BANK OF GEORGIA
RESEARCH

Georgia's Agricultural Sector

Uncovering the Potential

Georgia | Agriculture
Industry Overview
June 5, 2013

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Terms and Definitions

ADA – Agribusiness Development Activity
AMP – Access to Mechanization Project
APMA – Agricultural Project Management Agency
CAGR – Compounded Annual Growth Rate
CIS – Commonwealth of Independent States
CNFA – Citizens Network for Foreign Affairs
DCFTA – Deep and Comprehensive Free Trade Agreement
EBRD – European Bank for Reconstruction and Development
EPI – USAID Economic Prosperity Initiative
ETC – EBRD Early Transition Countries Fund
EU – European Union
FAO – Food and Agriculture Organization
FDI – Foreign Direct Investment
FSC – Farm Service Center
FTA – Free Trade Agreement
GDP – Gross Domestic Product
GeoStat – National Statistics Office of Georgia
GIPA – Georgian Institute of Public Affairs
GMO – Genetically modified organisms
GoG – Government of Georgia
GR – Georgian Railway
GRDP – Georgian Rural Development Programme
GSP – EU General System of Preferences
GTAP – Global Trade Analysis Project
GWP – Georgian Water & Power
ha – hectare
ICTSD – International Centre for Trade and Sustainable Development
IFC – International Financial Corporation
IFI – International Financial Institutions
IMF – International Monetary Fund
MESD – Ministry of Economy and Sustainable Development
MFI – Microfinance Institutions
MoA – Ministry of Agriculture
MoE – Ministry of Environmental Protection of Georgia
MRDI – Ministry of Regional Development and Infrastructure
MSC – Machinery Service Center
NPK – Nitrogen, phosphorus, potassium blended fertilizer
OECD – Organisation for Economic Co-operation and Development
RVA – Regional Veterinary Association
SME – Small and medium enterprises
TRACECA – Transportation Corridor Europe Caucasus Asia
UN – United Nations
USAID – United States Agency for International Development
USG – United States Government
VA – Value Added
VRA – Regional Veterinary Association
WB – World Bank
WTO – World Trade Organization
WTTC – World Travel and Tourism Council

Executive Summary

Georgia's variety of fruits, vegetables, and nuts drove agriculture to hold a 29% share of GDP at the time of the fall of the Soviet Union in 1991. By 2011, its contribution fell to 9%.

Georgia's 49 soil types and 22 microclimate zones support a variety of fruits and vegetables, while low pesticide use is favourable for organic farming. Georgia is rich in water resources, with average annual renewable per capita water resources some 3.5-6.0x higher than Turkey, Armenia, Azerbaijan, and Ukraine and annual average precipitation double that of regional peers. Georgia has yet to realize its potential in affordable agricultural land (the average arable land price is 1/4 that of France and 1.2x below that of Bulgaria), cheap labour, and ease of access to European markets. Agricultural yields in Georgia remain 2.9x below the global average on fruit and 2.5x on vegetables, and 1.7x and 2.6x lower than Eastern European fruit and vegetable yields, respectively.

Fruit and vegetables will become key export commodities. Both CIS and EU markets import significant volumes of fruit and vegetables, making them obvious targets for Georgian exporters. Domestic demand is also strong, but underutilization of storage facilities and their uneven distribution, as well as the lack of post-harvest treatment, hamper the development of the domestic segment. Agricultural production would exceed consumption by 1.1x by 2021, leaving room for exports, on our estimates.

Attractive opportunities for organic production. Despite stable growth in organic farm production in Europe in recent years, demand for organic goods continues to outstrip supply. Growth drivers include increasing health consciousness (including an aversion to pesticide use and genetically modified foods), income growth, rising environmental awareness, and greater accessibility to retail outlets. In 2004-2011, the European organic market almost doubled to EUR 21.5bn. Low chemical fertilizer and pesticide use positions Georgia well to tap into this opportunity.

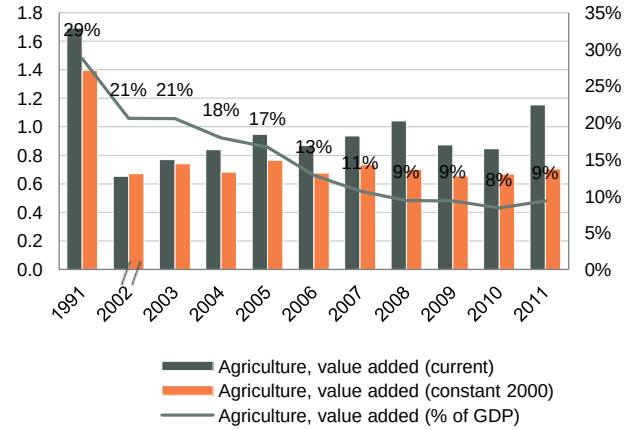
CIS to remain a vital trading partner. The CIS will remain Georgia's key trading partner over the mid-term, in our view. Sticking with a focus on traditional product mix of alcoholic beverages and mineral water (which together accounted for 58% of agricultural exports to the CIS in 2011), and boosting vegetable and fruit exports should bode well for Georgia in the CIS space. Expected growth in fruit and vegetable consumption will come from gradual increases in real incomes in the CIS.

Ample government incentives for agriculture investment. The Georgian government supports agricultural development via incentives and investments, including infrastructure and logistics projects and rehabilitation of irrigation networks. State investments will introduce irrigation up to 278,000ha of agricultural land by 2017, more than 11x the current 25,000ha. The state's recently established GEL 1bn (US$ 0.6bn) agriculture fund will provide short- and long-term funding to farmers and support the creation of new value-added production capacities. Moreover, simplified customs regulations, an absence of quantitative restrictions on trade, WTO membership, and numerous trade agreements will support trade volumes. Finally, Georgia is currently negotiating a Free Trade Agreement with the EU. Once in place, the agreement will vastly simplify Georgia's access to EU markets.

Agriculture – Underutilized Potential

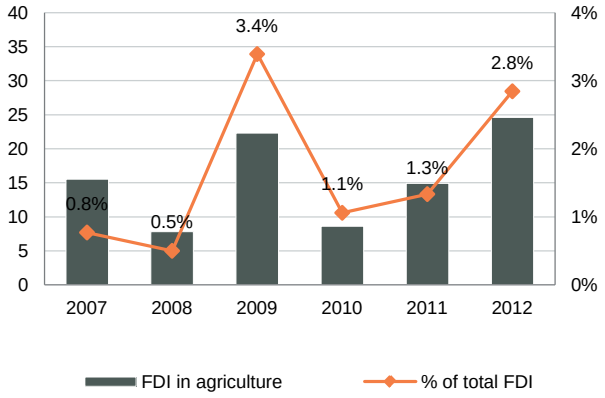
From the leader to the laggard. Agriculture has been a leading industry for Georgia in the past; however, insufficient investment and weak know-how caused its contribution to the economy to gradually decline. According to the World Bank, in 1991, agriculture accounted for 29% of GDP. By 2011, the share fell to 9%. Agriculture accounted for just 1.3% of total FDI inflows in 2007-2011, with a small uptake in 2012. Agriculture is the single largest employer in Georgia, accounting for 53% of the employed population (around 1mn) as of end-2007.

Figure 1: Agriculture production, US$ bn



Source: WB Database, GeoStat

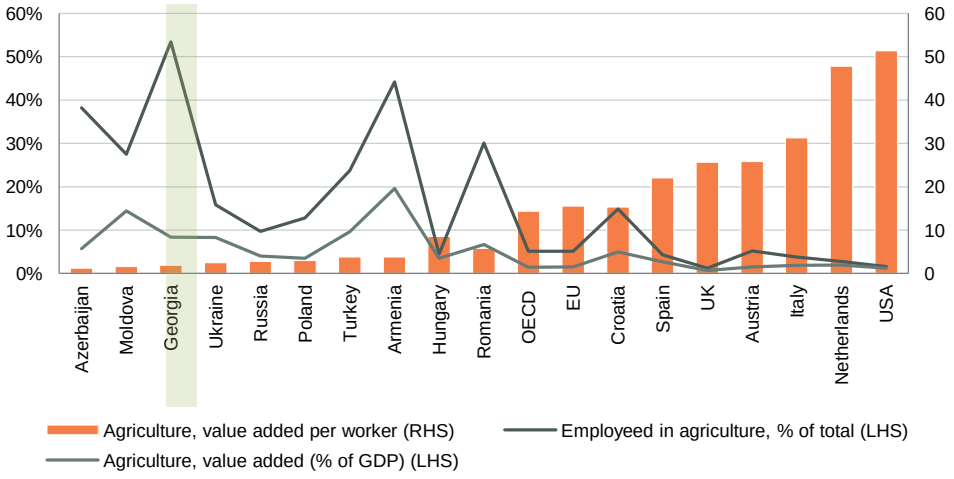
Figure 2: FDI in agricultural sector, US$ mn



Source: GeoStat

Underutilized potential. Agriculture as a percentage of GDP is the lowest at 9% compared to industry's 14% and the service and other sectors' 77%. Production predominantly serves domestic consumption and exports are limited. At US$ 1,888, 2010 productivity per worker was in-line with regional peers, but substantially lower than the developed-country average.

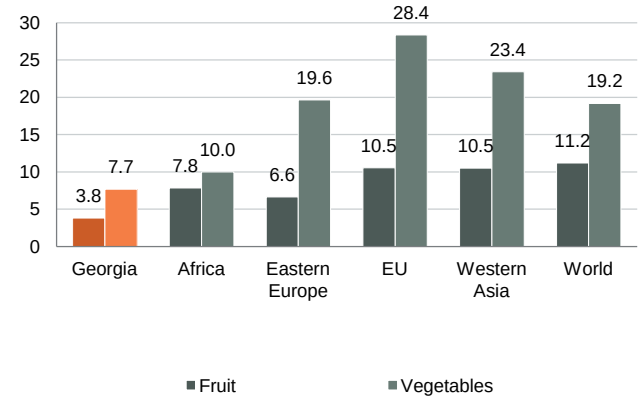
Figure 3: Productivity and employment in agriculture, 2010, US$ '000



Note: Latest statistics for employment in agriculture for Georgia, Ukraine, Russia and Armenia are for 2007, 2008, 2009 and 2008, respectively
Source: WB Database, FAOStat

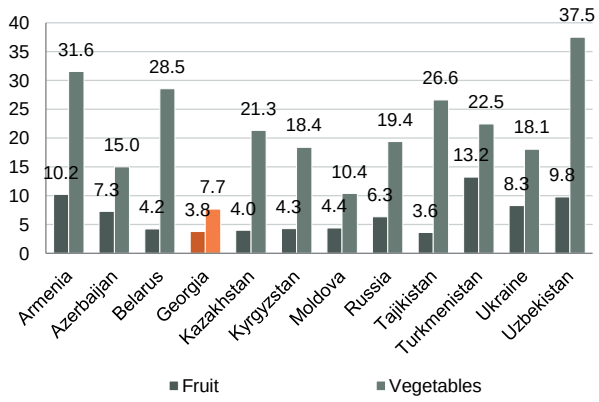
Georgian fruit and vegetable yields are significantly lower than global averages: as low as 2.9x below the world average on fruit and 2.5x on vegetables, and 1.7x and 2.6x lower than Eastern European fruit and vegetable yields, respectively.

Figure 4: Agricultural yield comparison, 2011, tonnes/ha



Source: FAOStat

Figure 5: Agricultural yields vs. CIS states, 2011, tonnes/ha



Source: FAOStat

We conducted a sensitivity analysis to estimate the potential impact of higher yields on economic output (assuming no additional land privatizations). GDP projections are based on nominal IMF forecasts until 2017 and extended to 2021, with varying levels of agriculture's share in GDP. For example, if agriculture accounts for 7% of GDP in 2021 and production yields increase by half, GDP is estimated to grow by 4% (US$ 1.3bn) to US$ 39.3bn and agriculture's share in GDP will increase to 10%.

Table 1: Sensitivity analysis

Nominal GDP in 2021, US$ bn

yield growth	Share of Agri in GDP (current)				
	5.0%	6.0%	7.0%	8.0%	9.0%
	38.0	38.0	38.0	38.0	38.0
25%	38.5	38.6	38.7	38.8	38.9
50%	39.0	39.2	39.3	39.5	39.7
75%	39.4	39.7	40.0	40.3	40.6
100%	39.9	40.3	40.7	41.1	41.4

Nominal GDP per capita in 2021, US$ '000

yield growth	Share of Agri in GDP (current)				
	5.0%	6.0%	7.0%	8.0%	9.0%
	8.5	8.5	8.5	8.5	8.5
25%	8.6	8.6	8.6	8.6	8.6
50%	8.7	8.7	8.7	8.8	8.8
75%	8.8	8.8	8.9	9.0	9.0
100%	8.9	9.0	9.0	9.1	9.2

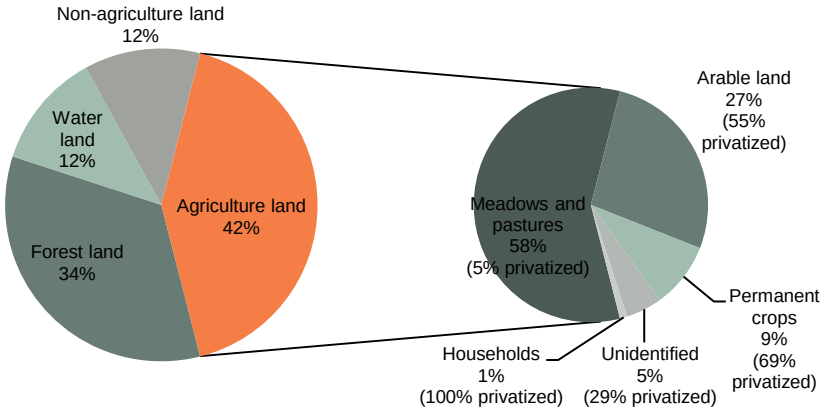
Note: Yields related to average yields for vegetable and fruit segments. Estimates use current stock of agricultural land
Source: WB Database, BoG Research

Georgian Agribusiness: Key Factors

Securing the Land

Only an estimated 26% of all agricultural land has been privatized. Of Georgia's total land area of 6.95mn ha, 42% is agricultural land. Arable land represents 0.8mn ha, or 27% of the agricultural land. Up to 55% of the arable land has already been privatized. Georgia has 49 types of soil and 22 microclimate zones from subtropical to arid and semi-arid, which allows for a wide range of crop production and animal husbandry.

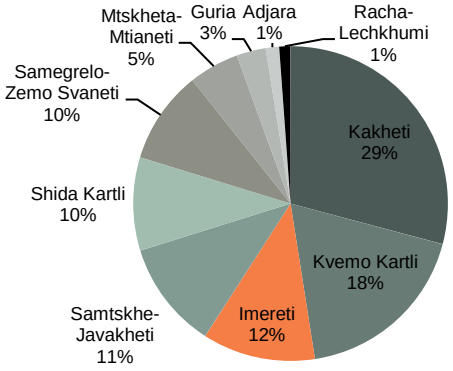
Figure 6: Distribution of land stock of Georgia



Note: Privatization figures are as of April 1, 2003
Source: MoA; BoG Research; USAID, Privatization of Agricultural Land Remaining in State Ownership

The largest area of arable land is located in Kakheti region, followed by Kvemo Kartli. Adjara has the lowest percentage of arable land due to its mountainous terrain.

Figure 7: Arable land by regions of Georgia



Source: MoA; BoG Research

Favourable for organic production thanks to low pesticide use. Chemical fertilizers were only used on 40-50% of the land area under cultivation during 2007-2010. The use of pesticides has been modest at only 7-21% of the land under cultivation during the same period. However, the inherent trade-off is lower crop yields.

Fertile soil and favourable climate allow earlier cultivation. Most of Georgia's fruit and vegetable crops are harvested 2-4 weeks earlier than in Ukraine, Poland, and other European countries.

Land ownership is highly fragmented after the two privatization periods of 1992-1998 and 2005-present.

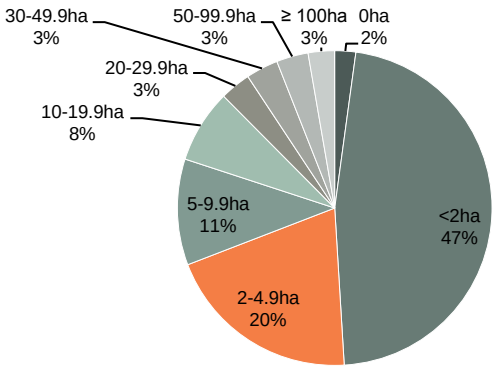
Table 2: Ownership regulation

Land Type	Private property	State property	Municipal property
Citizen of Georgia	Yes	Yes	Yes
Legal entity registered in Georgia	Yes	Yes	Yes
Citizen of foreign country	Yes	Yes	No
Legal entity registered in a foreign country	Upon submission of an inheritance certification within six months after registering property rights in the Public Registry	No	No

Source: Land Ownership and the Development of the Land Market in Georgia, 2013; report commissioned by Alliances KK and undertaken by a private consultant, Alexander Gvaramia

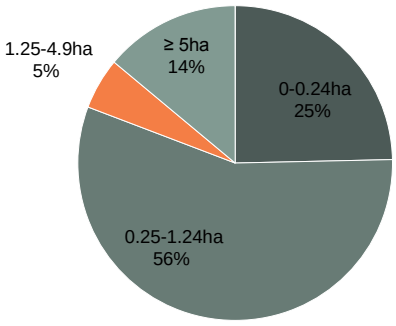
There are officially more than 0.8mn agro-holdings in Georgia. Up to 86% own arable and permanent crop land plots under 5ha. In contrast, 69% of holdings in the EU own land area under 5ha. The government plans to initiate legislation to incentivize small farmers to consolidate land plots, allowing them to unlock economies of scale and attract investment.

Figure 8: Number of holdings by size in EU-27, 2010



Source: European Commission, Eurotat

Figure 9[1]: Number of holdings by size in Georgia, 2011



Note: ha of arable and permanent crops; percentages are estimates
Source: BoG Research

Land consolidation is coming in the medium to long term, in our view. The pattern of change in land ownership in Western Europe suggests that market forces drive any land consolidation. The greatest consolidation in Europe occurred among land plots of over 50ha. We do not expect that type of significant consolidation in Georgia, however, a consolidation of existing ownership of below 2ha towards the largest plot sizes to up-to 50ha is possible in the future.

[1] Figure 6 and Figure 9 are estimates. The GoG is creating a land ownership database and BoG Research will provide an update once completed.

Table 3: Land consolidation in select EU-27 countries, % change over 1990-2007

	<2ha	2-4.9ha	5-9.9ha	10-19.9ha	20-29.9ha	30-49.9ha	50-99.9ha	≥ 100ha
Belgium	-63%	-57%	-52%	-54%	-44%	-7%	72%	166%
Denmark	-43%	-24%	-30%	-58%	-66%	-67%	-38%	186%
Germany (until 1990 former territory of the FRG)	-84%	-44%	-50%	-43%	-55%	-36%	27%	41%
Ireland	-62%	-53%	-32%	-35%	-21%	-5%	16%	11%
Greece	9%	-12%	-10%	-2%	63%	86%	104%	1%
Spain	-44%	-37%	-35%	-25%	-8%	-12%	5%	22%
Italy	-38%	-34%	-28%	-20%	-14%	9%	9%	-6%
Luxembourg	-70%	-60%	-39%	-57%	-59%	-66%	-22%	415%
Netherlands	-54%	-40%	-49%	-52%	-50%	-10%	79%	188%
Portugal	-61%	-49%	-40%	-27%	-15%	-4%	14%	7%
United Kingdom	141%	84%	-7%	-18%	-21%	-24%	-17%	6%

Source: Eurostat

Private ownership of agricultural land allows the owner to determine the primary purpose of the land, or to sell or transfer the land to third parties. Investors can acquire land through privatization: 1) at auction (electronic and public), 2) through direct sales based on decisions by the President of Georgia (including free-of-charge transfers and as a result of competitive selection processes), and 3) direct sales of leased land. The agricultural land tax differs by administrative units and the rates per ha are reviewed annually.

Table 4: Land privatization and taxes

Land type for privatization	Privatization type	Asset tax on land per ha (2012)	
		Minimum	Maximum
Arable lands (including land with perennial plants, gardens, vegetable gardens)	Auctions, direct sales	GEL 56	GEL 100
Hayfields	Auctions, direct sales	GEL 16	GEL 20
Pasture land	Auctions, direct sales	GEL 5	GEL 16

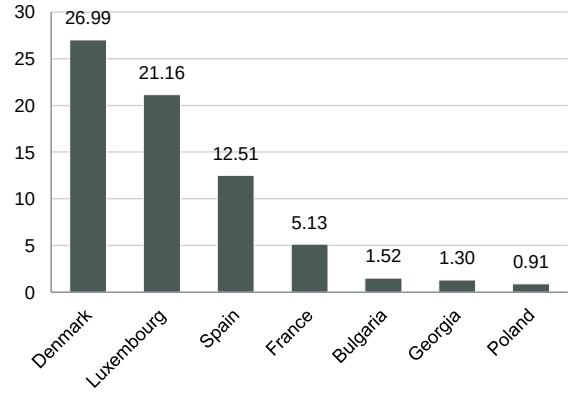
Note: In the case of direct sales of arable lands and hayfields to leasers, pasture lands leased before 30 July 2005 are also subject to privatization. Pasture land cannot be privatized with the exception of extraordinary investment initiatives; the Georgian privatization agency can then re-zone the land and auction it as arable land or a hayfield. Individuals owning up to 5ha of agricultural land as of March 1, 2004 are exempt from the asset land tax
Source: Land Ownership and the Development of the Land Market in Georgia, 2013. A Report Commissioned by Alliances KK and Undertaken by a Private Consultant, Alexander Gvaramia

Land exempt from privatization: 1) pasture land except those attached to buildings under the ownership of physical or legal entities or the state, 2) animal transportation roads, 3) sanitary zones of water supply objects, or in other words, the territory where a water supply object is located (strict regime zone), 4) land for historical, cultural, natural and cultural-religious monuments, 5) protected territories, except protected landscapes and territories for multi-purpose use, and 6) land adjacent to certain rivers.

The MoA plans to create a land ownership database. One of the main shortcomings of Georgia's initial land privatization push was a poorly managed ownership registry. Ownership certificates were often improperly registered or contained technical errors. As a result, some private land plots are not in the central registry. Many small farmers have been unable to re-register land deeds due to unaffordable registration costs or tax evasion purposes. A new project was launched in 2012 aiming at creating a complete ownership database with free registration of rights.

Land is relatively affordable and the purchase process is simple. The official starting price for arable land is EUR 460/ha (GEL 1,000/ha) in most regions. We estimate the average arable land price at between EUR 1,100-1,500/ha (or EUR 1,300/ha on average), 1/4 of prices in France, 1.2x below that of Bulgaria and well below other Western and Central European markets.

Figure 10: Arable land prices in 2009, '000 EUR/ha



Source: European Commission Eurostat; Association of Professionals on Land and Realty

Map 1: Regional Specialization and Potential

Source: USAID, Analytical Foundations Assessment – Agriculture (Rural Productivity) Final Sector Report, 2011

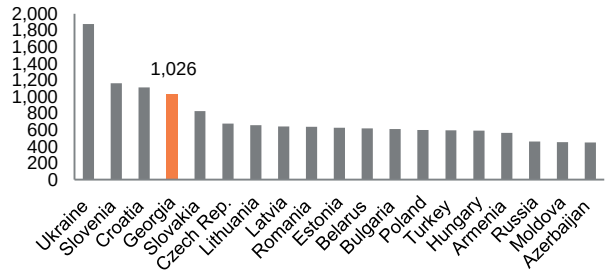
Abundant Water Supplies

Agriculture is the largest global consumer of water. The sector accounts for approximately 71% (3,100bn m^3) of global water withdrawals. According to the Water Resources Group that number will increase to 4,500bn m^3 (a small decline to 65% of global water withdrawals) by 2030 with no efficiency gains. However, globally, rain waters are used on 80% of cultivated land, which supplies 60% of the world's crop production.

The global agriculture sector faces a significant challenge over the next 40 years: to produce an estimated 50% more food by 2030 and double production by 2050 with less available water. The effects of population growth and therefore agricultural production, urbanization, industrial development and climate change are impacting water supplies. Water withdrawals have tripled over the last 50 years. In the meantime, overuse of fertilizers has contaminated surface water and groundwater supplies in many countries.

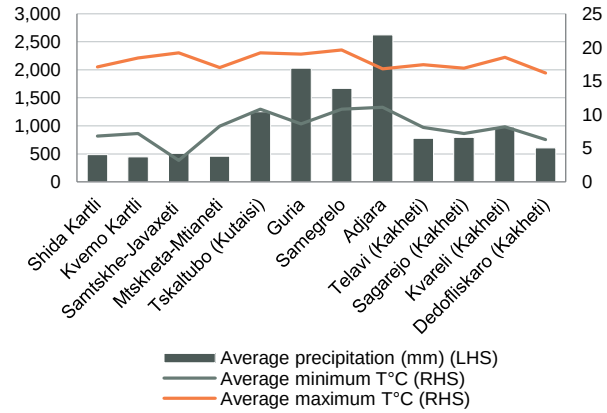
Abundant fresh water resources in Georgia. Georgia's annual average precipitation of 1,026mm is more than double that of regional peers Russia, Azerbaijan, and Moldova. The distribution of precipitation is uneven, however. Eastern and southern regions depend on irrigation, while the west needs drainage.

Figure 11: Annual average precipitation, mm



Source: Aquastat

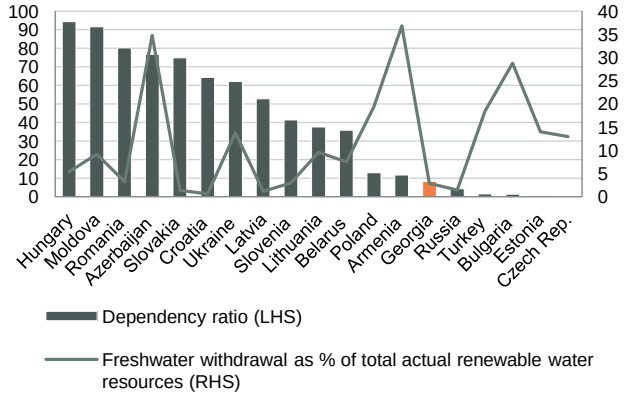
Figure 12: Precipitation and temperature by region



Source: MoA; BoG Research

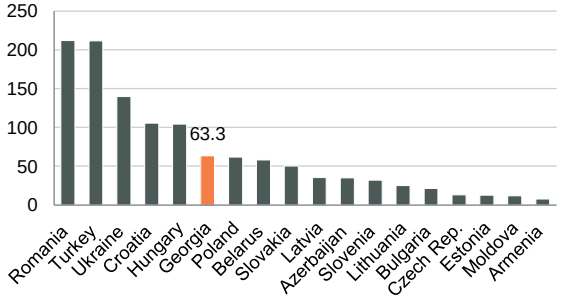
Georgia's boasts annual per-capita renewable water resources of approximately 14,000 m^3 on average, or 14x the 1,000 m^3 threshold for national water scarcity. By comparison, the same measure in Turkey, Armenia, Azerbaijan and Ukraine ranges from 2,500 to 3,800 m^3. Only about 6% of the total Georgian water resource is being withdrawn for human use. Agricultural water withdrawals make up 59% compared with 70-80% in many countries with developed irrigation infrastructure; household consumption constitutes 20% and industrial use 21%.

Figure 13: Water use and dependency on external sources, %



Note: Dependency ratio is an indicator expressing the percent of total renewable water resources originating outside the country; this indicator may theoretically vary between 0% and 100%
Source: Aquastat

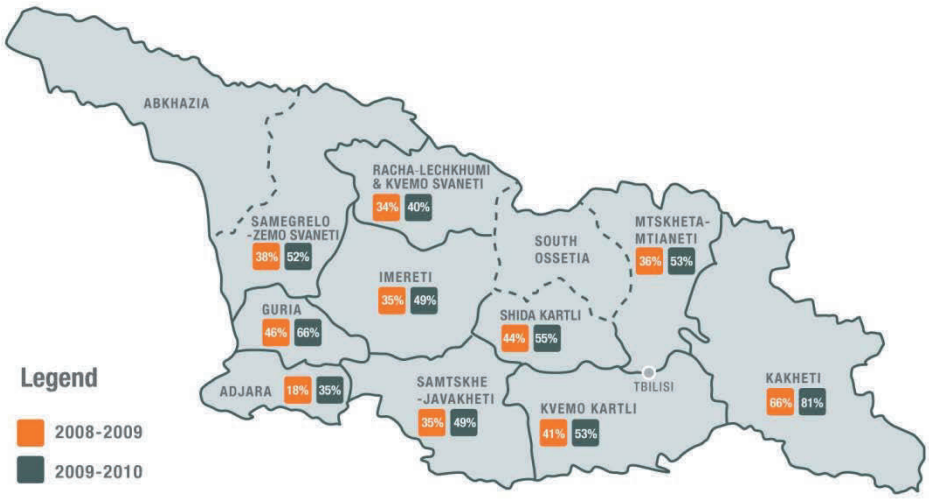
Figure 14: Total renewable water resources, km³/year



Source: Aquastat

Precipitation rates are highest in the west. Climatic zones are determined by distance from the Black Sea and by altitude. In the west, at higher elevations, precipitation is sometimes twice as heavy as in the eastern plains. Droughts during the growing season are not uncommon, occurring every 3 to 4 years. Irrigation helps ensure uninterrupted agricultural productivity. Hail is also characteristic to all parts of the country, but more common in the east. There are 5-15 occurrences annually, damaging 0.7-8.0% of agricultural lands. Recent hail storms in Georgia have caused extensive damage in the Kakheti region.

Map 2: Proportion of Villages Vulnerable to Drought



Source: USAID, Analytical Foundations Assessment – Agriculture (Rural Productivity) Final Sector Report, 2011 referring to 2010 Village Infrastructure Census, GeoStat

In addition to the rain and snow that refills streams and rivers, Georgia has substantial renewable groundwater reserves. Artesian and sub-artesian Soviet-era wells at depths of 300 meters can discharge 10-100 liters/second. In addition, shallower water table aquifers exist in some regions next to streams and rivers that can contribute to an irrigation network.

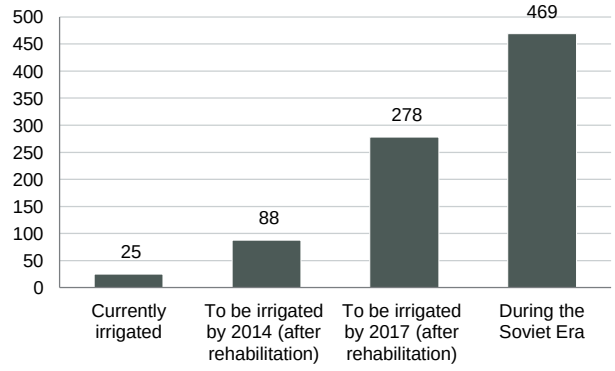
Table 5: Georgia's water sources

Water source	Comments
Rivers	26,060 rivers (59,000km) as part of the Black Sea and Caspian Sea basins
Lakes	860 lakes with 170km^2 of surface area (almost all are fresh water)
Ground water	18,000mn m^3 of natural fresh ground water supplies. Ample ground water storage, especially on the lower slopes of the Great Caucasus and Akhalkalaki and Marneuli plateau. The ground water storage can discharge 340m^3/second
Reservoirs	43 water reservoirs, including 34 for irrigation and 9 for power generation. There are 2,223mn m^3 of useful capacity in all water reservoirs
Wetlands	225,000ha in the Kolkheti Lowlands
Glaciers	734 glaciers along the Greater Caucasus Mountain Range, with total surface area of 513 km^2

Source: MOE, GWP

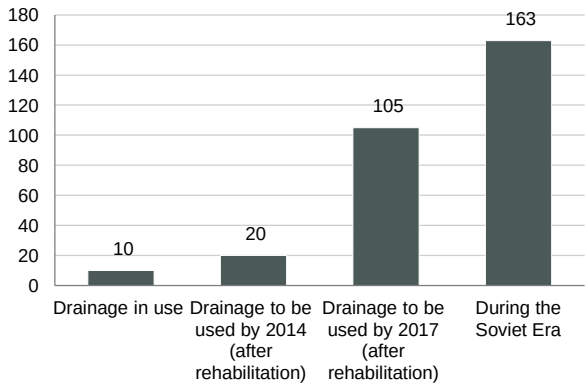
Restoring irrigation and drainage networks is a priority. According to the MoA, by 2017, 278,000ha of land will be irrigated and 105,000ha subject to drainage systems. River diversion is the main source for irrigation. Currently, though, groundwater is not actively used for irrigation in Georgia; it is likely to grow in the future for small-scale irrigation. Surface irrigation is the main irrigation technique. Approximately US$ 39mn (GEL 64.4mn) has been earmarked from the state budget by the MoA for the modernization of irrigation and drainage networks in 2013. Inefficient irrigation methods can reduce yields by 25-50%, according to USAID. All irrigation and drainage infrastructure in Georgia is currently owned and operated by the 100% state-owned LTD United Melioration System.

Figure 15: Area under irrigation, '000 ha



Note: Currently, 45,000ha is equipped for irrigation, of which only 25,000ha is fully irrigated
Source: MoA

Figure 16: Area under drainage, '000 ha



Source: MoA

Water is comparatively inexpensive. The irrigation fee is currently set at EUR 35/ha (GEL 75/ha) per year. In comparison, farmers in the Netherlands pay an area-based charge of EUR 59.7/ha per year. According to the European Commission, with the exception of the Netherlands (surface water) and certain irrigation systems in France, prices for irrigation in Europe are volumetric. Volumetric prices are not possible without water metering, which requires significant investment.

The Equipment and Know-How

Implementing efficient mechanization is difficult due to ownership fragmentation, with heavy equipment prohibitively expensive for smaller farms. Small farms (up to 1ha of arable land) account for over 80% of total production. Around 85% of the country's rural population is dependent on their own farms for subsistence, consuming roughly 75% of their own production.

The inability of small farmers to access machinery services prevents timely planting, which affects productivity and income. We estimate Georgia's machine stock at 4,800 units of heavy equipment (excluding leased equipment). Recently, a number of machinery service

centers (MSCs) were established across Georgia. These centers rent equipment to farmers at a fixed price plus fuel, which is set based on the distance from the MSC to the farm. Just 50% of farmers report using the MSCs. Another 26% say the centers are inaccessible (48% – distance, 33% – too expensive, other reasons – 19%) and the remaining 24% say they do not need the services or are not aware of them.

Recently introduced mechanization projects include:

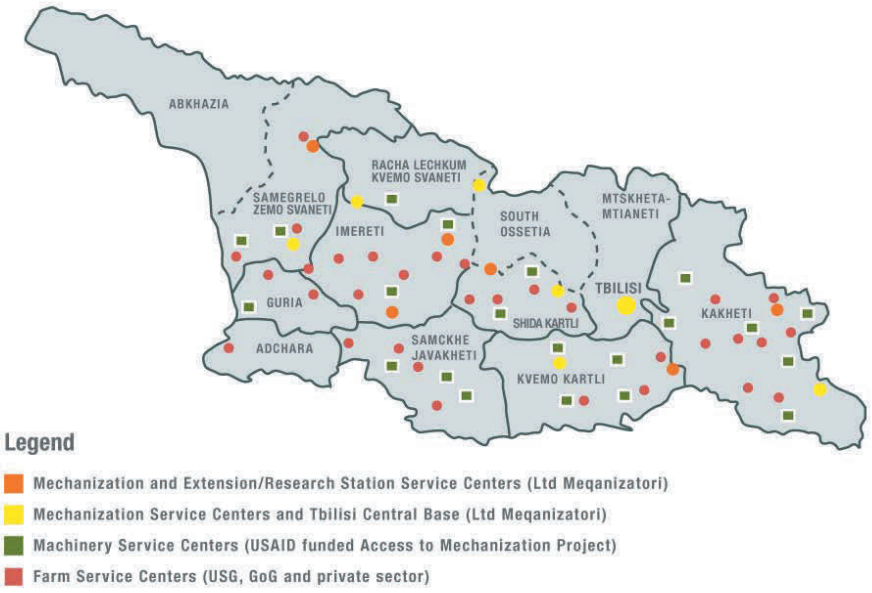
- Rural and Agricultural Development Fund-financed Small Land Owner Farmers Supporting Program: Farmers owning less than 0.25ha receive a GEL 100 voucher to purchase agrochemicals and equipment. Farmers with 0.25-1.25ha land receive GEL 510/ha for land cultivation and GEL 300 to buy agrochemicals and tools. Farmers with 1.25-5ha receive GEL 640 in vouchers. The program is managed by the Agricultural Project Management Agency (APMA).

- USAID-funded Access to Mechanization Project (AMP): Introduced in 2009, the AMP aims to develop privately owned MSCs to improve access to machinery for small farmers. There are 21 MSCs in Georgia.

- Millennium Challenge Corporation-funded Agribusiness Development Activity (ADA): 33 farm service centers (FSCs) that act as "one-stop shops", mainly for inputs like seed, fertilizers, chemicals, veterinary supplies and medicines, feed and tools for small-scale farming. FSCs also provide machinery services, veterinary services, training and information, etc.

- Government support for service centers: Through its 100% state-owned subsidiary LTD "Meqanizatori", the government established 12 service centers covering 30 municipalities that provide mechanization services and research station service centers.

Map 3: Location of agriculture equipment centers



Source: USAID, Analytical Foundations Assessment – Agriculture (Rural Productivity) Final Sector Report, 2011, CNFA, Ltd "Meqanizatori" official website

Fertilizer and harvest enhancer use is very low in Georgia, with 42% of arable land treated with mineral fertilizers and 21% with pesticides in 2010. Around 16% of the land was treated with organic manure during the same year.

Table 6: Proportion of arable land treated, %

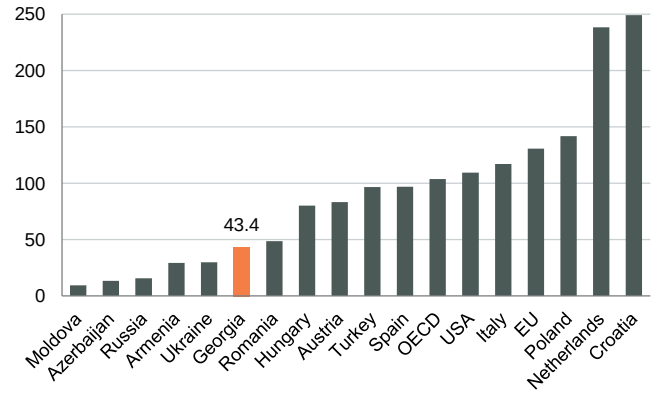
Item	2007	2008	2009	2010
Nitrogen fertilizer	38%	38%	49%	40%
Other mineral fertilizers	2%	2%	1%	2%
Manure	9%	16%	14%	16%
Pesticide	7%	8%	10%	21%

Source: USAID, Analytical Foundations Assessment – Agriculture (Rural Productivity) Final Sector Report, 2011; referred to "Data from 2010 Agriculture Statistics Publication, GeoStat"

Only 57% of survey respondents use retail outlets for seeds, seedlings, and saplings and 73% use them for fertilizers and agricultural chemicals. Distance and prohibitive cost were cited as reasons by interested farmers. The low retail penetration stems from a low awareness of available services and a limited perceived need. Many farmers use their own seed and limited fertilizer, most of which is organic.

Many fertilizers are available, but not the ideal type. For example, the use of blended fertilizers, or NPK (nitrogen, phosphorus, potassium), would increase productivity compared with areas with just one type of fertilizer in use. NPK is not easily obtained in Georgia. Domestic production of ammonium nitrate leads to high nitrogen fertilizer use (95% of all mineral fertilizer use in 2010-2011).

Figure 17: Fertilizer consumption (kg/ha of arable land), 2009



Source: WB database

Low fertilizer use makes the sector ripe for the development of organic agriculture production, which can be of particular interest to the EU. The MoA plans to develop organic food and farming by implementing legislative changes to regulate organic standards, certification rules, and procedures. Improper and excessive fertilizer use contaminates soil and water and the clean-up can be costly, while organic farming typically restricts the use of major conventional pesticides. Organic produce can be farmed with organic fertilizers and "green" pesticides.

Poor know-how also affects productivity. Weak management and technical skills, outdated production techniques, and limited knowledge and application of internationally accepted standards contribute to the low level of development in Georgia's agricultural sector. Many organizations are attempting to address these shortcomings; we list several examples below:

- **Government training program for agronomists.** Since 2010, 100 agronomists learn English and go abroad annually to learn modern agricultural technologies. Participants are sent to Western Europe, the US, Baltic countries, South Africa, and Egypt.

- **The EBRD's Early Transition Countries (ETC) Fund support of Margebeli's Marneuli Agro.** The project aims to improve cultivation and harvesting techniques using modern agricultural practices and to enhance farmers' practical knowledge. The program's "train-the-trainers" aspect will help with wider dissemination to regional farmers.

- **Georgian Rural Development Programme (GRDP) implementation of animal health program.** The health programs, implemented in the Kakheti, Samegrelo, Samtskhe-Javakheti and Shida Kartli regions, aim to incentivize the development of the private veterinary sector. The Georgian Institute of Public Affairs (GIPA) is the local implementing partner of the US Department of Agriculture for the technical assistance for animal health projects. GIPA educates private sector veterinarians, promotes Regional Veterinary Association (RVA) development, and coordinates the National Animal Health Plan Steering Group.

Transportation

Georgia's geographic location positions it well as a regional transport and logistics hub. Georgia is located on the Transportation Corridor Europe Caucasus Asia (TRACECA), connecting Europe with Central Asia. Georgian Railway's mainline runs from the Azeri and Armenian borders to the Black Sea ports of Batumi and Poti. Georgia's international road infrastructure is fairly well developed with international highway connections to all four neighbours. The country also has three international airports: Tbilisi, Batumi, and Kutaisi.

Map 4: Regional Gateway

Source: MESD, BoG Research

Over US$ 1.8bn invested in road infrastructure in 2004-2012. As of 2011, 84% of Georgia's international roads (1,455km) are in good condition, while just 31% (5,488km) of secondary and rural roads require no work. Improving the rural road system is particularly important in perishable crop production areas since long transportation times raise the risk of crop losses. The government is committed to continue road works, in particular on local roads. In 2013,

expenditures for the Ministry of Regional Development and Infrastructure (MRDI) are set at US$ 510mn (GEL 845mn), of which over 66% (US$ 340mn) is allocated to road works.

Georgian railways is an important means of transportation for agricultural products with direct access to Black Sea. In 2012, dry cargo transportation volume (which made up 53% of total freight transportation volume) increased 10% y/y to 10.6mn tonnes. This is still well below the Soviet-era volume of up to 60mn tonnes of cargo (liquid and dry) and the underutilization leaves room for future growth.

Georgia is ranked highest in the region in time and costs (excluding tariffs) associated with trade as rated by the World Bank Survey. The indicators in the tables below cover documentation requirements and procedures at customs and other regulatory agencies, as well as logistical aspects, including the time and cost of inland transport between the largest business city and the main port.

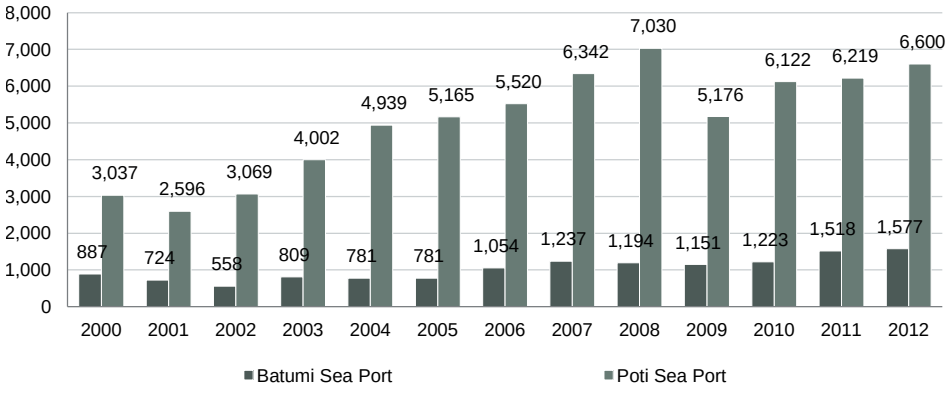
Table 7: Trading across borders, 2011

	Documents to export (number)	Time to export (days)	Cost to export (US$ per container)	Documents to import (number)	Time to import (days)	Cost to import (US$ per container)
Eastern Europe & Central Asia	7	26	2,134	8	29	2,349
OECD high income	4	10	1,028	5	10	1,080
Armenia	5	13	1,815	8	18	2,195
Azerbaijan	8	38	3,430	10	38	3,490
Georgia	4	9	1,355	4	10	1,595
Russian Federation	8	21	2,820	11	36	2,920
Turkey	7	13	990	7	14	1,235
Ukraine	6	30	1,865	8	33	2,155

Source: www.doingbusiness.org, latest data collection in June 2012

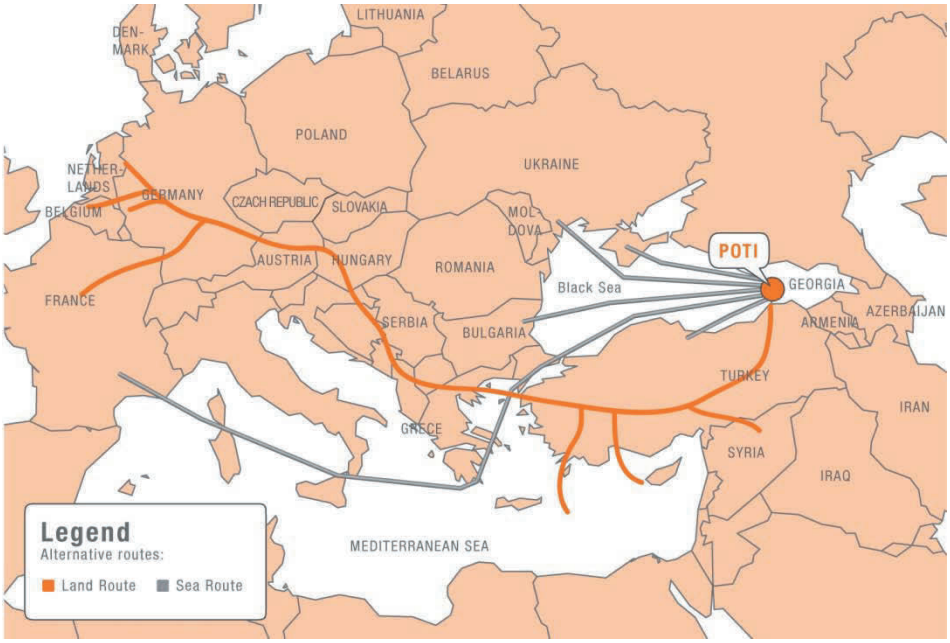
Sea transport can be used extensively for exports. Agricultural production can easily be exported via the Black Sea ports of Poti and Batumi to Russia, Ukraine, the Mediterranean and the rest of the world. Georgia enjoys a cost advantage at US$ 1,355 per exported container, lagging behind only Turkey (US$ 990). The recently modernized grain terminal in Poti further boosts agricultural export capacity. The Poti Sea Port is Georgia's largest, handling liquid and dry bulk, ferries and containers. The Batumi Sea Port primarily handles bulk cargo, but dry cargo processing is on the rise.

Figure 18: Dry cargo terminal turnover, tonnes



Source: Batumi Sea Port Limited; Poti Sea Port

Map 5: Select alternative transportation routes

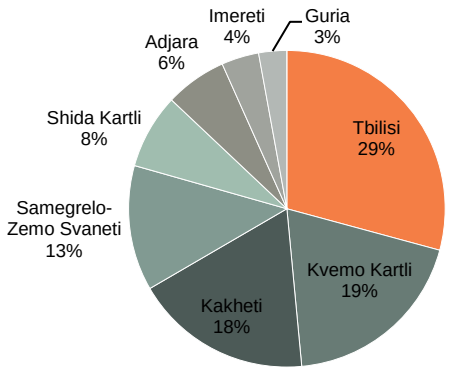


Source: BoG Research

Storage

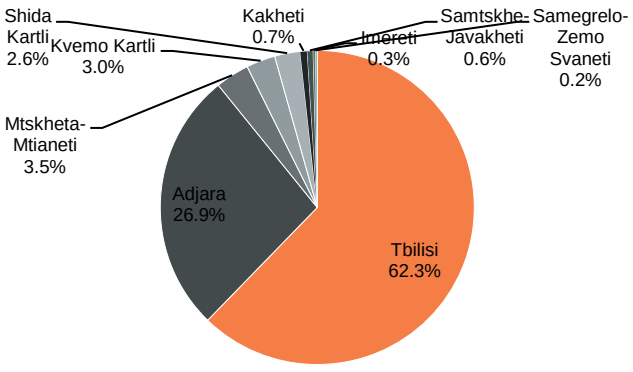
Georgia currently has 100,375t of cold storage capacity and 524,200t of silo capacity. The facilities are unevenly distributed, with most located in the capital, which is a major disadvantage. For example, the facilities are used for storing seeds and it is inefficient to transport seeds from Tbilisi to the regions.

Figure 19: Silo facilities by capacity share, 2013, tonnes



Source: BoG Research

Figure 20: Cold storage facilities capacity share, 2013, tonnes



Source: BoG Research

Minimal use of storage, sorting, and packing facilities by farmers. We believe that it is essential to raise awareness about the existence and advantages of storage, sorting or packing facilities, as a very small number of farmers use these facilities based on 2011 GeoStat Village Infrastructure Census results. The majority of surveyed farmers say they do not require or are unaware of the facilities. Other farmers also said the facilities were located too far away. Cost and distance were also cited as reasons for not using wholesale markets, with respondents preferring local retail market outlets.

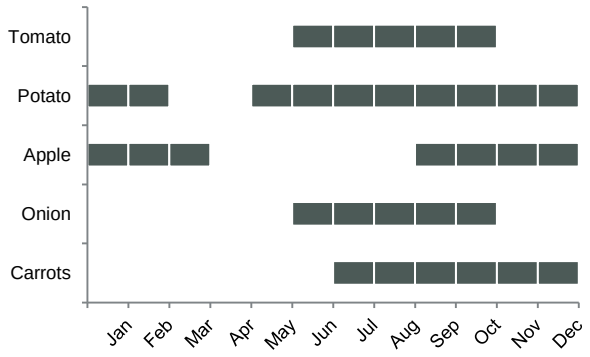
Table 8: Availability and Access

	No need / Unaware	Cannot Use	Use
Grain storage	93.4%	5.5%	1.2%
Cold storage	92.2%	7.3%	0.4%
Packing facility	96.2%	3.4%	0.4%
Sorting facility	94.4%	5.2%	0.4%
Fruit/vegetable storage	93.7%	6.2%	0.1%
Wholesale markets:			
Crop products	37.7%	10.1%	52.2%
Fresh milk	67.0%	21.8%	11.2%
Dairy products	46.2%	10.3%	43.6%
Fresh meat	44.5%	9.0%	46.4%
Retail agriculture market	13.0%	4.6%	82.4%

Source: GeoStat, Village Infrastructure Census (2011)

Produce prices are highly seasonal due to the underutilization of cold storage facilities. Most harvested fruits and vegetables are sold seasonally and only a small proportion is stored for non-seasonal consumption. Off-season imports are cheaper than local products partly due to the uneven distribution of storage facilities throughout the country, causing logistical inefficiencies. Another drawback is dealing with a big portion of low quality products as small farmers do not select for quality, nor do they use post-harvest handling practices. As a result, a high percentage of locally produced goods do not meet storage facility requirements.

Figure 21: Market Supply with Locally Produced Commodities



Source: USAID, Analytical Foundations Assessment – Agriculture (Rural Productivity) Final Sector Report, 2011

Establishing wholesale centers and developing a contingent value chain will help improve the efficient supply of quality produce. The lack of wholesale market consolidation centers and an inefficient value chain are a further constraint to trade. Market efficiency is negatively affected by the fragmentation of producers and the lack of wholesalers. This hinders efficient storage planning and development.

Other Inputs

Fertilizer, pesticide, herbicide, fungicide, and diesel fuel costs account for 52% of average agricultural production costs.

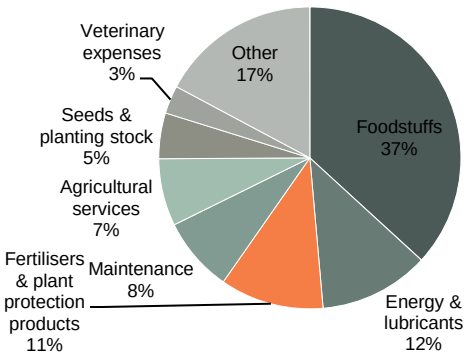
Table 9: Cost of key inputs in Georgia, Armenia and the US

Items	Georgia	Armenia	US
Ammonium Nitrate	US$ 500/MT	US$ 600/MT	na
NH_3	na	na	US$ 561/MT
NPK	US$ 1,100 to US$ 1,400/MT	US$ 800 to US$ 1,300/MT	US$ 550 to US$ 700/MT
Pesticides (Karate)	US$ 28 to US$ 31/liter	US$ 30 to US$ 100/liter	US$ 37/ac
Herbicides	US$ 6 to US$ 49/liter	US$ 50 to US$ 250/liter	Included in/ac cost
Fungicides	US$ 7 to US$ 92/liter	US$ 20 to US$ 400/liter	Included in/ac cost
Diesel	US$ 1.13/liter	US$ 0.99/liter	US$ 0.85/liter

Note: in = inch, ac = acres
Source: USAID's Analytical Foundations Assessment – Agriculture (Rural Productivity), Final Sector Report, 2011referred to Armania & USA biological farming associations, Georgia FSC

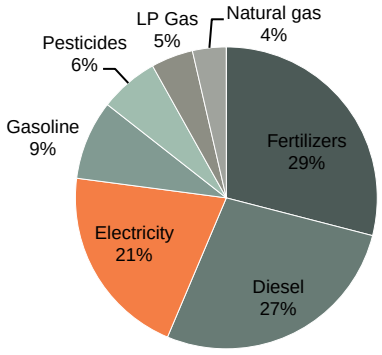
NPK costs in Georgia are double that of the US and slightly higher than in Armenia. Local production of nitrogen (ammonium nitrate) fertilizer exists, while blended NPK fertilizer is difficult to obtain.

Figure 22: Agriculture inputs, EU-27, 2010*



** Estimates*
Source: Food: from farm to fork statistics 2011 edition, Eurostat Pocketbooks

Figure 23: US farm energy use by source, 2002



Note: Outdated data used for demonstration purposes
Source: Congressional Research Service, Energy Use in Agriculture: Background and Issues, 2004

Higher diesel prices. Prices for diesel in Georgia were higher than in Armenia, Azerbaijan, Russia, and the US, but lower than in Hungary, Poland, Turkey, and the Netherlands over 2002-2010. Generally, major field crop activities are the heaviest energy consumers, followed by vegetables and fruit. Meanwhile, livestock activities are less energy-intensive. We expect Georgia to focus on fruits and vegetables, while livestock production will remain largely for domestic consumption.

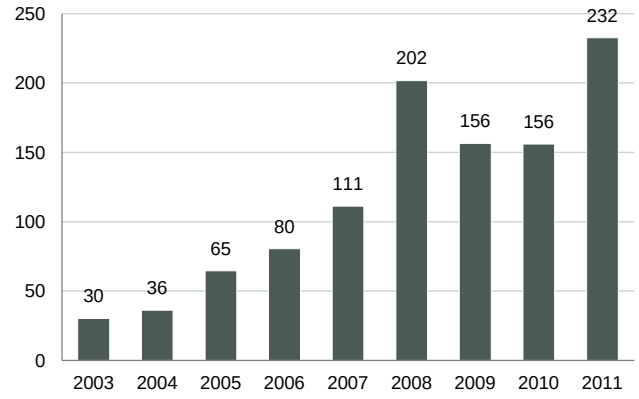
Table 10: Energy share of total costs in agricultural production by activities, 2002

Activity	Energy's share of total production costs (%)
Crop Activities	22.9
Major field crops	27.2
Vegetables & fruit	19.0
Greenhouse & nursery	9.3
Livestock Activities	5.9
Beef cattle ranching	11.6
Aquaculture & other	7.9
Dairy cattle & milk prod.	6.7
Hog & pig farming	4.6
Poultry & egg prod.	3.0
Cattle feedlots	2.6
US	13.7

Note: Outdated data used for demonstration purposes
Source: Congressional Research Service, Energy Use in Agriculture: Background and Issues, 2004

Highly competitive labour costs. In the US, about 40-70% of production costs in agriculture are related to labour costs. This makes Georgia's competitive labour cost a big advantage for agricultural producers. The average monthly salary in Georgia's agriculture sector has risen over the past several years to US$ 232 as of 2011, a 49% growth y/y (in US$ terms), but it remains well below many CIS markets.

Figure 24: Avg. monthly agriculture remuneration in Georgia, US$

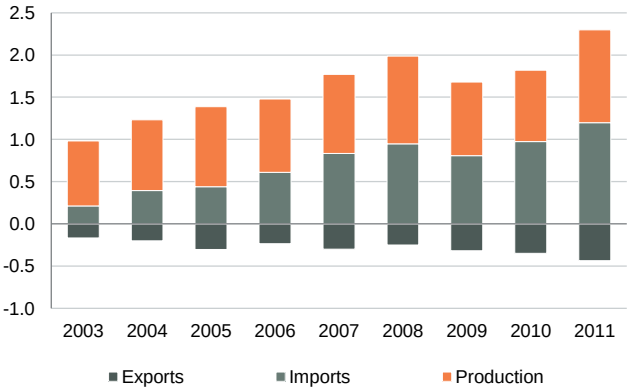


Note: Average for agriculture, hunting and forestry
Source: GeoStat

Domestic Market

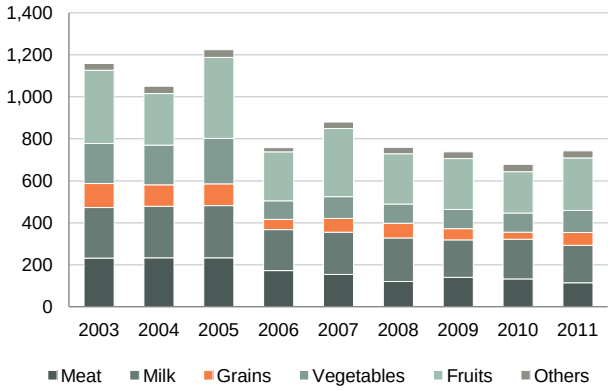
Georgia is a net importer of food and agricultural products. In nominal terms, Georgia's agricultural production grew just 12% in 2003-2011, while nominal GDP increased 184%. Domestic agricultural consumption grew 128% since 2003 to US$ 1.9bn in 2011 spurred by growing per-capita income. In turn, imports of agricultural products rose 5.7x to US$ 1.2bn in 2011, prompting a 47% trade gap in agricultural products.

Figure 25: Production and trade of agricultural products, US$ bn



Source: GeoStat

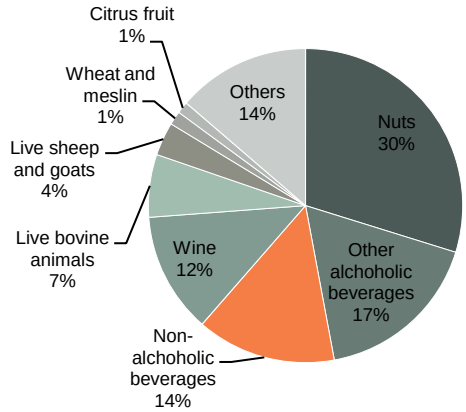
Figure 26: Gross value of Georgian agricultural production, constant prices 2004-06, US$ mn



Source: FAOStat

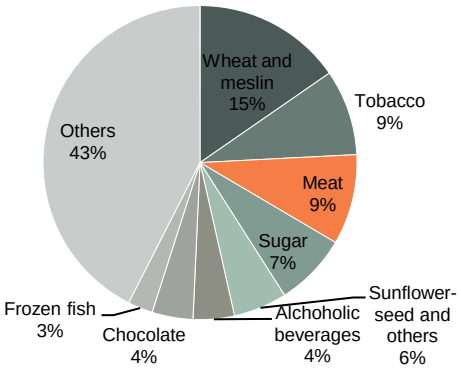
Currently, frozen fish, meat, milk, bananas, malt, sugar, potatoes, onions, tomatoes, sunflower, corn, wheat and citrus fruit account for the bulk of agricultural imports. As for exports, nuts, live animals and beverages are the major categories, while wheat is mostly re-exported. Georgia's total agricultural exports and imports in 2011 reached US$ 437mn and US$ 1.2bn, respectively.

Figure 27: Main agricultural exports, 2011



Note: Other includes a long and diversified list of products
Source: GeoStat

Figure 28: Main agricultural imports, 2011

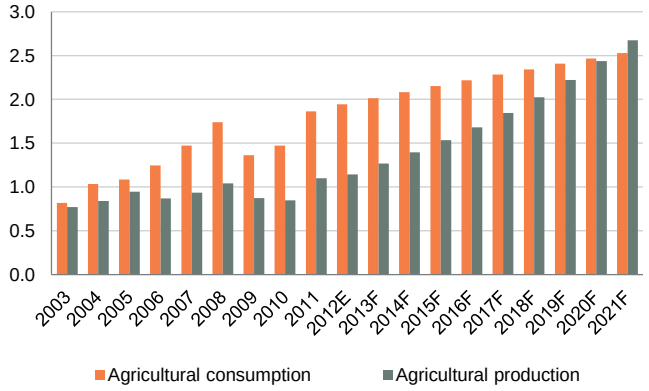


Note: Other includes a long and diversified list of products
Source: FAOStat

Low productivity drives high imports, but yield improvements will likely change the scale of imports. Georgia's gross agricultural production shrank 36% in real terms over 2003-2011. Output of the largest group, fruit (34% of 2011 agricultural production), dropped 28% in real terms over 2003-2011. Meat and vegetable production declined 51% and 45%, respectively, over the same period. Yields on many important agricultural goods are significantly lower than peers. Products' post-harvest lives are also short and the duration of product availability is limited. As the new government promotes agricultural production, we expect yields to rise gradually.

We expect domestic production to increase 2.4x by 2021 in nominal terms. This translates into 1.4x growth in real terms by 2021. Production of major agricultural commodities should exceed consumption by 1.1x by 2021, which will prompt higher exports.

Figure 29: Agricultural production vs. consumption, US$ bn

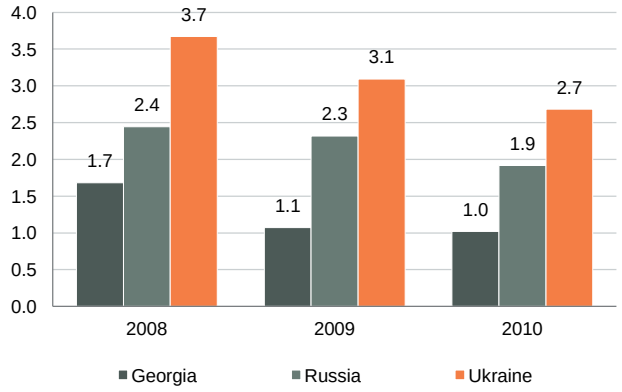


Source: GeoStat, FAOStat, BoG Research

Higher domestic yields to drive import substitution. Examples of probable imports that can be substitutes include vegetables from Turkey, apples from Iran, Ukraine and Europe, and pomegranates from Azerbaijan. Excess domestic production, in our view, will open export opportunities for Georgian producers and processors, including mandarin exports to CIS and European countries, hazelnuts to various markets, herbs to Europe, processed berries, pomegranates, and vegetables to multiple countries, and increased exports of other value-added horticulture products.

With higher yields, grain production has the potential to satisfy a larger share of domestic demand. Grain yields remain comparatively low. The use of quality seeds alone can increase productivity yields significantly. Georgia reported an average wheat yield of 1t/ha in 2010 compared to 2.7t/ha for Ukraine and 1.9t/ha for Russia.

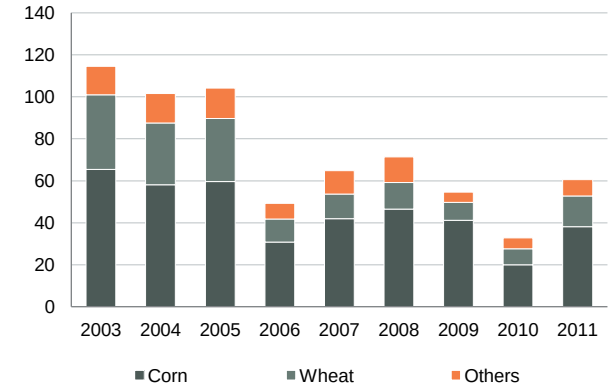
Figure 30: Average wheat yields, tonnes/ha



Source: FAOStat

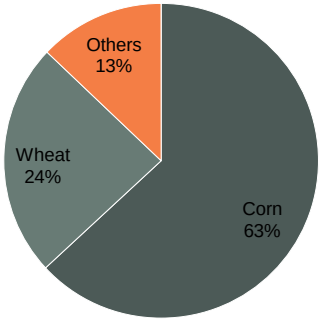
We estimate that if Georgia increases average yields to be comparable to those of Ukraine, the total production will meet 17% of current estimated consumption. Georgia is currently a net importer of wheat. Due to its small size, Georgia cannot compete with regional peers like Ukraine and Russia that enjoy significant economies of scale. In 2011, Georgia produced US$ 61mn (in 2004-2006 prices) of grain products, 47% less than in 2003. Corn and wheat production (87% of total grain output) decreased 42% and 59% from 2003, respectively.

Figure 31: Gross grain production, constant prices 2004-06, US$ mn



Source: FAOStat

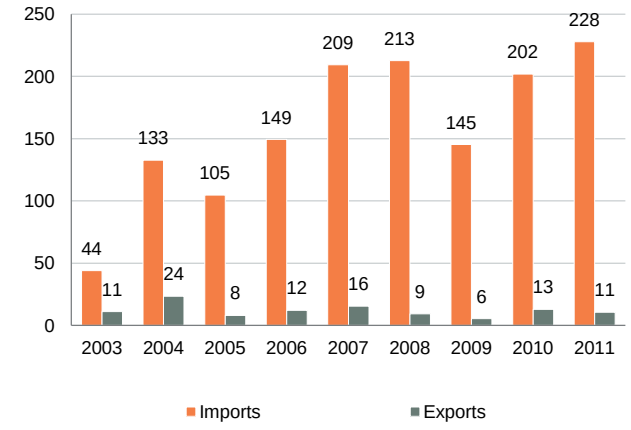
Figure 32: Structure of grain production, 2011



Source: FAOStat

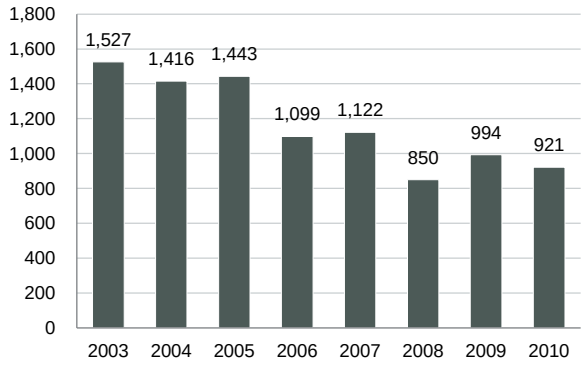
Wheat and meslin account for the largest share of agricultural imports. In 2011, Georgia imported US$ 184mn in wheat and meslin, which accounts for 15% of total agricultural imports. Grain exports totalled just US$ 11mn in 2011.

Figure 33: Grain imports and exports, US$ mn



Source: GeoStat

Figure 34: Grain consumption, tonnes

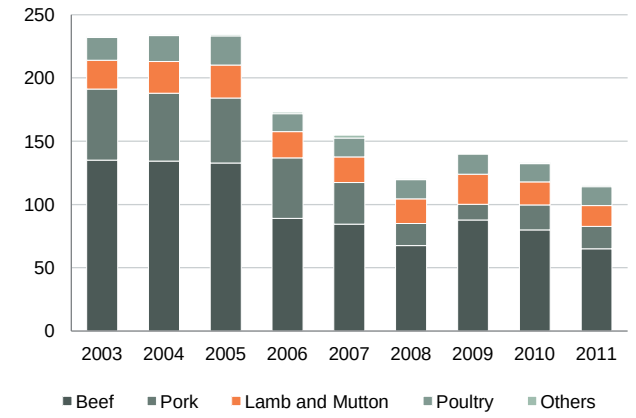


Note: Data calculated by BoG Research as Production – Imports + Exports. It excludes other adjustments, therefore numbers are estimates
Source: FAOStat, GeoStat, BoG Research

Georgia is likely to remain a net importer of meat and exporter of live animals. Meat production, mainly beef and pork, has been declining since 2006 as the swine flu severely affected production. Since most domestic production is concentrated in small family farms, it has become difficult to restore output. Moreover, cheaper imports have made it difficult for domestic production to compete for domestic consumption. Currently, the country is a net exporter of live animals and a net importer of meat. Live animal exports exceeded imports by more than 10x in 2011 (live animals account for 98% of meat product exports, while meat accounts for 96% of meat product imports). Georgian meat producers are often unable to compete with imported meat due to their relatively small size, which does not allow economies of scale. Moreover, problems exist in logistics due to storage and basic treatment and processing.

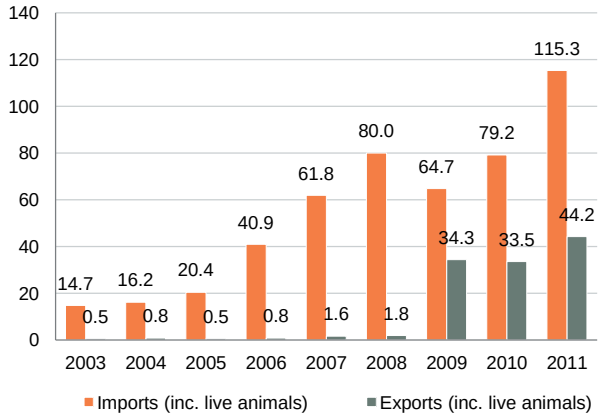
We estimate Georgian annual meat consumption at around US$ 226mn. Beef is the most popular meat, accounting for 19% of imported meat (excluding live animals) in 2011. Lamb and mutton are mainly produced for export.

Figure 35: Gross meat production, constant prices 2004-06, US$ mn



Source: FAOStat

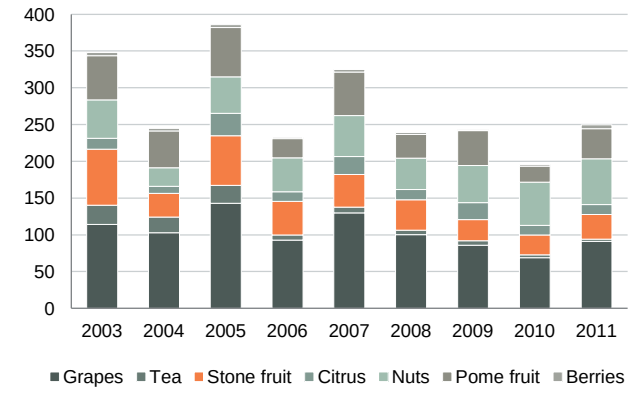
Figure 36: Meat imports and exports, US$ mn



Source: GeoStat

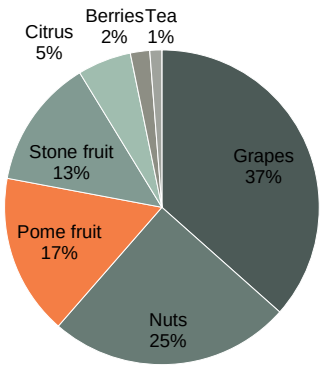
Georgia's fruit sector held up relatively well compared to other sectors in recent years and the balance of trade in fruit is positive. Production of nuts and grapes (with significant exports of nuts and wine) are driving the positive trade balance. Nevertheless, yields in the sector remain low. Georgian orchards produce 4t of fruit per ha, well below the 11t/ha in the EU and 1.7x less than in Eastern European countries. In 2011, Georgia produced US$ 250mn of fruit, down 28% in real terms since 2003. Grapes accounted for 37% of total fruit production and nuts held a 25% share. In 2011, the country exported US$ 140mn of fruit, mainly nuts (93%) and citrus fruit (4%). Nut exports surged 19x from 2002 level to US$ 130mn in 2011 after international companies completed several major investments.

Figure 37: Gross fruit production, constant prices 2004-06, US$ mn



Source: FAOStat

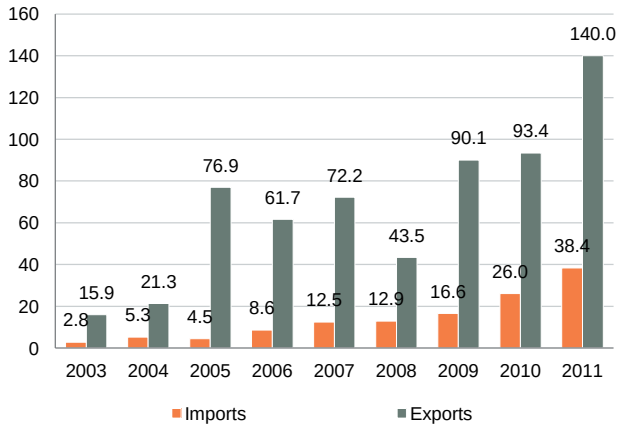
Figure 38: Structure of fruit production, 2011



Source: FAOStat

In 2011, Georgia imported US$ 38mn worth of fruit. Bananas accounted for 40% of imports, followed by citrus fruit (26%). If Georgia develops its domestic production and storage facilities, some of the fruit imports can be substituted by domestic production. Excess production could also then be exported. For example, Georgia can increase production of pomegranates for consumption and export, while lemons and oranges can be grown for import substitution.

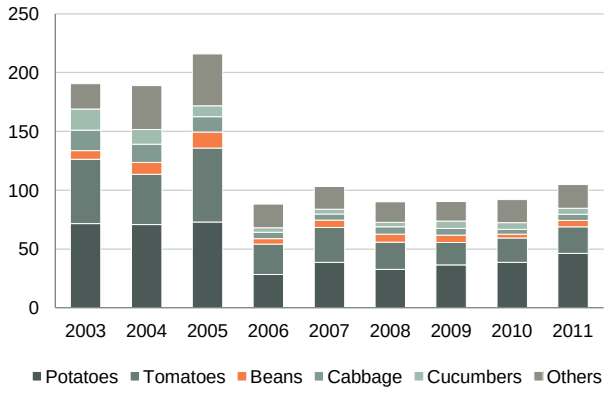
Figure 39: Fruit imports and exports, US$ mn



Source: GeoStat

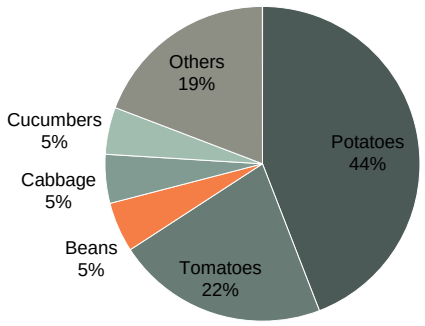
Georgia has the potential to substitute a large share of vegetable imports with local production and increase exports, in our view. In 2011, Georgia imported US$ 60mn in vegetables and exported just US$ 5mn. Vegetable production has stagnated for the past few years after a sharp drop in 2006 on a decline in potato (-61% y/y) and tomato (-59% y/y) production. In total, Georgia produced US$ 105mn in vegetables in 2011, down 45% from 2003. With development of local production and storage facilities, we believe Georgia can substitute vegetable imports in nearly all categories.

Figure 40: Gross vegetable production, constant prices 2004-06, US$ mn



Source: FAOStat

Figure 41: Structure of vegetable production, 2011



Source: FAOStat

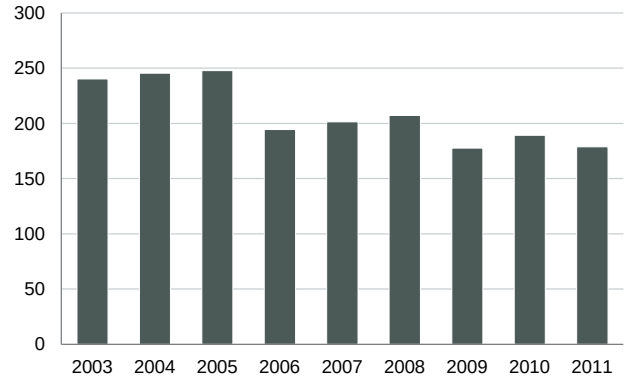
In 2011, potatoes and tomatoes account for 23% and 11% of vegetable imports, respectively. According to USAID, Georgia can increase production of tomatoes and potatoes by 3x and 5x, respectively, to fully substitute imports. Vegetable imports are relatively seasonal with around 65% of imports coming in winter. The high share of off-season imports is partly due to the lack of post-harvest treatment, which would allow for off-season storage. Transport logistics to storage is another issue.

Figure 42: Vegetable imports and exports, US$ mn

Source: GeoStat

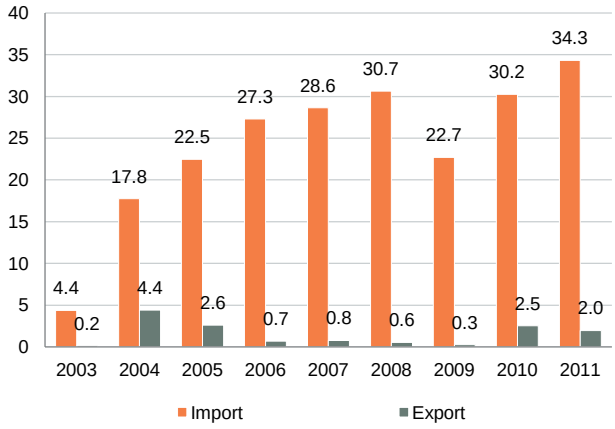
Trade deficit in dairy to remain. In 2011, Georgia produced US$ 179mn of milk, down 26% compared to 2003, in-line with a drop in cattle production. Georgia is a net importer of milk and dairy products, with US$ 34mn of imports and just US$ 2mn in exports.

Figure 43: Milk production, constant prices 2004-06, US$ mn



Source: FAOStat

Figure 44: Dairy product imports and exports, US$ mn

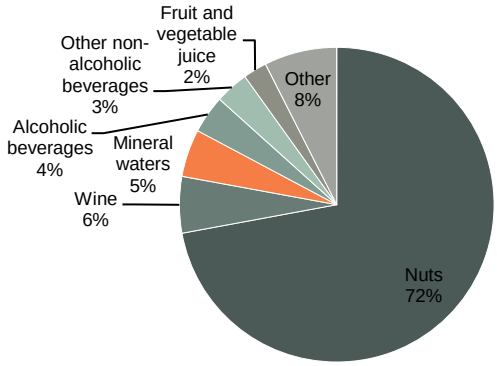


Source: GeoStat

Agriculture Trade with EU

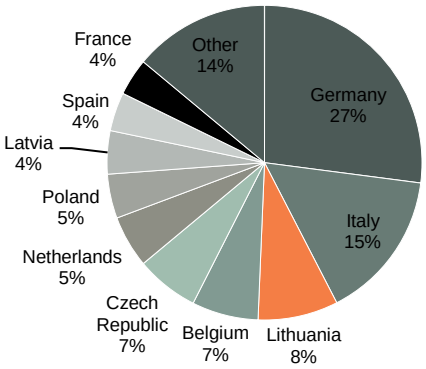
Germany (US$ 38mn), Italy (US$ 22mn) and Lithuania (US$ 12mn) were Georgia's major food and agricultural product export markets in the EU in 2011, making up 50% of Georgia's exports to the EU-27. Nuts, notably walnuts, were the main export to Germany and Italy in 2011, while mineral water and walnuts were the main agricultural exports to Lithuania in 2011.

Figure 45: Breakdown of Georgia's food and agricultural product exports to EU-27, 2011



Source: GeoStat

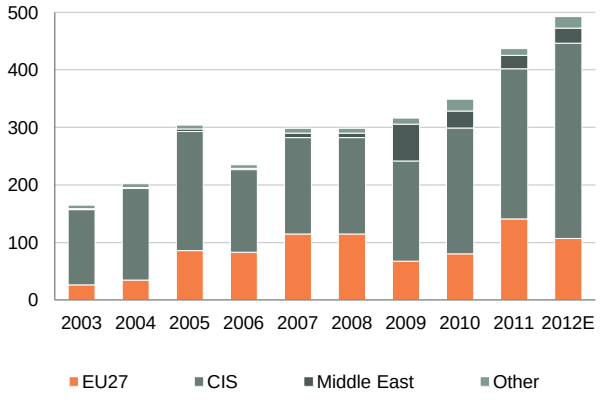
Figure 46: Georgia's food and agricultural product exports to EU-27, 2011



Source: GeoStat

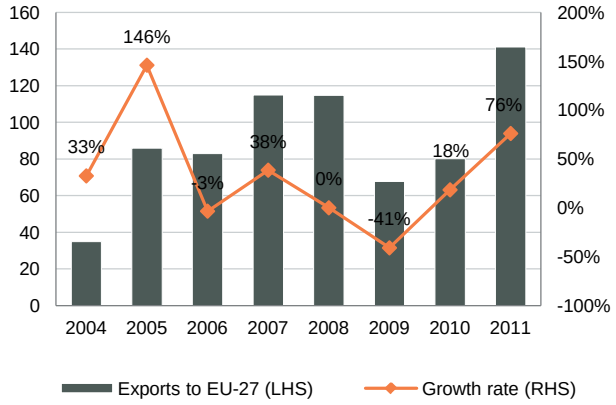
EU's share of Georgia's external trade is steadily rising. Over 2003-2011, total agricultural exports grew at a 13% CAGR. The CIS has traditionally been the key export market, but the EU is steadily making inroads. In 2011, the CIS (ex-Russia) accounted for 60% of agricultural exports, followed by the EU (32%) and the Middle East (5%). Russia's embargo on Georgian agricultural products drove a 23% y/y decline in exports in 2006. Georgian producers responded by redirecting exports to other CIS countries, the EU, and the Middle East. Since 2003, agricultural product exports to the EU increased at a 23% CAGR to US$ 141mn in 2011.

Figure 47: Georgia's food and agricultural product exports, US$ mn



Source: GeoStat

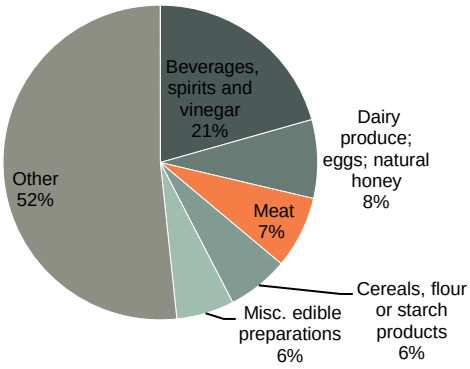
Figure 48: Georgia's food and agricultural product exports to EU-27, US$ mn



Source: GeoStat

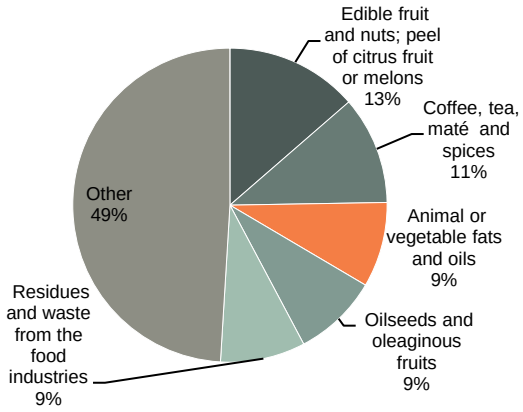
The EU recorded an agricultural trade surplus in 2011 (EUR 7bn) for the second year in a row. Wines and whiskies increased both in price and volume and recorded the biggest gains in exports. The US remained the main destination of agricultural exports.

Figure 49: EU agricultural product export structure, 2011



Note: Other includes a long and diversified list of products therefore more detailed breakdown is not provided
Source: Agriculture in the European Union, Statistical and Economic Information Report 2012

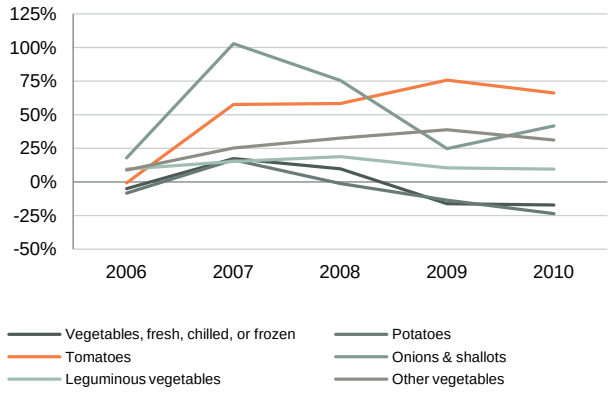
Figure 50: EU agricultural product import structure, 2011



Note: Other includes a long and diversified list of products therefore more detailed breakdown is not provided; Maté is a bitter, caffeine-rich infusion of the leaves of a south American shrub; Residues and waste includes products used in animal feeding, not elsewhere specified or included, obtained by processing vegetable or animal materials
Source: Agriculture in the European Union, Statistical and Economic Information Report 2012

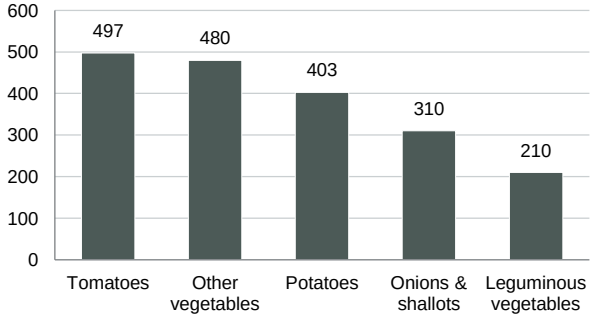
The key categories in EU-27 fruit and vegetable imports from non-EU states are: 1) fresh, chilled and frozen vegetables, 2) prepared and preserved vegetables, 3) fresh and dried fruit and nuts, and 4) preserved fruit and fruit preparations[2]. Fresh, chilled or frozen vegetable import volumes nearly halved over 2000-2010.

Figure 51: Growth of extra-EU imports of fresh, chilled or frozen vegetables



Note: % change in imports compared to 2005; Extra-EU imports are goods that enter the statistical territory of the EU from a non-member country
Source: Food: from farm to fork statistics 2011 edition, Eurostat Pocketbooks

Figure 52: Quantity of extra-EU imports, fresh, chilled or frozen vegetables , 2010, '000 tonnes

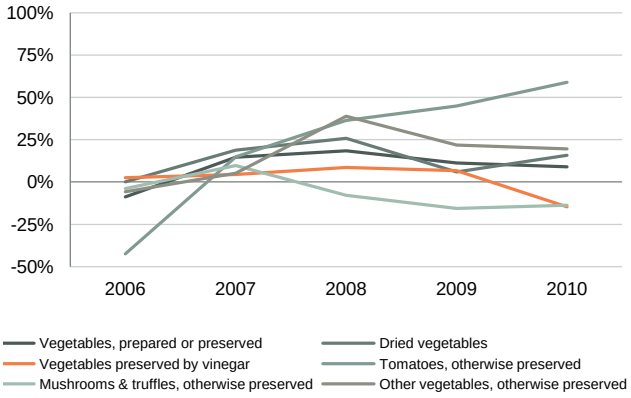


Source: Food: from farm to fork statistics 2011 edition, Eurostat Pocketbooks

Prepared and preserved vegetables still hold a significant share of imports despite an overall trade surplus. Over 2000-2010, EU-27 imports of prepared or preserved vegetables rose 49%, or 1.2mn tonnes by end-2010, although this was less than 1/3 of the quantity of fresh, chilled or frozen vegetables imported in the same year.

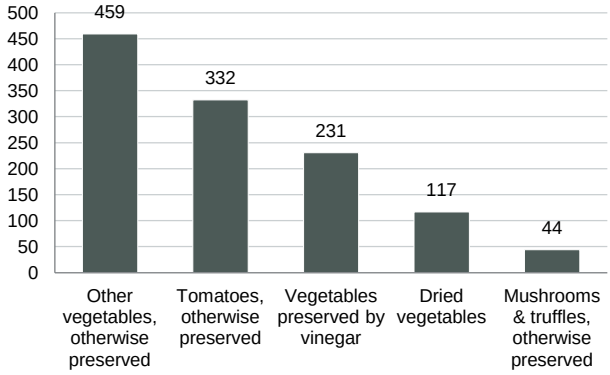
[2] Fruit preparation: high-quality fruits prepared in liquid solid form and stored for further processing, especially in dairy products including ice cream for baked goods (Agrana Glossary).

Figure 53: Growth of extra-EU imports, prepared or preserved vegetables



Note: % change in imports compared to year 2005
Source: Food: from farm to fork statistics 2011 edition, Eurostat Pocketbooks

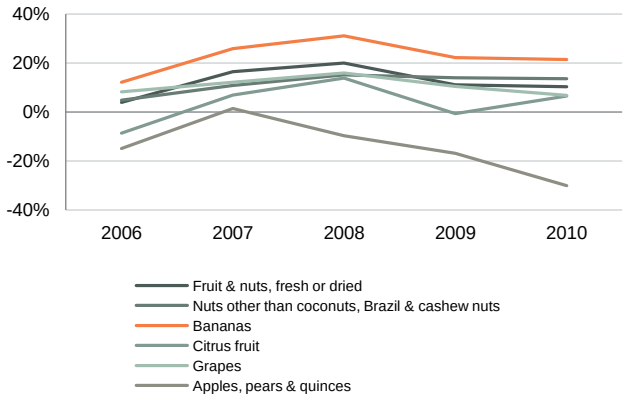
Figure 54: Quantity of extra-EU imports, prepared or preserved vegetables, 2010, '000 tonnes



Source: Food: from farm to fork statistics 2011 edition, Eurostat Pocketbooks

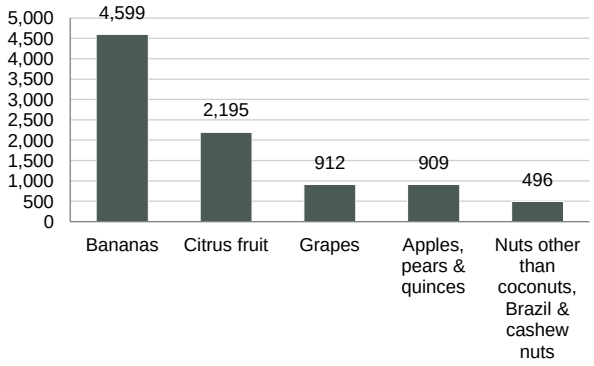
EU-27 imports of fresh and dried fruit and nuts grew over 2000-2008. The EU-27 posted an 8.7mnt trade deficit in fresh and dried fruit and nuts in 2010, of which more than half was in bananas. Most fruit imported to the EU is grown in tropical locales.

Figure 55: Growth of extra-EU imports, fruit and nuts, fresh or dried



Note: % change in imports compared to 2005
Source: Food: from farm to fork statistics 2011 edition, Eurostat Pocketbooks

Figure 56: Quantity of extra-EU imports, fruit and nuts, fresh or dried, 2010, '000 tonnes



Source: Food: from farm to fork statistics 2011 edition, Eurostat Pocketbooks

Preserved fruit and fruit preparations/concentrates also posted a trade deficit over the last decade, although narrower than for fresh and dried fruit and nuts (to 1.5mnt in 2010). Many of these products contain exotic fruits and are often imported in a semi-processed form (such as fruit concentrate) to be used by EU food manufacturers in fruit juice, jam, or ice cream production. The EU's main trade partners for preserved fruit and fruit preparations were dispersed, with China and Thailand at 17% and 13%, respectively, in 2010.

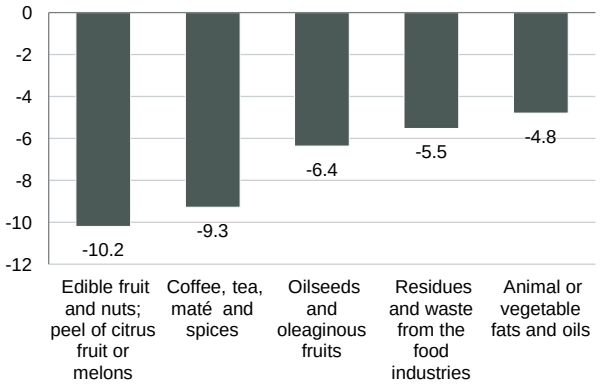
Table 11: Quantity of extra-EU imports, preserved fruit and fruit preparations, EU, '000 tonnes

	2000	2005	2006	2007	2008	2009	2010
Preserved fruit & fruit preparations	1,290	1,471	1,548	1,653	1,694	1,478	1,540
Frozen fruits	316	234	248	284	274	248	287
Preserved or prepared fruits	787	932	977	1,008	1,060	911	906

Source: Food: from farm to fork statistics 2011 edition, Eurostat Pocketbooks

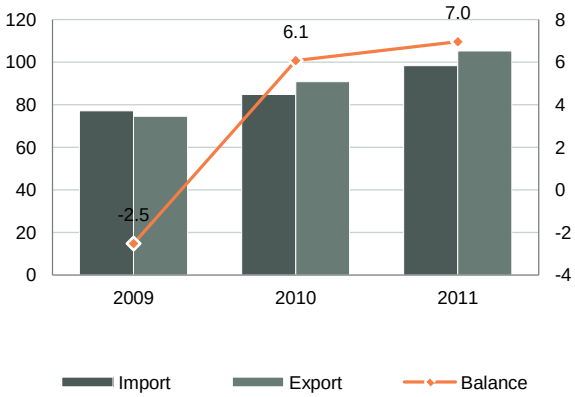
Niche products: A viable path to the EU for Georgian farmers. Georgia's small size precludes it from competing on scale with large regional EU suppliers. Niche products like regional specialities and organic foodstuffs are a strong alternative. Based on the structure of extra-EU fruit and vegetable imports, we believe Georgia should aim to secure a niche in categories other than fresh and frozen fruit and vegetable exports. This would, however, require Georgia to establish food processing facilities, as demand is higher for processed products.

Figure 57: Top deficit agro goods in the EU, 2011, EUR bn



Source: Agriculture in the European Union, Statistical and Economic Information Report 2012

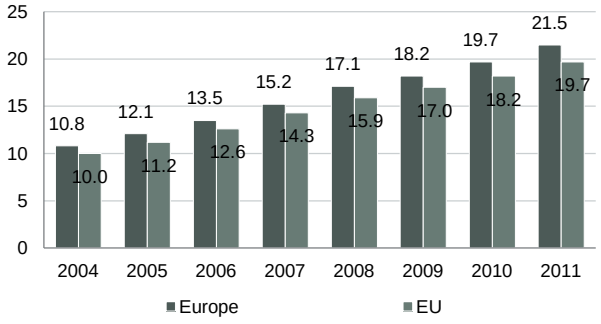
Figure 58: EU trade of agricultural products, EUR, bn



Source: Agriculture in the European Union, Statistical and Economic Information Report 2012

Demand for organic products in Europe is on the rise. In 2004-2011, the European and the EU organic markets almost doubled, reaching EUR 21.5bn and EUR 19.7bn in 2011, respectively. According to the European Commission, various anecdotal evidences and aggregate figures show that increasing demand for organic products has outpaced supply in recent years.

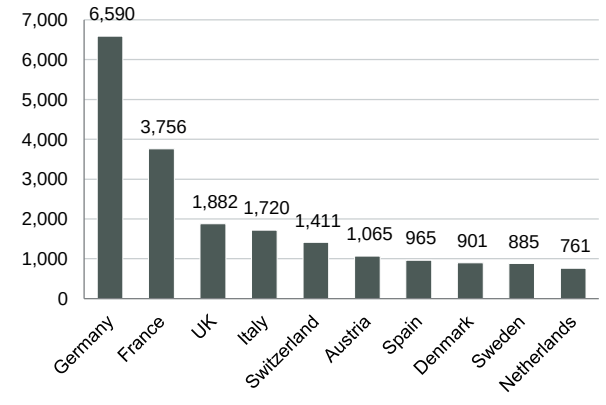
Figure 59: Sales of organic products, EUR bn



Source: FiBL-AMI survey 2013, based on national data sources

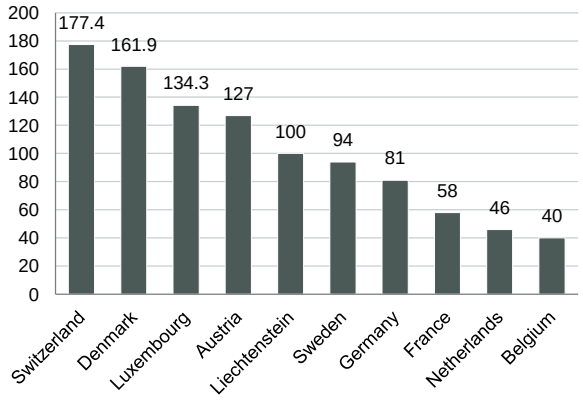
Germany, France and the UK were the largest markets for organic products in 2011. The highest per-capita consumption was in Switzerland, Denmark, and Luxemburg.

Figure 60: Sales of organic food and drink in select European countries, 2011, EUR mn



Source: FiBL-AMI survey 2013, based on national data sources

Figure 61: Annual per-capita consumption in select European countries, 2011, EUR

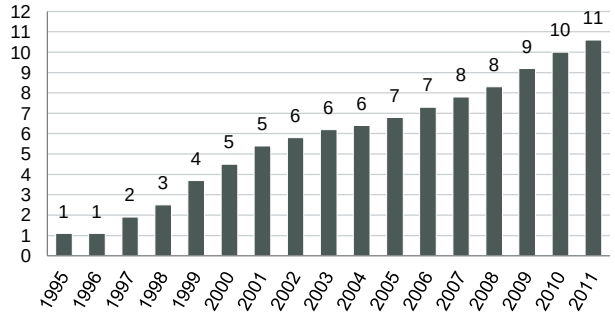


Source: FiBL-AMI survey 2013, based on national data sources

No longer a niche, organic farming is rising rapidly alongside growth in health consciousness, incomes, environmental awareness, interest in animal welfare, and greater accessibility to retail outlets. Global organic food and drink sales grew 6% y/y to US$ 63bn in 2011 and have more than tripled since 1999. As of 2011, the US accounts for 44% of global organic sales, followed by Germany (14%), France (8%), Canada (4%), the UK (4%), Italy (3%), Switzerland (3%), and others (20%).

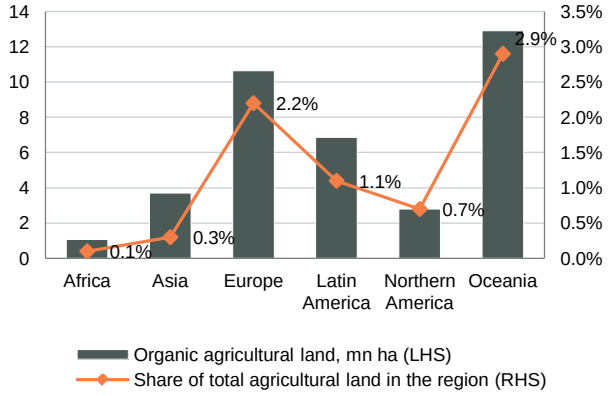
Organic farmland area in Europe increased 6% y/y to 11mn ha (including conversion areas) in 2011, whereas global organic farmland (not all farmland can be used for organic production as the farmland where pesticides were used required substantial treatments to become suitable for organic production) has remained level over 2010 and 2011. Over half of Europe's organic agricultural land is located in Spain, Italy, Germany, France, and the UK.

Figure 62: Growth in organic agro land in Europe, 1988-2011, mn ha



Source: FiBL-AMI survey 2013, based on national data sources

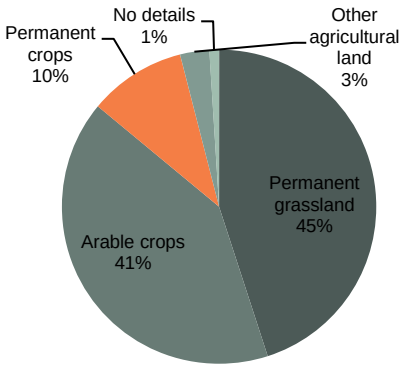
Figure 63: Regional shares of organic agro land, 2011, mn ha



Source: FiBL-AMI survey 2013, based on national data sources

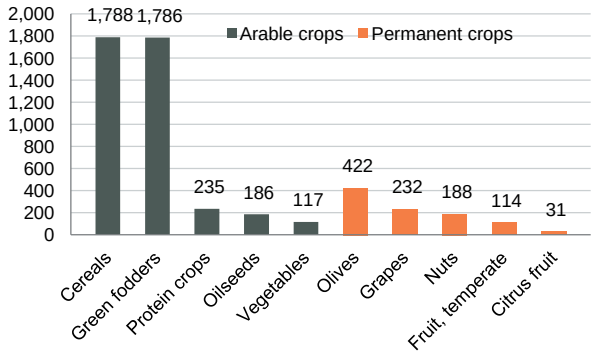
Arable crops and permanent crops account for 51% of Europe's organic agricultural land. Important crops include cereals, green fodders, olives and grapes. Spain, Germany, and the UK have the largest permanent organic grassland. Two-thirds of the EU's permanent crop area is in Italy and Spain, where most of the land is used for growing olives, grapes, and nuts.

Figure 64: Europe: Use of organic agricultural land, 2011



Source: FiBL-AMI survey 2013, based on national data sources

Figure 65: Europe: Key crops, 2011, '000 ha



Note: Organic only
Source: FiBL-AMI survey 2013, based on national data sources

The largest EU organic food markets must be considered when setting up trade with the EU. Germany is the largest market for organic goods in the EU-27. Organic sales increased 9% in 2011 on volume and price growth. Germany also has one of the largest organic agricultural areas with 1mn ha. However, the country imports soybeans, wheat, corn, rice, potatoes, dairy products, meat, and fresh produce in large quantities.

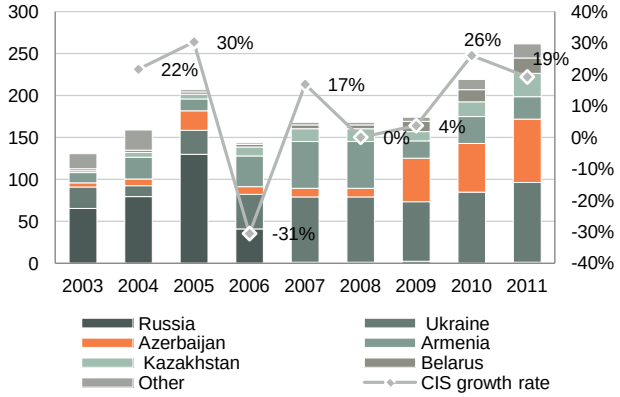
France is the second largest EU market for organics. It also has around 1mn ha of organic agricultural land. France depends on imports of spices, coffee/tea, honey, grains, and fruit and vegetable products. The third and fourth largest markets are Italy and the UK. While Italy grew by up to 10%, the UK organic market shrank 4% in 2011 on a reduction in organic farmland and in the number of producers and processors and as a result of reduced shelf space at major retailers.

Consumers of organic food can be divided into 2 groups. The so-called "regular buyers" are a group of long-term loyal consumers comprised of environmentalists, socially conscious individuals, and others. It accounts for almost half of EU organic sales. Regular buyers tend to buy at organic specialty shops or farmers' markets and prices are typically not factors. The second, larger group, or the so-called "light buyers", is comprised of consumers with no children, older consumers (aged 50-75) and trend-seekers. They buy organic for reasons that include a healthy lifestyle, food safety, animal welfare, sustainability, quality and taste of food, and innovative packaging. They buy at supermarkets and occasionally in specialty shops. The second group holds significant growth potential.

CIS: Trends to Remain

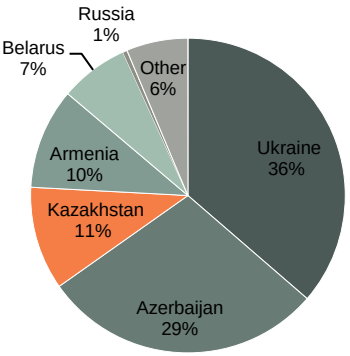
The CIS is a traditional export market for Georgian agricultural products. In 2011, 60% or US$ 261mn worth of agricultural products were exported to CIS markets. In 2005, the year before it embargoed Georgian production, Russia imported over US$ 129mn of agricultural products or 63% of Georgia's CIS agricultural exports and 43% of Georgia's total agricultural exports.

Figure 66: Georgian exports to the CIS, US$ mn



Source: GeoStat

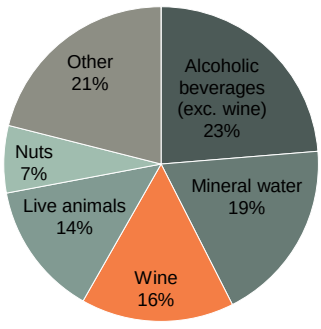
Figure 67: Georgian exports to CIS countries, 2011



Source: GeoStat

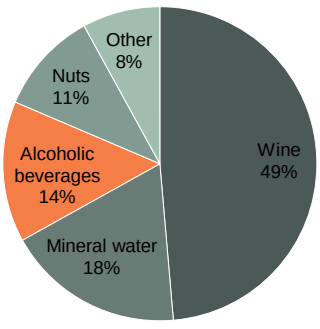
After the embargo, Georgia shifted exports mainly to Ukraine, Azerbaijan, and Armenia. Agricultural exports to other CIS countries (excluding Russia) quadrupled over 2003-2011. Alcoholic beverages and mineral water are Georgia's key traded goods with the CIS, accounting for 58% of Georgia's total exports to the CIS. Georgia trades mainly cattle with Azerbaijan and vegetables, wine, mineral water, and citrus fruits with Ukraine.

Figure 68: Breakdown of Georgian agricultural exports to the CIS, 2011



Source: GeoStat

Figure 69: Breakdown of Georgian exports to Russia, 2005 (pre-embargo)



Source: GeoStat

Growing real incomes are driving increased meat, vegetable, and fruit consumption. The pattern of consumption in the CIS, as seen in the table below, is shifting towards several key products. According to the World Bank, meat and fruit are more income-elastic than cereals. As overall economic conditions have improved and real household incomes have risen, the consumption of most food products, particularly animal products, fruit, and vegetables has grown.

Table 12: Annual per capita CIS food supply, kg

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Meat	13	14	15	16	16	17	18	21	23	23
Cereals	165	166	170	173	176	176	175	174	172	170
Vegetables	97	108	112	124	128	137	147	145	151	158
Fruits	45	40	42	41	43	49	51	51	53	53
Milk	118	120	127	127	124	132	127	124	121	125
Eggs	6	6	7	7	8	8	8	8	8	9

Source: FAOSTAT, BoG Research

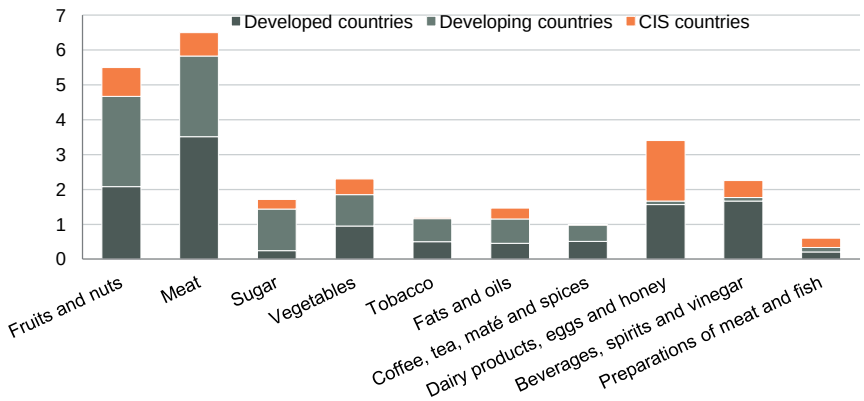
Sticking with traditional trade products and boosting vegetable and fruit exports looks like the right strategy for Georgian trade with the CIS. Consumers on the traditional markets, mainly the CIS, are more familiar with Georgian brands (wine, mineral waters) than EU or US consumers. Georgian wine brands, for example, have enjoyed high awareness and preferences in CIS countries, which provides a good opportunity for export expansion to these markets.

Product mixes in CIS countries differ as a result of varied climatic conditions and histories. Russia, Ukraine, and Belarus are dominated by grains, potatoes, meat, and dairy products. Moldova and Transcaucasia (Armenia, Azerbaijan, and Georgia) have favourable conditions for growing vegetables, fruits, and grains. The main agro-food products in Central Asia include wheat, animal products, cotton, vegetables, and fruits.

Belarus has the highest concentration in trade with the CIS, with over 90% of food exports going to other CIS countries. Armenia, Azerbaijan, and Kazakhstan send over 80% of their food exports to CIS markets, while Georgia, the Kyrgyz Republic, and Moldova are at around 70% of exports. Georgia and Moldova managed in recent years to export a higher share of food products to the EU. As a result of their large populations, Russia and Ukraine have the most diverse trading partners.

Russia is poised to reopen trading, which will partly divert trade volumes from other CIS states. Georgia should aim to grab market share in Russia's fruit and vegetable segment. The structure of Russia's fruit and vegetable, spirits, and vinegar imports are dominated by non-CIS countries. Russia has already made the political decision to reopen the Russian market to Georgian products, but formal agreement has not yet been reached. We believe the market will be formally reopened before the end of 2013. Prior to the embargo in 2005, Russia accounted for 78% of total Georgian wine and 72% of total Georgian mineral water exports.

Figure 70: Russian imports of key agricultural goods and foods in 2010, US$ bn



Source: ICTSD Programme on Agricultural Trade and Sustainable Development, 2012 "Possible Effects of Russia's WTO Accession on Agricultural Trade and Production"

Marine Fishing

Underutilized marine resources and unfulfilled quotas present an opportunity in Georgian marine fishing, particularly anchovies. Georgia has an abundant resource of high quality anchovy – some of the world's most traded fish species, which are used both for human consumption and animal feed products (meal, oil, dried or semi-conserved). Since independence in 1991, Georgia's fishing fleet virtually disappeared, with most vessels sold to Ukraine and or sitting idle due to a lack of parts and fuel.

In the 2000s, anchovy fishing volumes rose as Georgian companies hired Turkish vessels. Licensed Georgian enterprises can hire a fixed number of foreign ships with no size restriction to help catch their yearly quota. Fishing licenses are auctioned for ten year periods (the last auction was in 2006). Recently, the quotas for anchovy fishing have not been fully used. In 2011, Georgian firms fished 26,000t of anchovies, well below the 80,000t quota.

Table 13: Annual exports and imports of fish and fish products, US$ '000, Georgia

	2005	2006	2007	2008	2009	2010	2011	2012
Imports (US$ '000)	11,558	26,869	33,870	38,231	31,220	34,419	42,148	44,456
Exports (US$ '000)	1,004	905	1,949	6,094	4,526	6,547	4,388	2,617
of which exports to Turkey	*na*	*na*	*72.4%*	*48.1%*	*52.6%*	*62.8%*	*62.8%*	*62.9%*

Source: GeoStat, FAO, EI-LAT, BoG Research

Table 14: World anchovy production ('000 tonnes) incl. production in Turkey and Georgia

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total	11,701	13,960	10,566	14,773	14,036	10,866	11,469	11,146	10,493	10,547	10,601
of which Turkey	*9.2%*	*7.1%*	*10.5%*	*6.3%*	*6.3%*	*7.6%*	*7.0%*	*5.9%*	*5.0%*	*4.5%*	*4.2%*
of which Georgia	*0.2%*	*0.2%*	*0.2%*	*0.2%*	*0.2%*	*0.5%*	*0.5%*	*0.3%*	*0.3%*	*0.4%*	*0.2%*

Source: FAO, Globefish, BoG Research

Georgia is a small player in the global anchovy trade, but it benefits from its proximity to Turkey and Southern Europe, which have stable demand for fresh and processed anchovy. Domestic anchovy consumption in Georgia is estimated at only 3,500-5,000t annually. The country only has three operational fish meal factories and most of the fresh anchovy and processed fish meal is exported to Turkey. Turkish anchovy output is in decline due to government efforts to reduce catch stress by not issuing new licenses since 2002. Unfulfilled quotas and stable global anchovy demand present an opportunity to develop the industry for modern types of value-added anchovy products in Georgia.

Agriculture Sector SWOT

Strengths

- Availability of land for privatization
- Affordable land prices
- Limited use of pesticides, favourable for organic agriculture
- Favourable climate and soil conditions for a variety of agricultural products
- Availability and low cost of labour
- Strength in water resources and affordable water prices
- Government and investment support and support from international donors
- Simplified customs regulations, no quantitative restrictions on trade, zero tariffs on majority of goods
- WTO membership and numerous trade agreements
- Ease of starting a business, investor-friendly legal and tax framework
- Relative ease of access to EU markets

Weakness

- High costs of some raw materials and equipment
- Lack of knowledge of modern technologies
- Insufficient mechanization and technical equipment
- Limited access to/high cost of financial resources
- Limited access to agriculture insurance
- Lack of post-harvest treatment technologies including storage and processing
- Highly fragmented land ownership and small size of the market
- High barriers of entry into global and CIS markets

Opportunities

- Increasing productivity for existing products to meet local demand and export
- Adopting new products which are not traditionally used domestically but have good prospects for export
- Diversifying into organic and conventional segments
- Increasing trade to EU and new product opportunities in CIS, DFTA with EU
- Increasing food prices and consumption globally and in the country
- Shift into production of higher value-added products
- Additional privatization of arable land including pastures
- Infrastructure and logistics projects
- Continued government support
- Low current productivity, yields

Threats

- Macroeconomic threats domestically and in export markets
- Increasing input costs, specifically on energy
- Severe climate changes
- Fluctuation of market prices
- Low level of investments into the sector
- Fluctuation of national currency

Appendix 1: EU Regulation

The EU's General System of Preferences supports Georgian exports. Since 1999, Georgia has been a recipient of the EU General System of Preferences (GSP), which has removed custom duties for certain exports. Georgia enjoys duty reductions on 6,200 of 7,100 non-zero tariff lines. Since 2005, Georgia has also benefitted from a second arrangement under the GSP, known as GSP+, which covers an additional 70 tariff lines.

Pending free trade agreement could further deepen trade ties. The EU and Georgia have been negotiating a Deep and Comprehensive Free Trade Agreement (DCFTA) since 2011. Part of the talks involves a common-customs zone of about 500mn consumers. Georgia will need to ensure compliance with specific EU quality and safety standards to complete the agreement. Talks are expected to conclude towards the end of 2014.

Table 15: Select macroeconomic results of EU-Georgia DCFTA

Short run	Impact on Georgia	*Long run*	Impact on Georgia
National income, EUR mn	114.4	National income, EUR mn	291.9
GDP, % change	1.7	GDP, % change	4.3
Consumer prices, % change	-1.0	Consumer prices, % change	-0.6
Wages, less skilled % change	1.5	Wages, less skilled % change	3.6
Wages, more skilled % change	1.5	Wages, more skilled % change	3.6
Total imports, % change	4.4	Total imports, % change	7.5
Total exports, % change	8.9	Total exports, % change	12.4

Note: The difference between the short-run and the long-run lies in the way capital mobility is modelled. In the short-run capital is assumed fixed, while in the long run it is mobile. That implies that with free capital mobility, capital in the long run will move to those sectors with the strongest comparative advantages, leading to highest capital returns. This reinforces comparative advantages in the economy and leads to stronger results. We call this the dynamic investment effect in the long run
Source: Trade Sustainability Impact Assessment in support of negotiations of a DCFTA between the EU and Georgia and the Republic of Moldova, 2012, ECORYS referred to CGE modelling calculations

Studies suggest significant economic benefit for Georgia from the DCFTA. According to European research group Ecorys, the FTA should improve Georgia's trade balance and the relative purchasing power of Georgian citizens.

Table 16: Georgian sector-specific shares of total value added (VA), VA, output, exports and imports (% change, long run)

	Share of Total VA	Value Added	Output	Exports	Imports
Veg, fruits, nuts, oilseeds	5.9	2.7	3.4	21.9	19.1
Other crops	0.4	-2.3	-2.0	3.0	15.1
Animal products	10.0	2.5	3.1	5.7	19.8
Livestock and meat products	1.0	-14.7	-14.8	169.9	17.8
Vegetable oils and fats	0.0	5.4	6.7	6.5	3.4
Sugar	0.2	-2.5	-2.4	-1.5	1.6
Other processed foods	1.1	-6.2	-8.8	14.5	13.0

Source: Trade Sustainability Impact Assessment in support of negotiations of a DCFTA between the EU and Georgia and the Republic of Moldova, 2012, ECORYS referred to shares GTAP, IIDE CGE modelling calculations

Organic products to the EU are not subject to import tariffs. Goods must be accompanied by an organic certificate and an import certificate. There are currently three ways to export organic products to the EU:

1. Being on the EU list of countries with full organic production recognition. The list currently includes Argentina, Australia, Canada, Costa Rica, India, Israel, Switzerland, New Zealand, Japan, Tunisia and the US.
2. An agreement with a specific member state under which the country certifies and imports organic products. This option is being phased out under new legislation.
3. Countries not on the broad EU list must obtain certification for a product from a recognized EU certifier. These products can then be sold as organic in all EU member states.

The new EU organic logo identifies organic products from 2010 onwards. In order to use it, farmers and organic food processors need to follow a set of legal requirements. Organic food processors should:

- Produce goods mostly from ingredients of organic agricultural origin;
- Use non-organic agricultural ingredients only if authorized under the EU organic farming legislation;
- Use just a limited number of additives or processing aids as authorized by the EU organic farming legislation;
- Not use artificial flavorings and colorants nor genetically modified organisms (GMOs);
- Make sure organic and non-organic products are stored, handled and processed separately.

The distribution of organic products varies considerably in EU-27 member states. In the largest markets, full-service supermarkets account for 40-70% of total organic sales.

Organic Farming

Organic farming has a strict inspection system and practices include:

- Methods that minimize pollution of soil, water, and air and contribute to biodiversity and animal welfare;
- Reducing carbon emissions through the reduction of energy use by recycling wastes and by-products and retaining more vegetation;
- Imposing strict limits on chemical synthetic pesticide and synthetic fertilizer use, livestock antibiotics, food additives and processing aids. The use of GMOs is prohibited;
- Choosing plants and animals that are adapted to local conditions and resistant to disease, and employing wide crop rotation practices;
- Raising livestock in free-range, open-air systems and providing them with organic feed;
- Using animal husbandry practices appropriate to different livestock species.

There are significant differences in cost structures between organic and conventional farming. The main differences are in energy, total wages, inputs, overheads and depreciation. According to the UN, organic farms require over 30% more jobs per ha than conventional farms.

Organic farming, in general, is more profitable than conventional farming, based on research published by the UN's Food and Agriculture Organization in 2009. Based on the results of a 30-year study, over a 14 year cycle, organic systems were found to be nearly 3x more profitable than conventional systems as organic goods have high price premiums, resulting in higher incomes.

Table 17: Main differences between conventional and organic farming

Conventional Farming	Organic Farming
Uses GMOs	Prohibits the use of GMOs
Lower wage costs – more reliant on machines and equipment which requires less time and labor	Higher wage costs – more time-consuming and labor intensive, creating more jobs
Higher energy costs, more diesel oil	Lower energy costs, less diesel oil
Relies more on chemical and mechanical procedures	Relies less on chemical and mechanical procedures
Higher overhead costs associated with depreciation and interest charges of machines and equipment	Lower overhead costs associated with depreciation and interest charges of machines and equipment
Input costs are higher on fungicides, insecticides, chemical-based fertilizers and crop protectors, purchased feedstuff and medicines for livestock	Input costs are lower as organic farming spends less on fungicides, insecticides, chemical-based fertilizers and crop protectors, purchased feedstuff and medicines for livestock
Uses chemical synthetic pesticide and synthetic fertilizer	Does not need to use synthetic fertilizers or other chemicals as soil is stronger due to crop rotation
Requires intensive irrigation	Irrigation requirements are greatly reduced as rain water is better retained
Lower market prices	Higher market prices. Certified organic products are usually more expensive than conventional products due to several reasons: organic food demand outpaces supply; production costs for organic foods tend to be higher due to greater labor inputs per unit of output; smaller quantities of organic products results in higher costs due to obligatory segregation of organic and non-organic foods for processing and transportation; costs of marketing and distribution for organic products are higher because of smaller volumes

Source: WTTC, UN's Food and Agriculture Organization

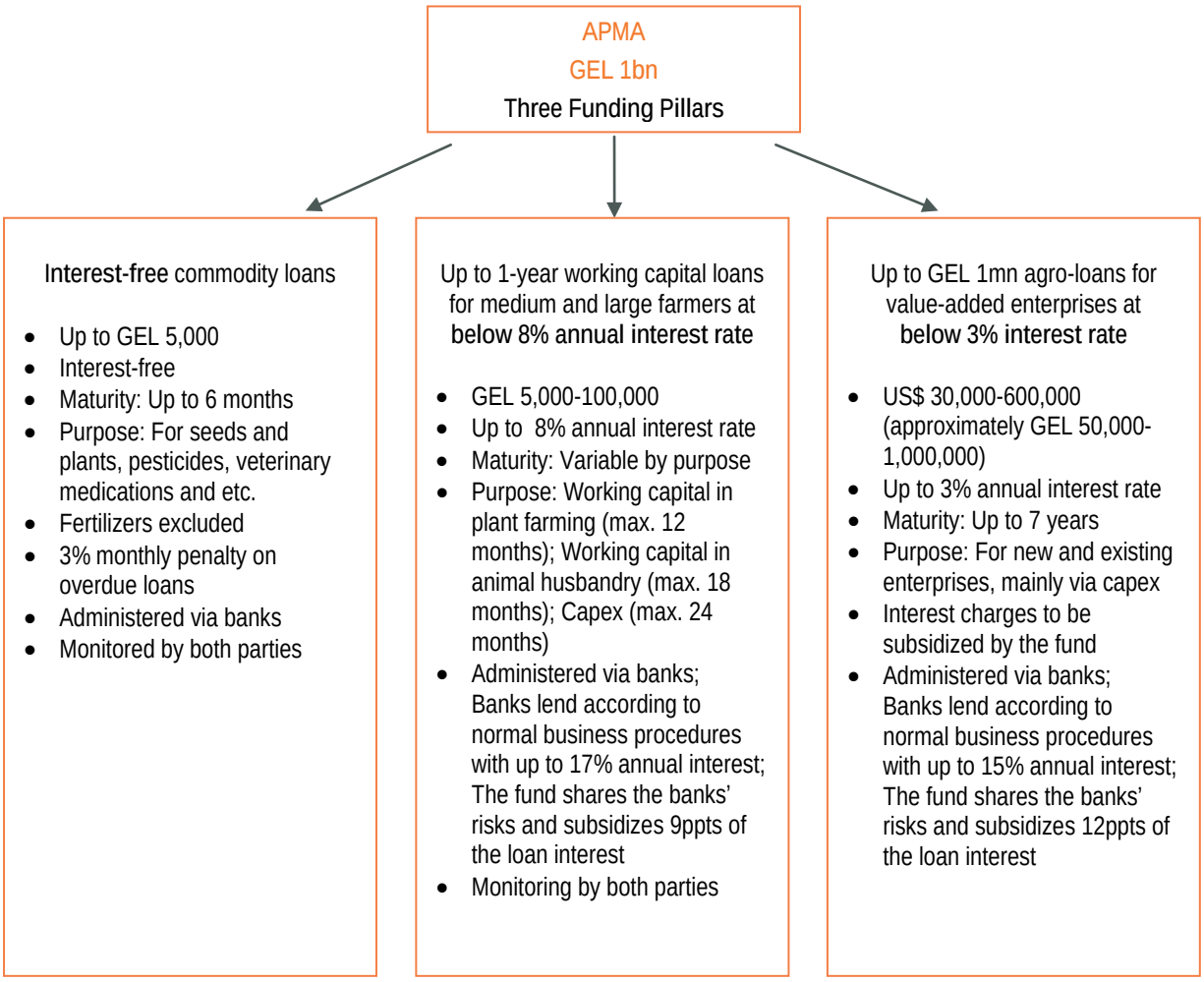
Appendix 2: State Support

The fragmented and SME-heavy nature of Georgia's agriculture sector makes it difficult to use broader financing opportunities. Borrowers in the agriculture sector, especially SMEs, are perceived as risky because of high operational risks and low-quality collateral. Moreover, it is difficult to administer and monitor many small lenders located in remote locations and the cost of capital is high in Georgia. As a result, agriculture loans make up only 1.2% of Georgia's total loan book.

Government support for farmers and the agricultural sector through GEL 1bn agro-loans will also boost the role of banks in agriculture lending, in our view. The state's GEL 1bn (US$ 0.6bn) agriculture fund, officially unveiled earlier this year, should increase bank lending to the sector, increase loan maturities, and promote higher bank participation through risk sharing in lending. Several international financial institutions also provide credit facilities to banks targeting the sector. Trade finance products are also available.

APMA will cooperate with commercial banks to provide long-term low-interest loans, establish support programs for small farmers and agricultural coops, develop rural infrastructure and irrigation and drainage systems, establish agricultural insurance programs, supply additional agricultural machinery, create new agriculture value-added production companies by 2013, and more. APMA is a 100% state-owned, commercial organization that focuses on agricultural development. APMA takes the place of private investors in many infrastructure projects. Some of the initiatives may be privatized in the future once projects are completed and objectives have been met.

Diagram 1: APMA



Appendix 3: Major Products

Table 18: Main agricultural product yields

Yield, kg/ha, 2011	Georgia	Eastern Europe	EU	Western Asia	World
Vegetables fresh nes	25,978	21,430	20,803	15,856	14,249
Watermelons	13,950	11,771	33,286	22,609	29,277
Potatoes	13,559	16,698	32,123	22,911	19,450
Chillies and peppers, green	9,333	14,043	34,832	20,778	15,774
Tomatoes	8,885	22,457	58,176	37,363	33,589
Pears	8,381	7,856	22,132	13,716	14,805
Eggplants (aubergines)	7,517	14,277	27,991	26,845	25,770
Quinces	6,923	7,871	7,463	10,708	8,146
Garlic	6,211	7,785	7,487	8,144	16,717
Onions, dry	6,163	19,416	35,334	24,343	19,898
Cabbage and other brassicas	6,050	28,454	31,522	20,987	29,000
Plums and sloes	5,849	5,842	8,524	10,750	4,552
Peaches and nectarines	5,618	5,319	16,570	14,612	13,708
Tangerines, mandarins, clementine	5,589	0	18,637	21,227	9,170
Fruit fresh, nes	5,316	5,441	6,139	6,392	6,425
Stone fruit, nes	5,052	4,837	4,684	5,597	5,568
Carrots and turnips	4,250	23,447	42,033	25,459	30,110
Cucumbers and gherkins	4,250	20,306	48,496	23,926	31,251
Cherries	3,857	4,726	4,423	7,949	5,886
Apples	3,782	8,883	21,479	14,008	15,867
Cereals, nes	3,057	2,138	3,065	1,680	1,374
Grapes	3,028	5,420	7,551	8,962	9,830
Lemons and limes	3,000	0	16,797	27,769	14,955
Soybeans	2,995	1,762	2,832	3,747	2,533
Berries, nes	2,915	5,101	5,938	7,854	7,339
Corn	2,287	5,426	7,560	5,587	5,185
Nuts, nes	2,079	1,654	1,630	2,792	1,361
Wheat	2,060	2,828	5,364	2,620	3,195
Hazelnuts, with shell	2,006	793	1,693	1,127	1,260
Oranges	2,000	3,333	20,392	23,568	17,232
Barley	1,906	2,539	4,362	1,863	2,763
Rye	1,705	2,183	3,026	2,860	2,532
Strawberries	1,635	5,039	12,596	23,813	18,808
Beans, dry	1,534	1,799	1,683	2,072	796
Walnuts, with shell	1,500	2,836	2,007	1,967	3,534
Buckwheat	1,446	980	1,535	1,446	986
Peas, dry	1,018	1,803	2,032	1,971	1,538
Tea	967	225	3,350	2,833	1,434
Almonds, with shell	963	816	541	2,948	1,271
Oats	959	1,984	2,943	2,489	2,325
Groundnuts, with shell	686	701	863	3,638	1,774
Apricots	607	6,656	8,997	9,127	7,894
Sunflower seed	533	1,616	1,942	1,972	1,543

Source: FAOStat, BoG Research
Note: NES – Not Elsewhere Specified

Table 19: Production and consumption of main agricultural products in Georgia

	Prod, 2010, tonnes	Cons, 2010, tonnes	Difference of consumption over production, tonnes
Meat and Fish			
Beef	63,365	63,380	15
Buffalo	0	5,525	5,525
Pork	25,609	35,438	9,829
Poultry	21,796	61,020	39,224
Sausages	0	5,123	5,123
Canned meat	0	378	378
Frozen fish	na	na	na
Dairy products	609,657	620,391	10,734

Vegetables			
Corn	0	341	341
Onion	19,000	49,043	30,043
Garlic	5,700	6,483	783
Potato	228,800	223,950	-4,850
Processed tomato	0	4,987	4,987
Carrot	5,500	6,779	1,279
Beet	na	na	na
Cabbage	27,100	18,919	-8,181
Broccoli and Cauliflower	0	271	271
Eggplant	11,400	15,273	3,873
Canned peas	80	1,195	1,115
Soybean meal	1,362	na	na
Tomato (greenhouse)	56,000	64,089	8,089
Cucumber (greenhouse)	28,600	32,165	3,565
Tarragon (offseason)	na	na	na
Paprika (offseason)	na	na	na
Sweet paprika (offseason)	na	na	na
Beans	5,800	11,060	5,260
Green beans	0	474	474
Fruit			
Apple	21,100	19,982	-1,118
Fruit Juices	na	na	na
Apricot	800	995	195
Pomegranate	na	na	na
Lemon	2,100	3,276	1,176
Melons	40,900	42,055	1,155
Strawberry	800	856	56
Bananas	0	14,342	14,342
Kiwi	0	566	566
Mandarin	48,600	13,460	-35,140
Peach	6,900	6,729	-171
Pears	13,700	13,903	203
Persimmon	na	na	na
Berries	800	800	0
Cherries	3,000	2,966	-34
Oranges	1,400	6,396	4,996
Hazelnuts	28,800	13,783	-15,017
Walnuts	6,100	6,098	-2
Pheikhoaa	na	na	na
Fats and Oils			
Vegetable Oils and Fats	0	2,681	2,681
Sunflower oil	7,600	48,058	40,458
Sunflower cake	0	1,655	1,655
Corn oil	0	417	417
Grain and Flour			
Wheat	48,400	732,893	684,493
Corn	141,100	146,019	4,919
Barley Malt	0	20,831	20,831
Wheat bran	0	34,674	34,674
Wheat Flour	0	5,556	5,556
Sugar Raw Material	0	75,371	75,371

Note: The data has been calculated by BoG Research as Production-Imports+Exports and does not include other adjustments. Hence the data could be used as approximation only

Source: FAOStat, USAID, BoG Research

Appendix 4: Investment Case

Hypothetical Pomegranate orchard

Assumptions

Loan to Equity ratio	60% / 40%	Cost of Debt	14.0%
Preparation period	2 years	Cost of Equity	20.5%
Area, ha	100	WACC	15.3%
Number of trees	50,000		
Initial investment, US$	1,249,572		

Income statement, US$	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F
Total revenues	0	0	200,324	404,710	613,222	821,867	1,032,662	1,038,023	1,043,416	1,048,843	1,054,303	1,059,797
Revenues from Pomegranates	*0*	*0*	*198,920*	*401,817*	*608,753*	*815,729*	*1,024,760*	*1,029,884*	*1,035,033*	*1,040,209*	*1,045,410*	*1,050,637*
Pomegranate juice revenues	*0*	*0*	*1,404*	*2,893*	*4,469*	*6,137*	*7,902*	*8,139*	*8,383*	*8,635*	*8,894*	*9,160*
y/y change (total revenues)	na	na	na	102.0%	51.5%	34.0%	25.6%	0.5%	0.5%	0.5%	0.5%	0.5%
Fertilizer, water, other input expenses	0	0	76,124	95,188	95,188	95,188	95,188	95,188	95,188	95,188	95,188	95,188
Labor expenses	0	0	32,243	42,535	53,226	64,012	75,110	76,237	77,381	78,541	79,719	80,915
Other expenses	0	0	30,177	34,298	35,520	36,315	37,134	37,979	38,851	39,751	40,679	41,636
EBITDA	0	0	61,779	232,689	429,288	626,352	825,230	828,619	831,997	835,363	838,717	842,058
EBITDA Margin	na	na	30.8%	57.5%	70.0%	76.2%	79.9%	79.8%	79.7%	79.6%	79.6%	79.5%
Depreciation	0	0	53,102	53,102	53,102	54,329	54,329	54,329	54,329	54,329	56,426	56,426
EBIT	0	0	8,677	179,587	376,186	572,023	770,901	774,290	777,668	781,035	782,291	785,632
EBIT Margin	na	na	4.3%	44.4%	61.3%	69.6%	74.7%	74.6%	74.5%	74.5%	74.2%	74.1%

Valuation, US$ '000	2013F	2014F	2015F	2016F	2017F	2018F	2019F	2020F	2021F	2022F	2023F	2024F
Fully taxed EBIT	0	0	7,375	152,649	319,758	486,220	655,266	658,147	661,018	663,879	664,947	667,787
Depreciation	0	0	53,102	53,102	53,102	54,329	54,329	54,329	54,329	54,329	56,426	56,426
Capital expenditures	-1,249,572	-77,984	0	0	-30,661	0	0	0	0	-52,442	0	0
Unlevered FCF	-1,249,572	77,984	60,478	205,751	403,521	540,548	709,595	712,475	715,347	770,650	721,374	724,213
WACC	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%	15.3%
Discount factor	0.91	0.79	0.68	0.59	0.51	0.44	0.39	0.33	0.29	0.25	0.22	0.19
Present value of FCF	-1,133,638	61,339	41,243	121,651	206,852	240,242	273,429	238,025	207,200	193,531	157,063	136,710
Cumulative present value of FCF	743,647											
Terminal Value multiple	4.5 x											
Terminal Value	3,005,041											
Present value of TV	567,263											
NPV	1,310,910											
Project IRR	28.5%											

NPV Sensitivity analysis, US$

Capitalization rate \ Average pomegranate sales price per kg, US$	0.55	0.60	0.65	0.70	0.75
3.5	727,155	956,003	1,184,852	1,413,700	1,642,548
4.0	777,257	1,012,569	1,247,881	1,483,192	1,718,504
4.5	827,359	1,069,135	1,310,910	1,552,685	1,794,460
5.0	877,462	1,125,700	1,373,939	1,622,178	1,870,417
5.5	927,564	1,182,266	1,436,968	1,691,671	1,946,373

NPV Sensitivity analysis, US$

WACC \ Average pomegranate sales price per kg, US$	0.55	0.60	0.65	0.70	0.75
14.3%	967,959	1,227,889	1,487,820	1,747,750	2,007,680
14.8%	896,011	1,146,660	1,397,308	1,647,957	1,898,606
15.3%	827,359	1,069,135	1,310,910	1,552,685	1,794,460
15.8%	761,838	995,127	1,228,415	1,461,704	1,694,992
16.3%	699,289	924,459	1,149,628	1,374,797	1,599,967

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