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The Status and Potential of Organic Agriculture in Armenia

A background document for the Greening Economies in the Eastern Neighbourhood (EaP-GREEN) partnership programme

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Foreword

This report was prepared by Nune Darbinyan and Gunnar Rundgren for the *Greening Economies in the Eastern Neighbourhood Organic Agriculture* (EaP-GREEN) project. It was revised and updated by Alex Leshchynskyy. Verena Balke from UN Environment reviewed and edited the final draft. The report was originally produced in 2011, as background material for the UN Environment publication "*Organic Agriculture – A step towards the Green Economy in the Eastern Europe, Caucasus and Central Asia region*".

In this edition, data and sections on marketing, standards and certification have been updated; new sections on trade barriers have been added; and the overall report has been condensed. The responsibility for the content of this report remains fully with the authors.

Abbreviations

AA	Association Agreement (between Armenia and the European Union)
AMD	Armenian Drams
AOAF	Armenian Organic Agriculture Foundation
BSCI	Business Social Compliance Initiative
CARD	Center of Agribusiness and Rural Development
CARMAG	Second Community Agricultural Resource Management Programme
CIS	Commonwealth Independent States
COSMOS	Standard for organic and natural cosmetics that safeguard socio-environmental health
CU	Customs Union (Belarus, Russia and Kazakhstan)
DCFTA	Deep and Comprehensive Free Trade Area
EaP-GREEN	Greening Economies in the Eastern Neighbourhood partnership programme
EC	European Commission
EDMC	Armenian Enterprise Development and Market Competitiveness Programme
EECCA	East Europe Caucasus and Central Asian
EEU	Eurasian Economic Union
ENPARD	European Neighbourhood Programme for Agriculture & Rural Development
EU	European Union
FAO	United Nations Food and Agriculture Organization
GDP	Gross Domestic Product
GHG	Greenhouse gas
GSP	Generalised Scheme of Preferences
IQF	Individually quick frozen
ISO	International Organization for Standardization
NGO	Non-governmental organization
SPS	Sanitary and phytosanitary
UNDP	United Nations Development Programme
UNECE	UN Economic Commission for Europe
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
WTO	World Trade Organization

Executive Summary

UN Environment's scoping studies have revealed that the expansion of organic agricultural production can contribute to alleviating poverty, providing economic benefits to farmers (resulting from price premiums and lower production costs), and creating additional employment in food processing. Agriculture's emissions of greenhouse gases (GHG) are being reduced while also improving the farming system's resilience to climate change. Finally, organic agriculture enhances biodiversity and preserves valuable traditional landscapes, thus creating opportunities for eco-tourism.

In Armenia, agriculture employs almost 45 per cent of the working population and has been a key sector of the country's economy since its independence in 1991. Fruit production, viticulture and vegetables are the traditional high-value crops produced in Armenia, many of which are further processed. Main organic products include juices, nectars, beverages, concentrates, individually quick frozen (IQF) and dried fruits, as well as dried herbal and wild products. Organic beekeeping is also expanding. Armenia's main export markets for organic products are Russia and the European Union (EU).

Armenia's organic agricultural sector has experienced progressive growth for over a decade and a national sub-committee on organic agriculture was established in 2014 within the framework of a National Committee on Greening the Economy. Armenia's organic products are sold at premium prices and their exports are projected to grow considerably, thereby contributing to farmers' incomes and to the country's overall trade balance. The existence of a local organic certification body with international recognition significantly improves the ability of local producers to access the lucrative international organic markets. The cultivation of large unused and abandoned agricultural tracts using organic methods, as well as the further development of organic wild production and animal husbandry techniques in protected areas constitute major opportunities to generate incomes and raise the levels of employment in rural Armenia.

Nevertheless, organic agriculture in Armenia is also faced with several obstacles that are primarily related to the lack of organisation in the sector, its markets and value chains. Moreover, there is also a low level of awareness and knowledge about organic production among key stakeholders in the country. In order to fully realise the multitude of potential benefits associated with organic production, organic agriculture needs to be better integrated into Armenia's national socio-economic development and poverty eradication objectives, as well as its programmes on trade, environmental protection and climate change mitigation/adaptation. Regional politics and trade policies could create new challenges for both the private and public sectors.

Introduction

Greening the economy will maintain, enhance and, where necessary, rebuild natural capital as a critical economic asset and source of public benefits, especially for the poor whose livelihoods and security are strongly dependent on nature. In 2011, UN Environment conducted scoping studies on Green Economy and organic agriculture in Armenia, Moldova and Ukraine, which revealed the multitude of potential socio-environmental benefits associated with promoting organic farming in these countries. The summary report "Organic Agriculture – A step towards the Green Economy in the Eastern Europe, Caucasus and Central Asia region" concluded that organic agriculture can play a strategic role in the transformation to a Green Economy and in revitalising the farm and food sector. It can create employment that provides better returns per unit of labour input all along the value chain. It can also increase income and food security for rural communities, create business opportunities for investors, and increase the contribution of agriculture to the national economy by reducing import bills for farm inputs – which is particularly important for Armenia, that imports all of its chemical fertilizers and pesticides (UNEP 2011).

The EU-funded "Greening Economies in the Eastern Neighbourhood" (EaP-GREEN) partnership programme was designed to harness these opportunities and provide support to "Eastern partnership" countries (in particular Armenia, Moldova and Ukraine) in strengthening their organic agri-food supply chains and trade flows. More specifically, the programme aims to support the expansion of these countries' organic sectors by building the capacity of the private sector (farms and companies) to access the fast-growing European and international organic markets. This report, and similar reports from Ukraine and Moldova, are an EaP-GREEN initiative to provide an up-to-date overview of national trends in organic production and trade, the associated policy climate, as well as opportunities and barriers for the further expansion of this sector.

Armenia's agricultural sector

The Republic of Armenia covers an area of 29,743 square kilometres, of which 2049.4[1] thousand hectares are classified as agricultural land – making up 68.9 per cent of the total territory in 2014 (Armstat 2015). However, as Armenia is a land-locked, mountainous country, arable land is limited to 447.5 thousand hectares (15 per cent of country's total area) (Armstat 2015), and the country's agricultural strategy is strongly oriented towards maximising the value obtained per unit of land area. With altitudes

[1] Latest figure provided by FAOSTAT is 1682.10 thousand hectares in 2013.

ranging from 380m above sea level in the valley of the Debed River, to 4,090m above sea level at Mount Aragats, Armenia's climate is mainly dry continental, varying from sub-tropical to alpine. Given the low levels of rainfall, irrigation is a key priority for agricultural production in Armenia (Avetisyan 2008).

Armenia's fertile volcanic soils allow for the cultivation of wheat and barley as well as for the pasturage for sheep, goats, and horses. Figs, pomegranates, apricots, peaches, walnuts and quince are grown in the subtropical Aras River valley and in the valleys north of Yerevan, where the richest farmland is found. The country's winemaking traditions date back to over 5,000 years, and Armenian brandy enjoys a worldwide reputation. Armenia is a recognised as a hot-spot for biodiversity and many species of wild and cultivated plants have emerged within its territory.

Agriculture is a major economic sector in Armenia, accounting for 21.9 per cent of its GDP between 2005 and 2014 (World Bank 2014). Following Armenia's independence, large collective farms were privatized to create some 338,000 farms or rural households, many of which are too small and dispersed to allow for economies of scale for most agricultural products (Millns 2013). In 2013, 88 per cent of Armenia's farms were smaller than 2 hectares, and the average size of a farm made up 1.37 hectare (Millns 2013). Roughly 15 per cent of the country's farmers cultivate leased land, with an average holding size of 3.2 hectares (Millns 2013), while large farms of more than 10 hectares represent only a small fraction of agricultural producers (6 per cent of all farms according to Avetisyan 2008).

Although agriculture employs almost 45 per cent of the country's working population (Armstat 2009), and over 420 thousand persons were employed by the sector in 2013 (FAOSTAT), many farms are faced with low crop yields and are unable to produce volumes that are sufficient for commercial trade. Disputes over the allocation of water rights and farming equipment, which have been on-going since the on-set of land privatisation, have also contributed to the sector's inefficiency. In 2013, 95 per cent of agricultural machinery was more than 10 years old (Millns 2013) and most small-holder farmers remain unable to buy and maintain agricultural machinery. Some agriculturalists have begun to cooperate and hire equipment on a joint basis, but the lack of appropriate machinery is a still a major barrier to increasing the sector's output and income (USAID 2009).

Despite the increasing volume of agricultural credits offered by various commercial banks, micro-financing organizations and credit clubs, access to credit and facilities remains largely inadequate. Low rural incomes, remoteness and lack of market access are all fuelling the migration from rural to urban areas in the country.

Millns (2013) reports that over 150,000 hectares of the country's available arable land and 50 per cent of former pasture land remains out of use. The reasons are multi-fold; some lands are in dangerous zones riddled with landmines or near the disputed Armenian-Azerbaijani border; some arable holdings are in remote areas without access to markets and adequate infrastructure; while others are too small for farming practices to be economically viable (Avetisyan 2008).

In terms of agricultural output, fruit, grapevines for viticulture and vegetables are high value crops that serve as ingredients for processed goods, such as wines, spirits, preserves and dried fruits. After Armenia's independence some market links were nevertheless lost, and crops such as geranium, sugar beet and sugar cane, tobacco, flax for linseed oil, as well as other plants used to make essential oils are no longer cultivated, or their cultivation has decreased substantially.

While animal breeding has also suffered during the post-Soviet transition period, in the recent past there has been an increase in productivity and the number of livestock in the country. Armenia's climatic and natural conditions are favourable for animal husbandry and enable the production of various livestock products, including multiple varieties of cheese. Compared to 1998, by 2007 the overall number of livestock increased by 33 per cent (cows by 20 per cent, sheep and goats by 21.5 per cent, and pigs by 270 per cent) (Avetisyan 2008). In 2013, livestock production accounted for roughly 40 per cent of agricultural output, and continued on an upward trend, rising by 10,000 above the previous year, to reach 671,000 heads (Arkanews 2013).

The privatisation of agricultural lands has led to a reduction in the use of chemical inputs, and a subsequent improvement in the state of the environment compared to the intensive agricultural practices during the former socialist economy. Throughout the 1990s, total pesticide use in Armenia diminished significantly, dropping from 6,295 tonnes in 1988, to 411 tonnes in 1994 (UNECE 2000). According to FAO records, 16,268 tonnes of nitrogen fertilizers were used in the country in 2014. The latest figures from FAO indicate that 51.95 tonnes of insecticides were used in the country in 2010, with an average of 32.2 kilograms of nitrogen fertilizers applied per hectare of agricultural land in 2014.

Currently, there are no provisions for the monitoring of agrochemical use in Armenia. The country imports virtually all of its fertilizers and pesticides, and officially only registered pesticides and fertilizers can be sold. However, low quality and outdated pesticides can easily be found on the domestic market due to inefficient market control and enforcement mechanisms. There is also a danger of agro-chemical misuse by uninformed or untrained farmers, as well as due to the use of expired pesticides and an

underdeveloped agriculture extension service, known as applying research to agricultural practices. High-quality nitrogen fertilizers can be purchased at subsidized prices, but the use of phosphorus and potassium fertilizers remains very low.

Agricultural practices in Armenia are frequently causing soil erosion and land compaction/degradation, as well as over-grazing of natural pastures. In the future, climate change is expected to have three key effects on Armenia's agricultural sector: the appropriate zone for growing crops is likely to move upwards by 100m in altitude by 2030 and 200-400m by 2100, a combination of higher temperatures, increased evaporation and lower precipitation levels will lead to a loss of productivity for most crops; and changing weather patterns may cause damage to crops and agricultural lands in ways that cannot be predicted (UNDP 2009).

Government policy for agriculture and rural development

To promote the development of agriculture and to respond to social challenges in rural communities, the Government of Armenia has adopted strategies and policies such as the *Strategy on Poverty Alleviation in Armenia* and the *National Agrifood Development Strategy*. The *2010-2020 Sustainable Agricultural Development Strategy* identifies priorities for the development of the country's agro-food sector, which include:

- Addressing the effects of the logistics crisis and strengthening integration in agriculture and agro-food industry;
- Effective use of land, water, labour and intellectual resources to improve the productive potential of the agriculture sector;
- Expanding non-agricultural employment in rural areas and improving farm income of the rural population;
- Developing community infrastructures in rural areas;
- Strengthening agricultural support services and improving their accessibility; and
- Improving branch structure of agriculture and promoting production of high-value products.

Additionally, there are several national environmental plans including the *Lake Sevan National Action Plan*, the *National Environmental Action Plan* and the *National Action Plan to Combat Desertification*.

Markets and trade

Following the collapse of the former central marketing system, Armenian farmers have been experiencing weak market linkages. Under the new market conditions and the

liberalization of trade in farm products, traders or middlemen collect fresh products, fruits and vegetables directly from farms. The produce is then directed to regional wholesale markets or to supermarkets. In order to strengthen value chain links and responsibilities among the different actors, contracts are often developed between processors and farmers.

Nevertheless, the conditions for trade and marketing of agricultural produce have not always been efficient. Retailers have the option of being completely independent from supermarket chains or linked to them. Agricultural prices are set mainly by processing companies. Since most farmers are price-takers, they lack critical numeracy skills and are unable to do cost calculations.

The share of food and agricultural raw materials in external trade is 14.4 per cent of export and 17.1 per cent of import according to data from 2004 - 2008. Moreover, brandy alone accounts for around two thirds of the country's agriculture exports (Table 1).

Table 1: The top 20 Armenian agriculture and food exports in 2011-2013 (US$1,000)

	2011	2012	2013	Average
Beverages, distilled alcoholic	131,246	164,773	185,832	**160,617**
Cigarettes	16,270	41,817	68,027	**42,038**
Apricots	6,223	10,283	14,847	**10,451**
Grapes	6,766	9,800	5,777	**7,448**
Fruit, prepared	5,595	6,381	8,536	**6,837**
Waters, ice etc.	5,685	7,017	6,599	**6,434**
Coffee, roasted	5,339	5,512	4,814	**5,222**
Beverages, non-alcoholic	2,833	3,914	4,557	**3,768**
Wine	2,495	4,132	4,218	**3,615**
Cider etc	2,805	3,036	3,753	**3,198**
Cheese, whole cow milk	1,850	2,331	4,589	**2,923**
Vegetables, preserved	1,698	3,308	2,650	**2,552**
Beer of barley	1,692	2,496	2,077	**2,088**
Potatoes	250	0	4,148	**1,466**
Meat, pig sausages	844	1,415	2,015	**1,425**
Juice, fruit	1,201	1,418	1,589	**1,403**
Chocolate products	982	1,502	1,537	**1,340**
Crude materials	148	1,425	2,436	**1,336**
Nuts, prepared (exc. groundnuts)	930	1,414	1,389	**1,244**
Sugar refined	2,739	297	555	**1,197**
Cherries	959	1,696	899	**1,185**
Total	**206,517**	**288,095**	**351,912**	**282,175**

Source: FAOSTAT 2017.

There are also several trade limitations, such as the prohibition of export of grain and grain products, regulation of minimum export prices, and caps on imports of food products from outside the Commonwealth Independent States (CIS) region (imports cannot exceed 50 per cent of total consumption and a 12 per cent duty applies on –non-CIS imports).

While the European Union (EU) is Armenia's largest trading partner, accounting for the destination of nearly 29 per cent of Armenia's exports in 2014, trade between the two is not extensive (European Commission 2015a). In the period from 2009 to 2011, the European Union's (EU) overall exports to Armenia increased by 15.7 per cent, while EU imports from Armenia rose by 23.3 per cent. However, trade flows in agricultural products between Armenia and the EU remains small, and imports to Armenia greatly exceed the country's exports to the EU. For one, between 2011 and 2015 EU exports to Armenia shrank by 0.5 per cent annually and in 2013, Armenia's food exports to the EU amounted to merely EUR 2 million, while beverages totalled EUR 4 million (European Commission 2015a).

Photo: Flickr/Creative Commons/ReflectedSerendipity

The EU and Armenia completed negotiations on an Association Agreement (AA), including a Deep and Comprehensive Free Trade Area (DCFTA) in July 2013. However, the process of implementation of the AA and the DCFTA came to a halt in September 2013 following the start of Armenia's negotiations for membership in the Customs Union (CU) of Russia, Belarus and Kazakhstan. Membership obligations in the CU are incompatible with commitments required by DCFTA (EC 2015b)[2].

Nevertheless, Armenia and the EU remain committed to further cooperation. For example, Armenia benefits from the EU's Generalised Scheme of Preferences (GSP), which offers advantageous access to the EU market. Since 2005, this arrangement provides Armenia with a zero duty rate for about 6,400 tariff lines, or products as defined in lists of tariff rates, representing approximately two thirds of the lines in the customs code (EC 2015b). In October 2013, the EU approved Armenia's honey for import into the region (Armenia News 2013). Since 2015, the EU is also supporting the Armenian agricultural sector in the framework of the European Neighbourhood Programme for Agriculture & Rural Development (ENPARD)[3].

Sanitary and phytosanitary requirements for exports

It is important to underline that agri-food products imported into the EU must also meet stringent sanitary and phytosanitary (SPS) requirements aimed at protecting human and animal health. These include general requirements for all stages of food and feed production and distribution, including traceability throughout the supply and production chain, hygiene specifications, marketing and labelling requirements, as well as rules on microbiological composition and genetically modified food, animal feed, residues, pesticides, veterinary medicines, and contaminants. Plants and animal products exported to the EU must be also be accompanied by a health and sanitary certificate and are subject to inspections at the point of entry into the EU. The exporting country must be authorised by the EU to export the category of products concerned and all the products must come from approved processing facilities in the exporting country.

In addition to regulatory requirements, private standards and other trade preferences may amount to *de facto* compulsory standards in the form of clients' codes of conduct, product specifications, sourcing guidelines and/or various quality management systems. These include COSMOS (standard for organic and natural cosmetics that safeguard

[2] Armenia signed the CU treaty on 10 October 2014 and became a full member of the Eurasian Economic Union (EEU) on 2 January 2015.
[3] The EU has allocated 25 million euros for implementation of ENPARD in Armenia, supporting sustainable and comprehensive development of agriculture and rural communities. This program will last for three years.

socio-environmental health), Globalgap (a system for "Good Agriculture" practices); the standards of the British Retail Consortium; the International Organization for Standardization (ISO) 9000 (general quality management); ISO 22000 (quality management in the food sector); SA 8000 (a social standard developed by Social Accountability International); and the BSCI (Business Social Compliance Initiative). These standards are upheld through provision of their own inspectors or reliance on third party inspection agencies.

The organic sector

Prompted by the food and bread insecurity of the early 1990s, Armenian farmers cleared thousands of hectares of traditional vineyards and fruit trees in order to shift to cultivation of cereals. After stabilization of the economy in the late 1990s, new vineyards and fruit orchards were planted, coinciding with the onset of Armenia's organic agriculture movement and the growth of organic markets.

In this way, unlike many other countries where the transition to organic farming has been initiated and promoted by external forces (such as market actors or donor-funded projects), the development of organic agriculture in Armenia has endogenous roots. Today, most of the demand for organic raw materials comes from processing companies and most of the production is sold for export. Despite a lack of government support and underdeveloped market links, the organic agricultural sector is experiencing progressive growth. In 2013, the total area under organic agriculture and in conversion in Armenia made up 10,000 hectares – representing a six-fold growth since 2006 (FAOSTAT).

Compared to non-organic agriculture, there are favourable conditions for organic farming in pre-mountainous and mountainous regions of Armenia. Extensive organic livestock production could also be easily established on the already available pastures. While comparative research is not available at national level, interviews with local stakeholders and experts have indicated that given a skilled labour force, organic yields are comparable with the results of conventional agriculture. Interviews have highlighted that, as the value of organic products is typically higher, and production costs are similar to those of non-organic production, organic practices in Armenia can result in higher net returns.

Types of organic products

Production of fruits, berries, alfalfa, grains and vegetables, collection of wild species (medicinal and aromatic plants), and beekeeping have been the main organic agricultural

activities in Armenia since 2002. The raw materials are further processed into juices, nectars, beverages, concentrates, purees, individually quick frozen (IQF) berries, dried fruits and bread. While animal husbandry is already a priority of the national agricultural development strategy, organic animal husbandry remains largely underdeveloped. Organic beekeeping is, however, a growing sector. In 2015, there were already 500 organic beehives in Armenia. (Willer & Lernoud 2017).

Photo: Flickr/Creative Commons/Kamillo Kluth

On the 1832 hectares of certified land in 2015, over 30 different crop varieties are produced by 57 farms. 11 crop varieties are fruit and berries, such as apricots, plums, peaches and cherries, 14 of them are vegetables and cereals, such as tomatoes, peppers, eggplants, wheat and potatoes, and 6 varieties include different crops and wheats collected in the wild, such as buckthorn, mint and rosehip. (Shen 2012)

Armenia's organic processors, of which the most prominent are listed in Table 3 below, are key players in the trade of organic produce, and constitute the main outlet for organic farmers' products.

Table 2. Main processors of organic production in Armenia

Company	Products
Tamara Fruit CJSC	Preserves, IQF, juices, concentrates
Beer of Yerevan CJSC	Preserves, purees, juices
SIS Natural CJSC	Juices, preserves, concentrates
Biouniversal LLC	Herbal teas, essential oils
Cheer LLC	Dried fruits, herbs, vegetables
Euroterm CJSC	Juices, preserves
ABDA LLC	Herbs, herbal teas
ASVA-RAF LLC	Herbs, wild organic primary products
Bizon 1 LLC	Powder extracts of fruits and berries, instant teas, oils
ANUSHAK LLC	Beekeeping, honey export
Nectar-Bonus LLC	Wild collection, processed food

Source: Shen 2012, Business Armenia 2013.

Education and training

While several capacity-building activities for improving organic agricultural know-how have taken place, capacities for expanding organic production in Armenia remain limited. The certification body Ecoglobe has been conducting regular training since 2002. These training exercises disseminate information on organic rules, standards, organic inspection and certification issues to different groups and stakeholders across the value chain – including women, communities and other social groups.

Civil society also plays a prominent role in informing and upskilling stakeholders. For example, the NGO Shen helps communities in planting and management of organic orchards. The Green Lane NGO offers advice to farmer and women's groups in selected regions. Meanwhile, the Center of Agribusiness and Rural Development (CARD) works with processors and traders to improve organic marketing skills and local capacities. It must also be noted that the Armenian Organic Agriculture Foundation was established in 2004 with the aim to promote the sector, but its involvement has been significantly limited by a lack of financial resources.

Armenian organic producers also regularly participate in BIOFACH, the annual international organic fair organized in Nuremberg, Germany, where they are able to establish and enhance contacts with potential buyers as well as conclude new contracts. Armenian organic products have also been presented at other trade shows such as the *Anuga* and *Grüne Woche* in Germany, the Organic Marketing Forum in Poland, All Things Organic in the US and the Organic Trade Show in the United Arab Emirates.

Investment and support

Foreign investment is mainly sourced from the Armenian diaspora across Russia, the USA and Europe. Local investors comprise processing companies that purchase and lease land for production. In 2009, the government provided a grant of US$1 million for organic berry plantations in Armenia. Several NGOs, in particular Shen, have, with support of donors, implemented community and agricultural development projects and planted some 160 hectares of organic orchards. In addition, the United States Agency for International Development (USAID) funded the Enterprise Development and Market Competitiveness project, in partnership with Ecoglobe, the organic certification body, in 2011 (The Pragma Corporation 2016). This programme also supported the introduction of organic standards in small and medium enterprises in the herbal industry. The World Bank has also recently conducted a survey on agricultural value chains, which paid special attention to organic production. In fact, the World Bank has approved a US$ 32.67 million financing for the Second Community Agricultural Resource Management (CARMAC) Project for Armenia to improve productivity and sustainability of pasture and livestock in eight regions of Armenia to increase high-value agri-food chains (World Bank 2014).

Government involvement in the organic sector

Being a key economic sector and an essential provider of jobs, agriculture remains a priority for the Armenian government. Due to its potential to contribute to trade and sustainable development, organic agriculture and products have also become part of Armenia's strategic agenda over the recent years.

Organic legislation became part of the official agenda of the Armenian Government through a partnership programme with the EU. The 2008 *Law of the Republic of Armenia on Organic Agriculture* entered into force in May 2009. This law describes the principles for the management of organic agriculture, defining the practice as one that is in harmony with agricultural ecosystems and implemented in compliance with the requirements of relevant technical regulations and other normative documents. The law also recognizes:

- The main principles of organic agriculture in Armenia;
- The Armenian government's role in regulating organic agriculture, including establishing a procedure to maintain a registry of economies entities engaged in organic agriculture, as well as establishing a catalogue of and procedure of use for additives in food processing;
- The government's role in establishing the procedure for the conversion agricultural

land to organic practices; and
- The need for the Armenian government to provide assistance in organizing business forums, training and financing for organic agriculture.

The sector was included in the *Strategy for the Sustainable Development of Agriculture for 2010-2020*. It provides an important mechanism for the realisation of several strategic goals, including: protecting natural and environmental landscapes, developing agro-tourism, developing a food safety system that is in line with international standards; and improving sales and export volumes of agricultural and agro-processing products (FAO 2012).

The key public agencies involved in organic production are the Ministry of Agriculture and its Forest Agency and State Food Safety Service; the Ministry of Nature Protection and its Bio-Resources Management Agency; and the Ministry of Economy. The Ministry of Agriculture is in charge of development of policy and legislation on organic agriculture, and its enforcement (see below). Since 2014, the government Commission on Sustainable Development has a committee on organic agriculture under the lead of the Ministry of Agriculture.

Organic standards

The implementing by-laws of the Armenian *Law on Organic Agriculture* include the design of a national organic logo. There have been concerns that the law may burden producers and certification bodies due to differences to other international provisions and requirements. Since almost all of Armenia's organic producers are oriented to exports, there is little value added for them to adhere to a national standard, and this will only be an unnecessary, additional procedure to follow alongside processes for obtaining accreditation in their export destinations.

The establishment of a local private certification body, Ecoglobe, in 2002, was nevertheless an important step for the development of organic agriculture in the country – primarily because of the global recognition that the label has been able to attain. Ecoglobe is currently recognised as an "equivalent certification body" by the EU and Switzerland, and also appears on the US Department of Agriculture's and Canada's national registers of "compliant certifiers". The standard also certifies products in Russia, Ukraine, Belarus, Iran and Pakistan.

To meet the requirements of the EU organic market, Armenian producers are offered the private standard under the name "Green Caucasus" (a trademark developed in cooperation with Caucascert, an organic certification company from Georgia). This label

is also used for local markets. For the US and the Canadian markets, organic producers in Armenia apply the rules and practices of the U.S. National Organic Program. The German-based SGS has also been active in Armenia since 2011 (Shen 2012).

Markets and trade in organic agriculture[4]

Trade in organic products has so far been strongly focused on exports, however in the future, the domestic market could also be of increasing importance.

Export market

Armenian organic products first began to be exported in 2008. Trade sources indicate that export products include honey, juices, nectars, preserved fruits, IQF, and semi-finished products (purees and concentrates) derived from fruits and berries that are either cultivated or collected in the wild. Industry sources estimate that exports increased ten-fold in 2010-2013. Main markets for Armenia's organic produce are in the EU are Germany, France, Hungary and the Netherlands, while other export destinations include Russia, Kazakhstan and other Asian countries. The US market is considered important, and although actual export volumes remain limited, there are continuous efforts by exporting companies to establish partnerships and trade links with the US. Much of the exports take place via the Armenian diaspora.

Armenian organic produce fetches a higher price compared to conventional agri-food products, often in the range of 15 to 50 per cent. In some instances it can even be considerably higher – for example, the price paid by the processing companies in 2008-2013 for 1 kg of conventional apricots was between AMD 50-60 (US$ 0.1-0.12), compared to AMD 150-200 (US$ 0.31-0.42) per kg of organic apricots.[5] This price difference between organic and conventional products is nevertheless expected to shrink due to increased supply and market competition.

A recent assessment of the export marketing opportunities for Armenia's organic products concludes that processed fruits, herbs and honey have the highest export potential. There are also some opportunities for traditional varieties of cereals and pulses to be exported as specialty grains. Armenian organic export strategies should increase their focus on added value products, such as dried apricots (wild and farmed), fruit kernel oils, herbs (ideally in form of extracts) and specialty honey (UNEP 2011).

[4] There are no official statistics on Armenia's the organic market, and there is no systematic data collection by the private sector. The information presented in this section is based on interviews with industry representatives and other stakeholders across the organic value chain.
[5] As of June 2016, at the exchange rate of AMD 1 = US$ 0.0021.

Domestic market

The first organic consumer survey conducted in 2005 by the Armenian Organic Agriculture Foundation revealed that half of the people visiting supermarkets in the capital city of Yerevan were keen to purchase ecologically pure and organic products. However, consumers had no clear understanding of organic labelling, production and certification requirements (AOAF 2006).

In order to further promote organic products, several supermarkets have begun to offer organic goods and tasting events. More than 400 organic products are being imported to Armenia by the SAS Supermarket chain, CARD and Fresh Line organic shop (Shen 2012). CARD has also opened the Green Day organic store in Yerevan, and supplies imported organic goods to supermarkets. It also imports high-end beverages, chocolate and cosmetics, and tests the local market for organic agriculture inputs. The supermarket chains Yerevan City, Moskvichka and SAS also sell a range of locally produced organic products, such as juices, nectars, honey, herbal teas, instant fruity teas and oils.

Although the domestic market remains small, producers have reported increased domestic sales. Further efforts to popularize the national organic logo are necessary to expand Armenia's local demand and market for organic products.

Organic agriculture and the Green Economy

The benefits of organic farming in Armenia's transition to a Green Economy are plentiful (UNEP 2011):

- Organic agriculture creates more value through premium prices and by increasing consumer awareness and quality differentiation in the marketplace. It can also create more employment both in farming and processing.
- Organic agriculture enhances biodiversity and ecosystem services, and preserves valuable traditional landscapes that can be important assets for eco-tourism development. This is particularly relevant for the protected areas of Armenia.
- Organic farming reduces the consumption of energy-demanding agricultural inputs, especially nitrogen fertilizers and reduces greenhouse gas emissions from agricultural activity.
- Organic agriculture also reduces vulnerability of soils to erosion, while at the same time increasing the soils' ability to sequester and store (Auerbach et al. 2013).
- Restoration of degraded pastures by organic practices (such as holistic management) can improve yields, while also increasing bio-diversity and acting as a carbon sink.

- Organic agriculture is more resilient to climatic chocks, such as droughts, as a result of increased soil organic matter, biodiversity and management practices such as crop rotations, the latter of which reduce pests and diseases and improve soil quality (FAO n.d.).

Most Armenian farmers already use minimal amounts of synthetic inputs, making it relatively easy for them to switch to organic production. In addition, there are huge tracts of agricultural land that could be easily converted to organic management in Armenia. Nature reserves could also be used for extensive organic animal husbandry and for collection of wild plants.

Photo: Flickr/Creative Commons/Ismael Alonso

Challenges for organic farming

The challenges faced by Armenia's organic sector are mainly related to poor land management, structure of land ownership and agricultural enterprises, which are also affecting non-organic production, as well as financing and marketing. There is also a lack of active government support to the sector, especially considering the substantial contributions to public and development goals that it could make. Furthermore, infrastructural deficiencies tend to affect organic products disproportionately because of their smaller volume, high quality demands and requirements for special handling procedures to ensure integrity. There is also a general lack of awareness on organic agriculture across most segments of society, from consumers to policy-makers, which results in lack of official data collection on organic agriculture.

Barriers to production

On the whole, there is inadequate understanding and knowledge about many aspects of organic production, ranging from pest control to nutrient management. Prospective organic producers often look for substitution of inputs, instead of developing truly sustainable production systems. They, for example, employ the same kinds of inputs as previously used, but opt for organic variants. There is also a lack of livestock integration into crop production systems, thereby limiting access to manure fertiliser and reducing yields.

Barriers to market development

Consumer awareness about the principles and benefits of organic farming remains low in Armenia. The growth of the organic market is further challenged by low purchasing power, unstable supply, lack of branding, fluctuating quality, as well as a small range and volume of products available. Organic products are not generally available in most local shops, and because of their small volumes, transaction costs are typically high.

For both domestic and export marketing, the links in the organic value chains are underdeveloped. In addition, fluctuating export markets discourage long-term investments in organic production, branding, marketing and trade infrastructure. There is also an insufficient capacity of producers and processors to ensure product quality and quantities for the international marketplace. Most producers also lack access to information about international markets and industry terms of trade.

Tariff and non-tariff barriers for exports of organic products

Organic products are subject to the same tariffs and quotas in major export markets as non-organic products. There have been several proposals for countries to apply more favourable trading conditions on environmental goods and services, including by reducing or eliminating tariff and non-tariff barriers to organic products, such as on imports of organic bananas into the EU (Central America Data 2008). To date, organic products have not been given preferential treatment in international trade and there are no international customs codes for organic products.[6] Therefore, organic producers have to comply with all the broader agri-food product export requirements, as well as standards and certification procedures that are specific to organic produce. For example, for exports to the EU, the certification body has to be accredited according to EU organic regulation, or the exporting country must be listed on the Third Country List, which recognizes some countries that have equivalent organic production rules and systems as the EU.[7] All in all, this means that the regulatory barriers for organic products are higher than those for non-organic products. Armenia's organic certification body, Ecoglobe, has obtained EU approval as an organic certification body, which greatly facilitates the accreditation process for Armenian organic producers.

Another barrier for Armenian, as well as any other middle to low income producers is that the EU - USA equivalency agreement for organic trade does not facilitate trade for producers outside the EU and the USA, even though they are technically also partners under the agreement. This causes superfluous duplications of USA and EU equivalent certifications, and creates the need for multiple accreditations of local certification bodies. The result is *de facto* discrimination of third country producers, compared to those based in the EU and USA.

Additionally, some of the standards demanded by export destinations are difficult for producers in Armenia to fulfil. For example, the US standards are very detailed regarding composting procedures and it is difficult for producers in Armenia to ensure that all these requirements are met. Likewise, the EU and US requirements for organic seeds are hard to fulfil for virtually any country with a small organic sector, primarily because seed companies are not interested in supplying organic seeds to small markets and may offer high prices to small markets.

[6] Interestingly, the United States has introduced 35 import codes and 26 export codes to its trade data schedule to facilitate tracking of imported and exported organic products.
[7] The EU organic regulation, including the import rules, is subject to a much debated revision with a very unclear outcome at the time of writing.

There are no public organic standards in place in Russia or in the EEU, and thus there are currently no special barriers for exports of organic products to those countries. Russia has, however, drafted a proposed Law on Organic Production[8], while regulations and requirements for laboratories and conformity assessment (certification) bodies are being established to unify and remove trade barriers across the EEU territory. This, however, does not involve any regulations for organic production or certification, and there is concern that the multiple market requirements for conventional food and organic food inside the EEU and in export markets will create additional burdens.

In addition to regulatory demands, organic products also face special requirements from importers. For example, a buyer in the target market (such as the EU) might demand certification from a specific certification body because of its reputation or his or her personal familiarity with the label. In addition, various markets have strong preferences for certain organic labels (e.g. the BioSuisse label in Switzerland, Soil Association in the UK and KRAV in Sweden) and may also be required to comply with fair trade, climate-neutral or other additional product certification. While compliance with several standards can provide new market opportunities, the complexities associated with their attainment constitute major market access barriers, particularly for small-scale producers. There are no such preferences for imports to Russia, as there are no national organic certification bodies operating in the country. Armenian products are well known in the Russian market and where they can easily compete with similar products from other sources.

Photo: Flickr/Creative Commons/brightonmike

[8] For latest on its implementation, consult GAIN reports (Global Agricultural Information Network n.d.).

Conclusion

Conditions in Armenia bode well for organic production and the country already produces marketable organic products with competitive advantages. If appropriately branded (with bio-labels in Europe and organic certification in the US, Canada, Australia, New Zealand, etc.), the sector can set premium prices for speciality products. In this way, locally produced organic food could be an important element in attaining the country's food and agricultural strategies. As stated earlier, most Armenian farmers use a minimum amount of synthetic inputs, so a transition to organic agriculture is economically viable, and will be a key stepping stone for the country's broader transformation to a Green Economy. Organic production is also more resilient to climatic shocks and reduces the vulnerability of soils to erosion and degradation of natural capital. It boosts biodiversity, supports critical ecosystem services, and preserves traditional landscapes that could draw eco-tourists, increasing jobs and contributing to Armenia's economic growth.

Continued development and reputation-building for Armenia on the export markets, as well as the development of the domestic market are necessary to realize the full potential of organic production in Armenia. Organic agriculture should be further mainstreamed into the national programmes related to the socio-economic development and poverty eradication, as well as tourism, trade, climate change and environment. Additional government support mechanisms to encourage conversion from conventional and organic practices are also needed. This, in turn, will help to stimulate private, government, financial institution and donor investments into organic production and value chains.

Other recommendations for the promotion of organic production and trade in Armenia include a public campaign for the export market with particular targeting at the Armenian diaspora, as well as a domestic marketing strategy to promote consumer awareness about not only the health and nutritional benefits of organic farming and production, but also its benefits for the country's sustainable economic development.

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