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Innovation for Agricultural Training and Education

Armenia: Background Study

B. Bynum Boley, Ph.D.; A.L. (Tom) Hammett, Ph.D.

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LIST OF ACRONYMS

- AET - agricultural education and training
- ANAU - Armenian National Agrarian University
- ASC - Agricultural Support Centers
- ATC - Agribusiness Teaching Center
- CIA – Central Intelligence Agency
- EDMC - Enterprise Development and Market Competitiveness
- EHEA-European Higher Education Area
- GDP – Gross Domestic Product
- InnovATE – Innovation for Agricultural Training and Education
- ICARE - International Center for Agribusiness Research and Education
- NCVETD - National Centre for Vocational Education and Training Development
- NGO – Non-governmental Organization
- RA – Republic of Armenia
- TAMU - Texas A&M University
- TVET - Technical and Vocational Education Training
- UNESCO-UNEVOC – United Nations Educational, Scientific and Cultural Organization – International Centre for Technical and Vocational Education and Training
- USAID - United States Agency for International Development
- USDA – United States Department of Agriculture

EXECUTIVE SUMMARY

This report provides an overview of the current status of agricultural education and training (AET) in the Republic of Armenia. AET is vital to the social and economic future of Armenia because it provides the skills for the agricultural industry which presently employs 39% of the population and constitutes 21% of the country's GDP. With its importance to employment and to the country's economy, the agricultural industry is one of the most promising sectors for making real strides toward reducing poverty and bringing economic development.

This report consists of a literature review on the current state of the agricultural industry and AET within Armenia. The report is organized by a dual focus on the supply and demand factors influencing agriculture and AET in Armenia. The supply-side section of the report focuses on the educational system of Armenia and how AET is incorporated into it. The demand-side section examines the present state of the agricultural industry to identify the current labor and employer needs. These discrepancies in supply and demand are cross-pollinated for recommendations on how to best improve the AET system in Armenia to meet the present challenges of the agricultural industry.

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Introduction

Purpose of this report

This report aims to review the current state of AET in Armenia and identify where the education system is successful at meeting the current market demands for agricultural AET as well as areas that need increased attention.

Data collection methodologies

The accumulation of the information for this report involved gathering both primary and secondary data from a variety of sources. The primary data collection consisted of interviews with various AET stakeholders in Armenia during the scoping study held in the spring of 2013. These conversations were held with staff from governmental agencies and non-governmental organizations, agriculture students, and faculty members at agricultural institutions to acquire existing views and information regarding AET in Armenia. The secondary information was obtained through a review of literature searching library resources, newspaper archives, and government, university and NGO websites.

Background

Historical Background

Armenia is an ancient country with a history traced back to the Old Stone Age. Its formation stems from multiple tribes coming together on the Armenian plateau between Asia Minor and the Iranian uplands to create the state of Uratu in the ninth-eighth centuries BC (Tumanian, 2006). A core part of Armenia's historical and present identity is tied to it being the first nation to officially adopt Christianity as its state religion in 301 AD (Avestisayn, 2010). This Christian heritage is unique in a region where most of neighbors have predominantly Muslim populations.

Armenia has faced a large amount of conflict throughout its history. This conflict partly stems from Armenia's location "between the greatest conflicting powers of East and West" including the ancient empires Persia, Rome, Arabic Caliphate, Byzantium to modern day Europe, Turkey, and the former Soviet Union (Tumanian, 2006, p. 5). Armenia's location between these superpowers has resulted in it being in an "arena of incessant warfare" according to Tumanian (2006, p. 5).

Figure 1. Map of Armenia from CIA-World Factbook (2013)

There are two historical events that continue to influence Armenia and the current agricultural industry. The first is the genocide of over one million Armenians by the Turkish Ottoman Empire during World War I (Dadrian, 2003). The genocide resulted in a poor relationship between Turks and Armenians, which later manifested in the establishment of closed borders from Armenia to Turkey and Azerbaijan, a Turkish ally. These closed borders have crippled Armenia's export potential by only allowing goods to flow across the Georgian border to the north or the Iranian border to the south (Figure 1).

The second event is the occupation of Armenia by the Soviet Union from 1920 to 199, which still impacts the Armenian agriculture industry. The Soviets used Armenia as "an agricultural complex that provided a significant amount of exports to the rest of the Soviet Union" (Avestisayn, 2010, p. 22). With the fall of the Soviet Union and the loss of key export markets, the Armenian economy struggled, as seen by the high percentage of residents in poverty and the large trade imbalance reflected in country's high number of imported goods.

Soviet rule from 1920 to 1991 has also had long lasting impacts on Armenia's educational system. The Soviet agricultural education system was "concentrated on increasing the primary agricultural

production" with "little regard to economic efficiency, product quality and consumer demand considerations" (Urutyan et al., 2007, p. 3). Additionally, the "economic content in the curricula was… weak in nature and highly ideological not emphasizing development of creative thinking and problem solving capacities of students" (Urutyan et al., 2007 p. 3). It has taken significant educational reforms to steer the Armenian education system away from this old way of thinking.

Economy

After several years of economic growth, Armenia faced a severe economic recession with GDP declining more than 14% in 2009. This downturn was sparked by sharp declines in the construction sector and workers' remittances, particularly from Russia. The economy began to recover in 2010 with 2.1% growth, and has grown even faster in the years since then (CIA, 2013). Today GDP remains modest compared to other countries in the region, at $9.95 billion USD.

The service sector accounts for 45% of national GDP, and industry accounts for 33%. Some important industries include diamond-processing, metal-cutting and forging machines, electric motors, tires, knitted wear, hosiery, shoes, silk, chemicals, trucks, instruments, microelectronics, jewelry manufacturing, software development, food processing, brandy and mining (CIA, 2013).

GDP Sectors and Indicators by Country 2012

	Armenia	Russia	Germany	Turkey	Georgia
Total GDP (USD billions)	9.95	2,014.7	3425.9	789.26	15.74
Agriculture (% of GDP)	21.6	3.9	0.8	9.1	8.5
Industry (% of GDP)	33.2	36	30.5	27	23.1
Services (% of GDP)	45.2	60.1	68.7	63.9	68.3
Exports (% of GDP)	25.1	29.4	51.8	26.4	38.4
Imports (% of GDP)	49.3	22.1	45.9	31.6	57.8
Inflation (% annually)	-1.3	8.5	1.5	6.8	1.3
Headcount at national poverty line (% population)	32.4	11	--	18--	14.8
Population Growth (annual %)	0.2	0.4	-1.7	1.3	0.2
Net Migration (thousands of people)	-50,001	1.1 million	549,998	350,000	-125,007

Source: World DataBank

Exports

Total exports from Armenia total around $1.653 billion USD (CIA, 2013). Main export commodities include iron, unwrought copper, metals, diamonds, mineral products and foodstuffs.

Major Export Destinations 2012

Rank	Country	(% of total imports)
1	Russia	19.6
2	Germany	10.7
3	Bulgaria	9.1
4	Belgium	8.9
5	Iran	6.9

Source: CIA World Fact Book

Imports

Imports into the country total $3.459 billion USD (2013), with main imported products being natural gas, petroleum, tobacco products, foodstuffs and diamonds.

Major Import Destinations 2012

Rank	Country	(% of total imports)
1	Russia	20
2	Germany	11
3	Bulgaria	9
4	Belgium	9
5	Iran	6.5

Source: CIA World Fact Book

Agricultural Economy

Agriculture has traditionally been and continues to be a strong pillar of the Armenian economy. While agriculture represented only 21% of Armenia's GDP in 2012 (CIA, 2013), it employed nearly 39% of the Armenian workforce (USAID, 2012). Following the collapse of the Soviet Union poverty rates jumped significantly, and despite modest improvements, the poverty rate remains at 36% of the total population (USAID, 2012). Due to the high percentage of people employed by the agricultural sector, it has been identified as one of the most important leverage points for alleviating extreme poverty in Armenia (USAID, 2012). This correlation also indicates a need for growth and development of the agriculture

industry to better address the needs of Armenia's rural poor. Main agricultural subsectors include livestock, vegetables and fruits – especially grapes (CIA, 2013).

Current Education and Training Systems in Armenia

History of Education in Armenia

Higher education in Armenia dates back over 700 years (Urutyan et al., 2007). While this history is tied to higher education in monasteries, Armenia's modern higher education began with the creation of Yerevan State University in 1919 (Urutyan et al., 2007). Shortly following the establishment of the University, the Soviets took control of the education system, resulting in the creation of many state run higher education institutions tailored toward the demands of the 'Soviet-era economy and state-owned enterprises" (Urutyan et al., 2007, p. 2). These demands largely focused on a Marxian education philosophy that prepared graduates to become managerial and technical staff for collective farms and state-owned agribusiness (Urutyan et al., 2007). With the collapse of the Soviet Union, the Armenian educational system was in need of reform to meet the new needs of the country.

An important step forward for the education system was joining the Bologna Process in 2005. With the signing of the Bologna Declaration, Armenia pledged to reform their higher education system to be more compatible with European standards. A key goal of the Bologna Process is to "strengthen the competitiveness and attractiveness of the European higher education and to foster student mobility and employability" (EHEA-European Higher Education Area, 2013). Since the signing of the Bologna Declaration, Armenian enrollment in higher education increased from 19.6% to 28.6% between 2001-2008 (World Bank Group, 2013).

Structure of the Armenian Education System

General Education (Pre-University)

Armenia's requirements for pre-university education were updated in 2006 with the new National Curriculum for General Education (World Data on Education, 2011). Under the new curriculum the main goal is the "comprehensive and harmonized development of the mental, spiritual, physical and social abilities of children and learners, and the formation of good habits of conduct and behavior" (RA-Ministry for Education and Science, 2006). The Armenian general education system is based upon a three-tiered system that formally begins with compulsory primary school and continues on with compulsory middle school before diverging into multiple options for secondary education (Figure 2).

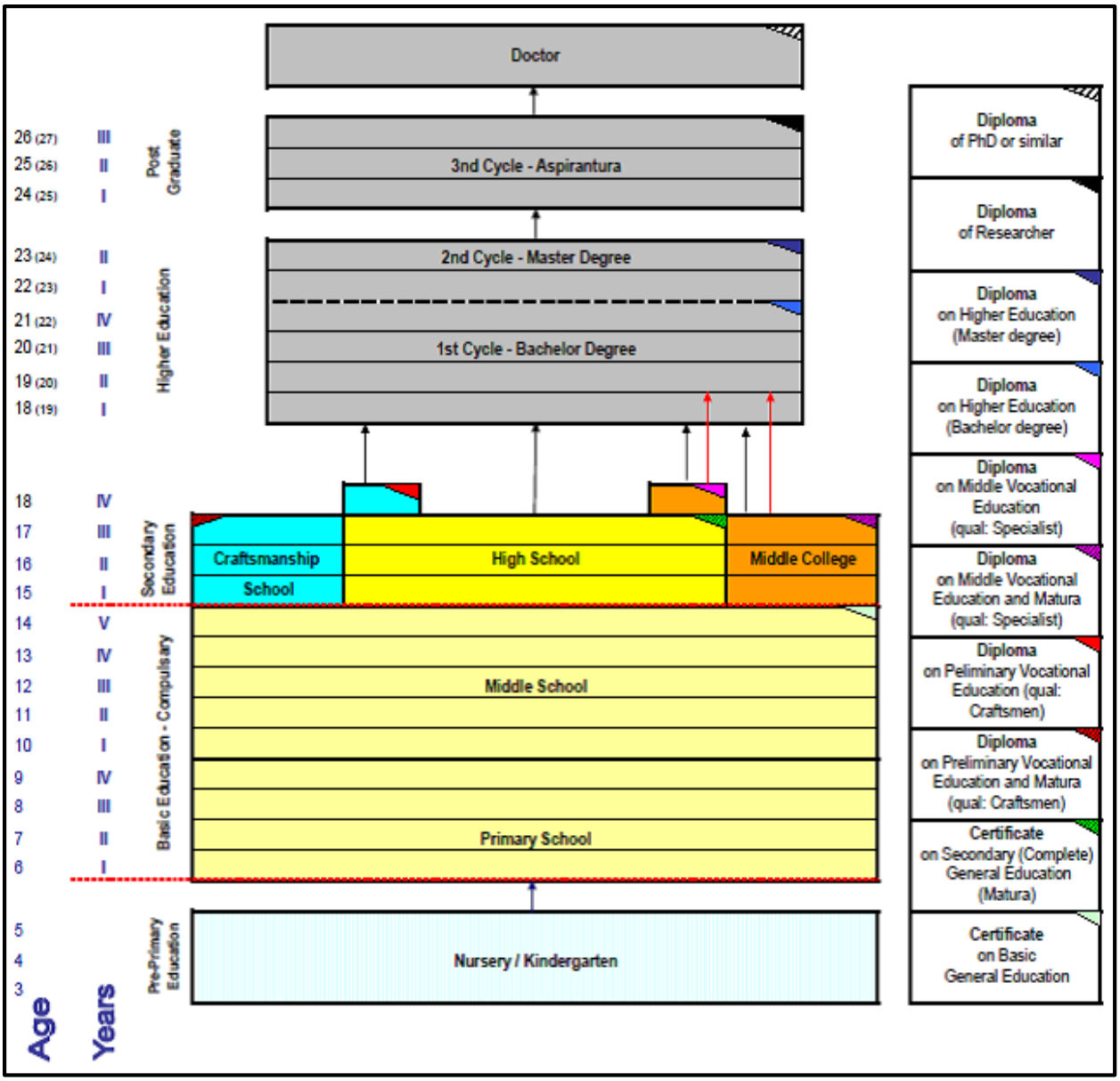

Figure 2: Diagram of the Armenian Education System (UNESCO-UNEVOC, 2013)

Primary School

Primary school is compulsory in Armenia. It begins at age seven and continues on for a period of four years covering grades 1-4 (RA-Ministry for Education and Science, 2006). According to the National Curriculum for Education,

> The main purpose of primary school is to establish the foundation for the learner's mental, spiritual, and physical abilities, linguistic thinking, literacy, logic and the baseline skills for future learning. The primary school will ensure the necessary conditions for learning and the necessary level of knowledge in order to continue learning in the middle school (RA-Ministry for Education and Science, 2006, p. 3)

It appears that Armenia has been very successful in achieving almost universal enrollment at the primary and lower secondary levels. This near universal enrollment spans all socioeconomic levels and the rural vs. urban divide (World Data on Education, 2011).

AET in Armenian Primary Schools

The National Curriculum for Education makes no direct mention of agricultural education, but it does dedicate 32-68 hours a year toward natural and social science education and provides schools with an additional 32-68 hours for optional subjects (Table 4). It is not known how much direct attention agricultural education receives within the primary school education, but it appears that there are possibilities to include it within the natural science, social science, and optional subjects focus areas. This would be particularly relevant to rural schools where a large number of the children's families are involved in agriculture.

Middle School

Middle school is compulsory in Armenia and lasts for a period of five years covering grades 5-9 (RA-Ministry for Education and Science, 2006). According to the National Curriculum for Education the main purpose of middle school is

> to provide knowledge about human beings, nature and society, to develop specified competencies and skills and moral and spiritual values and the ability to apply these in life so that the learner can either continue education in high school or proceed to an institution of professional education or enter the world of work (RA-Ministry for Education and Science 2006, p. 3)

Within the middle school curriculum, there is limited reference to agricultural education. Within the technology portion of the curriculum, the only place AET is mentioned is in the statement that a graduate of middle school must "appreciate the basic principles of household management, food technology, textile production, agricultural technologies, drawing and modeling" (RA-Ministry for Education and Science 2006, p. 34). The middle school curriculum has even more leeway with time allotted to natural and social sciences and optional subjects. Each school has the discretion to spend 2-3 hours a week or 68-102 hours a year on optional subjects (Table 4). Including agricultural education within middle school is vital because upon completion, students have an important decision to make pertaining to which vocational track they want to pursue.

Secondary Education

Secondary education is offered through two different options, each with different types of diplomas. The first is traditional high school consisting of grades 10-12 with a continued direct path on to higher education which provides students with a certificate of completion. The other option is to seek out a professional education through vocational schools, technical-professional schools or colleges (World Data on Education, 2011). These professional degrees generally require completing the general education requirements through grade 9 before being accepted into the program. The certificates provide the credentials to become either qualified 'craftsmen' or 'specialists' depending upon the chosen track. If graduates with these professional degrees desire to continue on to higher education, they have the chance to complete the additional requirements through an extra year of studies as seen in Figure 2.

According to the National Curriculum for General Education (RA-Ministry for Education and Science, 2006, p. 3), its main purpose is "to ensure the knowledge, competencies and skills to enable learners to lead independent lives and be able to move on to further professional education."

AET in Armenian Secondary Schools

As with the primary and middle school curriculum, there is little to no direct mention of agricultural education within the high school curriculum. However, there are general references to competencies that would require some extent of agricultural knowledge. For example, under the natural science learning objectives, the curriculum mentions that high school graduates should

> emphasize the role and importance of natural sciences in the development of civilization and in the evolution of a personal philosophy, and develop a sense of obligation for the preservation of nature, society and individuality, and understand the need to live in harmony with nature (RA-Ministry for Education and Science, 2006, p. 28).

Under the social science learning objectives, the curriculum requires graduates to:

> have a sound grasp of Armenian national problems; know the main characteristics of Armenian civilization and values; have a systematic knowledge of the political structure of the modern world, and the geopolitical and economic situation of Armenia and the region; and prioritize national consciousness and be determined to work to further the interests of the Armenian nation (RA-Ministry for Education and Science, 2006, p. 29-30).

Furthermore, the learning objectives from the technology subject matter expect Armenian graduates to "appreciate professional requirements and differences, labor market demand and the availability and significance of vocational education" (RA-Ministry for Education and Science, 2006, p. 34).

Technical and Vocational Education Training (TVET)

Until recently, education reforms largely neglected TVET in Armenia and primarily focused on general and higher education (UNESCO-UNEVOC 2013). This is evident in the amount of funding allocated for TVET, which was only 4.63% of the total education expenditures in 2006 (World Bank, n/d). A step forward for TVET was the signing of the Concept on Social Partnership in the Field of Preliminary (Craftsmanship) and Middle Vocational Education by the Ministry of Education (UNESCO-UNEVOC 2013). The Ministry of Education now sees TVET as an asset since it is a "modernized system that provides a qualified labor force suited to the requirements of employers" (UNESCO-UNEVOC, 2013). The mission of TVET education in Armenia is to

> increase efficiency of preliminary (artisan) and vocational education and training, including adult education system reforms, to foster its development, international integration, international recognition of awarded certificates and qualifications in the Republic of Armenia (NCVETD, 2013).

The TVET system is focused on two different levels as seen in Figure 2. The first level of TVET is Preliminary (craftsmanship) vocational education. It ranges from 6 months to three years and ultimately leads to a 'Craftsman' qualification (UNESCO-UNEVOC, 2013). The second level of TVET is Middle Vocation Education. It has a longer duration of 2 to 5 years and results in a Specialist qualification (UNESCO-UNEVOC, 2013). If TVET students are interested in continuing on to pursue higher education, both tracks provide the option to earn a secondary general education diploma titled "Matura" equivalent to the high school diploma (UNESCO-UNEVOC, 2013).

AET in Armenian TVET Programs

AET at the vocational level is provided through state agricultural colleges operating across the different marzes or regions of Armenia (Avestisayn, 2010). There are 10 state colleges supported by the Ministry of Agriculture serving over 3,500 students across 23 different specialties of focus. Some of the newer specialties offered by these colleges take into account supply chain management and exports, these include "Quality Examination of Consumer Goods; Canning and Food Concentrates, Technology; Agrarian Management; Fermentation Technology and Winemaking; Meat and Meat Product

Technology; Translation and Customs Service; Calculus and Automated System Software" (Avestisayn, 2010). The colleges operating under the Republic of Armenia's Ministry of Agriculture are listed below with the addition of two additional colleges that appear to offer vocational AET (Table 9). Agricultural colleges also cooperate with regional Agricultural Support Centers (ASC) to help lead seminars, training courses, and field demonstrations for rural communities close to the colleges (Avestisayn, 2010). These agricultural colleges and ASC are core parts of the Agricultural Extension system under the RA Ministry of Agriculture. A diagram providing the organizational structure of the RA Ministry of Agriculture is provided in Figure 3. Additionally, the contact information for Armenia's ASCs is provided in Table 10 of the appendix.

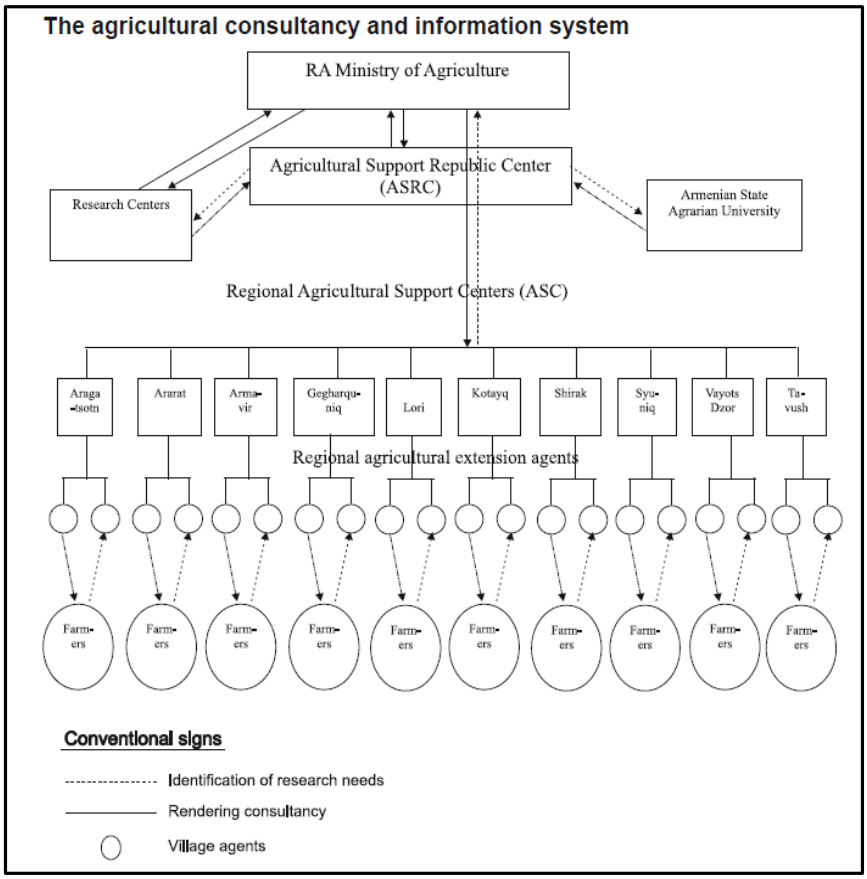

Figure 3: Structure of the Ministry of Agriculture and Extension Activities

Higher education

Armenia's higher education system consists of a range of degrees including bachelors, specialist, masters and doctoral degrees. The Republic of Armenia's Ministry of Education and Science calculates that there are approximately 123,700 students pursuing higher education across its 26 state sponsored universities and 40 private universities (Higher Education in Armenia, 2013). Thirty-one of these

universities are officially accredited. In addition to the large number of domestic students studying within the universities, there are also approximately 7,000 foreign students studying at Armenian universities (Higher Education in Armenia, 2013). Below are brief descriptions of each type of degree offered in the Armenian High Education system:

Bachelor's Degree Description from the Ministry of Education and Science

This program prepares specialists for a Bachelor's degree includes required courses and practice of general humanities and social-economics, mathematics, natural sciences and special professional disciplines. To acquire the first degree, i.e. Bachelor's degree, at the institutions of higher education, the applicant should study for at least 4 years, while for medical specializations it is 5 years. The program ends with a summative assessment and final paper defense. The Bachelor's qualification is awarded upon successful completion of the course. The awarded qualification gives the right to practice the specialization (except medical) and progress into the next cycle-the Master's degree (Higher Education in Armenia, 2013).

Specialist Diploma Description from the Ministry of Education and Science

This program includes courses of general humanities and social sciences, mathematics, natural sciences and special professional disciplines, as well as provides graduates with various types of professional skills and specialized theoretical and practical courses, preparing for the occupational activity. The duration of study is at least 5 years; for the arts and physical education students it is 4 years. The program ends with an assessment, including the defense of a diploma thesis. The qualification of Diploma Specialist is awarded upon successful completion (Higher Education in Armenia, 2013)

Master's Degree Description from the Ministry of Education and Science

Master's qualification is awarded to persons holding Bachelor's or Specialist Diploma degree based on the results of a minimum one year of professional education program. Graduates completing the Master's program are fundamentally prepared and have the knowledge, competence and skills necessary for scientific research, scientific-pedagogical activity, management and independent professional development. The degree provides access to post graduate Doctoral Studies, based on the results of the entry examinations of applicants (Higher Education in Armenia, 2013).

Doctoral Degree Description from the Ministry of Education and Science

A PhD student (researcher) is a person holding a higher education qualification (Master's or Diploma Specialist's degree), who carries out Doctoral research to expand his/her theoretical knowledge and to prepare scientific thesis for pursuing a PhD (Candidate of Science) degree. Upon completion of at least a 3-year postgraduate study and a successful defense of a thesis, the PhD student is awarded with a PhD (Candidate of Science)(Higher Education in Armenia, 2013).

Agricultural Higher Education in Armenia

Armenian National Agrarian University (ANAU)

While there are many universities throughout Armenia providing degrees with aspects of agribusiness such as economics, political science, marketing, and management, there is only one degree granting university that provides a holistic agricultural education. The Armenian National Agrarian University (ANAU) describes itself as "the only higher educational institution that trains and prepares specialists for the agrarian sphere." Their mission 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" (ANAU, 2013). The broad faculties and specialties providing within the ANAU are represented in Table 10. While ANAU has 7 degree granting faculties with numerous focuses and chairs within each, the Agribusiness Teaching Center (ATC) within the International Center for Agribusiness Research and Education (ICARE) is of particular interest to this study because of its historical focus on AET and its partnership with innovATE, USAID, and Texas A&M University (TAMU).

Agribusiness Teaching Center (ATC) Background

The ATC was established in 2000 as a department within ANAU, by a cooperative agreement between ANAU, the USDA, and Texas A&M University. In 2005 the International Center of Agribusiness Research and Education (ICARE) was established to manage ATC activities (see relationship between ANAU, ICARE, and ATC in Figure 4). The undergraduate and graduate curriculums are western-structured, based on the agricultural economics curriculum of Texas A&M University. The ATC provides agribusiness education to support sustainable entrepreneurial activities in the food and agriculture sector in Armenia and the region. It prepares agribusiness specialists with broad agribusiness, marketing, and managerial skills and up-to-date communication abilities.

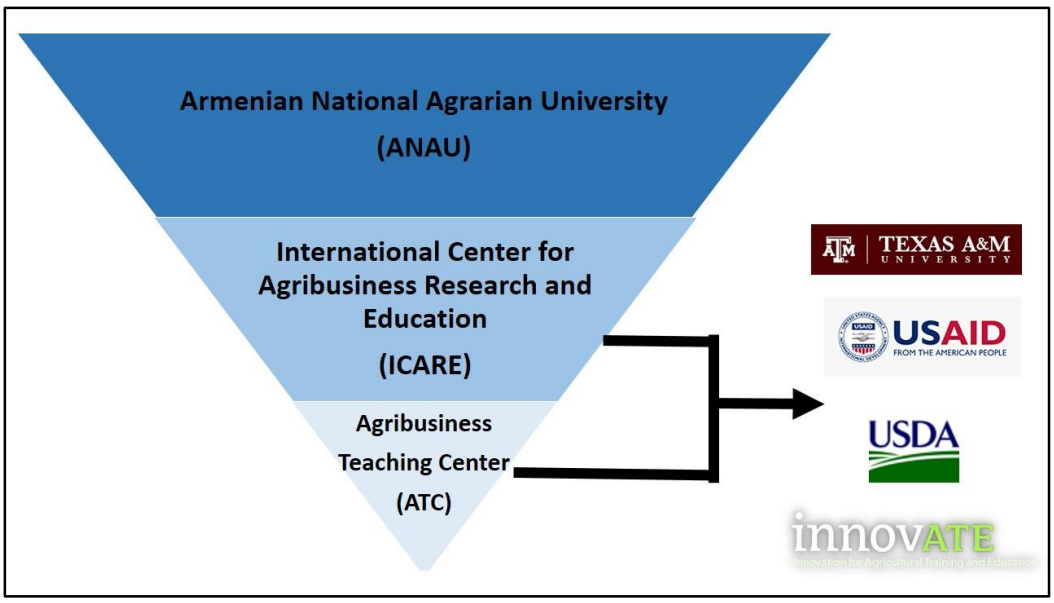

Figure 4. Diagram of the relationship between ANAU, ICARE, and ATC

ATC/ICARE has established a solid foundation for agribusiness management education. ATC is providing critical skills valued by the private sector. Nearly every graduating ATC student is either finding a job with good firms or continuing on for advanced education. It is also noteworthy that 60 percent of ATC graduates are women. ATC skill development has built self-confidence, technical capacity, leadership, and a can-do attitude in its graduates. This mind-set change is an important stimulus for the stagnating agriculture sector.

The ATC graduates are competitive in the growing regional agribusiness sector and support the development of that sector. Up until now, ATC has been receiving assistance from USDA however their funding lapsed in 2012, which necessitates a new mechanism to support ATC and to devise a sustainability plan for self-sufficiency with less reliance on donor financing.

Labor Market and Employer Needs

Workforce profile

In 2010, Armenia's workforce was comprised of 1.18 million people out of its approximate population of 3 million people (USAID, 2012; CIA, 2013). Its unemployment rate in 2012 was estimated to be around 7% (CIA, 2013) (Table 1). A key challenge for the Armenian economy is the mass exodus of its labor force to countries believed to provide better economic opportunities. The Armenian State Migration Service calculates that 180,000 people permanently emigrated from Armenia between 2008 and the end

of 2012 (Harutyunyan, 2013). This mass exodus of Armenian's brightest residents has left the country without the technically advanced workforce required to grow the economy. While this 'brain drain' has hurt the Armenian economy, it should be noted that the remittances provided from this large diaspora constitutes to account for a substantial percentage of the country's GDP.

For those within the Armenian workforce, the agricultural industry is by far the highest employer. It is estimated that approximately 39% or between 430,000-460,000 Armenians are employed within the agricultural industry (Table 2 & 3).

Current State of the Agricultural Industry

The agricultural industry has been and continues to be critical to Armenia's economic development, food security, and ability to overcome poverty (Avetisyan, 2010). While it is an important part of the economy, the structure of the agricultural industry has significantly changed since Soviet times. These large changes were acknowledged in USAID's evaluation of the Armenian agriculture industry in 2006. The authors write:

> Armenian agriculture was transformed, almost overnight during 1991-92, from some 840 centrally managed and highly subsidized State and collective farms into some 440,000 decentralized and unsubsidized small holdings (USAID, 2006, p. vi).

The "collapse of non-farm industries forced some 440,000 families or as many as 1.8 million people (out of a 1992 population of approximately 3.5 million) into subsistence level farming practices" (USAID, 2006, p. 1). Additionally, Engels and Sardaryan illustrate these dynamics stating that

> the collapse of Armenia's planned economy resulted in the breakup of all Soviet vertically and horizontally established marketing arrangements in the agricultural sector. Over a decade later, distribution channels continue to be underdeveloped and are primarily integrated with processors which increases transaction costs and decreases efficiency. (Engels and Sardaryan 2006, p. 4)

These influences can be seen in the shift of crops favored for production. The Armenian agricultural sector has evolved from Soviet times when there was an even split between crop production and livestock management (49.4% to 50.6%) in 1990 to a primary focus on crop production (62.3% to 37.7%) in 2009 (Avestisyan, 2010). The primary crops produced based upon number of hectares planted are cereals (171.6 thousand hectares) followed by fodder (63.9 thousand hectares), potatoes (32 thousand hectares), vegetables (23.9 thousand hectares), melons (6.2 thousand hectares) and technical crops (2.4 thousand hectares). Graphs of how production has changed from 1990-2009 are provided in Figures 5 and 6.

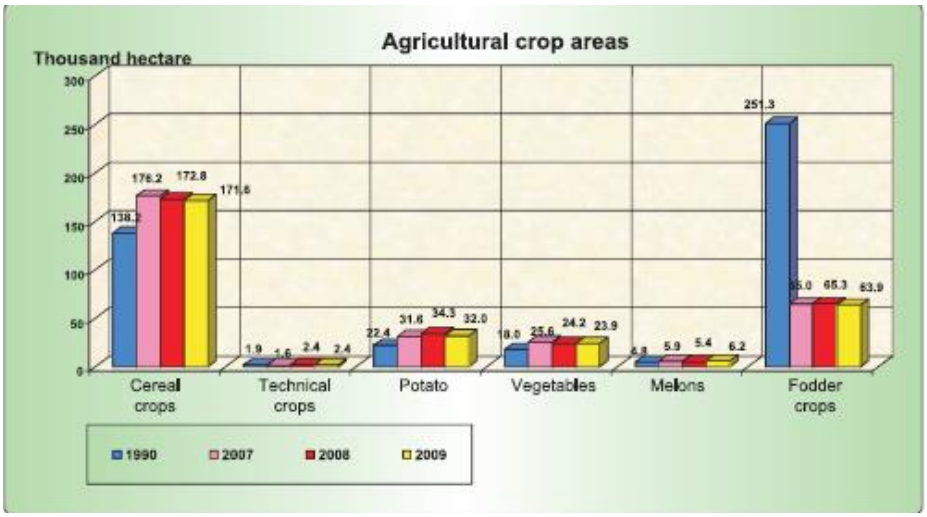

Figure 5. Changes in Agricultural Production from 1990-2009

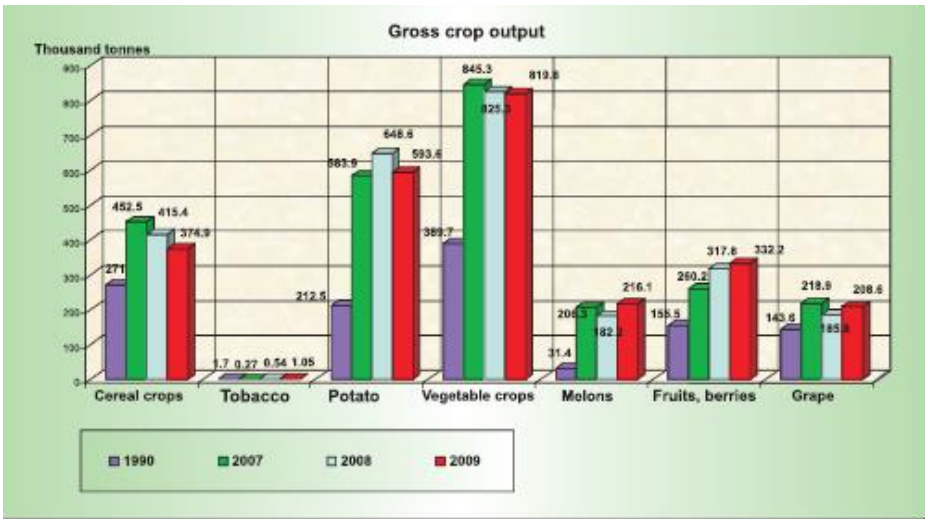

Figure 6. Changes in Gross Crop Output by crop from 1990-2009

A change of particular interest is the rising production of cereals. This is attributed to three factors: 1) farmers have additional income in the fall and can afford planting cereals in the winter, 2) cereals are not too costly or labor intensive, and 3) planting cereals ensures that farmers are able to provide food for their families (Avestisyan, 2010, p. 33). The hard economic conditions following the fall of the Soviet Union have also resulted in the removal of high value crops from production such as vineyards and apricot trees in favor of short term fuel and food needs. The structure of increased cereal production is

not economically efficient, and thus needs improvement because cereals yield the lowest per hectare income for farmers (Avestisyan, 2010).

Challenges to Armenian Agriculture

Despite Armenia's rich agricultural history, the agricultural industry still faces many challenges. These problems can largely be broken down into supply and demand problems. Supply problems include lack of qualified agriculture professionals, lack of interest in pursuing agriculture as a career, limited amount of arable land, and the seasonal nature of many of the country's key crops. Another supply related problem includes the domestic business climate, which is often associated with oligarchs and corruption (USAID, 2011). Demand side challenges stem from two main factors: the political issues that have closed borders and resulted in Iran and Georgia being the only neighboring trade partners, and the need for Armenia's food processing to meet European quality standards.

Future of Armenian Agriculture

Armenia is at a crossroads, poised with important decisions that will impact the future development of the country. There is a need to address high levels of poverty and the daily needs of many Armenians through agriculture. On the other hand, long term international competitiveness of the Armenian agricultural industry will likely reduce poverty, but at a slower rate. With regard to long-term development, a key strategy for growth is to strengthen Armenia's food processing supply chains and to increase production and export of agricultural products with comparative advantage. According to Dries, "Supply chain inefficiencies and disruptions are common problems inhibiting the international competitiveness of emerging economies" (Dries, et al. 2012, p. 1). Strengthening food processing supply chains would provide additional jobs, as well as increase the value of Armenia's raw agricultural products. In 2012 the agricultural industry represented 21% of Armenia's GDP (CIA, 2013), which does not include the contributions of the food processing industry, an additional 5% of GDP in 2009 (Avestisyan, 2010).

Armenia has comparative advantage in the production of fresh and dried fruit, dairy, fish, shellfish and flowers (USAID, 2006). While these advantages exist, they have yet to materialize into competitive advantages due to a number of factors. The most significant is the weak domestic and international demand for Armenian agricultural products. Export struggles due to closed borders with Turkey and Azerbaijan further complicate the ability to compete internationally.

Securing the supply chain could provide channels for processing raw products such as milk and fruit that would otherwise perish if demand does not match supply at the time of harvest. New markets for value-added or processed products such as cheese and dried fruit would allow raw materials to have longer shelf lives and higher profit potential (USAID, 2006). Providing farmers with more markets for their product will ensure that excess is not wasted. A value chain with potential for success is Armenian's apricot industry (Harutyunyan & Danielyan, 2012). Figure 7 shows the multi-stage process from orchard to market for domestic and international consumption.

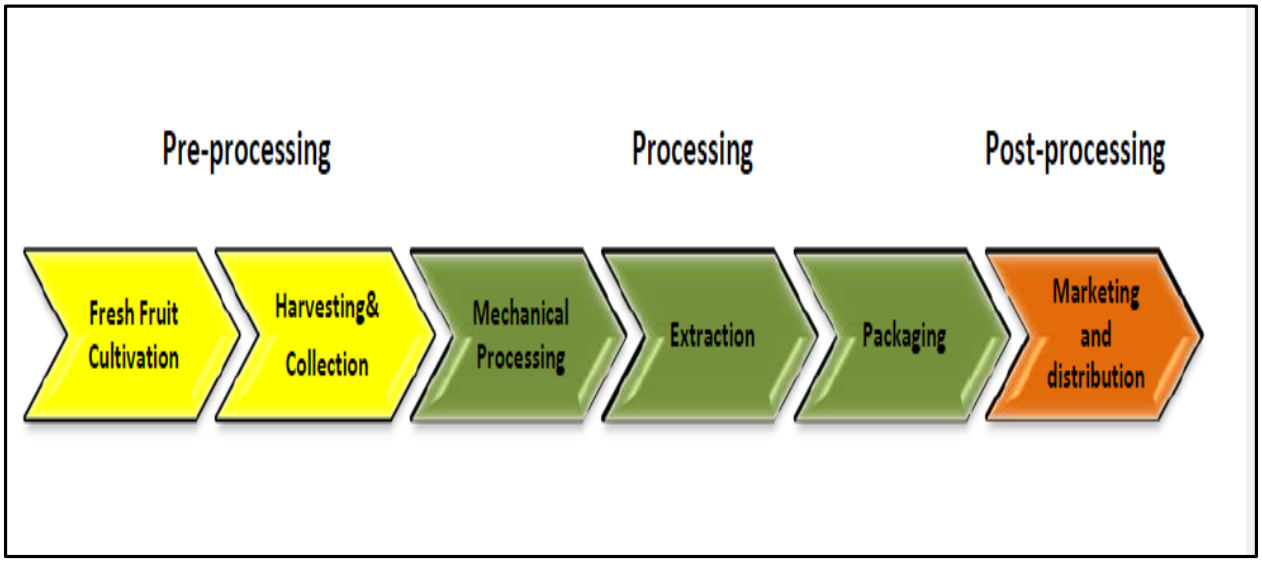

Figure 7. Apricot Value Chain from Harutyunyan & Danielyan (2012)

While the value chain is specific to apricot production, it is also representative of supply chain intensification for many other products such as wine, brandy and cheese. Supply chain strength is especially important for the dairy industry due to the highly perishable nature of the good, the rapidity of production and the counter-cyclical nature of demand and supply, demand being highest in winter, while supply peaks in summer (Engels and Sardaryan, 2006; Dries et al., 2012). Strengthening the food supply chain also has the potential to reverse Armenian's negative trade imbalance of $-0.17 billion USD by increasing the export of processed food products and decreasing the need for food imports (FAO, 2011). Below are suggested priorities and investment directions for Armenian agricultural development from Avetsiyian (2010).

Vision and Priorities of Agricultural Development (Avetsiyian, 2010)

1. development of family farms integrated with commercial agricultural organizations, cooperatives, and market infrastructures;
2. sustainable food security through realistic coordination of food safety interests and comparative advantage of export of agri-food products and through meeting the raw product needs of the processing industry;
3. increase in gross agricultural output mainly through productivity growth, decrease in number of people involved in agriculture and using the excess labor in agricultural service and non-agricultural fields;
4. processing of the considerable part of agricultural raw product by processing plants formed as a result of developing small and medium size entrepreneurship in rural communities;
5. prevalence of value added agricultural products within the crop and livestock production structures;
6. high level of food safety in the country, self-sustainability in the vital food products, reduction of rural poverty and emigration.

Investment Directions with High Returns (Avetsiyian, 2010)

- production and marketing of certified, ecologically pure fresh and processed agricultural products,
- organization of small productions of alcoholic and soft drinks,
- production and processing of oilseed plants
- development of greenhouses, in particular for flower production,
- establishment of dairy farms,
- intensive fattening of cattle and swine,
- organization of concentrated feed production,
- organization of wholesale agricultural commodity market,
- production of cheeses, in particular Swiss, Holland, Roquefort, and Goat cheeses,
- organization of small-scale slaughter facilities and production of meat products,
- cool storage,
- production and marketing of potato and other seeds,
- production of dry fruits,

- application of up-to-date irrigation technologies and organization of irrigation equipment production,
- providing private veterinary services,
- bringing in and leasing of agricultural machinery,
- organization of small-scale agricultural equipment production,
- organization of fertilizer, chemical and veterinary medications productions,
- development of reservoir fishing and processing of raw product,
- *agritourism (*Table 13 has a detailed SWOT of agritourism in Armenia*)

Conclusions

As Armenia emerges from the shadow of its Soviet past, AET is going to be vital for future development of the country. Current statistics recognize that a large percentage of the workforces is employed in the agricultural sector. Even though the agricultural industry is the largest employer, poverty remains rampant and there needs to be value added to the agricultural industry in order to help alleviate poverty.

Challenges Armenia faces as it tries to grow the agricultural industry are limited export markets, meeting the food processing standards of Western export markets, growing local demand for Armenian products, and producing a workforce that has the capabilities to address current and future challenges. AET can play a large role in helping overcome these challenges.

REFERENCES

AgroWeb (2013). Research Centers and Agricultural Support Marz (Regional) Centers, Armenia. AgroWeb Network: Central and Eastern Europe and former USSR. Retrieved on November 15, 2013 from http://www.agrowebcee.net/fileadmin/content/aw-armenia/files/Research_Institutes_and_ASMCs.pdf

ANAU-Armenian National Agrarian University (2013). Armenian National Agrarian University Website. Retrieved on November 14, 2013 from http://anau.am/en

Avetisyan, S. (2010). *Agriculture and food processing in Armenia.* Yerevan: Limush Publishing House.

BBC (2011). The sustaining power of Armenia's historic brandy. Retrieved on November 7, 2013 from http://news.bbc.co.uk/2/hi/programmes/from_our_own_correspondent/9532092.stm

CIA-Central Intelligence Agency (2013). The World Factbook: Armenia. Retrieved on November 11, 2013 from https://www.cia.gov/library/publications/the-world-factbook/geos/am.html

Dadrian, V. (2003). *The history of the Armenian genocide: ethnic conflict from the Balkans to Anatolia to the Caucasus*. Berghahn Books.

Dries, L., Gorton, M., Urutyan, V., & White, J. (2012). Supply chain relationships, supplier support programs and stimulating on-farm investment: evidence from the Armenian dairy sector. *SIDCISA (Supporting the International Development of CIS Agriculture) and International Center for Agribusiness and Education (ICARE)*.

EHEA-European Higher Education Area (2013). European Higher Education Area Official Website. Retrieved on November 7, 2013 from http://www.ehea.info/

Engels, J. & Sardaryan, G. (2006). Developing the Food Supply Chain in Armenia. Paper presented at the 98th EAAE Seminar 'Marketing Dynamics within the Global Trading System: New Perspectives', Chania, Crete, Greece as in: 29 June – 2 July, 2006.

Harutyunyan, V. (2013). Armenia's Shrinking Workforce. *Institute for War and Peace Reporting.* Retrieved on November 7, 2013 from http://iwpr.net/report-news/armenias-shrinking-workforce

Higher Education in Armenia (2013). Higher Education in Armenia from the Ministry of Education and Science of the Republic of Armenia. Retrieved on November 7, 2013 from http://studyinarmenia.org/

NCVETD-National Centre for Vocational Education and Training Development (2013). Website for National Centre for Vocational Education and Training Development. Retrieved on November 14, 2013 from http://www.mkuzak.am/?lang=en

Harutyunyan, G. & Danielyan, A. (2012). Apricot Value Chain in Armenia. *Shen NGO*.

Republic of Armenia Ministry for Education and Science (2006). National Curriculum for General Education. Retrieved on November 18, 2013 from http://www.ibe.unesco.org/curricula/armenia/ai_fw_2010_eng.pdf

Tumanian, R. (2006). Country Pasture/Forage Resource Profiles: Armenia. *Food and Agriculture Organization of the United Nations (FAO)*.

UNESCO-UNEVOC (2013). World TVET Database: Armenia. Retrieved on November 7, 2013 from http://www.unevoc.unesco.org/worldtvetdatabase1.php?ct=ARM

Urutyan, V., Grigoryan, A., Mezhlumyan, S., & Mnatsakanyan, L. (2007). Teaching and Learning Technologies and Student Success in Agricultural Higher Education of Armenia. Paper presented at IAMA 17th Annual Word Symposium on *Food Culture: Tradition, Innovation and Trust- A Positive Force for Modern Agribusiness* in Parma, Italy.

USAID (2006). Independent Evaluation of US Government Agriculture Sector Activities in Armenia. *United States Agency for International Development*. Prepared by CARANA Corporation.

USAID (2012). Armenia Economic Growth Assessment: Business Environments for Agile Markets (BEAM). *United States Agency for International Development*. Prepared by CARANA Corporation.

USAID-Armenia (2012). Enterprise Development and Market Competitiveness (EDMC): Qualitative and Quantitative Analysis in the Selection of Value Chains. *United States Agency for International Development.*

World Bank Group (2013). Armenia Country Program Snapshot. Retrieved on November 7, 2013 from http://www.worldbank.org/content/dam/Worldbank/document/Armenia-Snapshot.pdf

World Bank (n/d). Country Profile: Armenia's Technical and Vocational System. Retrieved on November 18, 2013 from http://siteresources.worldbank.org/EXTECAREGTOPEDUCATION/Resources/444607-1192636551820/4293995-1193243530233/CP_Armenia_reviewed.pdf

World Data on Education (2011). World Data on Education in Armenia. 7th edition. Compiled by UNESCO-IBE (http://www.ibe.unesco.org).

APPENDIX

Table 1: Official Employment and Unemployment Statistics (in thousands) (USAID, 2012)

Year	Labor Force	Employment	Unemployment	Unemployment Rate (%)
2006	1,187	1,098	89	7.5%
2007	1,181	1,092	89	7.5%
2008	1,177	1,102	75	6.4%
2009	1,193	1,118	75	6.3%
2010	1,188	1,103	84	7.1%
2011	1,202	1,121	80	6.7%
2012	1,195	1,125	70	5.9%

Source: National Statistic Service of the Republic of Armenia (www.ArmStat.am)

Table 2: Armenian Employment by Sector, 2010 (USAID, 2012)

Sector	Women	Men	Total	Share
Agriculture	255,069	202,467	457,536	39%
Mining	1,081	9,672	10,753	1%
Manufacturing	22,697	45,136	67,833	6%
Electricity and Gas	4,323	27,082	31,405	3%
Water and Sanitation	2,162	7,738	9,899	1%
Construction	1,081	84,469	85,550	7%
Wholesale, Retail Trade	42,692	67,059	109,751	9%
Transportation	4,864	43,846	48,710	4%
Food and Lodging	9,187	9,027	18,214	2%
Information & Communication	8,646	13,541	22,187	2%
Finance and Insurance	5,944	6,448	12,392	1%
Real Estate	1,621	1,934	3,556	0%
Professional and Scientific	10,268	9,027	19,295	2%
Administrative Services	3,783	5,158	8,941	1%
Public Administration	19,454	56,098	75,552	6%
Education	84,843	22,568	107,411	9%
Health and Social Services	41,611	10,962	52,572	4%
Arts and Entertainment	10,808	8,382	19,190	2%
Other	10,268	14,830	23,391	2%
Total	540,400	645,444	1,184,138	100%

Source: National Statistic Service of the Republic of Armenia (www.ArmStat.am)

Table 3: Areas of Employment Growth Potential (USAID, 2012)

Sector	Estimated Employment	Estimated Monthly Wages (USD)	Poverty Alleviation	Team Score
Agriculture	437,736	$171	High	3
Tourism	19,500	$159	High	3
Processed Food/Beverages	19,800	$243	Moderate	2
Machinery & Instruments	4,000	$246	Moderate	2
Mining & Metal Refining	10,753	$525	Low	2
Information Technology	7,000	$524	Low	2
Chemicals & Pharmaceuticals	7,000	$249	Low	1
Gems & Jewelry	950	$286	Low	1

Table 4. Teaching Plan for Primary and Middle School (National Curriculum for General Education)

BASIC SCHOOL BASELINE TEACHING PLAN
(Annual number of hours)

	Primary school				Middle school					Total
Field of study /grade	I	II	III	IV	V	VI	VII	VIII	IX	I - IX
National component										
Armenian language and literature	210	256	272	272	238	204	170	170	170	1962
Foreign languages	-	64	136	170	170	170	170	170	170	1220
Maths	120	128	136	136	170	170	170	170	170	1370
Informatics and ICT	-	-	-	-	-	34	34	34	34	136
Natural sciences	-	32	34	68	68	102	170	204	204	815
Social sciences					68	102	136	204	204	781
Arts	180	128	102	102	68	34	34	-	-	456
Technology					34	34	68	-	-	328
Physical education, IMT and safe life style	90	64	68	68	68	68	68	68	102	664
School – component										
Optional subjects	-	32	68	68	68	102	102	102	102	644
Total	600	704	816	884	952	1020	1122	1122	1156	8376
Elective component										
Elective practices	30	32	34	34	68	68	102	102	102	572

Table 2

BASIC SCHOOL BASELINE TEACHING PLAN
(Weekly number of hours)

	Primary school				Middle school					Total
Field of study /grade	I	II	III	IV	V	VI	VII	VIII	IX	I - IX
National component										
Armenian language and literature	7	8	8	8	7	6	5	5	5	59
Foreign languages	-	2	4	5	5	5	5	5	5	36
Maths	4	4	4	4	5	5	5	5	5	41
Informatics and ICT	-	-	-	-	-	1	1	1	1	4
Natural sciences	-	1	1	2	2	3	5	6	6	24
Social sciences					2	3	4	6	6	23
Arts	6	4	3	3	2	1	1	-	-	14
Technology					1	1	2	-	-	10
Physical education, IMT and safe life style	3	2	2	2	2	2	2	2	3	20
School – component										
Optional subjects	-	1	2	2	2	3	3	3	3	19
Total	20	22	24	26	28	30	33	33	34	250
Elective component										
Elective practices	1	1	1	1	2	2	3	3	3	17

Table 5. Annual Baseline Teaching Plan for Armenian High Schools (National Curriculum for General Education)

HIGH SCHOOL GENERAL STREAM BASELINE TEACHING PLAN
(Annual number of hours)

Field of study /grade	X	XI	XII	X – XII
National component				
Armenian language and literature	170	170	170	510
Foreign languages	170	170	170	510
Maths	136	136	136	408
Informatics and ICT	34	34	34	102
Natural sciences	238	238	238	714
Social sciences	170	170	170	510
Physical education, IMT and safe life style	102	102	102	306
School component				
Optional subjects	136	136	136	408
Total	1156	1156	1156	3468
Elective component				
Elective practices	102	102	102	306

Table 6. Weekly Baseline Teaching Plan for Armenian High Schools (National Curriculum for General Education)

HIGH SCHOOL GENERAL STREAM BASELINE TEACHING PLAN
(Weekly number of hours)

Field of study /grade	X	XI	XII	ÀÝ[1] (X-XII)
National component				
Armenian language and literature	5	5	5	15
Foreign languages	5	5	5	15
Maths	4	4	4	12
Informatics and ICT	1	1	1	3
Natural sciences	7	7	7	21
Social sciences	5	5	5	15
Physical education, IMT and safe life style	3	3	3	9
School component				
Optional subjects	4	4	4	12
Total	34	34	34	102
Elective component				
Elective practices	3	3	3	9

Table 7: Annual Baseline Teaching Plan for the Specialized Stream of Armenian High Schools (National Curriculum for General Education)

HIGH SCHOOL SPECIALISED STREAM BASELINE TEACHING PLAN
(Annual number of hours)

Field of study /grade	X	XI	XII	X - XII
National /universally compulsory/				
Armenian language and literature	136	136	136	408
Foreign languages	136	136	136	408
Maths	102	102	102	306
Natural sciences	102	102	102	306
Social sciences	136	136	136	408
Physical education, IMT and safe life style	102	102	102	306
National /compulsory streams/				
Stream subjects	374	374	374	1122
School component				
Optional subjects	68	68	68	204
Total	1156	1156	1156	3468
Elective component				
Elective practices	102	102	102	306

Table 8: Weekly Baseline Teaching Plan for the Specialized Stream of Armenian High Schools (National Curriculum for General Education)

HIGH SCHOOL SPECIALISED STREAM BASELINE TEACHING PLAN
(Weekly number of hours)

Field of study /grade	X	XI	XII	X – XII
National component /universally compulsory/				
Armenian language and literature	4	4	4	12
Foreign languages	4	4	4	12
Maths	3	3	3	9
Natural sciences	3	3	3	9
Social sciences	4	4	4	12
Physical education, IMT and safe life style	3	3	3	9
National component /compulsory streams/				
Stream subjects	11	11	11	33
School component				
Optional subjects	2	2	2	6
Total	34	34	34	102
Elective component				
Elective practices	3	3	3	9

Table 9. List of Agricultural Colleges involved in AET (Adapted from Avestisayn, 2010)

Agricultural College/ TVET	Other Possible Names	Marz	Date Founded
1. S. Lukashin State Agricultural College		Armavir	1952
2. Gavar State Industrial and Pedagogical College	Gavar Academician Tamamshev State Agricultural College	Gegarqunik	1929
3. Goris State Pedagogical College	Goris Agricultural College	Syunik	1931
4. Masis State Agricultural College		Ararat	
5. Nor-Ghehi State Agricultural College		Kotayk	
6. Stepanavan National Agricultural College		Lori	1929
7. Spitak State College	Spitak State Agricultural College	Lori	2000
8. Vanadzor State Agricultural College		Lori	1925
9. Shirak State Agricultural College n.a. M.Toumanian aka	Gyumri State Agricultural College	Shirak	
10. Yerevan State Agricultural College		Yerevan	1928
(Other Possible Colleges Involved in AET)			
11. Armavir State Agricultural College		Armavir	
12. Yerevan State Armenian – Greek College of Tourism Service and Food Industry		Yerevan	

Table 10. Research Centers and Agricultural Support Centers from AgroWeb (2013)

Research Centers and Agricultural Support Marz (Regional) Centers, Armenia

Institute	Director	Address
Research Center for Agriculture and Plant Protection	Mr. Hrachia Hovsepyan	1 Isi-Lemoulino, Ejmiatsin, Armenia phone: 0-31 53454, 52320
Research Center for Animal Husbandry and Veterinary	Mr. Kim Abelyan	Nor Geghi, Kotaiq region, Armenia phone: 474371
Research Center for Grape and Fruit Growing and Wine-making	Mr. Firdus Harutyunyan	Village of Merdzavan, Armavir region, Armenia phone: 734321; 777549
Research Center for Vegetables and Technical Crops	Mr. Galust Aslanyan	Village of Darakert, Masis region, Armenia phone: 0-36 40892
Research Center for Soil Science, Agro Chemistry and Melioration	Mr. Hunan Ghazaryan	24 Isakov St., Yerevan, Armenia phone: 778890
Research Station for Bee Keeping	Mr. Rafik Harutyunyan	Arinj, Yerevan, Armenia phone: 626650
Gyumri Selection Station	Mr. Ruben Karakhanyan	Gyumri, Armenia phone: 09 409058
PAREN Research, Production and Design Company	Mr. Nairi Ter-Balayan	4 Gorvetka, Yerevan, Armenia 524518; 524686
Research Institute of Agricultural Economy	Mr. Sergey Ghazaryan	39 a Mamikonyants St., Yerevan, Armenia phone: 232433
Armenian Agricultural Academy	Mr. Arshaluys Tarverdyan, Rector	Teryan 74, Yerevan, Armenia phone: 524541
Collage of the Armenian Agricultural Academy	Mr. Aram Hovhannisyan	74 Teryan, Yerevan, Armenia phone: 525937
High Scholl of the Armenian Agricultural Academy	Mr. Rubik Sargsyan	74 Teryan, Yerevan, Armenia phone: 524359
Nor Geghi National Agricultural Collage	Mr. Colak Khachatryan	Village of Nor Geghi, Kotaik region, Armenia phone: 0-24 22541; 31414
Yerevan National Agricultural Collage	Mr. Sargis Halobyan	143 Burnazian St., Yerevan, Armenia phone: 450920
Gavar National Agricultural Collage	Mr. Vazgen Martirosyan	1 Azatutyan St., Gavar, Armenia phone: 0-64 23402
Stepanavan National Agricultural Collage	Mr. Samvel Hunanyan	47 Tigran Mets St., Stepanavan, Armenia 0-56 22280; 22417
Vanadzor National Agricultural Collage	Mr. Rubik Hovhannisyan	3 Usanoghakan, Vanadzor, Armenia phone: 0-51 38385

Table 10 Continued. Research Centers and Agricultural Support Centers from AgroWeb (2013)

Shirak National Agricultural Collage	Mr. Kamo Zaqaryan	22 Leningradyan St., Gyumri, Armenia phone: 0-41 30681
Armavir National Agricultural Collage	Mr. Sargis Mkrtchyan	26 Yerevanyan St., Armavir, Armenia phone: 0-37 62292; 50872; 61470
Goris National Agricultural Collage	Mr. Seiran Dolunts	7 Nor Vanqi tap, Goris, Armenia phone: 0-84 22147; 20005
Masis National Agricultural Collage	Mr. Tigran Afoyan	Masis, Ararat region, Armenia phone: 0-36 44417
Aragatsotn Agricultural Support Center	Mr. Khoren Mkrtchyan	4 Grigoryan St., Building of the Regional Government, Ashtarak, Aragatsotn region, Armenia phone: 0-32 31032; 31689
Ararat Agricultural Support Center	Mr. Harutyun Sargsyan	34 Shahumyan St., Building of the Ararat Municipality, Ararat, Armenia phone: 0-38 41193; 42879
Armavir Agricultural Support Center	Mr. Levon Aleqsanyan	1 Isi-Lemoulino St., Ejmiatsin, Armenia phone: 0-31 56970; 54054; 47202
Gegharquniq Agricultural Support Center	Mr. Vrezh Melqonyan	2 Sayadyan St., Gavar, Armenia phone: 0-64 21613
Lori Agricultural Support Center	Mr. Manvel Grigoryan	7 Shahumyan St., Building of the Ararat Municipality, Spitak, Armenia phone: 0-55 22596; 23762
Kotayk Agricultural Support Center	Mr. Hambardzum Andreasyan	1 Barekamutyan St., Abovyan, Armenia 0-22 21723; 25569
Shirak Agricultural Support Center	Mr. Serzhik Qotanjyan	Armenia, Village of Akhuryan, Building of Akhuryan Local Government phone: 0-41 04300; 42189; 21641; 41814
Syunik Agricultural Support Center	Mr. Armik Bakunts	3 Mashtots St., Building of the Municipality, Goris, Armenia phone: 0-84 21035; 22435; 25806
Vayots Dzor Agricultural Support Center	Mr. Armen Yesayan	5 Shahumyan St., Building of the Municipality, Yeghegnadzor, Armenia phone: 0-81 24633; 22692; 22691
Tavush Agricultural Support Center	Mr. Vahan Karapetyan	5 A.Meliqbekyan St., Ijevan, Armenia phone: 0-63 36137; 33967

Table 11. Faculties and Areas of Focus of the Armenian National Agrarian University

Agronomy	
Focus	**Chairs**
• Agronomy	• Chair of Horticulture and Plant Protection
• Plant Protection	• Chair of Plant Cultivation and Vegetable Growing
• Selection and Genetics of Crops	• Chair of General Agriculture
• Agroecology	• Chair of Agriecology
• Forestry and Landscape Gardening	• Chair of Forestry
	• Chair of General Biology
	• Chair of Armenian and Russian Languages
	• Chair of Foreign Languages
Veterinary Medicine and Animal Husbandry	
Focus	**Chairs**
• Veterinary	• Chair of Veterinary Sanitary Expertise and Zoo Hygiene
• Animal Husbandry	• Chair of Therapy, Clinical and Pharmacology
• Veterinary Sanitary Expertise	• Chair of Epidemiology and Parasitology
	• Chair of Surgery and Obstetrics
	• Chair of Breeding and Feeding of Agricultural Animals
	• Chair of Private Animal Husbandry
	• Chair of Morphology and Physiology of Agricultural Animals
	• Chair of Pathological Physiology and Anatomy
	• Chair of Biochemistry
	• Chair of Microbiology and Virology
Agriculture Mechanization and Automobile Transport	
Focus	**Chairs**
• Agriculture Mechanization	• Chair of Automobiles and Tractors
• Agricultural Machinery and Equipments	• Chair of Agricultural Machinery
• Agriculture Electrification and Automation	• Chair of Agricultural Machinery Construction Technology and Reconstruction
• Organization and Management of Transportation	• Chair of Exploitation of Agricultural Machinery
• Organization and Management of Transportation in Agrifood System	• Chair of Agriculture Electrification
	• Chair of Graphics and Basics of Machine Projecting
	• Chair of Higher Mathematics and Theoretical Mechanics.
Hydro Melioration, Land Management and Land Cadastre	
Focus	**Chairs**
• Land Reclamation, Use and Storage of Soil and Land Resources	• Chair of Hydro-technical Structures and Melioration
• Land Management and Land Cadastre	• Chair of Land Management and Land Cadastre

• Life Support and Safety in the State of Emergency	• Chair of Life Support Safety
	• Chair of Strength of Materials and Engineering Constructions
	• Chair of Armenian History and Philosophy
Foodstuff Technologies (*)	
Focus	**Chairs**
• Bread, Confectionery and Macaroni Production Technology	• Chair of Animal Husbandry Product Processing Technology
• Fermentation Technology and Wine-making	• Chair of Plant Growing Product Processing Technology
• Canning and Food Concentrate Technology	• Chair of Food Industry Equipment, Packing and Leather and Fur Technology
• Meat and Meat Product Technology	• Chair of General Chemistry
• Milk and Dairy Product Technology	• Chair of Physics and Thermotechnics
• Fish and Fish Product Technology	• Chair of Physical Training
• Children's and Functional Nourishment Technology	
• Leather and Fur Technology	
• Agricultural and Foodstuff Product Packing Technology and Design	
• Agricultural Raw and Food Stuff Expertise, Standardization and Certification	
Economics	
Focus	**Chairs**
• Economics and Management of Agrarian Production	• Chair of Automobiles and Tractors
• Accountancy and Audit of Agrifood System	• Chair of Agricultural Machinery
• Economics and Management of Food Industry	• Chair of Agricultural Machinery Construction Technology and Reconstruction
• Finance Management of Agrifood System	• Chair of Exploitation of Agricultural Machinery
• Land and Property Relations	• Chair of Agriculture Electrification
	• Chair of Graphics and Basics of Machine Projecting
	• Chair of Higher Mathematics and Theoretical Mechanics.
Agribusiness and Marketing*	
Focus	**Chairs**
• Agribusiness and Marketing	• Chair of Automobiles and Tractors
• Agrarian Policy and Regional Development	• Chair of Agricultural Machinery
• Insurance	• Chair of Agricultural Machinery Construction Technology and Reconstruction
• Commodity Research and Commodity Quality Expertise	• Chair of Exploitation of Agricultural Machinery
• Consultation and Information of Agrifood System	• Chair of Agriculture Electrification
	• Chair of Graphics and Basics of Machine Projecting
	• Chair of Higher Mathematics and Theoretical Mechanics

Table 12. SWOT of Tourism Development in Armenia (USAID, 2012b)

Comparative advantage or disadvantage
• **Strengths:**
○ Armenia is the first Christian nation. ○ It has a unique cultural heritage and traditions that are still practiced by the people. ○ Many medieval monasteries, churches, and fortresses are found in Armenia. ○ It has six UNESCO World Heritage sites. ○ Armenia has a number of pre-historic sites. ○ Spectacular scenery characterizes some areas in Armenia. ○ Armenia's people are creative, warm and generous. ○ There is a large variety of activities that could be developed around attractions that already exist. ○ Armenia has a large Diaspora, which loves the country and has money to travel.
• **Weaknesses**:
○ Roads are in poor condition. ○ Little English is spoken outside of Yerevan. ○ It is expensive to get to Armenia, and expensive to stay in Yerevan and Lake Sevan. ○ It takes a day or more to get to Armenia from many locations and another day to return, which is a long time and increases jet-lag. There are few non-stop flights and only from a few cities. ○ Armenia lacks obvious attractions other than monasteries, museums, and landscape. Yerevan nightlife is similar to nightlife in other big cities.
Competitive advantage or disadvantage
• **Strengths:**
○ A large number of NGOs, the World Bank, and other organizations are interested in tourism. Diaspora individuals and groups are committed to and working on projects to improve the tourists' options and experience. Progress over the past five years continues today. ○ Lots of potential exists with local Armenians who are stakeholders with experience in all aspects of tourism and who want to grow and improve their businesses. There are a large number of individuals and SMEs in this sector, i.e. 130 tour companies in Yerevan. Opportunities exist for entrepreneurs in small towns who want to develop a tourism–related business.
• **Weaknesses:**
○ Except at high-end establishments, the standard of service and facilities is significantly below the standard expected by the international traveler. There is a scarcity of clean "modern" toilets in rural areas and even in Yerevan. ○ Successive tours of monasteries and the like become monotonous. There is little variety in things to do and see. ○ It is difficult to plan a visit. There are many websites, but none are comprehensive enough to answer all the questions and connect to the appropriate facilities, activities, etc. ○ There is a lack of experienced and skilled hospitality-related personnel.

Weaknesses (cont.):
○ There is a shortage of hotels, B&Bs, restaurants, sanitary facilities, crafts shops, nightlife, and activities outside of Yerevan. ○ Food and lodging providers in small towns suffer from erratic electrical service, and lack of sufficient refrigeration, modern appliances, updated bathrooms, and air conditioning. They also suffer from not being able to communicate with foreigners because they do not speak English, the travel language even for travelers whose first language is not English. ○ There is a lack of proper maintenance of unique buildings and monuments, which have high cultural and historical value. ○ There is a lack of bank products or micro-lending designed for the financial needs of SMEs in tourism outside Yerevan. ○ Political and economic power resides in the hands of a few in rural areas, which can hinder or help development of small towns to be attractive to tourists.
• **Potential for Growth (Opportunities)**
○ Internationally, tourism is a rapidly growing sector. ○ Tourists are seeking culturally unique and active locations. They want to get off the beaten path. ○ Armenia has a strong potential for integrated tourism in rural areas involving visits to monasteries and monuments, staying in local B&Bs, eating local traditional cuisine, and participating in village life involving discussions, music, and dance with villagers. ○ There is some potential for hiking and soft adventure, especially if linked with other tourism activities.
• **Major Constraints (Threats)**
○ *Tourists generally have a poor experience in rural areas due to the lack of decent accommodations, restaurants, sanitary facilities and the excessive time spent traveling because of this. They find it monotonous to visit a large number of monasteries and monuments, often in a run-down condition. As a result, there is poor dissemination of opportunities by word of mouth and on internet blogs.* ○ *There is an absence of mechanisms for promoting public-private partnerships at the local level among churches, monastery staff, villagers, banks, and potential investors for the purpose of developing and coordinating local plans for upgrading accommodations, restaurants, meeting places, sanitary facilities, gift shops, cultural events, language interpretation, and other means to heighten the experience of tourists in rural areas.* ○ *Armenia lacks a good centralized website, which could be used by tourists to locate hotels, restaurants, tour operators, cultural events, fairs and festivals, and other places and events of interest.* ○ *There is an absence of coordination mechanisms between governmental bodies, NGOs, Diaspora, and stakeholders in the private tourism sector that could leverage efforts and improve results.* ○ *Very high prices characterize the airline transportation sector.* ○ *There is an absence of professional hospitality, marketing, and sales staff.* ○ *Levels of taxation are high.*