next five years.

13. Implementation of ongoing educational and research programs is a precondition for food safety system reforms.

Main directions

- Review of the current legislation of the Republic, including implementation of amendments and addenda to the by-laws, as well as the adoption of several new laws and sub-laws to bring them in line with international requirements. The sphere of GMOs is not regulated yet, several principles are defined by law, but the mechanisms have not yet been approved by sub-laws, there is no risk assessment body, HACCP provisions aren't included in inspection questionnaires, no sanctions are imposed in case of the detection of residual materials, issue of unreliable certificates for laboratory examination, as well as the sale of goods with incomplete or false declarations.
- Improving the activities of institutional entities, developing new capacities following the standards of international legislation, due to which the functions of state-authorized bodies will be clarified, harmonized with the legislation, a network of laboratories will be established, and a reference laboratory will be appointed. In the framework of institutional reforms, attention should be paid to the establishment of a new SPS interdepartmental working group and raising the qualification of participants.
- Particular importance is attached to the strengthening of the institutional abilities of existing institutions in the sphere of food safety, veterinary and phytosanitary, especially



in the field of risk assessment. It's necessary to improve the laboratory and technical capabilities.

- The traceability principle should be applied to ensure the effectiveness of administrative reforms. It's necessary to take effective steps in this direction, as there are serious gaps in the stage of supply of raw materials, a number of products of both plant and animal origin are circulated without the relevant accompanying documents.
- Development of new mechanisms for the introduction of the HACCP system. The system implementation will require financial and technical support, thus support programs need to be developed. Besides, the HACCP system mandatory implementation requirement can be included in the procurement procedure.
- Implementation of the risk-based audits and HACCP audit, inspections, and monitoring programs based on assessed risks, effective budget expenditures.
- Implementation of programs to support the competitiveness of organic agriculture, as well as the food industry, taking into account the preferences of consumers in international markets and the mechanisms of quality assurance.
- Introduction of ISO 22000 and other food safety management standards. It's necessary to take into account the exported food and the market, in case of unprocessed goods, the GlobalGap system may be enough. Education and training for food safety specialists.





Food safety system

I. Import

II. Primary production

III. Reprocessing

IV. Sales network

V. Export

- ✚ Registration and inspection of pesticides, fertilizers, veterinary medicines, and other chemicals
- ✚ Border control of raw materials, food, feed

- ✚ Implementation of good agricultural, production, and hygiene practice
- ✚ Mandatory documentation

- ✚ Introduction of prerequisite program
- ✚ Introduction of HACCP system
- ✚ ISO 22000 certification

- ✚ Traceability
- ✚ Conformity assessment
- ✚ Risk-based inspections

- ✚ SPS measures
- ✚ Issuance of a health certificate

Roadmap



Resilience and nutrition; the role of nutrition in building resilience to shocks, and practical contextual steps to ensure safe, quality, and nutritional food for all

Currently, having a purpose to circulate the sowing areas of agricultural crops, gross harvest, non-cultivated arable lands and to increase the income of rural economies, ensure quality and nutritional food for all, as well as support the economic growth, the RA Ministry of Economy is implementing a number of state aid projects, such as:

1. “State Aid on the Promotion of Winter Wheat Production in the Republic of Armenia” project was approved by the RA Government decision No1148-L, dated July 2, 2020, the purpose of which is to support the availability of seeds having high agro-economical indices, harvest increase, promotion of crop rotation and increase of sowing areas, also by using non-cultivated lands, as a result also supporting the growth of local winter wheat volumes and incomes of economic entities by partially subsidizing or compensating the price of winter wheat seeds. Within the Project it is suggested to partially subsidize or compensate the price of certified winter wheat seeds of elite and/or 1st reproduction, as a result of which the seeds will be purchased at a much less than market price. The price of subsidy or compensation for 1 kg of seeds will amount to AMD 70. Around 3300 tons of imported and around 845 tons of local production high quality seeds in total, or in other words - seeds for around 17-20000 ha - have been purchased by the farmers.
2. “The State Aid on the Promotion of the RA Summer Wheat, Legumes and Fodder Crops Production” has been approved by the RA Government Decision No 176-L, dated February 11, 2021, the objective of which is to mitigate the issues of fodder provision and to increase the food self-sufficiency level which have emerged as a result of martial law and emergency situation, leading to reduction of the used pastures, by partially subsidizing or compensating the price of summer wheat, legumes and some fodder crops seeds. Moreover, in the frames of the project a special approach will be shown to the economic entities of 149 border settlements,



for which the seed price will be subsidized for 70% and for 50% for the economic entities of other settlements.

Resilience can be built through investment in food systems that are nutritionally sensitive, and socially responsible yet demand driven and profitable. This requires a transformation of food systems, where food security is at the centre of national development at all levels. True transformation of food systems takes a holistic approach with consumer demand and nutritional consumption patterns as the key driver. Opportunities for stable and safe food production are generated by this demand.

The concept of investing in Food Systems links the most profitable and profit oriented parts of our current economic systems to those who do not seem to benefit from economic systems in their current form, or who are struggling to connect to specific parts of those systems. This is a farm to fork approach that builds networks along the value chain and fosters links between profitable activities and socially marginalized groups.

The benefits of investing in SME's along the value chain and taking a whole system approach are as follows;

- Small businesses are strengthened,
- Household level incomes increase,
- Jobs are created,
- Educational opportunities arise,
- People have access to nutritious and safe food,
- Investments are made in innovative and green technologies that address climate change.

This acts as a buffer when a shock hits and allow for speedy and more solid recovery (both economic, social and food security). This is a new way of thinking and doing business that leverages on the problem of malnutrition and hunger to achieve multiple-gains; economic growth, jobs, education, and a healthier and productive population that is resilient to shocks, and recovers faster when they occur.



Vulnerability, risks, and social protection; making food systems work for all people

Approach 1: Eligibility criteria for safety nets are enhanced and regularly updated. This could include applying food security dimensions into the safety-net measures.

Approach 2: Establish Shock Responsive Food Security Safety Nets

- Short-term: Establish shock response mechanism to food insecure Armenian populations affected by the conflict and COVID-19 pandemic.
- Medium and long term: Social safety nets as comprehensive package
 - Nutrition education and awareness on healthy food choices and purchases
 - Apply social behavior change and teach the impacts of coping mechanisms and reduce the application of severe coping mechanisms

Approach 3: Establish early warning system components for food security Components:

- Price hikes
- Shocks monitoring: economic, political, environmental risks and shocks
- Natural and man-made disasters
- Nutrition: Obesity and malnutrition trends (all age groups)
- Rise of some Non-Communicable Diseases: Diabetes, hyper-tension
- “Over consumption” of certain foods



Land Reform

There is 444.000 thousand ha of arable land in the Republic of Armenia, 222.000 thousand ha (50%) out of which was cultivated. The use of non-cultivated lands may significantly improve the food safety level of the republic. In this regard, the RA Ministry of Economy presented 8 conceptual actions including the efficient use of agricultural lands. Currently, the 50% of agricultural lands in Armenia is used ineffectively, and the Ministry of Economy has initiated an inventory/monitoring to find out the objective and subjective reasons of that. The ultimate goal is to ensure the development of land resources and the creation of a land bank, so that the accurate information shall be provided to the potential investors.

Action plan:

1. Develop and submit to the RA Prime Minister's approval the Draft of the Prime Minister's Decree "On Approval of the List of Measures Ensuring the Implementation of the RA Law" on Amendment to the Land Code of the Republic of Armenia.
2. Develop and submit to the RA Government's approval the Draft of the Government Decree "On Definition of Criteria for Classifying Agricultural Lands as Unused Lands and Procedure of Their Registration".
3. Develop and submit to the RA National Assembly the Draft of the RA Law on Increasing the Efficiency of Agricultural Lands.
4. Establish "Land Agency", which will be in charge of improving land market, land consolidation and for the support in providing financial and technical assistance to farmers who currently have problems in issuance of land ownership documents. Ensure the operation of the agency by provision of required financial and human resources.

Studies show that 50% of agricultural arable lands are not properly used, mainly because of the absence of irrigation or insufficient irrigation, land plot fragmentation, complications while transferring land ownership, poor development of infrastructures and poor availability of financial resources etc. In order to solve the above mentioned issues "Concept and Actions Plan on Increasing the Efficiency of Agricultural Land Use" was developed and approved by Decision No 68-L of the RA government, dated January 23, 2020. This aims at clarifying the main



directions of the state policy towards increasing the efficiency of agricultural land use, which will result in increased efficiency of agricultural land use and agricultural production, as well as food safety level.

The following measures are to be taken to reach the goal:

- Define the criteria and registration procedure of abandoned lands: Relevant amendment was made in the RA Land Code, according to which a draft government decision should be developed to be submitted to the Government.
- Establishment of a land bank and its regulation: In order to put the abandoned lands into circulation and increase the land use efficiency, a draft law “On Increasing the Efficiency of the Agricultural Land Use” has jointly been developed by the RA Ministry of Economy and UN FAO expert team. The adoption of the law will be a legislative basis to deliver support in:
 - Land registration processes
 - Simplified land acquisition or leasing procedures for investors
 - State policy implementation of the RA Government in the sphere of sustainable agriculture and rural development
 - Reduction of land abandonment level
 - Reduction of land fragmentation level
 - Land market development
 - Restoration of natural resources and environmental protection.

The following tools will be used to reach the above mentioned objectives:

1. Land leasing, alienation and procurement mediation

Land leasing, alienation and procurement mediation is a tool to be used in the whole territory of Armenia. Land leasing, alienation and procurement mediation is a process, promoting the



lease and purchase contract conclusion between land owners and lessees, in the frames of which the National body is the mediator between the parties.

The National body will establish and exploit a republican electronic portal, where updated and precise information on agricultural lands (both private and community owned) available for leasing will be posted. Any land owner will have the right to submit an application to include the data on his/her land plot in the portal, and respectively, any possible lessee or purchaser will be able to use the above mentioned information and apply to rent the relevant land plot.

2. Land banking

Land banking is a tool used in the territories defined by the National body. The land banking includes:

- Land procurement by the National body
- Alienation, leasing and exchange of lands owned by the National body
- Improvement of quality and public infrastructure of the lands owned by the National body.

Land banking will be used for both land consolidation and implementation of other public projects.

3. Land consolidation

Land consolidation is a process of land redistribution (consolidation of lands belonging to one person in different places within one community by exchanging or purchasing lands, which is agreed amongst land owners and users) on voluntary basis to reduce the level of land fragmentation and abandonment.

- Comprehensive information on qualitative properties of the republic land resources on an online platform.
- Available geological maps have been digitized, as a result of which we have comprehensive digitized information on qualitative properties of the land resources throughout the republic on an online platform.



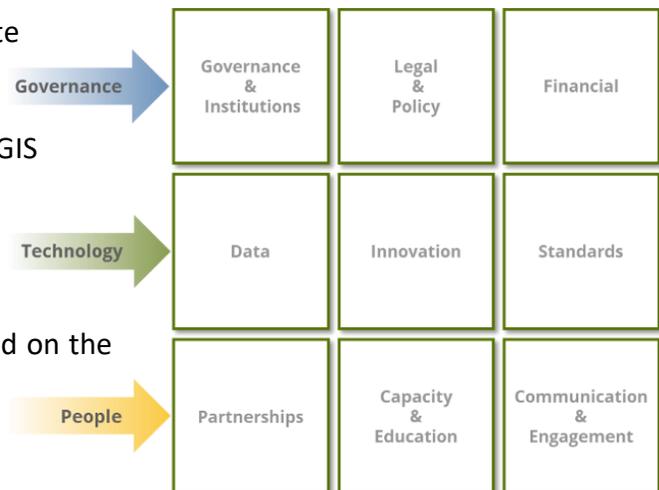
- Implementation of awareness raising activities parallel to land reforming process.

GIS systems

There is also an approach that in general the land reform is possible to organize via creating an ecosystem and making the existing or if needed the revised regulations and policies operational. However, whatever option the government will choose to proceed with increasing the use and productivity of agricultural land, the GIS systems are required to be applied for monitoring, data collection and for provision of necessary information to other stakeholders. To maximize the impact of any technology platform, organizations need a thoughtful, consensus-driven strategy for using the platform to meet their business needs. The same is true with technology. The geospatial strategy defines how MOE will use GIS to improve evidence-based agriculture policy analysis. An effective geospatial strategy connects the business needs with the right people, processes, and technology to help overcome challenges and improve results.

The strategy was established using a business-oriented approach to identify gaps and challenges related to the business first, technology, data availability, quality, governance, and human resources. The strategy prioritized initiatives and solutions that deliver real value, give the staff new knowledge and capabilities and improve the workflows and processes. Through this work, MOE will be able to clearly articulate the business value of GIS to key stakeholders and maximize the impact of MOE's GIS investment.

The strategy is anchored by nine strategic pathways in three main areas of influence based on the United Nations Integrated Geospatial Information Framework



The objective of these strategic pathways is to guide MOE towards implementing integrated geospatial information systems in a way that will deliver a vision for sustainable social, economic, and environmental development. Actions needed:



- Adopt the geospatial strategy and vision
- Establish a committee to identify and govern key agricultural data themes and applications
- Coordinate different geospatial initiatives within MOE
- Build a GIS and Knowledge Management team and skills
- Utilize Cadastre Data and avoid digitizing land boundaries internally
- Utilize Remote sensing for land monitoring
- Utilize field apps to collect information
- Provide Easy Access to Integrated GIS Services and Data through Enterprise GIS

The overarching strategy of the GIS within MOE:

Vision: The efficient use of location intelligence for a strong economy, sustainable agriculture, informed decisions, and optimized use of resources.

Mission: Advance the application of geospatial tools in the MOE and:

- Provide business-centric geospatial tools and information products
- Augment and enhance decision-making via spatial analysis
- Optimize and empower business functions and processes
- Establish a strong framework for information management
- Enhance the awareness function and customer service
- Leverage emerging technology trends for digital transformation

Guiding Principles:

- Location is a strategic enabler
- Data is a corporate asset
- Continuously invest in the development



Strategic Goals:

- Sustainably invest in technology and capabilities to evolve the ability to leverage location intelligence
- Enable collaboration by integrating disparate geospatial systems, data, and processes
- Derive knowledge and insights from geospatial data to support decision making
- Leverage innovative and agile solutions for easy and on-demand access to information

Value Proposition:

- Executives: Informed decisions and policies. Track performance and key indicators
- Managers: Optimize operations and increase productivity. Easy access to information
- Analyst: Provide better data analysis and presentation options
- Field Workers: Improved data collection and on demand access. Reduce site visits and surveys
- Community: Better services and data access

Strategic Objectives:

Theme	#	Objective	Outcome
Foundation	1	Establish a dedicated unit to support geospatial activities	Consult, manage and coordinate all geospatial initiatives and projects
	2	Develop geospatial data and applications governance framework	Authoritative and sustainable set of policies and procedures
	3	Create a centralized, accurate, and maintained spatial database	Accurate, consistent, and current database.
	4	Provide Easy and On-Demand Access to Integrated GIS Services	Intuitive, accessible, and familiar use of GIS data and applications.
Enabl ement	5	Enhance decisions and policies through location intelligence	Data-driven, location-aware, and impact cognizant policies



	6	Integrate GIS for field operations and workforce planning	Optimized monitoring, field inspection, food safety & resources planning
	7	Enhance efficiency by Leveraging Remote Sensing capabilities	Increase operations' efficiency, reduce site visits, monitor crop health
	8	Utilize Geoanalytics for modeling, prediction, and better decisions	Advanced analytics and models for better food security and safety
Capacity	9	Build internal geospatial core competency and capacity	Improved staff knowledge & skills and overall organizational capability
	10	Design GIS awareness programs and outreach campaigns	Increase the utilization of geospatial initiatives for better decision making
Engagement	11	Increase community engagement for awareness and reporting	Activate constituent engagement and awareness on running programs
	12	Collaborate with Cadastre Committee, Armstat and local entities	Enrich solutions through existing data/information, agreements, and skills

Strategic Initiatives:

Foundation	
Objective 1: Establish a dedicated unit to support geospatial activities	
	Initiative 1: Institutionalize GIS unit and develop standard operating procedures
Objective 2: Develop geospatial data and applications governance framework	
	Initiative 2: Establish executive and technical committees for governance
	Initiative 3: Define data custodianship and governance of all spatial datasets and applications
Objective 3: Create a centralized, accurate, and maintained spatial database	



	<p>Initiative 4: Identify and collect key agricultural and socioeconomic data themes & layers</p> <p>Initiative 5: Establish and maintain a centrally managed geospatial database</p> <p>Initiative 6: Periodically synchronize with Data warehouse, ARMSIS, ArmStat and Cadastre Committee's related datasets</p>
Objective 4: Provide Easy and On-Demand Access to Integrated GIS Services	
	<p>Initiative 7: Deploy Enterprise GIS Portal and infrastructure for mapping and analysis</p> <p>Initiative 8: Provide access to the spatial data through configurable situational awareness applications</p>
Enablement	
Objective 5: Enhance decisions and policies through location intelligence	
	<p>Initiative 9: Develop policy maps by highlighting key socioeconomic and agricultural issues</p> <p>Initiative 10: Provide spatial dashboards for the 13 key indicators</p>
Objective 6: Integrate GIS for field operations and workforce planning	
	<p>Initiative 11: Implement Field Apps for field inspections and surveys (Monitoring and Food Safety)</p> <p>Initiative 12: Deploy inspection/survey Dashboard</p>
Objective 7: Enhance efficiency by Leveraging Remote Sensing capabilities	
	<p>Initiative 13: - Utilize open satellite imagery to detect empty agricultural lands and crop health</p>
Objective 8: Utilize Geoanalytics for modeling, prediction, and better decisions	



	<p>Initiative 14: Utilize spatial analytics and field data to model, simulate and predict infestations and diseases</p> <p>Initiative 15: Leverage soil cover, topography and other environmental information to recommend crop types and suitable locations for facilities</p>
Capacity	
Objective 9: Build internal geospatial core competency and capacity	
	Initiative 16: Develop role-based training and workshop plans
Objective 10: Design GIS awareness programs and outreach campaigns	
	<p>Initiative 17: Design GIS awareness programs for different audience type (managers, professionals, business users, citizens, etc.)</p> <p>Initiative 18: Promote employees participation in GIS conferences and other activities concerning agriculture</p>
Engagement	
Objective 11: Increase community engagement for awareness and reporting	
	<p>Initiative 19: Configure Story Maps, highlighting challenges, opportunities, Programs and achievements</p> <p>Initiative 20: Provide reporting and survey tools for public engagement</p>
Objective 12: Collaborate with Cadastre Committee, Armstat and local entities	
	Initiative 21: Promote agricultural research and agribusiness by deploying an open data hub



Transforming Agriculture Education and Research

The development of the agriculture sector will also require further investment in human capacity across all agriculture market segments and levels. This must include educational and vocational training system reform to engage youth and improve farmer skills and training of the next generation of Armenian agronomists, agricultural technologists, and entrepreneurs (e.g., investment in building greenhouse management, agro-processing, agricultural product marketing, and financial and business literacy skills).

To promote the agricultural sector and integrate the latest technologies, it is important to provide the sector with professionals equipped with modern agrarian knowledge and skills. The level of agrarian education is low and insufficient; there is often even absolute lack of agrarian knowledge and professional skills, which directly affects the implementation of effective and up-to-date practices in the sector. To ensure the strategic development of agriculture, first and foremost, it is necessary to equip the sector with professionals with quality agrarian education.

Another serious challenge is the lack of qualified personnel or their low qualification in the responsible state agencies. The state agencies responsible for the sector are still not attractive for qualified specialists due to the low salaries.

In this context, another important issue is related to the young specialists from rural areas who get education in the capital city and do not return to their villages.

Armenian National Agrarian University is the only higher education institution in Armenia that prepares specialists for the agricultural sphere. The mission of Armenian National Agrarian University is to become an outstanding and leading educational, scientific-research and consultative center in the RA and in the region, which mobilizes the resources in the fields of education and science, integrates the results of basic scientific researches. For this mission, University has to implement the following activities:

- To ensure its general interests in the fields of education and science,
- To integrate and develop scientific researches and educational process,
- To ensure educational access for larger proportion of society,



- To get integrated in the world higher educational system, as well as to collaborate with international community,
- To provide qualified higher and post graduate education that meets the demands of society,
- To stimulate knowledge and usage of modern technology, as well as to form market infrastructure activity,
- To create a student-centered educational environment, to ensure multivector development for future specialists.

The future of the university should be built taking into consideration high dynamics of social-economic development, Armenia's entrance to the world economic platform, development of modern technologies in the spheres of social life, creation of information society in Armenia. On its way of realization its mission the University has to overcome some difficulties and to implement important steps.

Human resources and infrastructures

Ensuring human resources and infrastructures in line with the University's mission, vision and goals

OBJECTIVES

- Modernization of the infrastructures and material and technical resources of the University, renovation of the buildings, ensuring physical access and safe environment;
- Providing human resources in compliance with the University's needs;
- Ensuring conditions for smart learning in the University;
- Formation of a museum complex.

ACTIONS

- Inventory, sort and classify the existing resources;
- Carry out renovation works in the educational buildings, simultaneously ensuring adaptation of the conditions to the needs of people with musculoskeletal problems;
- Expand and improve the dormitory and the rest house;
- Develop the security systems of the educational buildings and ensure safe environment;



- Recruiting staff suiting the mission, vision and Strategic Plan goals adopted by the University;
- Renovate and technologically reequip and modernize the research and educational laboratories and classrooms, emphasizing the IOT and STEM directions;
- Providing proper conditions for maintenance of cultural values and their publicity.

Science

Obtaining scientific and research results in the food and agriculture sector and their implementation in the research excellence and innovative system development

OBJECTIVES

- Optimization of the research units of the Foundation and promoting scientific research and cooperation between them, cardinal revision of the activity of the base farms, human and institutional capacity building;
- Strengthening the education-science-industry linkage, implementation and commercialization of the results;
- Review of the directions of the scientific-research activity in the line with the challenges and trends of the sector, defining the research priorities in the University, implementing research projects having applied and investment significance;
- Enhancing the visibility of scientific-research activity, internationalization.

ACTIONS

- Revision of the documents regulating the structure and the activities of the scientific-research units and base farms;
- Developing and implementing joint projects by the scientific-research units;
- Developing and application of mechanisms that will ensure involvement of the students in the scientific-research units and their participation in scientific projects;
- Human capital development in scientific centers, involvement of the young personnel;
- Re-equipment and modernization of the technological infrastructure;



- Operation of institutionalized mechanisms of implementation of the scientific results within the University, from the concept of a scientific result to its implementation;
- Define the priorities of the scientific-research activity of the University in line with the sustainable development goals, the country's priorities and the needs of farmers and investors;
- Recording the scientific results, publication of articles in journals with high citation index;
- Revealing the trends of international projects, submitting grant proposals in areas that have strategic-significance for the University;
- Improvement of the "Agriscience and Technology" periodical of ANAU and its positioning in the lists of recognized international research publications.

Education

Academic excellence, quality and competitive educational programs

OBJECTIVES

- Continuous improvement of educational programs, internationalization and quality enhancement;
- Preparing socially responsible, competitive and qualified specialists demanded in the local and international job markets and mastering the up-to-date technologies;
- Increase in the number of local and foreign applicants through implementation of specialties demanded in the local and international job markets and educational programs in foreign languages;
- Improvement of the non-formal and continuous education system;
- Introduction and further deepening of student-centered approaches in the organization of the education process.

ACTIONS

- Structural and content transformation of educational programs; compliance of the learning outcomes with the requirements of the job market and the NQF (National Quality Framework);



- Encouraging the scientific activity of the faculty to create theoretical prerequisites for ensuring education-research link in the teaching process;
- Professional, teaching and research capacity building for the faculty, aimed at implementation of high-quality and competitive educational programs;
- Application of the approach of one-semester long paid internships, introduction of dual education;
- Ensuring the flexibility of core courses in line with scientific and technological innovations;
- Expansion of the cooperation format in the University's educational services, introducing, in particular, joint/double degree programs;
- Accreditation of educational programs, including of the one by recognized international accreditation agencies;
- Development and implementation of educational programs for non-formal and continuous education in line with the requirements of food and agriculture sector;
- Ensuring the trustworthy, outcome-based and student-centered evaluation system;
- Active use of student-centered, inclusive and smart education approaches in the teaching and learning process, in particular in STEM educational programs.

Management

Ensuring vertical and horizontal cooperation, participation, accountability and transparency in the governance system of the University

OBJECTIVES

- Formation of an in-house and academic culture;
- Reform in the University's governance system and enhancement of its efficiency;
- Introduction of a new human resource management (HRM) system, recruitment, maintenance and development of the best human resources;
- Revision of the quality assurance system, application of the Plan-Do-Check-Act (PDCA) cycle and introduction of an impact-oriented system of monitoring and evaluation;
- Enhancement of the competence and competitiveness of the structural subdivisions.



ACTIONS

- Formation of a common value system and dissemination of the ethics rules;
- Enhancement of the corporate social responsibility (CSR);
- Formation of a clear mechanisms of accountability and transparency;
- Introduction of an automated system of management
- Mapping of cooperation (Clarification of the mechanisms of information dissemination, control of the process, and cooperation between all subdivisions and branches of the professional educational institution and their governance);
- Ensuring coherence of internal legal acts with the relevant international and national legal acts;
- Developing and introducing systems of training and performance review of the University's employees according to categories;
- Elaboration and further development of differentiated criteria of bonuses for the faculty, administration, and support staff and bonus mechanisms;
- Development of in-house mechanisms of encouraging and dissemination of the progressive teaching practices, encouraging the modern teaching methods and technologies;
- Considering the possibilities of introducing social and/or medical insurance packages;
- Establishing a data base necessary for analysis and efficient planning of the University's activities;
- Revision of the quality assurance system;
- Building the University's organizational and governance capacities;
- Developing student support services, promoting the activities of the student organizations;
- Promoting student career services by developing dual education and the consultancy and training systems;
- Formation of an online platform for joint use of resources.





Priorities, objectives and measures

PRIORITIES	OBJECTIVES AND MEASURES
<p>I. Increase Agriculture Competitiveness and Enhance Efficiency</p>	<p>Reduce uncultivated land and develop land market</p> <ul style="list-style-type: none">• Develop economic and legal mechanisms for abandoned land utilisation• Develop geographical digitalised maps of agricultural lands• Improve cadastral data on agricultural lands• Establish and implement land consolidation legislation and programme• Implement monitoring of agricultural lands. <p>Improve irrigation in Armenia</p> <ul style="list-style-type: none">• Improve structure and organisation at the public & user level• Define irrigation programme and budget based on existing water resources, economic feasibility and potential to increase cost recovery• Rehabilitate of the existing and implement new irrigation projects• Establish a digitised water resources and customer irrigation database <p>Develop the credit market</p> <ul style="list-style-type: none">• Revise existing credit support programme• Eliminate gaps for fostering credit market development• Develop Guarantee Fund for agricultural loans <p>Support risk mitigation and climate change adaption</p> <ul style="list-style-type: none">• Develop the insurance market in agriculture• Develop and implement hail risk mitigation programme• Identify and promote broader climate adaptation and resistance measures (e.g., drought resistant seeds, new



	<p>agricultural practices, optimisation of natural inputs, climate smart and sensitive technologies and practises)</p> <p>Improve economic viability of agricultural producers and processors in priority value chains</p> <ul style="list-style-type: none">• Develop sector analysis for high priority agricultural value chains• Invest in the selected food and nutrition value chains to strengthen economic viability and improve competitiveness• Develop a forecastable industry out of agriculture: Herbs and spices, colours and flavours, perfumes, medical, cosmetics and other similar products <p>Improve access to agriculture equipment and machinery</p> <ul style="list-style-type: none">• Develop support programme for the purchase of new machinery and equipment for select value chains• Encourage local and international producers of machinery and equipment to enter local market or to establish manufacturers in Armenia• Initiate the change in the law for Leasing of Agricultural Equipment <p>Improve seed and planting material quality, promote modern cattle-breeding development</p> <ul style="list-style-type: none">• Improve seed and planting material certification system• Support establishment of poultry, cattle pedigree breeding farms
<p>II. Ensure Food Safety</p>	<p>Introduce internationally recognised food safety risk management systems</p> <ul style="list-style-type: none">• Establish the system for full traceability of food: from consumer to the field



- Introduce GAP (Good Agricultural Practices) standard in Armenia
- Introduce HACCP (Hazard Analysis and Critical Control Point) standard in Armenia
- Provide clear, reliable information and basic knowledge on food safety to public
- Create effective mechanism of permanent monitoring of food safety sector

Increase the level of veterinary services

- Improve animal health and animal identification systems (e.g., modern national livestock registry and livestock surveillance/traceability platform)
- Develop a strategy for protection from infectious diseases (brucellosis, African swine fever)
- Introduce mechanisms for the control of the circulation of veterinary medicines (especially antibiotics)
- Develop private veterinary services to provide affordable and high-quality services of veterinary doctors to farmers

Improve plant protection system regulations and enforcement

- Monitoring of plant quarantine and non-quarantine pests and phytosanitary assessment
- Develop system for advanced plant protection
- Develop system of predicting and rapid alert for harmful plant organisms
- Registration of pesticides (including imported) and creation of a single register;
- Develop plant protection system using digital technologies and monitoring system for pest and disease control

Strengthen laboratory capacities and conduct International Standard-



	<p>based tests in food safety, animal health, and phytosanitary control</p> <ul style="list-style-type: none">• Effective management of laboratory capacities in the areas of food safety, veterinary and phytosanitary• Establish a system of productive cooperation between public and private laboratories and Government <p>Introduce flexibility rules in food safety based on best international practices</p> <ul style="list-style-type: none">• Introduce flexibility rules into food safety legislation• Develop support policy which will foster legalisation of the small-scale farmers under flexibility rules• Establish close cooperation with internationally recognised organisations of food safety
<p>III. Improve Food Security and Nutrition</p>	<p>Ensure minimum level of food availability and self-sufficiency of nutritionally diversified food</p> <ul style="list-style-type: none">• Increase the production of vital local foods• Improve the trade balance for selected commodities where import substitution is economically viable <p>Increasing the access to nutritionally diversified food</p> <ul style="list-style-type: none">• Establish, maintain and replenish public food storage• Monitor and prevent food waste and lost• Establish close partnership with the partner to ensure synergies with other initiatives, such as school feeding, nutrition education <p>Monitor food security</p> <ul style="list-style-type: none">• Improve systems of monitoring food security• Identify criteria, develop Less Favourable Areas, LFA maps, and measures
<p>IV. Develop</p>	<p>Support market opening, investment attraction, and export</p>



<p>Local Markets and Increase Export Possibilities</p>	<p>promotion</p> <ul style="list-style-type: none">• System development and fulfilment of food safety requirements which avail possibilities for products and market export diversification• Develop and implement export strategy which integrative part will be targeted export promotion• Improve export logistics <p>Develop tools to increase agricultural investment opportunities</p> <ul style="list-style-type: none">• Develop and promote agricultural investment program <p>Develop and implement Adding value to the products Program</p> <ul style="list-style-type: none">• Establish quality scheme legislation and capacity for implementation at the national and regional level• Develop and implement measures for increasing organic production, geographical indications, and other quality schemes• Develop Armenian quality food label• Introduce a new milk, grape, etc. pricing system that will be based on the quality standards of milk (grapes) <p>Promote well-organised agro-wholesale, retail and farmer markets</p> <ul style="list-style-type: none">• Develop feasibility studies for establishment of the modern wholesale market• Promote local farmers market establishment and direct sales <p>Foster cooperation, aggregation, and value chain integration</p> <ul style="list-style-type: none">• Support policy for creation and maintenance of successful producers' groups• Encourage different type of farmers' associations' establishment (sectorial, local, regional, livestock breeder associations which will be herd book holders etc.)• Promote the efficiency of farmers' activities through non-
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	commercial cooperatives
V. Develop Institutional and Human Capacity in Agriculture	<p>Improve institutional analytical capacities at the Ministry aimed at increasing and making policies more targeted, ensure monitoring and evaluation of state supported projects</p> <ul style="list-style-type: none">• Improve the organisational structure of the Ministry in order to coordinate issues related to the rural and agricultural development and effective management of natural resources• Develop capacity at the policy department level to ensure effective project and policy monitoring and evaluation• Introduce comprehensive data collection and management systems to improve quality of decision making and business decisions <p>Improve targeted policy engagement, payments, and communications with farmers</p> <ul style="list-style-type: none">• Develop farm registry <p>Improve transparency and efficiency of Ministry payments</p> <ul style="list-style-type: none">• Create a single payment institution as part of the Ministry <p>Ensure access to information and two-way communication with farmers</p> <ul style="list-style-type: none">• Develop systematic market price collection, processing and dissemination system• Develop a national gross margin database and make it available to farmers• Disseminate high-quality market information <p>Improve effectiveness and efficiency of knowledge and experience transfer</p> <ul style="list-style-type: none">• Introduction of agricultural advisory services and capacity development for advisors.• Support practical oriented research in agriculture



	<ul style="list-style-type: none">• Improve educational levels of food business operators, agribusiness, and farmers, media, and consumers, and develop youth entrepreneurship programmes• Use the Diaspora's potential to develop technological, technical, educational opportunities <p>Improve effectiveness and efficiency of donor coordination</p> <ul style="list-style-type: none">• Ensure effective communication of agricultural related priorities to international partners through formal and non-formal donor coordination meetings.• Strengthen capacity of the donor coordination framework in agricultural sector platform and its integration in the state coordination system <p>Develop farmer segmentation framework and clarify farmer status</p> <ul style="list-style-type: none">• Define farmers status, i.e., the obligations and benefits for each farmer segment
<p>VI. Support Sustainable Rural Development</p>	<p>Develop measures to encourage rural entrepreneurship development</p> <ul style="list-style-type: none">• Develop studies, policies, and legislation to diversify the rural economy• Provide investment support for diversification activities at the farm and non-farm level• Promote agro-tourism development in rural communities based on the specific cultural identity of the communities <p>Rural agricultural infrastructure development</p> <ul style="list-style-type: none">• Develop priority agricultural infrastructure in rural areas <p>Maintain good agricultural practices, biodiversity, and environmental sustainability programmes</p> <ul style="list-style-type: none">• Develop and implement an awareness programme of good agricultural practices amongst farmers, advisers, and policy makers



	<ul style="list-style-type: none">• Ensure coordination of activities with the Ministry of Environment <p>Build up community driven capacity for implementation of local strategies</p> <ul style="list-style-type: none">• Develop a programme for community activism• Support local initiatives in relations to agriculture and rural development
<p>VII. Promote Digital Agriculture and Technology Innovation</p>	<p>Invest in national digital agriculture platforms and digitalisation initiatives</p> <ul style="list-style-type: none">• Develop the strategy and action plans for digital agriculture• Invest in the phased design and roll-out of foundational digital agriculture platforms like: farm, land, animal, and irrigation registries, surveillance & traceability platforms, land-trading platforms for abandoned land, digital observatory for extension planning and monitoring, crop area mapping, yield predictions, etc.• Conduct feasibility studies for priority digital investments and initiatives – e.g., assess viability of agriculture payments digitalisation, starting with G2P (government-to-person) farmer payments (e.g., national farmer e-wallet) which can lay ground for future digital payments uses (e.g., farmer-to-agribusiness, insurance, credit payments)• Invest in new enabling policies to ensure safe and secure digital agriculture (e.g., new code of data privacy for agriculture data) <p>Promote broader (non-digital) agriculture technology innovation and uptake</p> <ul style="list-style-type: none">• Develop prioritised agriculture innovation roadmap and action



plan (beyond digital) in support of national agriculture strategy

- Through different policy and support measures promote agriculture innovation initiatives and programmes, e.g.: greenhouses of the future hail protection innovations, biotech innovation, production and post-harvest stage mechanisation innovations (e.g., promotion of innovative irrigation, field preparation, harvesting, storage, packaging machinery etc.), modernised agronomic diagnostic technologies, etc.

Digitalise government agriculture systems and develop Ministry digital capacity

- Set up and grow Digital Agriculture and Innovation department within the Ministry
- Develop the Ministry's IT and data analytics capacity to deal with existing and forthcoming agriculture data assets (farm register, irrigation register, livestock, land parcel identification, payments control, etc.)
- Digitalise existing administrative structures dealing with agriculture, e.g., digitalisation of national extension infrastructure, including regional extension centres
- Digitalise agriculture statistics in coordination with statistics agency (e.g., digitalisation and integration of open agro-data sources in common platform, new digital data-capture processes for more real-time data, improved data accessibility to government and public)
- Establish partnerships on digital agriculture with national and EU/EAEU research projects and programmes (e.g., EU Copernicus programme) and other relevant bodies (e.g., WB Agriculture Observatory)



- Explore opportunities to digitalise national agronomy systems (e.g., digitalisation and modernisation of soil testing and field trial infrastructure)

Build farmer and education system capacity on digital agriculture and innovation

- Launch agriculture technology and awareness-building and promotion initiatives (e.g., conferences, tech promotion programmes with national agriculture academic institutions, farmer education/extension programmes)
- Strengthen links between research institutes, academia, agricultural producers, and local tech/IT community to create innovative solutions in agricultural production
- Introduce training on modern agriculture technologies and digital innovations into agriculture training programmes/curricula
- Support innovative e-learning platforms to engage youth in agriculture (e.g., online vocational programmes on agriculture)