

Establishing Agricultural Sustainability Degrees and Providing Extension Services

A Next Step in Azerbaijan's Education Reforms

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"The Earth does not need more 'educated' consumers of knowledge, but rather a radical rethinking of our approach to education."

– Iveta Silova

The catastrophic outcomes of climate change, water shortage, and soil desertification have had a negative impact on countless millions of lives and adversely affected the sustainability of natural resources across the world. In 2018, the Internal Displacement Monitoring Center indicated that 17.2 million people have been internally displaced due to natural disasters and extreme weather conditions; in 2020, this number leaped to 30.7 million people. This poses challenges for food security due to agricultural sensitivity to climate change. According to the 2022 UN Sustainable Development Goals report, an estimated 700 million people will be at risk of displacement due to drought alone by 2030. Agricultural production reduces crop yield, livestock productivity, and natural resources (including soil, water, and biodiversity depletion). A 2020 World Bank report indicates that 690 million people (8.9 percent of the world's population) are going hungry and projects that this number will grow by 60 million more within the next five years.

Such and similar challenges have brought climate action and sustainability concerns regarding agriculture and food security to the forefront of the agendas of international

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organizations, building upon the pledges made within the overall framework of the UN 2030 Agenda for Sustainable Development—including SDG13 on climate action, which links up to the process that centers on the UN Framework Convention on Climate Change. The global policy vision behind this flagship multilateral endeavor represents a paradigm shift designed to improve the lives of populations worldwide through, inter alia, various climate change mitigation and adaptation measures.

One of the crucial aspects of achieving the SDGs is education. Despite documents like the Paris Agreement (Article 12) and the UN Framework Convention on Climate Change (Article 6), recognizing that “education, training, and skills development are fundamental for all Parties to achieve sustainable development in the long term,” academia is largely absent from national climate policy discussions in Azerbaijan. This IDD Analytic Policy Paper will examine how the country can more fully integrate climate action and sustainable development in the field of agriculture into university curricula. This would ultimately benefit producers and, thus, the country as a whole.

Legislative and Pedagogical State of Play

Change is needed because education is one of the key channels to prepare the population for anticipating, mitigating, and adapting to the climate crisis and tackling sustainable development. As agricultural practices are among the economy’s most vulnerable sectors to the effects of climate change, the competence and skills of farmers plays a crucial role in any country’s achievement of the SDGs.

This is particularly important for countries where a significant portion of the population is involved in agricultural activities. This is the case with Azerbaijan, where agriculture is one of the biggest employers in the economy: 36 percent of the economically active population is involved in farming activities, with 90 percent of these farmers being smallholders who occupy 85 percent of agricultural land. Moreover, the agriculture share of Azerbaijan’s GDP grew up to 7 percent in the past few years. It is thus crucial for the country’s food security, productivity, and livelihoods (especially those of the smallholders) to have knowledgeable and competent producers, especially when unpredictable rainfalls or droughts have adverse impacts on crop yield production. However, according to the 2017 Azerbaijan Economic Reform Review, large numbers of farmers lack knowledge on the latest innovations in agriculture and lack the skills to use them. The acquisition of both would undoubtedly enable them to be optimally productive and use resources more efficiently and sustainably.

A review of Azerbaijan’s relevant legal framework shows that the country does have some laws and policies on integrating climate change in non-formal (adult learning and training) and formal (higher education) education. For example, the Strategic Roadmap on the Production and Processing of Agricultural Products (2016-2025) makes a strategic recommendation to “develop the system of science, education, and extension

services in the agricultural field.” It also sets the following objectives in place: to provide the transition to a new development phase in terms of quality in the agrarian field by improving the mechanisms to plan and carry out scientific research, implementing the results in agriculture, and forming a network of extension services that meet the requirements of agriculture.

This strategic direction aligns with what was set in the 2017 Azerbaijan Economic Reform Review on Environmental Protection, Sustainable Use of Natural Resources, and Management of the Impacts of Natural Factors on Agriculture. This document aims to “elaborate mechanisms to reduce the side effects of climate changes and other natural factors on agriculture, improve the mechanisms of environmental protection in the agrarian field, improve the mechanisms of sustainable use of agricultural lands and water reserves, and develop environmentally friendly agricultural production.” This has, in turn, led to the enhanced provision of short-term training programs and information on ecological and environmental protection and climate change mitigation, in accordance with the Law on Protection of the Environment (Article 59) and the 2013 National Forests Program.

While these programs are aimed at officials and specialists most associated with the activities that have a harmful impact on the environment, the UN Sustainable Development Cooperation Framework (2021-2025) has also set a strategic priority aimed at establishing more partnerships with non-governmental organizations and civil society to increase their participation in matters related to climate change. Its goal is to facilitate public consultation processes that consider the livelihoods of people at risk. The integration of such matters was mandated in the 2019 Classification for Bachelor’s and Master’s Degree Programs, whereby the Cabinet of Ministers granted approval for the establishment of a bachelor’s degree program titled Management of Sustainable Development and a master’s degree program titled Management of Natural Resources in Sustainable Development at the Azerbaijan State University of Economics. Moreover, a recent UNESCO review indicates that ADA University, Western Caspian University, and Baku State University are the most involved Azerbaijani institutions of higher learning in promoting climate change in academia. For example, ADA University facilitates the study of delivering climate change and the SDGs as a separate discipline through various course offerings; its Institute for Development and Diplomacy organizes conferences and roundtable discussions with policymakers on these topics, and publishes various papers on this and related topics.

Agricultural Sustainability as an Academic Discipline and a Professional Service

While the government and some universities have taken a series of important steps to increase public awareness on the requirements of the Paris Agreement and the fulfillment of the SDGs, further steps are needed to enhance the promotion of Azerbaijan’s human capital through education.

The concepts of climate change and sustainable agriculture are not systematically included in Azerbaijani tertiary education. This means that, in practice, neither the country's scientists nor farmers are involved in mitigating the complex agricultural problems caused by climate change.

In some other countries, this issue is dealt with in a two-fold approach. The *first* is to introduce agricultural sustainability as a distinct academic discipline, defined (according to an authoritative source) as an “integrated systematic approach to plant, animal production, and distribution that protects the environment, expands the Earth’s natural resource base, and makes the most efficient use of nonrenewable resources.” Such a holistic approach aligns with the inherent logic of the SDGs and the underlining UN 2030 Agenda for Sustainable Development. Another respected source describes a master’s degree in agricultural sustainability thusly: it “teaches the effects of agricultural practices on the natural environment and how to minimize impact while maximizing production. Individual programs may provide a regional or more global approach. A variety of agricultural and bioscience topics are generally covered to educate the student in the means of production, best management practices, and other aspects of sustainable agriculture.”

A curriculum based on this pedagogical and policy logic would enable Azerbaijani students to pursue a truly interdisciplinary approach that would involve the biological, social, and economic elements of sustainability, including aspects of climate change. On such foundation, students, farmers, and scientists would be able to study and understand the myriad problems in agricultural sustainability in a holistic way. This would allow them to see complex issues from the different angles of different disciplines and teach them to provide solutions systematically instead of through the lens of an isolated discipline.

The *second* aspect of the aforementioned approach is achieved by linking academic programs and the resulting research to working farmers through agricultural extension or advisory services.

This type of advisory service is recognized in countries like China, India, and the United States as a useful way to assist farmers through the practical application of science and technology to help them improve their farming methods and techniques, increase production efficiency and income, and improve their overall quality of life. According to the Global Forum for Rural Advisory Services’ 2012 Fact Sheet on Extension Services, “extension services enable farmers to take up innovations, improve production, and protect the environment. Extension shows positive effects on knowledge, adoption, and productivity. With studies showing very high (13-500 percent) rates of return to extension, it is a cost-effective way to improve farmer productivity and income. It also doubles productivity.” Extension services can also become a trusted channel for disseminating information and training farmers.

In Azerbaijan, some preliminary steps have already been taken in this regard. For instance, in 2020, the UN Food and Agriculture Organization (FAO), with the support of the Ministry of Agriculture, launched an EU-funded project on the provision of agricultural advisory services (AAS) that aimed to train farmers in sustainable agriculture. This AAS model is a system that provides farmers with demand-driven, high-quality advisory services that bring together public and private sector participants with a clear division of responsibilities.

The project has made significant inroads, such as establishing Commodity-Based Advisory Platforms with facilitators' support, which also has components that specifically target youth and women. However, more experts in the field of agricultural sustainability, and better coordination of the work of public and private enterprises within the framework of the AAS model (including state institutions and both public and private enterprises), would help to expand the AAS toolkit further. Capacity-building here would be critically important to ensure further success.

Recommendations

Policy. The Ministry of Science and Education, in cooperation with the Ministry of Agriculture and the Ministry of Labor and Social Protection of the Population, should develop standards for establishing degree programs in agricultural sustainability and food environments. These standards should cover the educational and professional standards of said programs, as well as professional standards for extension services specialists.

Programs and teachers. The universities with relevant degree programs or courses of study—i.e., Azerbaijan State Agricultural University, ADA University (including the newly-established Azerbaijan-Italy University), Lankaran State University, and Khazar University—should commit to teaching agricultural sustainability. This goal can be achieved by establishing experimental stations where new technologies can be tested on experimental plots, and extension officers can be trained for dissemination among farmers. Moreover, extension specialists should be trained as specialists and scientists in the field of agricultural sustainability.

Demand-driven content. Pedagogical and practical content should be adapted to Azerbaijan's local context, not simply cut-and-pasted from existing models or best practice. The link between research and the provision of extension services should be ensured through the universities' experimental plots, where the most updated technological innovations would be transferred to the production process.

Methods and learners. The most relevant teaching methods should be selected to match how farmers learn. The ways that farmers learn in Azerbaijan should be explored, and these methods and channels should be applied to the learning process. Moreover,

project-based and experiential learning should be the core methods applied in relevant university education programs. Furthermore, the gender composition of farmers and their size should be balanced.

Partnerships. Policymakers, NGOs, and farmers should join the global network of agricultural extension and advisory services for their mutual benefit.

Financial sustainability of extension services. This involves two interrelated approaches. First, the institutionalization of extension services. This would allow them to play a continuous role in capacity building. Moreover, the provision of updates on cutting-edge scientific and technological information and its application in agricultural production should be ensured. Second, the facilitation of Public Private Partnerships (PPP). This would help establish ties between universities, scientific institutions, and large private sector players (e.g., Gilan Agricultural Group, AS AGRO) in the form of agro-clinics agro-business centers, experimental plots, and information channels. Thus, agricultural extension services could be provided to a cadre of trained agricultural graduates. Larger, national-level NGOs could provide marketing, price information, and updates on climate change to farmers, engage in farmer welfare, and help increase agricultural productivity.