COMPARATIVE ANALYSIS OF AGRICULTURE IN THE SOUTH CAUCASUS

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LIST OF ABBREVIATIONS

AA	Amelioration Association
ACDI/VOCA	Agricultural Cooperative Development International/Volunteers in Overseas Cooperative Assistance
ACT/EMP	Bureau for Employers' Activities
ACT	Azerbaijan Competitiveness and Trade Project
ADA	Agriculture Department Activity (Georgia)
ADCP	Agricultural Development and Credit Project
ADF	Agriculture Development Fund
AIOJSC	Amelioration and Irrigation Open Joint Stock Company (Azerbaijan)
AMD	Armenian Dram
AMP	Access to Mechanization Project
AP	Action Plan
ArmStat	Armenian Statistical Service of the Republic of Armenia
ASAU	Armenian State Agrarian University
ATC	Agribusiness Teaching Center
ATGF	Armenian Technology Group Foundation
AZN	Azerbaijani Manat
AzStat	State Statistical Committee, Republic of Azerbaijan
BG	Borrower Group
BTC	Baku–Tbilisi–Ceyhan pipeline
CAB International	Centre for Agricultural Bioscience International
CARD	Center for Agribusiness and Rural Development Foundation
CARE	Cooperative for Assistance and Relief Everywhere
CBA	Central Bank of Armenia
CHF	Cooperative Housing Foundation
CIB	Comprehensive Institution Building
CIS	Commonwealth of Independent States
CJST	Closed Joint Stock Company
CNFA	Citizens' Network for Foreign Affairs
CRRC	Caucasus Research Resource Centers
CU	Credit Union
DAWE	Department of Amelioration and Water Economy
DCA	Development and Credit Authority Project
DCFTA	Deep and Comprehensive Free Trade Agreement
DDT	Dichloro-diphenyl-trichloroethane
EaP	EU Eastern Partnership
EBRD	European Bank for Reconstruction and Development
ECA	Europe and Central Asia Region
ENP	European Neighbourhood Policy
ENPI	European Neighbourhood Partnership Instrument
EPI	Economic Prosperity Initiative
EU	European Union
EaP	European Union Eastern Partnership
FAA	Federation of Agricultural Associations (Armenia)
FDI	Foreign Direct Investments
FAO	Food and Agriculture Organization, United Nations
FAOSTAT	Food and Agriculture Organization Statistics
FMD	Foot and Mouth Disease
FREDA	Fund for Rural Economic Development in Armenia
GABA	Ganja Agribusiness Association
GAC	Georgian Agriculture Corporation
GAV	Gross Added Value
GDP	Gross Domestic Product
GEL	Georgian Lari
GeoStat	National Statistics Office of Georgia

GIPA	Georgian Institute of Public Affairs
GIZ	German Society for International Cooperation
GlobalGAP	Global Good Agricultural Practice
GNIA	Georgian National Investment Agency
GoA	Government of Armenia
GSP	Generalized System of Preferences
GWS	Georgian Wines and Spirits
HACCP	Hazard Analysis and Critical Control Points
IAAD	International Association of Agricultural Development
IAMA	International Food and Agribusiness Management Association
ICT	Information and Communications Technology
IDSMIP	Irrigation Distribution System and Management Improvement Project
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
ILCS	Integrated Living Conditions Survey (Armenia)
ILO	International Labor Organization
ILRI	International Livestock Research Institute
IMF	International Monetary Fund
IO	International Organization
IRDP	Integrated Rural Development Project
IRP	Irrigation Rehabilitation Project
ISF	Irrigation Service Fee
JSC	Joint Stock Company
LAI	Law on Amelioration and Irrigation
LLC	Limited Liability Company
LPPP	Lusakert Pedigree Poultry Plant
LTD	Limited Liability Company
MASC	Marz Agricultural Support Center
MCA	Millennium Challenge Armenia
MCC	Millennium Challenge Corporation
MFI	Microfinance Institution
MoAg	Ministry of Agriculture of Georgia
MOM	Management, Operations and Maintenance (Azerbaijan)
MSC	Machinery Service Center
NGO	Non-Governmental Organization
NFA	National Food Agency
NPK	Nitrogen, Phosphorous and Potash (Potassium)
NRI	National Rainfall Index
NSS RA	National Statistical Services, Republic of Armenia
O&M	Operation and Maintenance
OECD	Organization of Economic Co-operation and Development
OME	Operation and Maintenance Enterprise
OSCE	Organization for Security and Co-operation in Europe
OSI	Open Society Institute
PAE	Per Adult Equivalent
PID	Project Information Document
PPP	Purchasing Power Parity
PSA	Production Sharing Agreements
RAC	Rural Advisory Center
RACP	Rural Assets Creation Program
SAIC	State and Amelioration Irrigation Committee
SEUA	State Engineering University, Armenia
SDP	Sustainable Development Program
SIDA	Swedish International Development Cooperation Agency
SME	Small and Medium Enterprises
SMS	Short Message Service
SNCO	State Non-Commercial Organization (Armenia)

SPPRED	State Programme on Poverty Reduction and Economic Development (Azerbaijan)
SPPRSD	State Program on Poverty Reduction and Sustainable Development, Republic of Azerbaijan, 2008-2015
SDC	Swiss Agency for Developmend and Cooperation
SVC	State Veterinary Committee
TACIS	Technical Assistance to the Commonwealth of Independent States
TSA	Targeted Social Assistance
UCO CC	Universal Credit Organization Commercial Cooperative
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
USDA	United States Department of Agriculture
VET	Vocational Education and Training
VFU	Veterinary Field Unit
VAT	Value-Added Tax
WSA	Water Supply Agency
WTO	World Trade Organization
WUCC	Water Users Consumer Cooperative
WUA	Water Users Association
WUAP	Water Users Association Development Support Project
WB	World Bank

CONTENTS

REPORT STRUCTURE

The structure of the attached report reflects the purpose of providing a three-country comparative analysis. Following the metholodogy, the comparative document combines features from the three-country analysis which seem to be illuminating. The emphasis is to compare Armenia and Azerbaijan to Georgia, though the comparisons should be of use to any reader interested in any one of the three countries.

The report provides comparative insights, but also provides detail analysis of each country separately. For more detailed explanations of any of the phenomena described, it is necessary to go to each of the country reports, each of which has an executive summary. In order to simplify the reader's undertaking further comparative analysis of their own, the comparative document, the executive summaries and the country reports are given identical structures.

METHODOLOGY

The present research, conducted between December 2011 and May 2012, provides a cross-regional development analysis of the agricultural sectors in Georgia, Armenia and Azerbaijan. The research was led by GeoWel, a research consultancy based in Tbilisi, under the supervision of lead researcher and author, Dr George Welton, who also oversaw the work of researchers in Armenia and Azerbaijan. The research in Armenia was carried out by lead author Dr. Armen A. Asatryan and, in Azerbaijan, by lead author Dato Jijelava, with the support of Dr. Vugar Babayev, Chairman of the Ganja Agribusiness Association (GABA).

The analysis relies heavily on desk research, combining government data with reports and analyses conducted by a wide range of local and international organizations. This data was reinforced, refined and clarified by extremely wide-ranging discussions with agricultural experts in each of the three countries.

Heavy reliance on government-based statistics brings potential problems and, in all three countries, experts tend to treat government statistics on this sector with varying degrees of suspicion. However, for a macro-analysis that looks at long-term trends, there really is no alternative. It is the belief of the research team that, while some specific numbers may be suspect, long-term trends are revealing. Where possible, the research uses data taken directly from the government statistical services of each country, but in some situations information was taken from the FAO and the World Bank Databank as they often give more detail than the publications of government agencies. The overall context within which to do research is particularly difficult in Azerbaijan, where government approval is required before one can conduct interviews and where data is generally harder to gather. The Ministry of Agriculture, for instance, has yet to disclose official budget figures. An assessment produced by the Open Society Institute (OSI) offers a glimpse of the difficulties in Azerbaijan in trying to assess the efficiency of government spending and the impact of their interventions in the agricultural sector, stating that:

> 'the competent official bodies so far haven't publicized any comprehensive report on major areas of expenditures; the assessment of the efficiency of expenditures […] still the assessment of the Ministry of Agriculture concerning the efficiency of budgetary spending on separate items of agricultural output is not known (to the public). The Ministry also fails to report official data about its activities to the public.' [1]

In order to both confirm and clarify the official data, we analysed existing reports and conducted expert interviews. Close to 100 interviews (50 in Georgia, 30 in Armenia, and 14 in Azerbaijan) were carried out in all three countries - although more extensively in Georgia - with government officials, the donor community, local NGOs and associations, academics, businesses, and financial institutions. Research in Armenia also included interviews with farmers in Aragatsotn, Armavir, Shirak, and Syunik Marzes. A field trip was organized in Azerbaijan, with the help and support of Dr. Vugar Babayev and his team at Ganja Agribusiness Association (GABA), to supplement the existing material with input from academics at the Azerbaijani State Agricultural University, professionals, and members of financial institutions.

1 Javid Khalilov (2011) Azerbaijan's Food Safety in Danger, Open Society Institute Assistance Foundation, p1 **http://www.osi.az/index.php?option=com_content&task=view&id=2228&Itemid=474 (Reviewed April 30, 2012).**

For the comparative section, primary data regarding food prices was also collected by the research teams in open air markets in Tbilisi, Yerevan and Baku. Information about other relevant costs, including energy, irrigation, farm services and agricultural inputs, was also collected by the research teams in all three countries.

The research was strengthened by the huge amount of analysis that has already been carried out in this sector, but a few research projects deserve particular attention. These are, in the case of Georgia, the USAID Value Chain Assessment[2] and the Analytical Foundation's Assessment of Agriculture (Rural Productivity)[3], both published in 2011 under the Economic Prosperity Initiative. Publications concerning Azerbaijan include several World Bank reports, such as the Azerbaijan Agricultural Markets Study (Final Report 2005)[4] and Azerbaijan: Country Economic Memorandum/ A new silk road – export-led diversification (2009)[5], as well as reports by IFAD such as Republic of Azerbaijan: Country Strategic Opportunities Programme (2010)[6]. For our research in Armenia, similar documentation was used, and supplemented by the work of local agricultural experts such as the research by S. Avetisyan (2010) Agriculture and Food processing in Armenia.[7]

2 USAID (2011)- Economic Prosperity Initiative (EPI)- Value Chain Assessment

3 USAID (2011)- Economic Prosperity Initiative-Analytical Foundations Assessment- Agriculture (Rural Productivity)

4 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report)

5 World Bank (2009) *Azerbaijan: Country Economic Memorandum/ A new silk road-export led diversification* (Report No. 44365-AZ)

6 IFAD (2010) *Republic of Azerbaijan:* Country Strategic Opportunities Programme

7 S. Avetisyan (2010) *Agriculture and Food processing in Armenia,* Yerevan

COMPARATIVE DOCUMENT

The case for agriculture in Georgia and the Region

Today, across the region, there is a strong consensus that agricultural development offers a huge investment opportunity and is also essential for development. This is no longer a significant matter of dispute in any of the three countries.

In Georgia, the government, all of the main opposition parties, the international community, development organisations and private businesses all seem to have come to the same conclusion. In Azerbaijan public policy, agricultural development is central to the country's overall economic diversification strategy, while In Armenia, it has been the focal point of the Millenium Challenge Compact and large World Bank projects.

There are four main reasons why agriculture is generally considered to be so important across the region: employment, growth, poverty reduction and food security.

The employment potential of agriculture is probably the most commonly cited reason why it is important. According to official statistics, agriculture is responsible for 53% of the 'employed' workforce in Georgia, 44% in Armenia and 38% in Azerbaijan. Maintaining this sector is therefore essential for maintaining jobs.

In terms of income, rural communities are considerabley poorer in Georgia than urban communities. This is slightly more complicated in Armenia and Azerbaijan but in all three countries the average income for the agriculturally self-employed (who make up the overwhelming majority of the employed) is a lot lower than those employed in urban areas. In Georgia the average income of those self-employed in agriculture (including in-kind consumption) is only around 20% of that of urban salaried workers.[8]

While the solution to urban poverty is, therefore, employment, the solution to rural poverty is either economic diversification or increasing agricultural productivity. As economic diversification in the post-industrial former-soviet rural economies seems extremely difficult in the short-to-medium term, increasing agricultural productivity seems a more likely route to help rural communities out of their poverty.

For growth, the potential for agriculture can be explained in a number of ways. The easiest is to look at its current low level of productivity in the production of key categories of agricultural output.

Figure 1: Productivity per hectare in various countries of the world (in metric tones)

	Wheat	Maize	Potatoes	Tomatoes
Georgia	1	1.4	11	8.4
Armenia	2.1	4.7	17	38.7
Azerbaijan	1.9	4.5	14.5	17
Kenya	3.2	1.6	2.9	29.2
Brazil	2.8	4.4	25.3	60.7
France	7	8.9	39.8	98.3

Source: FAO, Crops production statistics 2010 (reviewed April 25, 2012)

Here we can see that productivity in Georgia is incredibly low, which suggests that it has the highest potential for growth. It may seem odd to see low productivity as an opportunity, but in this case it reflects the massive under-utilisation of fertile agricultural land. There is no physical reason why Georgian agriculture should not be highly productive. It has an abundance of fertile arable land, high levels of rainfall and a huge variety of rare microclimates needed for growing high-value crops. A look at annual rainfall across the three countries shows a clear picture:

8 World Bank (2009). *Georgia Poverty Assessment,* p7

Figure 2: Rainfall comparatives

National Rainfall Index (NRI) (mm/yr)	1998-2002
Armenia	352
Azerbaijan	460
Georgia	1,140

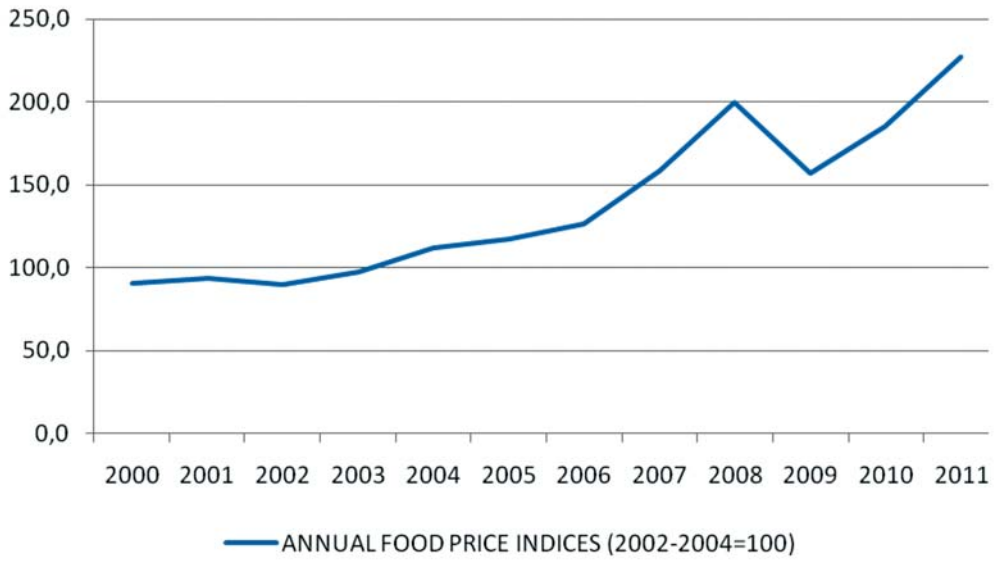
Source: FAO, Aquastat, http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en (Reviewed April 27, 2012)

As can be seen above, Georgia has two to three times more rain than Armenia and Azerbaijan. Apart from these physical characteristics, Georgia also enjoys other potential low-cost inputs, cheap labor for example and energy resources in the form of hydro-electric power and thermal springs. In addition, gas prices, already subsidized, will remain low, particularly as the capacity of the BTC pipeline expands. As a result, we can expect certain kinds of energy intensive agriculture to be particularly interesting in Georgia.

Another part of the 'prospect for growth' explanation of agriculture is connected to shifting world markets, where the last five years have been marked by two major changes in global food prices. First, food prices have risen much faster than general consumer prices. Second, the market has been marked by high levels of volatility. Both of these trends have been exemplified by the staple products' price spikes that occurred globally in 2008 and 2011.

Up to 2008, and before the financial crisis was properly underway, food prices increased dramatically over a 12-month period, with some key categories almost doubling in price. Prices dropped back as the financial crisis cooled the global economy generally, particularly reducing the price of oil - a key input in agricultural production for machinery, fertilizer and transportation. However, in 2010, driven by a drought in Russia and then a Russian grain export ban, the same dramatic increases started to re-appear and prices are now slightly higher than their 2008 peak.

Figure 3: FAO global monthly food price indices[9]



Source: FAO, Food Price Index, http://www.fao.org/worldfoodsituation/wfs-home/foodpricesindex/en/ (Reviewed February 3, 2012)

9 FAO Food Price Index consists of the average of 5 commodity group price indices (Meat, Dairy, Cereals, Oil and Sugar Price Indices) weighted with the average export shares of each of the groups for 2002-2004 - in total 55 commodity quotations considered by FAO commodity specialists as representing the international prices of the food commodities noted are included in the overall index.

Explanations of food crises tend to focus on a combination of short term problems, such as a poor harvest in an important producer country (in 2010 it was Russia), and long-term problems, such as population growth combined with economic growth placing ever-increasing pressure on limited resources like oil, water and land.[10] This pressure is, in many ways, made worse by the prospect of global warming and its consequences. Whatever explanation is offered, there are few who suggest that food prices will come down any time soon and, with the prospect of prices rising further in the future, agriculture appears increasingly to be a good investment.

The reason why all of these factors have not, so far, led to massive investment in Georgian agriculture is probably a function of a number of key hurdles in the Georgian market. In the course of this analysis we will consider many different factors but, for external investors, the difficulties in buying land, uncertainty over how to approach agricultural management and high local interest rates are amongst some of the most important challenges.

Finally, the need to produce locally is sometimes explained in terms of 'food security'. The securitization of the food issue is certainly a key part of the argument that has led to a consensus on the importance of agricultural development. Documents on 'food security policy' have been provided by governments across the world. Food is clearly a security issue, as we need food to live and dramatic increases in food prices can be massively destabilizing to a country, both economically and politically. Local production will not necessarily protect you against rising food prices - farmers are likely to increase prices along with international markets. However, local production might protect against some of the worst excesses of price fluctuations. It will also mean that, when prices still go up, then at least local producers will benefit even if consumers suffer. On the other hand, if there are enough producers, or if the benefits can be redistributed through taxation, this can offer a protection to society as a whole.

History

Georgia's dire agricultural situation since the end of the Soviet system can be broken down into the two decades from 1991 to 2011. The first decade of this period was characterized by dramatic collapse. According to World Bank statistics, Georgia's collapse in the 10 years from 1990-2000 averaged a real contraction of 11% per year. This was the most profound collapse of the region and, at its low point, reduced Georgia's output to around 32% of what it had achieved in the Soviet era. In comparison, Armenia and Azerbaijan saw far smaller levels of collapse. The second decade has been characterized by extremely slow recovery; in the 10 years from 2000-2010 the Georgian agricultural sector has recovered by a total of 6%, an average of 0.6% per year.[11]

This poses two separate questions. The first is: Why was the collapse so severe in the case of Georgia? And the second: Why has the recovery been so slow? Most of the rest of this project will focus on the second question, but here we will briefly consider the first, as it can help to explain many of the problems that came after.

While the dismantling of the agricultural sector can be explained by the collapse of the Soviet system, comparisons with other countries in the region suggest that this is not the whole story. The post Soviet collapse in agricultural productivity was clearly a result of the failure of the Soviet system that all agricultural activity was based on, and the two wars that followed. However, every country in the region experienced the same rupture from the post-Soviet system and Armenia, Azerbaijan, Tajikistan, Russia and Moldova all went through major, ethnically driven conflicts, while no other country in the region (with the possible exception of Tajikistan) fell as far as Georgia.

Why Georgia was so hard hit or, conversely, why other countries were not, is not merely of academic interest, but may rather help to explain why the country has experienced such difficulty in recovering. Three elements were key in Georgia. First, Georgia produced considerably more than the other countries and so had far further to fall. According to the World Bank, in 1990 Georgia was producing roughly twice as much agricultural produce as Azerbaijan and five times as much as Armenia.[12] Given that Georgia has about half as much arable land as Azerbaijan and about twice as much as Armenia, one can conclude that, per hectare of arable land, it was approximately twice as productive as either of these countries.

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10 N, Minot (2008*) Implications of the Food Crisis for Long Term Agricultural Development.* **www.ifpri.org/sites/default/files/publications/minot20080605.pdf** (Reviewed March 13 2012).

11 World Bank (2012). DataBank, Database "World Development Indicators and Global Development Finance"; **http://databank.worldbank.org/ddp/home.do?Step=1&id=4** (Reviewed April 4, 2012)

12 Ibid.

Second, the level of state collapse and lawlessness seems to have been greater, and to have lasted longer, in Georgia than in other places in the region, and was undoubtedly worse than in Armenia and Azerbaijan. This may seem a strange claim given the horrors of the Nagorno-Karabakh crisis but (as will be explained below) there are reasons to think that Georgia's fragmentation was more profound than in the other cases.

A third factor, which is linked to the second, is that, for numerous reasons, it seems that conditions were ripe in Georgia for a high level of 'asset stripping' and a collapse in infrastructure that was not experienced elsewhere. The dismantling of existing infrastructure for scrap has been a particularly long-term and debilitating problem in Georgia and seems to have resulted in a far greater collapse in the irrigation system, electricity supply and availability of farm machinery than happened in the other two countries. In some sectors - in particular in irrigation – this practice has remained stubbornly problematic. Some elements - farm machinery for example - are slowly recovering. Others, including electricity, were recently fixed. But none of the major elements of the infrastructure have improved significantly until relatively recently.

The changing structure of agriculture

Comparing the early post-Soviet period of the three countries may highlight the far greater challenge that Georgia has faced than the other two countries. However, a look at the more recent history of the dynamics of the three countries seems to suggest that Georgia's slow recovery is neither inevitable nor permanent.

Comparing the apparently changing structures of agricultural production in the three countries is tricky. Differences in data collection methodology across the countries can make firm production statistics hard to compare, and in none of the countries are the statistical agencies considered entirely reliable. Nonetheless, the comparison that follows relies on the assumption that official data on the dynamics of output (whether it grows or declines) can offer some insights. In addition, we have taken the precaution of discussing these dynamics with local experts working in the agricultural sector for many years. This was the only available strategy for ensuring that the dynamics 'make sense'.

Agricultural output in the three countries can be broken down into a few major categories: beef and lamb, pork, chicken, grains, vegetables and fruits along with a few key goods which are important in different countries: wine, nuts and live animals in Georgia, cognac and live animals in Armenia and sugar in Azerbaijan.

In the beef and lamb category, production of meat in Georgia has declined and imports of foreign meat have gone up, while at the same time exports of live animals from the country have also gone up. This shift away from meat production for the local market to live animal exports to the foreign market is generally a good thing for Georgian farmers as it enables them to receive more for their cattle and sheep than they would if they were sold locally. At the same time, the imported meat helps to keep local meat prices lower than they would be without it, and so local consumers are not unduly harmed.

In spite of this, the number of cattle has not increased, possibly reflecting limitations on the availability of land for raising cattle and sheep or possibly because farmers are eagerly selling off any increase in production as new-born animals.

In Azerbaijan, beef and mutton have seen average growth rates in productive output (in volume terms) of 7-8% per year in the last 10 years – an increase accounted for by several factors. First, Azerbaijan has a long tradition and culture of meat consumption, and there is a huge internal market demand for meat. Second, the government has provided a significant amount of support to the meat industry in the past decade. And the meat production market has been consolidated into larger commercial farms which import large numbers of live animals from Georgia.

In Armenia, beef production has increased since 2000, at first slowly and in recent years more quickly, though this tendency, in part, reflects the slaughtering of milk cows in response to dropping milk prices since the financial crisis. Sheep production has also grown steadily since 2000, driven by demand from Iran, though the dramatic increase in prices for live animals in 2008/9 did lead to a reduction in the size of herds of 10-20% as farmers over-eagerly sold their existing stock in order to take advantage of the higher prices.

In pork production and pig numbers, Georgia and Armenia experienced the same collapse, following the swine

fever epidemic that began to spread in 2007. As a result, imports of pork and the price of pork have increased significantly. In Armenia this appears to be encouraging the growth of commercial piggeries but in Georgia this does not yet seem to have happened. Pig stocks, without considering commercial piggeries, remain low in both countries as farmers continue to be nervous about re-investing in this sector.

Among the different categories of meat, chicken seems to show the most varied picture. In Georgia, local chicken production has gradually been replaced by imports and Georgian producers have reported that high feed and electricity prices have made it impossible for them to compete with these imports. Azerbaijan, on the other hand, has seen fairly rapid increases in chicken production, reflecting a high level of grain production, a subsequently low grain price and low energy prices. Armenia has also benefitted from a rapid rise in local chicken production which has been helped by large investments in this sector and favorable taxation. In both Armenia and Azerbaijan, this situation has also been helped by a closely protected market.

These conclusions are generally supported by the relative price in the different meat categories.

Figure 4: Price of Beef, Lamb and Chicken in Armenia, Azerbaijan and Georgia[13]

Products	Armenia	Azerbaijan	Georgia
Beef (1 kg)	6.63	9.54	7.33
Sheep (1 kg)	8.92	11.25	6.72
Chicken (1 kg)	4.08	4.45	3.53

Source: GeoWel Research, data collected in the three countries as of March-April 2012

As one can see, meat prices are highest in Azerbaijan and generally lowest in Georgia. The price differences between Azerbaijan and Georgia on beef helps to explain the import/export dynamic in that area and the significantly lower price of chicken in Georgia partially helps to explain why commercial chicken farming does not work in Georgia but does in the other two countries.

Before looking at the dynamics of crop production in the three countries, it is also worth looking at comparative prices there too.

Figure 5: Prices for Commodities in Armenia, Georgia and Azernaijan (USD)

Products	Armenia	Azerbaijan	Georgia
Tomato (1 kg)	3.06	1.27	1.92
Potato (1 kg)	0.51	0.89	0.48
Wheat flour (1 kg)	0.58	0.50	0.77
Cheese (1 kg)	4.67	5.34	4.81
Milk (1 L)	0.76	1.65 (in the regions the price is USD 0.89/liter)	1.14

Source: GeoWel Research, data collected in open-air markets in the three countries as of March-April 2012[14]

As we can see, there are considerable price differences, even in major food categories. The fact that this does not result in more intra-regional trade partially reflects the lack of fluid trade between the three countries.

13 Amounts in USD indicated throughout the document have been obtained using annual average exchange rates for all three currencies according to the three countries' national banks. These rates are to be found in Appendix 1.

14 Using currency rates 1 USD – 1.637 GEL, 0.786 AZN and 392 AMD

In crops, the differences in the production dynamic are similarly marked. In Georgia, potato production increased by about a third in the last four years following 6 years of flat production while tangerine production grew fast five years ago but has not increased in the last five years and watermelons have shown 8-11% annual growth in the last decade. Wheat, maize, grapes, tomato and cabbages have all suffered a steady decline in output. This uneven picture seems to reflect the variable help that is being offered in this area, with tangerines, mandarins and nuts securing substantial commercial investment and potatoes benefiting from support and focus from the international community.

In Azerbaijan, the biggest output growth for crops occurred between the mid-1990s and the mid-2000s, which coincides with the first decade of significant government subsidies and land privatization reforms. During that time, cereals more than doubled to over 2 million tonnes, potato production went up 6 times and vegetables as a whole nearly tripled. A similar pattern can be discerned if one looks at the more detailed production information on vegetables. However, it is hard to assert that this productivity growth is sustainable because, over that time, Azerbaijan was providing massive agricultural subsidies exceeding, in some instances, 15% of production value. For this reason, it is generally difficult to draw too many conclusions from the experiences of Azerbaijan.

In Armenia, the overall changes in production have been positive, but less dramatic. Crop production is extremely hard to analyse because fairly significant swings in year-to-year production levels are usually the result of weather patterns and, particularly, periodic droughts. Nonetheless, from 1995-2010, there were fairly good overall increases in grains (28%), potatoes (13%), vegetables (57%) and grapes (44%) and declines only in berries (12%) and forage crops (40%).

Potato production has been about 35% higher in the last five years than it was in the previous ten years, while vegetable production has been 50% higher in the same period.

Unlike in Azerbaijan, these encouraging figures did not result from large input subsidies and therefore the reason for this increased productivity may offer some insights into strategies that may work in Georgia. These increases are generally attributed to favourable weather conditions, stable levels of demand from processors, the provision of high quality seed imports (with a resulting increase in useage), improved planning due to contract farming, and stabilization in irrigation.

The differences between these three approaches are illuminating in a number of ways and these will be elaborated on later. For now, it is simply worth noting that the changes in Georgia and Armenia were generally market-led (with a certain amount of support from international organizations) and, as a result, the two countries, and particularly Armenia, have seen growth in line with their comparative advantage for fruits and vegetables. In Azerbaijan, which was driven by subsidies for selected industries, the huge shift towards grain production is in opposition, according to the World Bank, to the comparative advantage of the country and, therefore, may not be sustainable when the subsidies come to an end.

Market Access and Competition

Understanding agriculture in the region is impossible without understanding the differences in market access that exist in the different countries. There are essentially three different kinds of market access which affect the agribusiness sector: access to the local market, access to international markets and competition from international markets (ie. the degree of access they have to your market).

The first, access to local markets, can be understood in two ways - in terms of either physical infrastructure or institutional access. All three countries have faced challenges concerning accessibility, because all three are mountainous countries with many villages that are isolated from the larger markets of the country. Georgia has tried to correct this with a massive road-building program. Out of the USD 4.5 billion of post-war assistance, USD 659 million was pledged for road reconstruction, which did not include the road rehabilitation taking place under the municipal development fund. Not only have all of these pledges been fulfilled, but since that time some have even expanded, notably through financing from the Asian Development Bank. As a result, the major roads have improved out of all recognition and minor roads are also beginning to be easily usable.

The other two countries have also undertaken significant road-improvement programs. It remains however that, in all three countries, international organisations routinely complain about the access of rural communities to the center.

Market access can also be understood in institutional terms and, seen in this way, Georgia clearly has an advantage over the other two. According to the World Bank Doing Business report for 2012, Georgia was ranked 9th overall on the ease of doing business, Armenia 32nd, and Azerbaijan 67th out of 185[15] Both Armenia and Azerbaijan are seen to present more challenging environments to do business in and this will certainly raise hurdles for new investors in agriculture.

The second market access issue that is usually considered in economic development settings is access to foreign markets. Georgia and Armenia have a similar range of institutional arrangements, some of which are shared by Azerbaijan, albeit in more restricted versions. All three countries have agreements with former Soviet countries to gain preferential access. Georgia and Armenia (but not Azerbaijan) are members of the WTO and have GSP agreements with the EU and the US and recently they have both formally started negotiations on the EU Deep and Comprehensive Free Trade Agreement. Georgia also has a free trade agreement with Turkey.

However, Georgia and Armenia lose out to Azerbaijan in two other fundamental ways. Georgia cannot access the Russian market, whereas Armenia and Azerbaijan can - although Armenia is restricted, in practice, by its lack of a land border. Armenia is also cut off from the rest of the world by their closed borders with Turkey and Azerbaijan, which basically means that it can only access the Middle East through Iran to the south and Europe and Russia through Georgia to the north.

The final market access issue is the degree to which local goods face international competition. This is often a concern in many countries because of the sense that international markets may be unfair or local markets may need some form of protection in order to compete; this has certainly, until recently, been a concern in Georgia. However, while Georgia does import considerable quantities of food, overall, imports in key categories like tomatoes, potatoes, milk and fruits seem to be declining and are increasingly concentrated in particular times of year when other countries can take advantage of differing seasonality.

Armenia and Azerbaijan are far more protected by the kinds of institutional concern already highlighted. Altogether, these have led Georgia to be classified as a significantly more open environment for trading, as can be seen in the most recent categories of the World Bank *Ease of Doing Trade Across Borders Index* (part of the World Bank *Ease of Doing Business Index).*

Figure 6: Comparison of World Bank Ease of Doing Business Ratings for Trading Across Borders

	Armenia	Azerbaijan	Georgia
Overall rank for trading across borders	104	170	54
Cost to export (USD per container)	1815	2,905	1595
Cost to import (USD per container)	2195	3,405	1715
Documents to export (number)	5	8	4
Documents to import (number)	8	10	4
Time to export (days)	13	38	10
Time to import (days)	18	42	13

Source: World Bank/IFC; Doing Business Report 2012; http://www.doingbusiness.org/~/media/FPDKM/Doing%20Business/Documents/Annual-Reports/English/DB12-FullReport.pdf (Reviewed April 30, 2012)

The changing dynamic of exports across the three countries also seems to reflect the different circumstances they face. From Georgia, there has been growth in fruit, nuts, citrus, wine, spirits and live animals. Wine exports, although having increased significantly recently, have not really recovered in volume terms since the wine export ban to Russia, but the sales of spirits (produced from the production excess of wine grapes) have risen very fast, so that 'wine and spirits' together are now exporting at almost pre-ban levels, at least in

15 World Bank/IFC (2012). Doing Business Report pp79-80, 97.

value terms. Most of the spirits go to Ukraine and most of the wine goes to Ukraine, Kazakhstan, Belarus and Poland.[16]

Armenia and Azerbaijan, even though they have far more difficult import/export environments, have seen increases in agricultural exports, mainly because of their access to the large Russian market. In Azerbaijan, this is heavily focused in particular on sugar, fruit, vegetable oil and tea, with sugar exports, the largest of these, being very heavily subsidised by the state. Armenia has seen massive growth in cognac and upward trends in fruits and vegetables, most recently facilitated by the re-opening of the Georgian/Russian border to Armenian goods (but not to goods from Georgia).

The opportunity presented by live animal exports was encouraged by the decline in live animal exports from Australia over the last ten years and the ban on live animal exports from New Zealand. These changes, combined with rapidly growing populations in the Middle East, have led Middle Eastern live-sheep importers to look to new markets to supply their demand. This has presented a significant opportunity across the region and has certainly increased the income of cattle and sheep farmers by pushing up prices. In turn, this has had the effect of raising the price of local meat as well as the level of imports of beef from abroad.

Land Usage

One of the most interesting comparisons that the project has allowed us to make has been to assess the relative importance of various structural problems that the different countries seem to face. The first thing that this comparative assessment allows us to conclude is that the size of land-plots does not create an insurmountable problem in the agricultural sector. While some sectors have grown significantly and others have failed, the structure of land holdings across all three countries has not changed to any great extent and all three countries continue to be dominated by farming land-plots of less than 1.5 hectares.

Therefore, it is clear that while small land-plots may constitute a hurdle to economic development in the agricultural sector, this hurdle is not insurmountable; a conclusion that is in line with the general analysis of most of the large development organisations working in the region.

That said, in order to encourage external FDI, it is probably necessary to have a system in place which makes it easy for potential investors to find farmers who are looking, or will accept, to sell land. Such a system has not emerged in any of the three countries and, while land privatization has nominally been completed for arable land in each of the three countries, confusion still exists in each country over land ownership. In addition, much of the grazing land, which is often communally owned, is poorly managed and this can lead to inefficiencies in production.

In our analysis of Georgia we also highlight the problems that have been created by an inadequate land registration system, and the particular challenges created by the current attempt to fix the problem with country-wide GIS mapping of land-plots. However, neither of the other countries appears to have solved this problem either and neither seems to have a significant land market.

Irrigation

Water is one of Georgia's greatest natural resources. It has two to three times the water resources of Armenia and Azerbaijan, and this resource is at the centre of many of Georgia's hopes for industries, from the ski industry, mineral water and hydro power stations to, of course, agriculture. Unfortunately, while Georgia has considerable water resources, they do not exist naturally in the right place and at the right time for agricultural production. Most of Georgia's rainfall occurs in winter in the form of snow which melts in the summer months. In addition, while the sub-tropical west of Georgia is prone to flooding, the east is prone to drought. And many parts of the country can be expected to experience a fairly severe drought every three to five years.

In Armenia and Azerbaijan, the situation is made far worse by their lower levels of rainfall in the first place.

16 National Investment Agency of Georgia (2010), *Georgian Wine: Sector Overview* **http://www.tradewithgeorgia.com/upload/file/BEVERAGES-FINAL.pdf** (Reviewed May 10, 2012)

Iirrigation is thus essential to all three countries and serves two purposes. First, even in a good year, it ensures that crops receive more water, in the right place and at the right time, than they would naturally. It can therefore dramatically increase productivity. Second, it can provide security in a bad year. This is important because insecurity, with the possibility of a very bad harvest, is at the heart of Georgia's low-input, low-output model of production.

All three countries have extensive irrigation systems, but in Georgia there is evidence that the system collapsed far more drastically than in the other two countries. This may have happened for several reasons. In addition to evidence that the levels of state collapse and criminality were greater in Georgia, the proximity to Turkey/ the Black Sea may also have made it easier to extract value from parts of the system by theft and immediate sale. However, perhaps most crucially, the irrigation system in Armenia and Azerbaijan did not collapse to the same degree simply because it was even more essential there than in Georgia. As Georgia has a far higher level of rainfall than the other two countries, Georgia's agricultural sector is able to survive, albeit at a markedly diminished level of productivity, even with a significantly weakened irrigation system. The same cannot be said about the other two countries.

The irrigation system in Georgia, which at its height covered almost half a million hectares and which at the fall of the Soviet Union covered 386,000 hectares, currently covers 73-80,000 hectares, about one quarter of the country's cultivated land. This proportion is expected to rise to about one third if the current irrigation expansion planned by the Ministry of Agriculture is successful.

However, there are concerns that the irrigation system will not easily expand under its current structure. Under this system, irrigation is subject to top-down centralised management. All the experts we spoke to outside the government suggested that this would make major rehabilitation of the system difficult for two reasons. First, maintenance of irrigation systems of the type existing in Georgia is far easier with community level involvement. For this reason, the systems in Armenia and Azerbaijan start at the lowest level with local water users associations (WUAs), which work as non-profits organizations rather than as LLCs. Consequently, these associations are far better placed to monitor useage, collect payments and ensure that the system is maintained.

In addition, all of the World Bank projects that have worked to improve irrigation in the three countries have worked closely with communities to develop 'amelioration associations' (AAs) or Water Users Associations (WUAs) as part of the overall strategy. The World Bank blames the failure of their project in Georgia on the failure to develop these associations. Unfortunately, since the WB project was discontinued, there has been no significant change in the way that this problem is approached in Georgia.

It is not the case that AAs have been actively avoided in Georgia. However, the focus on the centralisation and privatisation of the large water maintenance companies has worked to undermine them, by attempting to centralise payment collection and management in large institutions. In addition, the large Ltds have created other biases. As they are for-profit companies, they naturally look for the most reliable revenue streams and, in Georgia, the most reliable revenue stream connected to water-channel and reservoir maintenance are the private hydro-electric dams, not the small irrigation systems. As a result, the Ltds are focused far more on the kind of repair work that is needed to support hydro-power than the small reservoir maintenance needed for small farmers.

The government's response to these problems is to self-consciously focus on the larger farmers. The logic behind this emphasis is that they are far better positioned to raise productivity to western levels and, in so doing, provide opportunities for export promotion and import-substitution-driven growth. In irrigation, this strategy envisages the gradual adoption of far more sophisticated systems than generally exist across most of Georgia. Systems such as drip irrigation, it is believed, could considerably increase the productivity of land and, in demonstrating the value of agricultural production as an investment, this will drive up land prices and encourage a land-market, creating a virtuous circle of investment and market-led reform.

The problem with this strategy is that the scale of agricultural investments in Georgia is not sufficient, in the short to medium term, to bring about a significant change in the structure of land-holding. Therefore, while increasing the availability of high cost and quality irrigation systems may help investment in Georgia, it is not likely to impact in the near future the vast majority of small farmers.

In Azerbaijan, according to the World Bank, around 30% of the available agricultural land - or roughly 1.4 million hectares - is actually irrigated.[17] As this is fairly similar to the total amount of 'cultivated land' (the rest being pasture), this means that most of the cultivated land is irrigated. This is not a significant reduction from 1990 irrigation levels, though some reports suggest that large portions of this irrigated land might be extremely badly deteriorated.[18]

In Armenia, due to recent investment and rehabilitation work, around 130,000 ha are now irrigated. This represents 28% of the country's arable land according to figures of the FAO for 2009 which put the total of arable land at 458,000 hectares.

It appears then that, in Armenia and Azerbaijan, a larger proportion of the irrigable land is actually irrigated than in Georgia, and this is generally considered to be one of the key reasons why agricultural productivity has managed to increase even though land-use overall has stabilised and in Armenia has even receded.

More important than the fact of this achievement is how it has been achieved. In both Armenia and Azerbaijan the successful expansion of irrigation has been due to the repairing of physical infrastructure, but also to a change in the management structure that goes with it. In both instances, the key to making the payment model for irrigation sustainable has been the development and training of local NGOs in managing and maintaining local irrigation systems. In Georgia, the change in policy which effectively undermined this kind of institution is one of the key reasons why collection rates have not improved and the irrigation system has not become more sustainable.

All of that said, in Armenia and Azerbaijan the irrigation systems also benefit significantly from more government support than they have done traditionally in Georgia. Notwithstanding the fact that World Bank reports on the reforms to the systems in both countries suggest that these projects, which focus on rehabilitating local irrigation networks and training water users' associations, are reaching levels of fee collection which are close to making the system self-sufficient, in neither country is the irrigation system as a whole close to being self-sufficient at this time.

If a similar strategy of repair and management re-organisation was implemented in Georgia it would almost certainly require considerable increases in government financing in the short to medium term, at least.

Agricultural Support Services

For an agricultural system to work, it is also necessary that a range of services and inputs are supplied by the market or by the state. If these support services are not provided, or if obstacles to their supply make their provision too expensive, then there is little chance that the agricultural system will develop, since it will never be able to compete with foreign producers who might profit from cheaper inputs. As a preliminary means of assessing input provision in the Caucasus, we compared a range of inputs in terms of price.

17 World Bank (2012). DataBank, Database "World Development Indicators and Global Development Finance"; *Azerbaijan, Agricultural Production and Land Use 2000-2010;* **http://databank.worldbank.org/ddp/home.do?Step=1&id=4** (Reviewed April 4, 2012)

18 IFAD (2010)- Republic of Azerbaijan: Country Strategic Opportunities Programme p1-2

Figure 7: Comparison of input (prices in USD)

	Armenia	Azerbaijan	Georgia
Electricity (kw/h)	0.05-0.08	0.07	0.08-0.1119
Gas (cubic meter)	0.33	0.13	0.31
Diesel (per liter)	1.17	0.57	1.44
Interest rates for farmers	18-22%	6-42%	16-42%
Irrigating one hectare of land (annual)	84-16820	25.4	46
Animal feed Barley (kg)	0.51	0.44-0.51	0.49
Compound feed (kg)	0.321	0.54	0.55
Farm services: plowing the field (price per hectare)	114	41.3	70-9222
Fertilizer Ammonium nitrate (per 50 kg)23	15.3	19-25.5	25.66

Source: GeoWel research, data collected in the three countries as of March-April 2012[19]

The table above provides a comparison of different input prices for Georgia, Armenia and Azerbaijan. At first glance, Georgia appears to be at a competitive disadvantage compared to the other two South Caucasus republics, and especially in comparison with Azerbaijan, since in almost all categories Georgia fairs poorly.

Although less striking, the difference with Armenia is still clear. The price of electricity, diesel, and fertilizer is cheaper in Armenia than in Georgia. Moreover, interest rates offered to farmers are significantly lower and the total share of banks' portfolios dedicated to agriculture is more significant. Although irrigation is more expensive in Armenia than in Georgia, this is not to be taken as an indicator that Georgia is at an advantage. The section below provides a detailed analysis of these findings.

As one can see, electricity prices seem to be similar across the region. Though generally a little higher in Georgia, gas is more or less the same in Armenia and Georgia but much cheaper in Azerbaijan. Diesel is also a little cheaper in Armenia than in Georgia and very much cheaper in Azerbaijan. Clearly, energy intensive farming is distinctly cheaper in Azerbaijan and a little cheaper in Armenia.

As with the irrigation system, the evidence seems to suggest that the machinery stock of the Georgian system was hit harder by the collapse of the soviet system than was the case in the other countries in the region. Again as with irrigation, this may have been facilitated by the easier access to international transport (with borders on the Black Sea and Turkey) that allowed more effective cannibalisation of resources.

The annual cost of irrigating one hectare of land is substantially higher in Armenia than in Azerbaijan and Georgia; it is USD 84-168 in Armenia, USD 25 in Azerbaijan and USD 46 in Georgia. At first glance, this seems like a debilitating factor that might impact Armenia's agriculture.

However, the research suggests that the water management system in Armenia is more advanced and efficient than those in Georgia and Azerbaijan. For instance, practically all of the country's irrigated land is under WUAs and collection rates have increased countrywide. According to the World Bank, the efficiency of the system has made it possible to increase water fees which now stand at AMD 11 (USD 0.028). That is above the full cost-recovery threshold of AMD 10.5 (USD 0.026) estimated by the World Bank.[20]

Higher irrigation water costs then translate into increased revenues for WUAs which in turn enhance their abilities to maintain and repair the system in place. Moreover, as the system is more and more reliable and properly maintained, the incentive is higher for farmers to irrigate their land and pay the fees since irrigation has direct positive effects on both productivity and farmers' potential income. Therefore, the fact that irrigation is more expensive in Armenia cannot necessarily be taken as a weakness but as a potential advantage.

19 Using currency rates 1 USD – 1.637 GEL, 0.786 AZN and 392 AMD

20 World Bank (2009)- Implementation completion and results report: Irrigation Development Project (Report No: ICR00001145)p. 32-33

Today, agricultural support services in Georgia are provided by a complicated array of cross-cutting service delivery organizations that exist to deliver agricultural inputs: development organizations like Mercy Corps, CARE, UNDP, MCC; private companies such as Cartlis and AgroGeo+; and government agencies like the Georgian Agricultural Corporation.

The rebuilding of the stock of agricultural machinery in Georgia has been carried out through many internationally funded projects. However, there seems to be no reliable information on the stock of agricultural machinery in Georgia with which to assess the aggregate impact of these projects. The FAO has data from the first post-Soviet decade but nothing after that for all three countries.

Figure 8: Tractors usage comparison by countries

Countries	Indicators	1992	1997	2002
Armenia	Tractors	14,614	12,700	14,538
Azerbaijan	Tractors	33,200	32,917	30,132
Georgia	Tractors	23,500	12,000	21,860

Source: FAO, FAOSTAT, Agricultural machinery archive; http://faostat.fao.org/site/620/DesktopDefault.aspx?PageID=620#ancor (Reviewed April 27, 2012)

In Georgia, the newest entrant into this market has been the government owned company Meqanizatori. This company charges for the use of its machines and has been expanding rapidly; it now claims to have 30% of the agricultural service provider market, tripling its profits from GEL 1.2 million (USD 673 thsd) in 2010 to GEL 3.6 million (USD 2 million) in 2011.

In Azerbaijan, the current largest provider is 'Agrolizing', a state-owned provider that was funded to the value of AZN 221 million (USD 280 million) from 2005-2009, or USD 56 million a year.

Armenia did not witness a notable drop in levels of farm machinery at the end of the Soviet system and they have largely recovered since. However, as there has been a significant shift from meat production to horticulture during that time, this may still leave substantial under-provided demand. Armenia has been provided with agricultural equipment with grants from a number of different countries including Japan and India. Most of these have been sold at auctions.

The cost for plowing one hectare of land is significantly cheaper in Azerbaijan than in Georgia while it is most expensive in Armenia. While both countries have state-owned companies which provide fee-based services - Meqanizatori in Georgia and Aqrolizinq in Azerbaijan - the amount of investment poured into the sector by the Azerbaijani government has been significantly higher and might explain why the services are much cheaper there. Easing access to farm machinery for farmers has long been an agricultural priority of the Azerbaijani government, as stated in multiple state programs.

Along with equipment, another area of agricultural inputs considered to be problematic in Georgia is the availability of reasonably priced seed, fertilizer and pesticides. The overall picture is that there seems to be easy availability of these inputs as most farmers report being able to buy them. The bigger issues with regard to these inputs are the quality of the product and accessible information about which products to use. To help support the upgrade in quality of these products, the government-owned Georgian Agriculture Corporation has started to provide these resources and the current agricultural development plan calls for further expansion of this service-provision function.

In Azerbaijan, significant steps were taken by the World Bank as part of its Agricultural Development and Credit Project (ADCP) to establish a functioning network capable of providing farmers with extension services and the technical information they needed.

As a result, the whole country is currently covered by these extension service centers. The services are mostly provided through village-based advisors - a total of 216 – who are generally well-known in their areas and farmers

usually give positive feedback on the experience, reporting noticeable increases in their output as a result. However, there are persistent doubts about the sustainability of this model and it seems unlikely that it will be able to make the move to a market basis anytime soon.

The price of the ammonium nitrate fertilizer is USD 15.3 in Armenia and USD 25.66 in Georgia, this difference reflecting government subsidies. While Azerbaijan seems to have prices on a par with Georgia, if one includes their government subsidy, the ultimate price is lower than in Armenia.

In the provision of non-capital inputs like seeds, fertiliser and pesticides, Azerbaijan's focus has clearly been to offer subsidies, usually directed at the production of grains. These subsidies have had the effect of increasing output in the target areas, but it is extremely hard to say if they have created a long-term and sustainable industry, or if the output will simply diminish again when the subsidies come to an end.

In Armenia, improvements in seed provision have been one of the key factors increasing output of arable crops. This has been particularly true in the case of the import of Dutch 'elite' potato seeds and improved grain and vegetable seeds. These have been supported by a number of different government and international organisation programs. Generally speaking, grain seed imports have been subsidised by the state or IOs while potato and vegetable seeds have not.

In Georgia, the provision of veterinary services has, like much of the agricultural sector, been subject to wide-scale privatization so that in its current form the state's role in providing services has been significantly reduced. One concern this has created amongst almost all of the experts that were interviewed for this research, is that this has left Georgia very exposed to potentially very damaging problems with livestock diseases. This, it is argued, like the inadequate irrigation provision, totally undermines efforts to improve the sector as a whole and leaves a risk factor that could undermine growth sectors like live animal exports.

Perhaps most telling, the Georgian government now employs, in a national food agency, 125 vets nationwide and the 2012 agency budget, allocated to 'diagnoses of animal and plant diseases', is GEL 1.2 million (USD 673 thousand).

In Armenia, the system also seems to have serious problems. The state provides a very modest income to a network of vets who are also able to take on private work but who, in exchange for their salary, have to conduct mandatory vaccinations and carry out surveillance. However, the system has been hampered by multiple re-organisations and, as in Georgia, the political nature of disease control means that vets may feel disinclined to report diseases to officials.

In Azerbaijan, although a network of private veterinarians is in place, the provision of veterinary services is monopolized by the state, that carries out free vaccination campaigns against a number of diseases (FMD, brucellosis, mad cow). The private sector, which provides only fee-based services such as artificial insemination, is very weak, underdeveloped and unable to compete with the state apparatus. Its role is marginal since, in the state law on veterinary services, there are many diseases that are strictly under state control and private veterinarians cannot be contracted to work on these diseases.

Therefore, at present, one cannot easily say that any of the three countries have a disease management system that would give one confidence.

The final most common and generic input is finance. Lack of finance is often given as the main reason why farmers are unable to invest in expensive inputs like buying high quality seed, fertiliser or pesticides, paying for animal feed or making use of artificial insemination. Similarly, lack of finance might make it difficult for farmers to forego immediate cash-flow calculations that work to their disadvantage, like selling crops in the middle of the season when the price is lowest, or selling calves when they are weaned, rather than after fattening.

Certainly cash-flow limitations are problematic, but in the modern world, if gains were easy enough to justify, one would expect that farmers would take out loans to support their investment. In Georgia this does not happen very widely, the main reasons being cost and high interest rates.

Both Armenia and Azerbaijan offer state subsidies to some agricultural loans, but whether these discounts get through to the farmers is unclear. The market rates for loans across the region are similar, ranging from 18 to

30% depending on the circumstances. This kind of MFI-type lending can still be useful for short-term cash-flow management, but it is debilitating for long-term capital investments that might cover several years before any cash-flow is generated.

While interest rates in Azerbaijan and Georgia can be extremely high, up to 40% and even above in some financial institutions, interest rates are lower in Armenia, at 18 to 22%. Consequently, the share of Armenia's banking loan portfolio devoted to agriculture was 6.2% in 2009.[21] In comparison, in Georgia it was 1.8% as of August 2011.[22]

That said, the change in the financial environment which has created the greatest opportunity for the farmers is the introduction in Armenia of forward contracts. These have become increasingly widely used in Armenia by certain large exporters, agricultural processors and by the cognac manufacturers. The system has provided higher prices and greater predictability and has allowed and encouraged farmers to put more resources into the development of their production.

Government spending

The Georgian government's spending on the agricultural sector has been erratic over the last 10 years. Aggregate spending of the Ministry of Agriculture rose by 700% from 2000 to its highpoint in 2007, but then fell back by 2/3. At its recent low-point in 2010, spending on agriculture was less than 0.5% of total government spending and was proportionally smaller than at any time since 2000. 2011 saw a revival in spending as the government refocused on agriculture as a priority area and 2012 has seen that increase continue.

In addition, in the same period, and particularly as a result of the 2005 downsizing of government, the government has reduced both staff and responsibilities and, between 2000 and 2007. the staff of the MoAg dropped by 87%.[23]

At least as important as the spending of the Ministry of Agriculture is what the money is spent on. From 2007-2010 the majority of the larger line-items in the Ministry of Agriculture budget were social support of one kind or another, providing hand-outs of flour food and fuel. The village development project and the high mountainous regions projects, which were also run through the Ministry of Agriculture, were not generally agriculture-related either, but instead, were mechanisms for supporting priorities identified by small isolated communities. The main larger agriculture projects conducted by the Ministry of Agriculture in this time were a machinery project in 2007 and an irrigation project in 2009.

Spending has also been erratic. Over the last five years the only areas of consistent support have been grape collection support activities, which basically ensured that grape producers would receive a minimum price for their grapes.

In 2011 and 2012 this pattern has started to shift and the government is now far more proactively involved in supporting particular elements of agricultural infrastructure as well as the agricultural value chain. There are projects to enhance the irrigation system, mechanical equipment provision and land use. There are also projects that focus on wine-making or agricultural business support generally, while the largest single component of the government's expenditure is in the 'intensification of agricultural production'. This includes the showcasing of modern technology using demonstration plots, the rehabilitation of green-houses, the establishment of extension/research/mechanization centers, and the creation of cattle-breeding and poultry-raising farms. And most operational activities of the Ministry of Agriculture are carried out by the Georgian Agriculture Corporation.

The Georgian Agriculture Corporation (GAC), a 100% state-owned for-profit organization, was established in March 2010 in an effort by the MoAg to develop the Georgian agriculture sector and, specifically, to boost commercial agriculture in the country. At the moment, GAC draws its funding strictly from the state budget. However, the government of Georgia has recently created the Agriculture Development Fund (ADF) under the Ministry of Economic Development and the MoAg, which will allow the company to draw funding from different sources: equity funding, joint ventures, grants, and Foreign Direct Investments (FDI). In terms of decision-making, the company operates under decisions made by the board where different ministries are represented.

21 CBA, "The Credits of Commercial Banks", 2005-2009. (See Armenian section document, Section 8.4)

22 USAID (2011)- Analytical Foundations Assessment-Financial Sector Assessment p. 13

23 Ministry of Agriculture (2008), Overview of the Budget of the Ministry of Agriculture 2000-2007. p13

GAC includes five distinct subsidiary companies and most of the agricultural sectors are involved in its activities: demonstration plots, irrigation projects, food processing, mechanization (farm machinery/service centers), grain storages facilities and pilot projects for the production of corn, wheat, blueberries, and potatoes.[24]

GAC's focus on commercial farming (larger farms and run as businesses) blends well with the efforts of GNIA and development projects like the Economic Prosperity Initiative, to attract more direct foreign investment into the sector. FDI has traditionally been sluggish in the agricultural sector in Georgia but it is hoped that the combined efforts of the Ministry of Agriculture and the Ministry of Sustainable Development, through GAC and GNIA, can turn this around by working to facilitate investments and targeting improvements, financial support and demonstrations for potential high-end investors.

The biggest difficulty with this approach, in the short-term, is the risk that small farmers who lack the capital or skills to buy and operate drip irrigation or green-houses will not be ready to use expensive seed varieties or innovate in significantly different crops. Therefore, while they will doubtless benefit from the government's increased focus on agriculture, that benefit will probably be marginal.

The government's objective, it would seem, is to generate a virtuous circle where external investments bring in money and expertise that increase productivity, providing better-paid jobs for those who want to stay in agriculture and pushing up land prices to encourage those who do not want to stay, to sell their land to those who will make productive use of it.

In Armenia, spending by the Ministry of Agriculture has been fairly low, though the government has also spent on agriculture through other means, particularly in rehabilitating the irrigation system. The average annual support expenditures administered by the Ministry of Agriculture in the period of 2004-2008 was just 1.22% of the value of the total agricultural production (excluding infrastructure rehabilitation financing). For instance, in 2010 the total budget of the Ministry of Agriculture stood at AMD 9.2 billion (USD 24.6 million), which was a decrease in spending compared to the previous year when the budget totaled AMD 13.5 billion (USD 36.1 million). This means that, for 2010, the ministry spending was only about 1% of total government spending.[25]

What is noticeable though in looking at the Ministry of Agriculture activities since 2008 is that their priorities have been constant. Two programs in particular have been sustained in recent years and have received the highest level of investment: state assistance to the agricultural land users' program and activities to support the veterinary sector, especially in vaccination of animals.

Since 2007, the Ministry of Agriculture has been directing its state assistance to the agricultural land users' program. What started as a pilot project was extended in 2008 to more than 253 communities and 8 marz.[26] For instance, assistance costing AMD 1.6 billion (USD 5.2 million) was offered in 2008 to cultivate 49,855 hectares while a similar amount was spent in 2009 on the production of cereals on 45,073 hectares.[27]

The ministry continues to support agricultural land users although funding has decreased in importance, standing at roughly AMD 864 million (USD 2.3 million) in 2011. This includes the provision of extension services through the existing network valued at AMD 293 million (USD 787 thsd) which has seen continuous investment since 2008 (rural advising services).[28]

The Armenian government has also made it their priority to invest in the veterinary sector, which constituted the largest budgetary item last year, as well as support to international projects. These include measures to support artificial insemination, animal inoculation, the implementation of veterinary quarantine restrictions, the laboratory diagnosis of animal diseases and animal-origin raw materials, and investment in an "Anti-epidemic and Veterinary Diagnostic Center" SNCO of the Ministry of Agriculture.

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24 GAC projects in Mechanization/MSCs and grain storage are discussed respectively in section 8.1 and 8.4.

25 E-gov.am (2012) *Interactive Budget.* **https://www.e-gov.am/interactive-budget/** (Reviewed April 27, 2012)

26 S. Avetisyan (2010) *Agriculture and Food processing in Armenia,* Yerevan, p130 **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012).

27 Ibid p131

28 The Government of the Republic of Armenia (2012); 2011-2013 Medium-Term Public Expenditure Framework; **http://www.gov.am/files/docs/706.pdf** (Reviewed May 2, 2012)

We may add that, for 2011, the level of investment in the irrigation network surpassed by far the level of investment in agriculture as a whole and stood at AMD 35.3 billion (USD 94.8 million).[29] This is almost four times the overall budget of the Ministry of Agriculture.

In comparison to Georgia, the Armenian government spending appears to have been more structured and less reliant on different kinds of social support measures such as hand outs. In contrast to Georgia and Azerbaijan, Armenia has focused less on the provision or improvement of farm machinery and does not have a state-owned company such as Meqanizatori or Aqrolizinq. Moreover, unlike Azerbaijan, Armenia does not rely heavily on subsidies either.

It is much more difficult to assess government spending in Azerbaijan. For instance, it is extremely difficult to get precise information about the Ministry of Agriculture's budget and how money is spent, and the same restriction applies to the facts and figures of state programs. To date, a detailed agricultural budget, broken down in separate line items is still to be made public.

That said, in Azerbaijan, a range of presidential and ministerial decrees, as well as state programs, include measures that relate to agriculture. The main state programs (the State Program on the Socio-economic Development of Regions, the State Program on Poverty Reduction and Sustainable Development for 2008-2015, and the State Program on Reliable Provision of the Population with Food in the Azerbaijan Republic for 2008-2015) offer generally vague propositions that cover most of the agricultural spectrum in terms of activities, although the focus is usually put on facilitating the supply of inputs through state subsidies and access for farmers to extension services.

What is striking in Azerbaijan's approach has been the reliance on subsidies which have been used as the main tool to stimulate growth. 50% subsidies have been allocated to inputs such as fertilizer, pesticide, oil and diesel. Farmers are exempt from paying taxes apart from land tax (between AZN 7-40 per year (USD 9-51)) while AZN 40 (USD 51) per hectare is donated to the farmer whatever is grown. Other allowances include seed production subsidies (mainly for wheat) and an additional AZN 40 (USD 51) per hectare for those sowing wheat, discount leasing of agricultural equipment and the provision of farm services at cheaper prices by Aqrolizinq, heavy subsidies in irrigation and an agricultural lending system under the State Entrepreneurship Fund with interest rates starting at 6%.

According to official statistics provided by the Ministry of Agriculture, in 2010 alone government funding involved subsidies amounting to AZN 55.5 million (USD 69 million) on fuel and oil, AZN 23.5 million (USD 29 million) on wheat and paddy sowing, AZN 24.5 million (USD 30.5 million) on fertilizers, and AZN 55.5 million (USD 69 million) for the State Entrepreneurship Support Fund. The overall subsidy program has been evaluated to result in an aggregate measure of support which runs as high as 15.5%.[30] It has been a serious impediment in Azerbaijan's accession negotiations with the WTO which requires measures of support of less than 10%.

The biggest concern with this approach is whether it will be sustainable. In Azerbaijan it seems to have created market distortions in favour of wheat production and away from fruits and vegetables, where Azerbaijan probably has a bigger comparative advantage. It has also made it difficult for private service providers to establish themselves, as there is little chance of competing with Aqrolizinq who not only rent and lease farm machinery but supply inputs as well.

International Projects

Given the limited amount of money that is available through government channels for economic development, one of the key avenues for agricultural development over the years in Georgia has been through international organizations. International organizations have helped the agricultural environment in Georgia in several different ways.

29 The Government of the Republic of Armenia (2012); 2011-2013 Medium-Term Public Expenditure Framework; **http://www.gov.am/files/docs/706.pdf** (Reviewed May 2, 2012)

30 World Bank (2011) *Promoting Azerbaijan's Agricultural Productivity 1997-2010* (IEG Working Paper 2011/03). p5 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/04/000333037_20111104011657/Rendered/PDF/653560NWP0Box30anWorkingPaper201103.pdf** (Reviewed May 2, 2012).

A large number of projects have focused on agricultural development directly. These projects work on a wide range of different issues, generally attempting to target weaknesses in the agricultural supply chain and to help fix them. At a production level this involves help with selection, development and training in higher-yield crops and animals and assistance in collective buying of inputs and agricultural services. Programs run and/or financed by the Swiss Development Corporation, CARE International, CHF, Mercy Corps, Millennium Challenge Georgia, USAID, the United Nations and many others, have focused considerable attention on the development of agricultural service centers which offer access to farm machinery, veterinary services and agricultural advice.

There are two main models for international development work in agriculture in the Caucasus. The first, and most common, is 'development' oriented in the broadest sense, which implies that the work is not simply trying to achieve economic growth, but also to ensure that growth explicitly aims to achieve other social goals, so that it works to reduce poverty, promote democracy and civil participation and gender equality and to help ensure the health and security of vulnerable groups. This is generally the model of agricultural development support favored by European donors and UNDP.

An alternative model of agricultural support is to try and help the more self-consciously commercial farms. This model usually also has wider social goals, as it is intended to encourage FDI and ultimately hopes to raise employment. Projects of this kind, while supporting commercial farming, may still therefore focus on labour-intensive commercial farming, but with the aim of helping facilitate rural employment at the same time. However, development projects of this kind generally focus on growth, and assume that a broader form of development will follow. The work of USAID in Georgia has often relied on this approach.

For two major reasons, most development support for the agricultural sector in Armenia and Azerbaijan has taken essentially the same forms. First, all three countries face, to varying degrees, very similar structural problems. Second, major donor organizations are present and implementing programs in all three countries. Therefore, common sense dictates that agriculture projects carried out by the same organization across the region should in nature and scope remain essentially similar.

For these reasons, engaging in a cross-country comparison of international projects that have been, or are, being implemented in the region on the basis of the sectors targeted is not particularly useful. A comparison of the scope of investments, on the other hand, provides insightful benefits.

Although all three countries have benefited from a large number of projects, it is fair to say that Armenia and Azerbaijan have received more investments than Georgia. A major contributor in these two countries has been the World Bank which has provided loans to governments and implemented projects to ensure the provision of extension services, to strengthen the state and private veterinary services, and to improve irrigation networks. This kind of investment in the agricultural sector has not taken shape in Georgia. According to Ahmed Eiweida, World Bank Country Sector Coordinator for Sustainable Development in Georgia, the organization has tried to push for investments in the agricultural sector although it has not implemented the same number of projects.[31]

One sector that clearly sets Armenia and Azerbaijan apart from Georgia is irrigation. First, both countries have received a lot of support to rehabilitate and strengthen their irrigation networks, namely through numerous and consecutive World Bank projects.

Second, most of these projects have been deemed satisfactory by the World Bank and have helped shift the nature of water management from a top down approach to a participatory one. In both instances, they have been able to restructure governmental water management agencies while supporting the creation of a number of water users associations (WAUs).

Third, although far from perfect and differing to some degree, the introduction of a participatory approach and support over the years to water management bodies and associations have allowed both systems to become more functional and self-sustaining. The capacities of WUAs to collect water fees and operate the maintenance and rehabilitation of irrigation channels are also growing.

In sharp contrast, Georgia has seen the implementation of only one major irrigation project by the World Bank and the World Bank's assessment of its own project as a whole was extremely negative. The main reason for the

31 Interview with Ahmed Eiweida (31 May 2012) World Bank Country Sector Coordinator Sustainable Development

failure in sustainability, their assessment argues, is that government policy at the time adopted an overly 'top-down' approach and failed to help build or support the amelioration associations that the original plan had called for. As a result, Georgia's irrigation coverage rate is much lower than its neighbors', the system is still run with a top-down approach and on-farm water delivery is problematic.

Education

It is usually recognized that no part of the Georgian education sector is suited to provide manpower for Georgia's agribusiness sector.[32] Experts agree that, on a day to day basis, organizations and companies for the most part lack the specific knowledge associated with the sector. According to Dmitry Kostarov of AgroGeo+, Georgia has to rely on external experts, visits or seminars which have limited impact because on a daily basis farmers and agricultural organizations do not benefit from such expertise.[33] According to Kostarov, the larger agricultural producers in the country and other agricultural companies continue nonetheless to rely mostly on the use of international experts.

At present, about 5,000 students are enrolled in the Georgian Agricultural University while in any given year approximately 1,000 students graduate from vocational education centers in agricultural subjects. The numbers are even higher in Armenia where there are 4500 full-time and 5800 part-time students. In Azerbaijan, 2937 bachelor students, 120 master students, and 10 PhD students are currently engaged in university studies. [34]

While the number in Azerbaijan is smallest, the university has gone through several reforms and usually such changes are considered to be positive. For example, the rector has been replaced, the university has implemented a number of exchange programs and joined the Bologna Process and numbers are rising.

The problem with the education of agronomists and agricultural specialists is not simply a question of scale, but rather, that the type of education provided does not seem to be well-suited to either extreme of an increasingly polarised agricultural sector. At the commercial end, where capital-intensive farming, using in particular drip irrigation and green-houses, is beginning to take root, the skill sets provided by traditional institutions are not up-to-date or practical enough to serve the market. As a result, the larger commercial farms depend on international expertise.

Of the three countries, this question seems to be least problematic in Armenia; there are continual reports that Armenia, as a result of intensive and focused attention to this issue, is on the whole producing more students who are highly skilled. In Georgia, this has been more of a problem, with large commercial farms forced to bring in international expertise.

At the more typical end of the market - farmers with less than two hectares and often less than one hectare of cultivated land - the skills provided by universities or even VET centers are unlikely to have any impact as the farmers are unlikely to have the time or the money for formal education. Therefore, in this situation the skills and expertise of the agricultural service centers, or commercial input providers, seem to be crucial. In every country, the specialists we spoke to recognised the benefit of these networks but also insisted that more needs to be done.

Cooperatives

Confronted with small land holdings and land fragmentation, a number of analysts have suggested that Georgian agribusinesses can never become efficient until land is consolidated into larger plots. The present research has rejected that analysis, but it is still clear that there are benefits to consolidation. However, such consolidation is unlikely to happen quickly and would almost certainly bring about certain social challenges as subsistence small-holders struggle to make the transition to conventional employment, particularly in urban settings. Another approach would be to encourage more collective action on the part of farmers through the use of cooperatives.

Cooperatives can serve a range of different purposes. They can collaborate to buy inputs less expensively, or to sell goods at a higher price. They can help manage local resources or help maintain infrastructure against

32 USAID- Analytical Foundations Assessment- Agriculture (Rural Productivity) (2011) p43

33 Interview with Dmitry Kostarov (February 10, 2012), Head of Strategic Development Department, AgroGeo+

34 Azerbaijan State Agricultural University, Statistics **http://www.adau.edu.az/view.php?lang=en&menu=21** (Reviewed April 30, 2012)

common threats, from maintaining irrigation channels or flood defences to organising responses to disease. They can also become hubs for communication and education by providing structures through which experience and expertise can be shared.

However, cooperatives have been slow to develop in Georgia. There are roughly 150 farmer cooperatives or associations in Georgia, involving only 5-10% of the total number of farmers in the country, and it is unclear how active even these are.[35] In Armenia and Azerbaijan however, the number of working cooperatives is even smaller.

The two areas where cooperation at a local level seems to have been effective is in water management and in milk collection. In Azerbaijan, the transformation of the Water Users Association from LLCs to NGOs was, according to the World Bank, critical in the success of their amelioration rehabilitation efforts. Collectivisation seems to have helped to facilitate increased collection rates and an improvement in the quality of repairs. In Armenia, their not-for-profit status also seems to have boosted collection rates.

The milk collection centers are more complicated. While a visible growth in dairy output has been partially attributed to the emergence of such centers, it is not clear whether their classification in this way makes a great deal of difference.

The experience of SDC in Armenia suggests that the leveraging of private investments into milk collection centers and running them as private businesses, instead of funding or subsidizing them, might provide a more effective approach. According to SDC, the independent milk collection busineness offered a more "flexible model allowing farmers to sell to buyers who had better terms."[36] Since the investor in question was reliant on milk collection for his livelihood and had contracted a soft loan, this ensured that the business stayed open all year round and worked through difficult times.[37] This was not the case with milk cooperatives and village authorities who were donated equipment in a similar project in Sisian and which shut down in 2009 when milk prices dropped considerably and some buyers were delaying payments to farmers.[38]

35 Interview with Juan Echanove (March 28, 2012), Agriculture Attaché, Delegation of the European Commission to Georgia.

36 David Elliott and Gavin Anderson (2012 draft), *Improving livelihoods through livestock market interventions in rural Armenia: A case study on impact and poverty reduction resulting from the development of livestock farming in rural Armenia,* prepared for the Swiss Agency for Development and Cooperation (SDC), p5

37 Ibid.

38 Ibid.

GEORGIA EXECUTIVE SUMMARY

History

Georgia's dire agricultural collapse since the end of the Soviet system can be broken down into the two decades from 1990 to 2000 and from 2001 to 2010. The first decade of this period was characterized by dramatic collapse. According to World Bank statistics, Georgia's collapse in the 10 years from 1990-2000 averaged a real contraction of 11% per year. This was the most profound collapse of the region and, at its low point, reduced Georgia's output to around 32% of what it had achieved in the Soviet era. In comparison, Armenia and Azerbaijan saw far smaller levels of collapse. The second decade has been characterized by extremely slow recovery; in the 10 years from 2000-2010 the Georgian agricultural sector recovered by a total of 6%, an average of 0.6% a year.[39]

This poses two separate questions. The first is: Why was the collapse so severe in the case of Georgia? And the second: Why has the recovery been so slow? Most of the rest of this project will focus on the second question, with the intention to try and help understand where we go from here. But here we will briefly consider the first, as it can help to explain many of the problems that came after.

In Georgia the post soviet collapse in agricultural productivity was clearly the outcome of the dismantling of the soviet system, upon which all agricultural activity was based, and that of the two wars that followed. However, comparisons with other countries in the region suggest that this is not the whole story. All of the countries of the region experienced the same rupture from the post-Soviet system and Armenia, Azerbaijan, Uzbekistan, Russia and Moldova all experienced major, ethnically driven conflicts. But no other country in the region (with the possible exception of Tajikistan) fell as far as Georgia.

Why Georgia was hit so hard or, conversely, why other countries were not, is not merely of academic interest, but may rather help to explain why the country has experienced such difficulty in recovering. Three elements were key in Georgia. First, Georgia produced considerably more than the other countries and so had far further to fall. According to the World Bank, in 1990 Georgia was producing about twice as much agricultural produce as Azerbaijan and five times as much as Armenia.[40] Given that Georgia has around half as much arable land as Azerbaijan and about twice as much as Armenia, one can conclude that, per hectare of arable land, it was about twice as productive as either of these countries,. Therefore, when the system upon which that productivity depended collapsed, it had far more value to lose.

Second, the level of state collapse and lawlessness was greater, and lasted longer, in Georgia than in other places in the region, and was undoubtedly worse than in Armenia and Azerbaijan. This may seem a controversial claim, but it is easy to justify if one thinks about how long it took to rebuild a reliable power-supply to the country, or if one notes that, until the Rose Revolution, Abkhazia, South Ossetia, Ajara and Svaneti were all outside central government control. The fact that these were all import/export regions exacerbated the practical loss of control. Lastly, and related to the second explanation, for a number of reasons, it would appear that the conditions were ripe in Georgia for a degree of 'asset stripping' and consequently, a collapse in infrastructure, that was not experienced elsewhere.

The dismantling of existing infrastructure for scrap has been a particularly long-term and debilitating problem in Georgia and seems to have resulted in a far greater collapse in the irrigation system, electricity supply and availability of farm machinery than happened elsewhere. Some of this, like irrigation, has remained stubbornly problematic. Some elements - farm machinery for example - are slowly recovering. Others, including electricity, were recently fixed. But none of the major elements of the infrastructure had improved significantly until relatively recently.

39 World Bank (2012). DataBank, Database "World Development Indicators and Global Development Finance"; **http://databank.worldbank.org/ddp/home.do?Step=1&id=4** (Reviewed April 4, 2012)

40 Ibid.

The general structure of agricultural production

The significance of agriculture in the Georgian GDP has shrunk in recent years, from 15% of GDP in 2005 to around 7% in 2010. Over the same period, it has also seen an approximate 2% decline in total aggregate output. However, the overall picture is complicated and makes little sense unless one looks at the specifics., Most of the report will therefore be looking at particular subsectors.

In value terms, Georgia produces about 50/50 crops and meat so any consideration of the sector needs to consider both. In the meat sector there has been a clear division between what has happened in beef and lamb and what has happened in pork and chicken. In beef and lamb, meat production has gone down and imports of foreign meat have gone up, while this has coincided with a rise in exports of live animals. On aggregate it is not clear that the drop in production of beef and lamb is a bad thing as prices generally have gone up; average annual beef prices in Georgia increased from GEL 6.8 (USD 4) per kg in 2007 to GEL 11 (USD 6.5) in 2011. [41] This shift from meat to live animal sales seems to allow Georgia to receive more for its cattle and sheep than it would if they were sold locally, and the ready supply of imported frozen meat means that this increase in demand for live animals does not push up local prices as much.

The declines in the chicken and poultry production, on the other hand, seem to show little that is positive to mitigate concerns. The decline in pork production and its replacement with imported pork seems simply to be the result of the swine fever epidemic that, from 2007, wiped out pig stocks. The resulting increase in the price of pork seems to offer an opportunity for commercial pork production, but with the memory of the destruction and the legitimate concern about the return of the disease, small farmers have been slow to rebuild their pig herds.

The decline in chicken production appears to be the logical result of international competition. The need to import grain and produce chicken pellets locally, combined with relatively high energy costs, means that Georgian producers have not been able to compete with internationally supplied frozen chicken. The declining share of the local market is a reflection of the fact that only a relatively small proportion of the market will pay a premium for chicken that is fresh and locally produced.

It is hard to assess the dynamics of vegetable production over the long term because the statistical methodology for calculating production was changed in 2005/6 and this change made it appear that production had dropped significantly in one year, whereas there is no other evidence to suggest that it did so. However, it does appear that potato production has been increasing, as have tangerines and water melons, while wheat, maize, grapes, tomatoes and cabbages have been declining. This uneven picture seems to reflect the uneven help that is being given in this area, with tangerines, mandarins and nuts securing substantial commercial investment and potatoes gaining support and focus from the international community while the rest, until recently, have been fending for themselves in a competitive international market place.

Exports have been fairly slow, though they have been growing in fruits, nuts, citrous fruits, wine, spirits and live animals. Wine exports have not really recovered in volume terms since the wine export ban to Russia, but sales of spirits (produced from wine grapes bought or subsidized by the government) have gone up very fast so that 'wine and spirits' together are now exporting at almost pre-ban levels, at least in value terms.

In wine, a slightly more detailed breakdown of these exports suggests that, while large producers have probably done quite well out of the Russian ban by diversifying their export markets and increasing standards and prices, the same cannot be said about small and medium producers.

The opportunity presented by live animal exports from Georgia was precipitated by changes in the supply of live animals on the international markets, in particular, by the decline in live animal exports from Australia over the last ten years and the banning of live animal exports from New Zealand. This has presented a significant opportunity and has certainly increased the income of cattle and sheep farmers who, in some instances, may now have the resources to change the nature of their business in order to expand beyond the standard low-input, low-output model.

41 GeoStat (2012), Food Security Information – Food process, **http://geostat.ge/index.php?action=page&p_id=752&lang=eng** (Reviewed May 7, 2012)

Overall, the value of nut exports from Georgia has risen tremendously in recent years, from USD 19 million in 2000 to roughly USD 130 million in 2011 (See Figure 22). A large portion of these exports consist of hazelnuts which have received substantial private investment.

The value of exported fruits (excluding citruses and nuts) has risen in the past decade from USD 456 thousand in 2000 to USD 4.6 million in 2011 (SeeFigure 22). Over the same period, citruses' export value has also grown from USD 2.5 million in 2000 and peaking at USD 15.7 million in 2009. The value of citrus exports then dropped significantly, to USD 12 million in 2010 and USD 5 million in 2011.

Prices of food in Georgia generally have reflected some of the excesses of the international market over the last few years, particularly in staples like wheat and potatoes, though the post-war stimulus package may have limited the drop in prices that occurred globally in 2008. As a result prices have stayed consistently high from 2008 to now.

For meat, however, prices were generally more driven by factors peculiar to Georgia and the region. Pork prices increased dramatically in 2007/8 as a result of swine fever and beef prices increased in 2010 as live animal exports pushed up local prices for cattle. These went up again in 2011 as a result of changes in the rules regulating the slaughtering of cattle, though the short-term dramatic increase in 2011 was almost certainly the result of substantial price-gouging and has now dropped, albeit not back to original levels.

Access to markets and international competition

There are essentially three different kinds of market access which are relevant to the agribusiness sector in Georgia. The first is simply access to local markets, which is determined by transportation costs and the ease in selling goods. Even though Georgia is a relatively small country, many parts of the country have been traditionally cut-off and improving connections between the more isolated rural communities and urban markets is clearly a necessary step to improving the livelihoods of those in the periphery.

This has in fact been facilitated in Georgia through a massive road-building program which began even before the 2008 war but expanded significantly afterwards. Out of the USD 4.5 billion of post-war assistance that was pledged, USD 659 million was allotted to road reconstruction, over and above the road rehabilitation taking place under the municipal development fund. USD 410 million was pledged to renovate the East-West Highway, USD 119 million for a bypass in Adjara, USD 60 million for improving the Varziani-Telavi road and USD 70 million on local roads.[42] Not only have most of these pledges been realized, but they have even been added to with organizations like Asian Development Bank actually expanding their road building commitments.

As a result, most of the main roads have been improved significantly. Clearly the next hurdle is the quality of local roads, which still remain fairly poor, and connecting high mountainous regions like Racha and Svaneti has recently also become a major government priority.

On the question of small producers' ability to sell their products - or rather, to operate in the market place - this research did not consider the degree of ease with which small farmers can sell to market stalls, as there seems to be little research on this subject or data with which to make national claims. However, for larger producers, we can defer to the oft-quoted World Bank Ease of Doing Business Index (2012) which rates Georgia 9th in the World.

The second market access issue that must be considered in economic development settings is access to foreign markets. Georgia has a range of trade agreements that give it preferential access to certain markets, including membership of the WTO, bilateral trade relations with most of the CIS countries, a Free Trade Agreement with Turkey and GSP arrangements with the US and the EU. It has also just started formal negotiations for a Deep and Comprehensive Free Trade Agreement with the EU. This will not only provide access to the EU market, but will also require Georgia to align its economic standards with the EU, on everything from phytosanitary regulations, to competition policy to labor regulations. In exchange for this alignment, the EU will give open access to its market for the sale of most products. However, it seems unlikely that this will lead to a dramatic expansion of agricultural exports to Europe in the short-term as Georgia cannot currently produce on the scale and the quality needed by western supermarkets.

42 George Welton (2009). *The Loan Component of the Post-War Pledge: an Evaluation.* Tbilisi, Open Society Georgia Foundation. p17

Georgian agricultural goods continue to be excluded from Russia, which is historically its largest export market. It is hard to assess the exact impact of this exclusion, because a large proportion of the exports to Russia, prior to the ban, were probably dealt with in the grey economy and exported through South Ossetia. However, as Russia is by far the largest market in the region, is familiar with Georgian brands and does not impose the same quality demands as the EU, a re-opened Russian market would seem to offer considerable opportunity if, despite considerable risks, it were to happen.

The final component of market access that tends to be part of discussions of agriculture in Georgia is the competition that has been created with local products by the highl level of access accorded to foreign goods entering the Georgian market. Since the establishment of a new customs code in 2004/5, the tariffs charged to enter the Georgian market have been reduced dramatically on a range of products and, added to the free trade area with Turkey, concerns are often expressed that Georgia is unable to compete in this kind of open global market place.

Indeed, there has been dramatic expansion in imports in a range of different goods, including agricultural goods. However, in key areas like vegetables, imports seem to be declining, and in fruits and vegetables generally there is a very high level of seasonality, which seems to suggest that modest improvements in greenhouses or in storage could lead to a large amount of import substitution.

Land Holding and Irrigation

In Georgia, as with the other countries of the region, the agricultural market is dominated by small farmers., Land holdings In Georgia average about 1.25 hectares and this is usually spread over several plots, generating the twin problems of size and fragmentation. This has often been blamed as the main reason why the Georgian market is not viable. However, I think that one clear finding of this comparative analysis is that consolidation is not an insurmountable hurdle.

Arable land in Georgia is now very largely privatized, though much of the grazing land is still community owned by municipalities and 'managed' by villages. The communally-owned grazing land definitely creates problems with under-management and, particularly, overgrazing. This contributes to commonly commented-upon problems in the animal sector, like low milk yields and slow weight gain. Communal grazing also makes disease control more difficult.

For the development of a commercial agriculture market and to encourage commercial agricultural investment one of the most pressing problems today is land registration. After several rounds of land privatisation and with a country organised by a patchwork of individual, government and village owned and run land, there is often confusion over who owns what. As a result, even when land is privatised by the government, new buyers can arrive to find that there is disagreement over land-ownership.

In an attempt to fix this, the government initiated a system where land needs to be registered on a cadastral map before it can be considered effectively owned by an individual. However, people have been slow to register their land in this way because the registration process is extremely expensive and, once registered, their land becomes subject to land tax. As a result, instead of solving the land issue, the cadastral registry problem is currently creating even more confusion and, as a result, potential investors routinely complain that they are unable to find land to buy and farmers trying to sell land might not find it easy to do so.

Irrigation

While the structure of land-holdings appears to be roughly the same in Georgia as in Armenia and Azerbaijan, the irrigation situation in Georgia is quite different.

All three countries have extensive irrigation systems, but in Georgia there is evidence that the Soviet era system collapsed to a far greater extent than in the other two countries. There are several reasons why this may have happened; in addition to evidence that there was a higher level of state collapse and criminal state capture, the proximity to Turkey/the Black Sea may also have made it easier to steal any valuable parts of the system. However, perhaps most crucially, the irrigation systems in Armenia and Azerbaijan collapsed to a lesser degree

than in Georgia simply because the Georgian system was not quite so essential. As Georgia has a far higher level of rainfall than the other two countries, Georgia's agricultural sector is able to survive, albeit at a much diminished level of productivity. The same cannot be said of the other two.

The irrigation system in Georgia, which at its height covered almost half a million hectares, and which at the fall of the Soviet Union covered 386,000 hectares, currently covers only 73-80,000 hectares – about one quarter of the country's cultivated land. This will go up to around one third if the current irrigation expansion planned by the Ministry of Agriculture is successful.

However, there are concerns that the irrigation system will not easily expand under the current structure. The current irrigation system is subject to centralized top-down management and all the experts we spoke to outside of the government suggested that this would make major rehabilitation of the system difficult. The main reason is that maintenance of irrigation systems of the type used in Georgia is far easier with community level involvement. This is why, in Armenia and Azerbaijan, irrigation systems start at the lowest level, with local amelioration associations (AAs). These associations are important because they are far better placed to monitor usage, collect payment and ensure that the system is maintained.

In addition, all the World Bank projects with the aim of improving irrigation in the three countries have worked closely to develop AAs as part of the overall strategy. And the World Bank blames the failure of their project in Georgia on their lack of success in developing such associations. Unfortunately, since the WB project was tied up, there has been no significant change in the way in which this problem is approached in Georgia.

It is not the case that Amelioration Associations have been actively avoided in Georgia. However, the focus on the centralisation and privatisation of the large water maintenance companies has worked to undermine them, by attempting to centralise payment collection and management. In addition, the large Ltds have created other biases. As they are for-profit companies, they look for the most reliable revenue streams and, in Georgia, the most reliable revenue stream connected to water-channel and reservoir maintenance is the private hydro-electric dams and not the small irrigation systems. As a result, the Ltds are likely to focus far more on the kind of repair work that is needed to support hydro-power than the small reservoir maintenance needed for small farmers.

The government's response to these problems is to self-consciously focus on the bigger farmers. The logic behind this emphasis is that big farmers are far better positioned to increase productivity at western levels, and in so doing to provide an opportunity for export promotion and for growth driven by import-substitution. In irrigation, this strategy envisages the gradual adoption of far more sophisticated systems than generally exist at present across most of Georgia. Systems like drip irrigation, it is believed, will vastly increase the productivity of land and this demonstration of the value of agricultural production as an investment will drive up land prices and encourage a land-market, thereby creating a virtuous circle of investment and market-led reform.

The problem with this strategy is that the size of agricultural investments in Georgia is insufficient, in the short to medium term, to change significantly the overall structure of land-holding. Therefore, while increasing the availability of high-cost quality irrigation systems may help investment in Georgia, this is unlikely to have an impact on the vast majority of small farmers in the near future..

Agricultural support services

Understanding the successes or failures of the agricultural sector in Georgia entails examining the range of support services on which the sector depends. In the report, therefore, we look at the degree of availability of farm machinery, veterinary care, seed provision, fertilizers, pesticides and storage.

For all these different categories of inputs/support, the biggest hurdle is the fragility of a system that discourages expenditure on inputs and perpetuates the low-input and low-output model. Inevitably, the lack of cash-flow and overly expensive financing create obstacles to any agricultural investments - buying high quality seed, fertiliser or pesticides, paying for animal feed or artificial insemination. However, an equally important obstacle seems to be the concern that any investment might be destroyed in unavoidable circumstances. For crops, the biggest risk factor is the yearly fluctuations in the amount of available water; they may be killed off by a drought or a flood. For animals, the risk factor is disease.

Unfortunately, the only effective means of protection against these risks are irrigation and national veterinary management, both of which have been allowed to slip in Georgia.

On top of this, there are features of each input worth considering. With regard to the irrigation system, the evidence seems to suggest that the machinery stock of the Georgian system was hit harder by the collapse of the Soviet system than that of other countries in the region. This may have been facilitated by the more ready access to international transport (with borders on the Black Sea and Turkey) that allowed more efficient cannibalisation of resources.

Today, agricultural support services are provided by a complicated array of cross-cutting service delivery organizations that provide agricultural inputs: development organizations like Mercy Corps, CARE, UNDP, MCC, private companies such as Cartlis and AgroGeo+ and government agencies like the Georgian Agricultural Corporation.

Generally, in machinery provision, the Millennium Challenge Georgia as well as the USAID Access to Mechanisation projects have supported the creation of mechanisation service centers. The Georgian government, which has been providing agricultural equipment under a range of different projects, has also started to rapidly expand the network through which it supplies equipment. The Ministry of Agriculture and the Ministry of Economic and Sustainable Development set up the Meqanizatori company in 2009. This organisation now claims to have 30% of the agricultural service provider market, tripling its profits from GEL 1.2 million (USD 673 thsd) in 2010 to GEL 3.6 million (USD 2.1 million) in 2011.

Along with equipment, another area of agricultural inputs considered to be problematic in Georgia is the availability of reasonably priced seed, fertilizer and pesticides. There seems to be plenty of general availability of these inputs as most farmers report being able to buy them. But the bigger issue with these inputs is that of quality and knowledge. While seed, fertilisers and pesticides are available, there have historically been serious problems over quality because the the most commonly used products are cheap and potentially degraded, while falsification of products also continues to be a problem. To help support an upgrade in the quality of these products, the government owned Georgian Agricultural Corporation has started to provide these resources.

Related to this, the second problem is one of education. Most ‘farmers’ are not farming out of choice and have little or no training in farming practices and so may not be aware of the benefit of using one product rather than another. Even if they do know the benefits of high quality products, they may not know how to correctly use the product in order to achieve them. For example, while farmers may be aware that they need ‘a fertiliser’, they may not know which kind they need and how to use it. As a result, while the use of high quality products might have considerable benefits, these benefits may go unrealised in most cases.

The provision of veterinary services has – as with much of the agricultural sector - been subject to wide-scale privatization so that, in its current form, the state’s role in providing services has been significantly reduced. One concern this has raised amongst almost all the experts that were interviewed for this research is that this has left Georgia considerably exposed to potentially very damaging problems with animal disease. As with poor irrigation provision, it is argued that this totally undermines efforts to improve the sector as a whole and gives rise to a risk factor that could undermine growth sectors such as live animal exports.

In an effort to reduce costs, and in line with their broader philosophy for the economy, the 2005 reforms in the veterinary sector shifted a lot of the responsibility for disease prevention, detection and cure onto the private sector. And the scale of this privatization is now perhaps best observed in the very limited involvement of the government in this area. The government now employs 125 vets nationwide and the budget of the national food agency (responsible for the vets), which is allocated to ‘diagnoses of animal and plant diseases’, is GEL 1.2 million (USD 725 thsd) a year for the entire country.

The reliance on private vets for monitoring, prevention and treatment of animal disease creates different kinds of problems. One problem is that, while treatment of individual diseases may be effectively provided by individual vets, national monitoring and national disease treatment plans require a different kind of infrastructure and that infrastructure probably needs to be publically financed. For example, diseases such as swine fever, brucellosis and foot and mouth disease require government vets who can identify the disease and who have powers to quarantine farms and destroy affected animals, backed by a government that will provide compensation when that happens.

The second problem with the current system of veterinary provision is whether it can even provide good private care in a sustainable fashion. With an ageing population of vets, who are not used to working in private practice and who, since 2011, no longer need accreditation in order to work as vets, the quality of service is hard to judge.

Exacerbating these problems with veterinary service provision is the fact that Georgian farmers generally have a fairly poor understanding of animal health issues. Most have no education in the area and lack reliable sources. As a result they are unable alone to make basic assessments about healthy animal rearing practices. Worse perhaps, lacking this skill-set, their handling of animals and their management of herds may exacerbate the problems of animal disease in Georgia.

The difficulties in the veterinary sector can be at least partially blamed for the numerous diseases - swine fever particularly - that have debilitated different parts of the meat production sector in recent years. Added to which, the continuous uncertainty with regard to animal diseases inevitably creates security concerns which undermine the likelihood of investment and quick restocking.

The low productivity in the sector, however, is more clearly explained by feeding practices. In particular, the lack of professional land management for grazing, it is commonly accepted, has resulted in a classic 'tragedy of the commons' where communally-held land is over-grazed because the aggregate of individually rational decisions about how to graze your animals, results in grazing patterns which are sub-optimal for everyone. As a result animals have too little access to good grazing for fattening or high milk yield, unless they move to mountainous pastures in the summer.

In addition to this is the problem of feed availability and utilisation. Generally speaking, farmers give their animals very little by way of high quality feed, preferring to rely on free, or extremely cheap, grazing and hay in the winter. This not only leads to low milk yields, but it makes competitive meat production extremely difficult. As in almost all of the analysis that has gone before, this is partially a problem of demand and partially one of supply. Demand for animal feed is low because of insufficient financial resources and an extremely risk-averse attitude to agricultural investment. But this is exacerbated because little high-grade animal feed is produced locally and so farmers have to rely on expensive imports.

Storage is another area of apparent under-provision. Grain storage facilities in Georgia are currently in the process of being reconstructed, with the support of the Georgian Agriculture Corporation among others. And in many areas, such as potatoes and cheese, storage may be a means of overcoming seasonality concerns and allowing farmers to sell their products off-season when prices are higher.

The final, and most general, input is finance. Farmers face severe and unpredictable cash-flow limitations. But in the modern world, if they were able to make large, clear financial gains, we would expect farmers to take out loans to support investments, or at least have the possibility of deferring the sale of their products until the best return could be achieved. In Georgia, for many reasons, this does not happen. The most obvious explanation is the cost of the loan. At between 20% and 40% annual interest, there is no doubt that the high cost of financing is debilitating for some sections of the agricultural sector.

However, the cost of financing doesn't have to be the crucial issue; it depends on the type of loan. For long-term loans, 30% financing is likely to undermine the profitability of most projects but for short-term loans, even if interest rates are high, the cost of the loan may be quite low. Even at 30%, borrowing GEL 500 (USD 302) for 6 months only costs GEL 150 (USD 91), ie. GEL 25 (USD 15) per month. This may be a reasonable price to pay to defer sale of an asset until the off-season or to pay for a much needed input in advance of a harvest, particularly as the differences in productivity or return are often large.

Instead, the two key problems seem to be basic supply and demand. First, in terms of supply, there is an impression in the sector that small credit organizations currently cover only a small proportion of the country so there is under-utilised demand. Second, many farmers who might benefit only from loans are not demanding them because of the insecurity of the agricultural sector. Farmers are generally not investing in their production, not because of lack of access to capital, but because of the fact that they are highly risk averse and, presented with considerable uncertainty, don't like to take on debt. Therefore, while efforts need to be made to reduce the cost of borrowing, this is unlikely to greatly improve the security of the farmers and their inclination towards investment as long as their exposure to a total loss of crops or animals remains high.

Government spending

Government spending on the agricultural sector has been erratic over the last 10 years. Aggregate spending of the Ministry of Agriculture went up by almost 700% from 2000 to its high point in 2007, but then fell back by two thirds. At its recent low-point in 2010, spending on agriculture was less than 0.5% of total government spending and was proportionally smaller than at any time since 2000. 2011 saw a revival in spending as the government refocused on agriculture as a priority area and 2012 has seen that increase continue.

In addition, in the same period, and particularly as a result of the 2005 downsizing of government, the government has reduced both its staff and its responsibilities. Between 2000 and 2007, the staff of the MoAg dropped by 87%.[43]

At least as important as the spending of the Ministry of Agriculture is what the money is spent on. From 2007-2010, the majority of the large line-items in the Ministry of Agriculture budget were social support of one kind or another, providing hand-outs of food and fuel. The village development project and the high mountainous regions projects, which were also run through the Ministry of Agriculture, were not generally agriculture-related either, but instead, were mechanisms for supporting development priorities identified by small isolated communities. The main large agriculture projects conducted by the Ministry of Agriculture in this time were a machinery project in 2007 and an irrigation project in 2009.

Spending has also been erratic. Over the last five years the only areas of consistent support have been grape collection support activities, which basically ensured that grape producers would get a minimum price for their grapes.

In 2011 and 2012, this pattern has started to shift and the government is now far more proactively involved in supporting specific elements of agricultural infrastructure as well as the agricultural value chain. There are for example projects to improve the irrigation system, mechanical equipment provision and land use. There are also projects that focus on wine-making or agricultural business support generally. One of the largest components of the government's expenditure targets 'the intensification of agricultural production'. This includes the showcasing of modern technology with the use of demonstration plots, the rehabilitation of green-houses, establishing extension/research/mechanization centers, and the creation of cattle-breeding and poultry-raising farms. Most of which operational activities of the Ministry of Agriculture are carried out by the Georgian Agriculture Corporation.

The Georgian Agriculture Corporation (GAC), a 100% state-owned for-profit organization, was established in March 2010, in an effort by the MoAg to develop the Georgian agriculture sector and in particular to boost commercial agriculture in the country. At the moment, GAC draws its funding solely from the state budget. However, the Georgian government has recently created the Agriculture Development Fund (ADF) under the Ministry of Economic Development and the MoAg and this will allow the company to draw funding from different sources: equity funding, joint ventures, grants, and Foreign Direct Investments (FDI). In terms of decision-making, the company operates under decisions made by the board, on which different ministries are represented.

GAC regroups five distinct subsidiary companies and covers most of the agricultural sectors through its activity: demonstration plots, irrigation projects, food processing, mechanization (farm machinery/service centers), grain storage facilities and pilot projects for corn, wheat, blueberries, and potatoes.[44]

GAC's focus on commercial farming (larger farms, run as businesses) fits in well with the efforts of GNIA and development projects like the Economic Prosperity Initiative, to attract more direct foreign investment into the sector. FDI has traditionally been sluggish in the agricultural sector in Georgia but it is hoped that the combined efforts of the Ministry of Agriculture and the Ministry of Sustainable Development, through GAC and GNIA, can turn this around by working to facilitate investments and targeting improvements, financial support and demonstrations aimed at potential high-end investors.

The government's objective, it would seem, is to generate a virtuous circle where external investments bring in money and expertise that increase productivity, providing better-paid jobs for those who want to stay in agriculture and pushing up land prices to encourage those who do not want to stay to sell their land to those who will make productive use of it.

43 Ministry of Agriculture (2008), Overview of the Budget of the Ministry of Agriculture 2000-2007. p13

44 GAC projects about Mechanization/MSCs and grain storage are discussed respectively in section 8.1 and 8.4.

The biggest difficulty with this approach, in the short-term, is the risk that small farmers who lack the capital or skills to buy and operate drip irrigation or green-houses will not be ready to use expensive seed varieties or innovate in significantly different crops. Therefore, while they will doubtless benefit from the government's increased focus on agriculture, that benefit will probably be marginal.

In addition, while the government presents this strategy as being market oriented, it does involve the government directly in providing farm machinery, seeds, fertilizers and pesticides. This has made some commentators nervous. The concerns here are fairly common in any public/private debate and, in essence, this comes down to two issues. First, is the government well placed to know what resources the private sector needs and to supply them in the right form? In Azerbaijan the large agricultural subsidies granted to grain producers have certainly stimulated output, but this appears to have created a distortion which has seen Azerbaijan grow its output in areas where it does not have a comparative advantage.

Second, it seems that government provision of the service is unlikely to encourage private actors to provide the same service. In Georgia there are already some people saying that the Georgian government's provision of farm machinery is discouraging private companies from starting or expanding their work in this area. And in Armenia there were concerns that the government provision of potato seed may have damaged an industry which had been developing for some time.

Therefore, the challenge facing the Georgian government today is first, how to encourage investment in high-return commercial agricultural enterprises, while also helping smaller farmers increase their productivity and second, how to quickly provide much needed agricultural inputs without damaging the longer-term market for inputs that will be needed to make the sector sustainable.

International Projects

Given the limited amount of money that is available through government channels for economic development, one of the key avenues for agricultural development over the years has been through international organizations. And international organizations have affected the agricultural environment in Georgia in many different ways.

A large number of projects have focused directly on agricultural development. These projects work on a wide range of different issues, generally attempting to target the weaknesses in the agricultural supply chain and to help fix them. At a production level this involves help with selection, development and training in higher-yield crops and animals and assistance in collective buying of inputs and agricultural services.

These programs are run and/or financed by Swiss Development Corporation, CARE International, CHF, Mercy Corps, Millennium Challenge Georgia, USAID, the United Nations, and many others and they have focused considerable attention on the development of agricultural service centers which offer access to farm machinery, veterinary services and agricultural advice.

There are two main models for international development work in agriculture in the Caucasus. The first, and most common, is oriented towards 'development' in the broadest sense. In this way, it is not just trying to achieve economic growth, but also to ensure that growth explicitly aims at achieving other social goals; it is therefore interested to reduce poverty, promote democracy, civil participation and gender equality and to help ensure the health and security of vulnerable groups. This is typically the model of agricultural development support favored by European donors and UNDP.

These projects often end up working with municipal government for a number of reasons. First, when going into communities, municipal governments can provide useful information about local networks.

Second, in order to try and help facilitate sustainability, many development projects will seek to ensure that key elements of the support networks are sustained by local governments when they leave. This, for example, has been a key component of CARE International's work in Samtskhe-Javakheti, Kvemo-Kartli and, more recently, Racha-Lechkhumi. It has also been a prominent feature of Mercy Corps work in Samtskhe-Javakheti and CHF's work in twenty different muncipalities.

Third, working with and through regional and municipal governments is an automatic requirement of many donors,

for the practical reasons already listed, but also because they believe that this is an effective way of developing local government capacity. For example, the Municipal Development Fund, which is one of the primary vehicles for allocating donor money on infrastructure projects, is primarily designed to operate on projects designed by municipal governments.

An alternative model of agricultural support is to bring support to the more openly commercial farms. This usually also has wider social goals, as it is intended to encourage FDI and ultimately hopes to stimulate employment. Projects of this kind may, therefore, while supporting commercial farming, still focus on the labour-intensive commercial farming, in order to help facilitate rural employment at the same time. However, this model of development projects generally focuses on growth, and assumes that development, more broadly speaking, will follow.

This approach is often taken by USAID, which has completed one large project of this kind in recent times and is currently conducting another. The AgVantage project, implemented during the period from 2002 through 2009 and closed in 2010, spent USD 23.4 million in this area. The goal of the AgVantage project was to raise the rate of economic growth in Georgia through increased production and sales of added-value agricultural products. The project aimed to assist private enterprises and associations to formulate an agricultural strategy and analyze its policy, including export promotion, to create an information system for agricultural market and to ensure food safety.

During the life of the project, USAID/AgVANTAGE reports that it facilitated production, processing and sales of value-added agricultural products which generated more than USD 37 million and created 1,880 permanent jobs, provided 63 grants to agricultural enterprises, supported 120 firms and directly benefited 31,100 individuals.[45]

Another project that is on-going at the moment, and which has similar goals, is the Economic Prosperity Initiative. This project, which was initially valued at USD 40.4 million, is broken into three major components, of which support to the agriculture sector is the main one.

Education

It is generally recognized that no part of the Georgian education sector is equipped to provide manpower for Georgia's agribusiness sector.[46] Specialists usually agree that, on a day to day basis, organizations and companies for the most part lack the specific knowledge associated with the sector. According to Dmitry Kostarov of AgroGeo+, Georgia has to rely on external experts, visits or seminars which have limited impact because on a daily basis farmers and agricultural organizations do not benefit from such expertise.[47] According to Kostarof, the larger agricultural producers in the country and other agricultural companies still rely mostly on the use of international experts.

There are currently about 5,000 students enrolled in the Georgian Agricultural University and, in any given year, around 1,000 students graduate from vocational education centers in agricultural subjects. However, this does not seem to be meeting the needs of agricultural education in the country, since small farmers are still extremely low-skilled and large farmers routinely bring in expertise from outside the country.

The problem with the education of agronomists and agricultural specialists is not simply one of scale, but rather, that the type of education provided does not seem to be well-suited to either extreme of an increasingly polarised agricultural sector. At the commercial end, where capital-intensive farming, particularly using drip irrigation and green-houses, is beginning to take root, the skill sets provided by the traditional institutions are not sufficiently up-to-date or practical to serve the market. As a result, the larger commercial farms depend on international expertise.

At the more common end of the market - farmers with less than two hectares and often less than 1 hectare of cultivated land - the skills provided by universities or even VET centers are unlikely to have any effect as the farmers, predictably, have neither the time nor the money for formal education.

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45 USAID, (2011). *Final Evaluation of AgVANTAGE Project in Georgia 2011,* **http://pdf.usaid.gov/pdf_docs/PDACR900.pdf** (Reviewed December 19, 2011);

46 USAID (2011) Analytical Foundations Assessment - Agriculture (Rural Productivity). p43

47 Interview with Dmitry Kostarov (February 10, 2012), Head of Strategic Development Department, AgroGeo+

Cooperatives and Social Capital

Confronted with small land holdings and land fragmentation, many analysts have suggested that Georgian agribusiness can never become efficient until land is consolidated into larger plots. This research project has strongly argued that, for agricultural productivity to increase, land-consolidation is not in fact essential in the short to medium terms, and moreover may not be desirable from a poor-oriented development perspective.

However, it is clear that there are a range of benefits inherent in larger scale activities. One route to larger scale is land consolidation, another is the use of collective or cooperative farming.

Cooperatives can serve many different purposes. They can coordinate to buy inputs less expensively, or to sell goods at a higher price, they can help manage local resources or protect against common threats by maintaining irrigation channels or flood defences and they can organise effective responses to disease. In addition, they can also become hubs for communication and education by providing structures through which relevant experiences and expertise can be shared.

Regrettably, cooperatives have been slow to develop in Georgia. There are roughly 150 farmer cooperatives or associations in Georgia which cover only 5-10% of the total number of farmers in the country and it is unclear exactly how active even this small number have been.[48] However, even smaller is the number of farmers who formally or informally cooperate to buy, produce or sell together. This failure is usually attributed to a low level of social capital in Georgia. This, in turn, is seen as resulting from soviet collectivisation, under which people had no need to self-organise as they were organised centrally, or from Georgian traditionalism, which encourages extended kinship networks but discourages strong civic or commercial ties that lay outside these networks.

On the other hand, however, it has also been pointed out that collectivisation is currently strongly discouraged by the Georgian tax and legal system, which increases the tax liabilities of collectives by treating them as a single legal entity.

Because of their apparent benefits, but low level of utilisation, providing incentives for the creation of farmers' cooperatives, while removing current disincentives (see below), is a top priority for the European Union. As a result, enabling a legal environment to push for the creation of cooperatives is a precondition for the implementation of an upcoming EUR 40 million agricultural package.[49] A significant portion of this project, EUR 15 million, would be directed in the form of grants to stimulate farmers' cooperation.[50]

Opinions differ on the likely benefits of this strategy. The significant failure of cooperatives in Armenia and Azerbaijan seems, in fact, to suggest that there might be something about the post-Soviet space that makes them unlikely to be successful. However, it is equally possible that Georgia could be the first to finally remove the institutional barriers to effective agricultural collective action, and so provide a model for the region.

48 Interview with Juan Echanove (March 28, 2012), Agriculture Attaché, Delegation of the European Commission to Georgia,

49 Interview with Juan Echanove (March 28, 2012), Agriculture Attaché, Delegation of the European Commission to Georgia,

50 Interview with Juan Echanove (March 28, 2012), Agriculture Attaché, Delegation of the European Commission to Georgia,

1 HISTORY/ BACKGROUND

Georgia's dire agricultural collapse since the end of the Soviet System can be broken down into the two decades from 1991 to 2011. The first decade of this period was characterized by dramatic collapse. According to the EBRD, Georgia's collapse in the 10 years from 1991-2001 averaged a real contraction of 10% per year. This was the most profound collapse of the region and, at its low point, reduced Georgia to around 20% the output that it had achieved in the Soviet System.

The second decade, has been characterized by extremely slow recovery. In the 10 years from 2001-2010 the Georgian agricultural sector has recovered by about 1% per year, according to official statistics. As a result, at the end of the last decade, agricultural output was still only around 40% the levels that had been achieved under the soviet system.

This, therefore, generates two separate questions. The first is why was the collapse so severe in the Georgian case? The second question is, why has the recovery been so slow? It is the second question that will be the focus of the analysis of this research project but for this section we will focus on the first question.

The initial collapse is generally explained as the simple result of the end of the soviet system and the Abkhaz and South Ossetian war. This is undoubtedly true. However, what it does not explain is why the collapse was so much more profound in Georgia than other places in the formerly soviet system. They all experienced the same dismantling of the soviet economic system. Even places like Belarus, which has maintained a command economy far longer than almost anywhere else, experienced a rupture with the soviet system of economic supply and demand. Georgia was also not the only place to experience conflict as ethnically driven wars were a relatively common feature of the post-soviet space. Even if we just restrict ourselves to the South Caucasus, Armenia and Azerbaijan both also suffered conflict as well as collapse in support to the system but neither of them experienced the same scale of collapse in agricultural production.

One of the biggest reasons for this difference seems to be the relative scale in the collapse of infrastructure that occurred in the post-Soviet period. There are several possible reasons for this. The first is not just the level of collapse that occurred but also the level of state capture that happened in Georgia post-1990. The wars not only created two defacto autonomous regions, but also provided entry points to Russia that both allowed massive smuggling and, through that, financed and supported a range of different groups in their ability to both steal from and undermine the state. This was most obviously seen in the range of different ways that parts of the country were controlled by their own criminal gangs, so that not only Abkhazia and South Ossetia, but also Ajara and Svaneti became effectively excluded from state control.

Another partial explanation for the collapse of state infrastructure was the ease with which key resources could be stolen. Georgia's border with Russia and Turkey meant that key infrastructure involved in irrigation, electricity supply and farm machinery could be dismantled and shipped abroad. It is a commonly acknowledged fact, that until recently scrap metal was Georgia's biggest export.

Therefore, in Georgia one coming together of multiple factors that devastated all of the infrastructure needed for agriculture. Not only was key infrastructure stolen, but state capture meant that the state was not in a position to manage the maintenance of systems like irrigation, police the collection of electricity charges or help maintain the roads.

As suggested by Professor Neil McFarlane, a Georgia expert at Oxford University,

> The collapse and disorder were deeper in Georgia than in its neighbours. The Armenian state did not collapse. As for Azerbaijan, although it had its moments (e.g. 1993), the level was not so high and the period not so protracted. And the exit point for stolen stuff was closer than it was for Azerbaijan. And of course from 1993 the Armenian-Turkish border was closed.[51]

As the analysis below will explain, one can see the result of this collapse not just in the depth with which production dropped in the post-Soviet period, but also in the enormous difficulty that the state has faced in rebuilding it.

51 Professor Neil McFarlane in email exchange, March 2012.

2 POVERTY AND AGRICULTURE

General estimates of Georgia's poverty vary considerably depending upon the source and the exact poverty line that is used and who/how is calculating it. Official government estimates show that poverty in the country as a whole went down a little, but not much, in the first 5 years after the Rose Revolution.

The World Bank, which conducted a large analysis of poverty in Georgia in 2007 (that was released in 2009). The World Bank assessment looked at both income and consumption per adult equivalent (PAE) and concludes that, looking at consumption poverty, the poverty 'headcount' was 23.6% of the population to be 'poor' and 9.3% 'extreme poor'.[52]

They also show that poverty is generally higher in rural areas, with 29.7%, than in urban areas, with 18.3%. They also highlight that the rural employed have 22.6% poverty count compared to only 11.4% for wage earners in urban areas since median-earnings amongst the rural employed are only about 20% the level of those in the urban employment.[53]

These discrepancies draws attention to the fact that these numbers are extremely susceptible to small variations in the way they are calculated. Perhaps more importantly, this national overview can be dangerous because the picture is better in some places and far worse in others. According to almost all different sources, the differences in the level of poverty from region to region is enormous. According to the assessment of the WB, Shida Kartli is the poorest region in the country with a poverty headcount of 59% while Kvemo Kartli, its immediate neighbor, has a poverty headcount of only 8%. However, it is important to note that Racha-Lechkhumi, which other indicators suggest to be the poorest region in the country, is not included in their analysis as it is too small.

Overall, the World Bank assessment is also interesting because it highlights the importance of the rural sector. First, it explains that continued stagnation in the rural sector is one of the key reasons for poverty in Georgia. Second, it highlights the importance of rural investment and infrastructure expenditure as a source of potential poverty alleviation.

The World Bank has also analysed this from the other side. In addition to looking at how poor agricultural development has impacted on poor people as suppliers of agricultural products, it also looked at the region to see how dependency on imports makes a country vulnerable to poverty created by food price increases. Interestingly for our purposes, this analysis concluded that out of the whole Central and Eastern Europe and Central Asia region, Georgia, Armenia and Tajikistan are the most vulnerable to rises in commodity and food prices. As the report points out, as the result of rising food and energy prices,

> *In ECA overall, an additional 5.3 million people could become poor.* Five lower and lower middle income countries, Armenia, Georgia, the Kyrgyz Republic, Moldova and Tajikistan could see potentially high increases in their poverty rates as a result of high food and fuel price inflation…[54]

Clear evidence of this can be seen in the experience of the past few years. In 2010/11 a poor Russian wheat harvest, combined with a grain export ban, sent wheat prices sky-rocketing and there is strong evidence to believe that those countries dependant on Russian wheat were particularly vulnerable.[55]

52 World Bank (2009). *Georgia Poverty Assessment,* p4

53 World Bank (2009). *Georgia Poverty Assessment,* p7

54 World Bank (2011), Rising Food and Energy Prices in Eastern Europe and Central Asia, p1

55 GeoWel Research (2011), the Impact of Russia's 2010 Grain Export Ban, Oxfam Research Reports

3 AGRICULTURE IN THE WIDER ECONOMY

Agriculture has seen a decrease in absolute and relative terms as a sector of the economy in recent years. As a proportion of GDP agriculture has dropped from 16% in 2004 to 7% in 2010. Agricultural productivity in absolute terms has been fluctuating year by year since 2003. In 2010 production level in agriculture was GEL 1.5 billion (USD 841.6 million) with 4% increase compared to the previous year, but in 2009 it had been decreased by 6% compared to 2008.

Absolute output is also significantly down in many sectors since 2003.[56] Agriculture has also seen meager investment. FDI, for example, has often been less than 1% of FDI per year in the last 4 years, and its highest level was 2009 when it was the highest percentage of the total.

Figure 9: Absolute FDI in agriculture in Georgia[57]

Year	Absolute FDI in Agriculture	% of total FDI
2007	15,528	0.8%
2008	7,844	0.5%
2009	22,327	3.4%
2010	8,632	1.1%
2011 (I,II quart.)	3,469	0.9%

Source: GeoStat, *Foreign Direct Investment by Sector* http://geostat.ge/index.php?action=page&p_id=140&lang (Reviewed December 2011)

The variations in absolute FDI in agriculture can mostly be tied to a few large investments. For instance, in 2007 several companies did invest in the agricultural sector such as Jablunevіy Dar from Ukraine (investment so far: EUR 8 million), Hipp from Germany (investment so far: EUR 8 million), and Ferrero from Italy (investment so far: EUR 6 million). In 2008, Schuchmann Wines from Germany invested EUR 6 million and in 2009 Wimm Bill dann from Russia invested USD 15 million.[58]

In export terms agriculture is also a fairly miniscule portion of the total economy. Only three categories of agricultural products export in significant volumes. In first three quarters of 2011, nuts were 3.5% of exports,wine, grapes and spirits together were 5%[59] and live animals were 1.2%.[60]

The main significance of agriculture is its role as an employer. It is commonly cited that more than half the labor force are employed in the agricultural sector and this is true.

56 Department of Statistics (2009). *Quarterly Bulletin.* Tbilisi, Georgia Volume 2

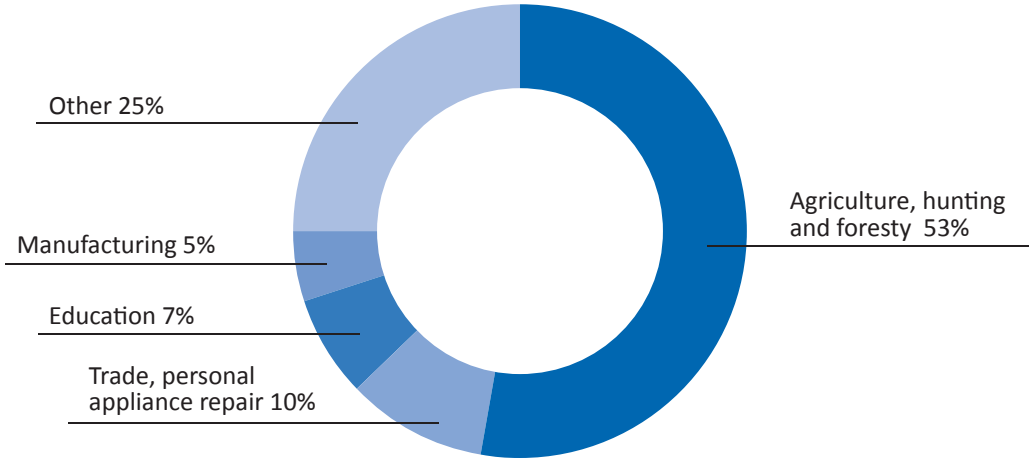
57 GeoStat, *Foreign Direct Investments by Economic Sectors 2007-2011,* **http://geostat.ge/index.php?action=page&p_id=140&lang=eng** (Reviewed December 19, 2011);

58 Georgia National Investment Agency- Agriculture: Invest in Georgia… ripe for investments (2011) **http://www.investingeorgia.org/upload/file/Agriculture_Investment_Proposal.pdf** (Reviewed April 12, 2012)

59 This is the combination of 'wine and grapes' with 2.3% share and 'Undenatured ethyl alcohol, spirits, liqueurs and other spirituous beverages' with 2.7% share.

60 GeoStat, *External Trade of Georgia by HS Chapters 2011,* **http://geostat.ge/index.php?action=page&pid=137&lang=eng** (Reviewed December 9, 2011);

Figure 10: 2007 Breakdown of Employment by Activity[61]

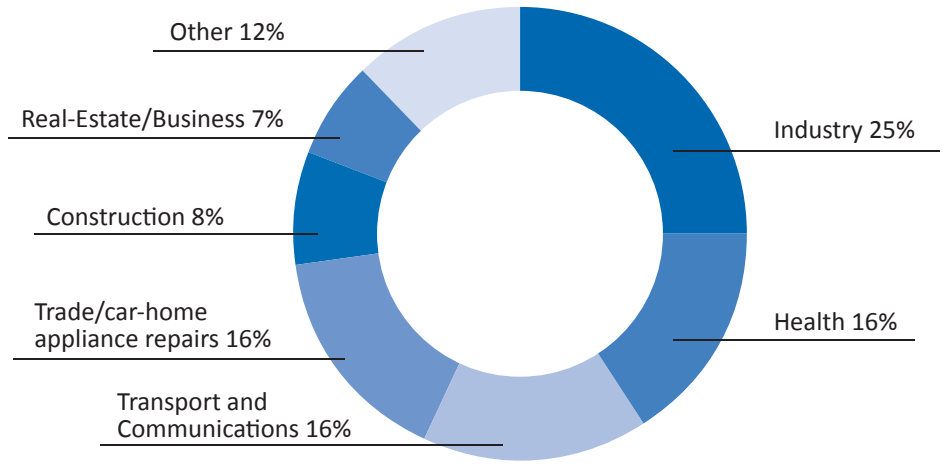


Source: GeoStat (2009), Statistical Yearbook of Georgia, p 43.[62]

However, the employment picture is rather more complicated than this summary might suggest. The definition of employment that leads us to conclude that agriculture is worth 53%, treats anyone who works more than 1hr per week in productively active labor as 'employed'. As a result, one can safely assume that many, if not most, of these people working in agriculture are drastically underemployed. And many of them would not consider themselves 'employed' in agriculture at all.

Another way of explaining this is that the agricultural sector's role in *formal* employment (meaning, paid a salary by a registered employer) is extremely small. According to the Business Survey, also conducted by GeoStat, there are around 350,000 people who are formally employed in the private sector (excluding finance). This is about 22% of those who are considered 'employed' by the broader definition. But agriculture has a relatively small role to play in this sector. As one can see in the table below, agriculture does not even register as non-negligible category.

Figure 11: Employment of Formally Employed 2009 (Excluding government and finance)[63]



Source: GeoStat (2010), Quarterly Bulletin III, p27-28

61 In the 2009 statistical Yearbook, 2008 information was not released by sector. The 2009 information will be released by sector when the new Yearbook comes out later this year.

62 The government no longer provides a breakdown of overall employment by category so this data is from the last statistical yearbook that did.

63 This is an average for the first two sectors and covers a total of 313,000 employed people from this period.

This is not surprising. Given the profile of small land-holding in Georgia one would expect that most farmers would be self-employed small-holders rather than employees of large farms. However, it is worth keeping in mind as it highlights two facts. First, that as they are currently under-employed, improving the productivity of this group, even if it means longer working hours, may be the quickest way to improve the material situation of the poorest in Georgian society. However, second, expanding productivity will not change the structure of employment. This may not be a bad thing. But, as long as productivity occurs on these small land-holdings, it is safe to assume that improvements in the sector will not expand formal employment a lot and this may be a problem if the security of formal employment is the goal for which many/most people aspire.

4 OVERALL STRUCTURE OF THE AGRICULTURAL ECONOMY

The decline of agricultural output in Georgia is widely recognized and clearly represented in Georgian government statistics. A quick review of the top agricultural production categories (by weight) gives us an indication of the problem.

Figure 12: Agricultural production and share of GDP by years (in current prices)[64]

	1996	1999	2003	2004	2005	2006	2007	2008	2009	2010
Growing crops						613	726	633	599	645
Farming of animals						728	733	802	746	749
Agricultural service activities						44	40	38	42	46
Forestry and logging						152	56	70	64	63
Fishing and fish farming						7	8	8	7	7
Total agricultural production	**1,282**	**1,401**	**1,653**	**1,611**	**1,716**	**1,544**	**1,563**	**1,551**	**1,457**	**1,510**
Annual change		6%	15%	-3%	7%	-10%	1%	-1%	-6%	4%
Share of GDP	33%	25%	19%	16%	15%	11%	9%	8%	8%	7%

Source: Geostat, Gross Domestic Product at current prices by 45 activities 1996-2010.

There are two problems here. The problem that is generally emphasized is the fall in agriculture's role as a portion of GDP. By itself this is not necessarily a problem as decline in the role of agriculture would probably be expected in any developing economy. The problem in Georgia, however, is that the proportion of the population involved in agriculture has remained extremely high, even as its role in the economy has declined, thereby suggesting that farmers and rural communities have not benefited from Georgia's economic successes and so seen their relative position decline.

Worse than the relative decline in output is that absolute output has also gone down, by about 2% since 2006. This does not necessarily mean that, on average, their standard of living has fallen. Over the same time period there have been dramatic increases in the size and regularity of pension payments and targeted social assistance and most observers accept that this has been the single biggest reason why poverty in rural communities has not risen far faster. However, this does mean that the group are far more dependant than they were before.

Of course, all of these production numbers are aggregate and combine all of the different categories and sub-categories of food production as well as combining changes in production volumes and changes in food prices. To start to understand the causal processes driving the changes in Georgia agricultural output it is necessary to diaggregate meat from crops and production volumes from prices. This will be done the the rest of the section.

64 The reason that the data is not provided in detail prior to 2006 is that GeoStat does not provide a breakdown before that time.

4.1 Meat

Geostat produces 'balance sheets' for different meat categories that give a fairly comprehensive overview of production, import, export, consumption, year opening balance, closing balance, etc. Below, we have abbreviated these balance sheets for all of the major meat categories produced in Georgia, including beef, lamb/mutton, pork and chicken. These abbreviated balance-sheets show both production numbers and levels of imports so as to indicate production/consumption patterns and, through which, the degree to which Georgia is self-sufficient.

Figure 13: Abreviated balance-sheets for beef products

Beef Indicators (thsd. tonnes)	2000	2006	2007	2008	2009	2010
Domestic production	48.3	33	31.3	25.1	29.2	26.7
Import	2	8	11.5	12.1	9	7.8
Self - sufficiency ratio, %	**96**	**81**	**73**	**68**	**76**	**77**

Source: Geostat, Statistical Publication *Agriculture of Georgia 2010*, http://geostat.ge/index.php?action=page&p_id=428&lang=eng (Reviewed February 6, 2012)

Figure 14: Abreviated balance-sheets for sheep and goat meat products

Sheep/goat meat Indicators (thsd. tonnes)	2000	2006	2007	2008	2009	2010
Domestic production	8.9	7.6	7.5	7.5	4.1	4.9
Import	0.1	0.1	0.1	0.2	0.1	0.1
Self-sufficiency ratio, %	**100**	**99**	**99**	**101**	**98**	**98**

Source: Geostat, Statistical Publication *Agriculture of Georgia 2010*, http://geostat.ge/index.php?action=page&p_id=428&lang=eng (Reviewed April 10, 2012)

Beef is by far the largest category of meat production in Georgia. However, in some parts of the country, it is produced as almost a by-product of the production of milk. When farmers focus on milk production, male calves are often sold quickly as cash generators, while females are kept or sold as potential sources of milk. They are also not kept for very long and often killed for veal as quickly growing them to maturity would require the use of high-energy feed that is not produced in Georgia and is therefore expensive. In the absence of this means for quick maturation, raising a beef cow to adulthood means keeping it for 2-3 years and investing it with time and resources, which are scarce. It also involves taking risks, as the animal may die or be killed. Finally, it requires space in a winter shed and sufficient feed (usually hay) for it to survive the winter. All of these factors may be extremely scarce.

Raising cattle for beef production is rare in Georgia. Those who do usually buy calves in Spring, when they are 2-3 months old, or in Autumn, when the age of calves is about 5-6 months. In summer, calves are usually kept in grazing areas and not given any additional food. In the winter period farmers usually buy hay and also prepare feed from the by- products of food processing (like beer production) combined with maize and bran. After two years, young bulls reach 300-350 kilos and are often sold as live weight. The largest beef market in Georgia is in Tbilisi.

In 2010, the Government of Georgia enforced a regulation according to which beef could only be sold if cattle was slaughtered at specifically designated slaughterhouses. There were four such slaughterhouses for Tbilisi - Aspindza, Natakhtari, Karajala and Tsikisdziri. In the beginning of Summer of 2011, new regulations were introduced, according to which beef sold in Tbilisi can come from only two slaughterhouses - Natakhtari and Teleti. Although slaughtering costs are not very high, it is one lari per kilo, transporting animals to and from slaughterhouses drives beef prices up.

It was widely reported in the Georgian press that instituting slaughtershouses in 2010 led to sharp increase of beef prices at agricultural markets from about GEL 7-8 (USD 4-4.5) to about GEL 12-13 (USD 6.7-7) per kilo. Decreasing

the number of slaughterhouses which could serve Tbilisi to two led to further shortage of beef in the city and price hikes to up to GEL 16-18 (USD 9-11). However, in summer the prices gradually started to stabilize. Director of 'Ibermeat Georgia', a company which operates Natakhtari slaughterhouse, has declared in the press on numerous occassions that sharp price increases were due to speculations on the market and increased demand for Georgian meat from Armenia and Azerbaijan.[65] Our own investigation suggests that prices on the Georgian market are now from 12 to 13 GEL per Kilo.

As one can see, the most significant trend in both beef and mutton/lamb production is the drop in production in the 2007-2010 period, particularly with beef, but also (a little later) with lamb. The simplest explanation for this decline is the huge increase in live animal exports that occurred over this time. In beef this was essential a shift in production/consumption so that live animals were exported and frozen beef imported. In lamb it simply resulted in a reduction of lamb consumption.

The reason for this is that live animal exports are an international market but are not quite as much of a 'commodity' as frozen beef because of the significant costs connected with shipping live animals large distances. In simple terms, the export of beef is far more price competitive than the export of live animals as live animal exports brings a more significant price benefit from geographic proximity to the target market. On this basis, what seems to have happened in both beef and lamb is a shift from local production to import on the meat side in order to allow for a larger export of live animals.

Figure 15: Abreviated balance-sheets for pork products

Pork Indicators (ths. tonnes)	2000	2006	2007	2008	2009	2010
Domestic production	36.9	31.1	21.4	11.4	8.2	12.8
Import	1.5	8.6	13.6	12.9	13.7	13.2
Self-sufficiency ratio, %	96	79	61	47	37	49

Source: Geostat, Statistical Publication *Agriculture of Georgia 2010*, http://geostat.ge/index.php?action=page&p_id=428&lang=eng (Reviewed February 6, 2012)

The most significant dynamic in pork is the decrease in domestic pork production and increase in imports. This can be attributed to the African swine fever outbreak that struck Georgia in 2007. We will discuss this in more detail when discussing veterinary services in section 8.3.

As one can see from the data above, pork production during this time dropped by around half and experts usually acknowledge that more than 50%, and even up to 80%, of the pigs died.[66] As a result, pork imports went up significantly so that, even with significant recovery of production in 2010, imports still be higher than domestic production. In addition, as one can see below there has been a sharp increase in pork prices which started in the last quarter of 2007, lasted throughout 2008, and started to drop slightly in the fourth quarter of 2009.

Figure 16: Abbreviated balance-sheet for poultry

Poultry Indicators (ths. tonnes)	2000	2006	2007	2008	2009	2010
Domestic production	13.7	11.2	12.4	12.9	12.4	11.6
Import	17.0	15.4	28.1	36.9	39.1	40.8
Self-sufficiency ratio, %	45	43	31	26	24	22

Source: Geostat, Statistical Publication *Agriculture of Georgia 2010*, http://geostat.ge/index.php?action=page&p_id=428&lang=eng (Reviewed February 6, 2012)

65 Transcripts of a radio interview can be found at this link: **http://www.radiokalaki.ge/indexphp?cid=39&act=view&id=10018** (Reviewed April 26, 2012)

66 Interview with Misha Sokhadze (February 28, 2012), Program Manager, FAO

Similarly, in the poultry market there seems to have been decline in overall production at the same time as there is massive increase in demand so that Georgia has become very heavily dependant on imported frozen chicken. The main reason for this is high input cost for chicken production in Georgia, mostly feed and electricity. Feed prices are high because grain, or the feed itself, need to be imported. Electricity is important for the incubation of the chickens. An owner of a chicken farm in West Georgia said that incubation of chicken costs farms around GEL 1.2 (USD 0.73). The prices are high because not only eggs are expensive, but also energy costs for heating incubators are high.[67]

4.1.1 Live animals

Live animal exports seems to be one of the great success stories of the Georgian agribusiness in recent years, as it increased from about USD 1 million in 2008 up to USD 34 million in 2009, in the process moving from 90th to 9th in the list of Georgia's most important export categories and, in the process became a more important export commodity than wine or mineral water.

In 2009, the share of sheep and cattle in total live animal export was 50-50% with USD 17 million each. Later, in 2010, live sheep export dropped dramatically to USD 8 million[68], while cattle export only dropped to USD 16 million. In 2011, the value of exported live animal almost doubled in both categories and reached USD 28 million for cattle and USD 15 million for sheep.[69]

Figure 17: Live animal export from Georgia (thousand USD)

Name of Positions	2007	2008	2009	2010	2011
Live horses, asses andmules	41	54	7	18	5
Live bovine animals	-	585	16,903	15,932	28,213
Live sheep and goats	-	463	17,054	7,843	14,944
Live poultry	-				274
Other live animals	2	0	22		9
Total live animal export	43	1,102	33,985	23,793	43,443
Share of total exports	0.003%	0.07%	3.0%	1.5%	2.0%
Total Exports	**1,232,110**	**1,495,345**	**1,133,622**	**1,575,067**	**2,189,136**

Source: GeoStat, *External Trade of Georgia by HS Chapters.* http://geostat.ge/index.php?action=page&p_id=137&lang=eng (Reviewed March 12, 2012)

Most of the exported sheep went to Muslim countries. The demand for live sheep in Muslim countries is largely driven by the holidays which require sacrificial slaughter. Sheep are sacrificed during the Islamic holidays of Eid ul-Fitr (Conclusion of the Fast), at the end of Ramadan and Eid ul-Adha (Lamb Sacrifice Festival), in the period known as Hajj when many Muslims make a pilgrimage to Mecca.

The Saudi Arabian market is particularly profitable because there were 2.5 million pilgrims to Mecca to perform the Hajj in 2009. In addition, during the Hajj the price of sheep purchased also acts as a religious offering and so sheep are often sold for dramatically more than normal market price.

The drive to look for live animals in the region seems to have been driven by changes in live animal exports

67 Interview with a local chicken farmer in West Georgia (April 23, 2012)

68 There is some dispute over the scale of this drop. According to GeoStat numbers, around 100,000 sheep were exported in 2010 but according to Ministry of Agriculture number is was closer to 160,000.

69 These numbers are somewhat contested and there are conflicts between the numbers provided by GeoStat, the Ministry of Agriculture and other stakeholders, but the general trend of the numbers is not contested. For example, Beka Gonashvili, head of Georgian Sheep Breeders Association, argues that it is true that sheep export declined in 2010 compared to 2009, but not that much as GeoStat suggests.

that have occurred globally in recent years, reducing supply, even while demand is increasing. In particular, in Australia which is the largest exporter of live sheep in the world, a ten year drought, a rising Australian dollar and increasingly challenging animal welfare standards have driven up prices and reduced exports of live animals. In addition, New Zealand has also seen rising standards for shipping live animals and, since 2007, has effectively banned the trade.

As a result of these changes, Arab buyers started looking for new sources of supply and in 2009 first started buying large quantities of Georgian sheep and offered considerably higher prices for them than the previous market. In the initial exceitment most of the Georgian sheep breeders sold as many sheep as they could, in some cases even selling female sheep. As a result, the level of sheep reproduction dropped in 2010 and exports declined, but this increased prices on live sheep market in Georgia and buyers started purchasing sheep selectively (so that they were mainly buying male sheep).

Figure 18: Livestock and poultry numbers in Georgia (by the end of the period)

Livestock (Thousand heads)	2006	2007	2008	2009	2010
Cattle	1,080	1,049	1,046	1,015	1,049
of which cows	591	541	561	538	562
Pigs	344	110	86	135	110
Sheep and Goats	789	797	769	674	654
Poultry	5,401	6,150	6,682	6,675	6,521

Source: Geostat, Agriculture, Livestock numbers, http://geostat.ge/index.php?action=page&p_id=428&lang=eng (Reviewed February 6, 2012)

According to GeoStat data, during the years that experienced the highest sheep exports, the stock of live animals in the country decreased. It dropped by 12% in 2009 and by 15% in 2011. In other years the annual drop was only about 3%.

Head of the biggest sheep exporter company Fast Plus, with USD 6 million sheep export in 2011, explained that taxation problems are a continuing challenge in exporting sheep. As she explained, "farmers cannot deal with bills of laiding and later this becomes our problem. We got a fine so huge that we think we will not continue our business until tax issues becomes better regulated"[70]. Beka Gonashvili, head of Georgian Sheep Breeders' Association highlighted the same problem "when sheep dies we have to call the Revenue Service to check this, it sometimes takes more than a day and it is impossible to keep a dead sheep for several days"[71].

4.2 Dairy Production

Dairy in Georgia is often seen as the primary animal-related activity in Georgia. Certainly, in volume terms, vastly more milk is produced than beef, and cheese is one of the central components of the Georgian diet.[72] Most milk is produced by small farmers who own 2-3 cows. Most milk in Georgia is consumed as cheese. So most of these farmers use the milk from their cows to produce cheese, or consume it in the family as raw milk. Some of this milk and cheese is sold at local markets or channeled through milk collection centers (MCC) that then either produce cheese themselves or sell it to larger producers.

The four regions of Imereti, Kvemo Kartli, Samegrelo/Zemo Svaneti, and Samtskhe-Javakheti account for the biggest milk production output in the country.

70 Interview with Nazi Alasania, President of Fast Plus. March 15, 2012.

71 Interview with Beka Gonashvili, Head of Sheep Breeders' Association of Georgia. March 15, 2012.

72 It is hard to make clear and simple comparisons of the overall value, as beef is so much more valuable than milk. While Georgia may produce about 20 times more milk than meat in a given year, beef is incredibly expensive at around 8-10 GEL per kilo. In comparison, it takes about 8 liters of milk to produce one kilo of cheese, valuing milk at around 0.5 GEL per liter/kilo.

The biggest problem facing the dairy sector in Georgia is the incredibly low overall yields. Milk yields for dairy cows in Georgia range from 900-1600 kg/cow/year, which is about ¼ the level of production in Europe as the EU-15 member states average around 6,000 kg/cow/year.[73]

Even with these low starting yields, national statistics seem to suggest that while the number of milking cattle has stayed fairly stable, the level of milk collection seems to have gone down.

Figure 19: Production of Milk (ths. Tons)

Products	2007	2008	2009	2010	2011*
Milk	624	645	551	587	555

*Preliminary Data

Source: GeoStat (2012), http://geostat.ge/index.php?action=page&p_id=428&lang=eng (Reviewed June 19, 2012)

This seems strange as prices for both milk and cheese seem to be going up.

Figure 20: Prices variations of Milk and Cheese (in GEL)

	2005	2006	2007	2008	2009	2010
Imeretian cheese	4.19	4.85	5.25	6.27	5.5	6.16
Price of fresh milk (GEL per liter)	1.12	1.14	1.4	1.77	1.82	1.4

Source: GeoStat (2011), http://geostat.ge/cms/site_images/_files/english/agriculture/Agriculture%20of%20Georgia%202010.pdf (Reviewed June 19, 2012)

One problem is that both milk and cheese are subject to wild price fluctuations throughout the course of the year. Milk and cheese are usually much cheaper in the summer when production of milk is high and more expensive in the winter when feed for dairy cows is restricted (both in quantity and quality) and milk yields are low. During that time, farmers consume the little milk they have and supply forproducers and milk collection centers is very low.

Milk and cheese seasonality in pricing has two possible solutions; to change the seasonality of the cheese production or to more effectively store the cheese. If stored properly, certain types Georgian cheese will stay fresh for at least 4 or 5 months, but it needs to be kept cool and stored in water. Another alternative is to change the breeding cycle for the cattle so that they have calves in the autumn (rather than spring), and produce milk in winter rather than summer. To do this would require different breeding practices and possibly the introduction of artificial insemination. In the absence of good grazing, winter milk production would require spending on animal feed. At the current time the main animal feed used by farmers is hay and even this is not plentiful.

At the current time some farmers already employ strategies to better take advantage of price seasonality. In particular, in many regions, farmers take their animals to high pastures in the summer. This provides better grazing, leaves the cow more comfortable (also resulting in higher yield) and alleviates the problem of flies. Most importantly, cheese produced in the mountains can be kept cool in mountain streams and so will keep for several months and can be sold in the autumn or early winter when cheese prices are higher.[74]

Notwithstanding the issue of seasonality, the dairy sector in Georgia is facing two major issues. First, yield needs to be increased. The sections that follow will highlight the reasons for low yields, which can be roughly summarized as, veterinary/disease control, genetic stock, poor grazing management and availability of animal feed.

73 Andrew Humphrey Abbott (2010), The Dairy Sector of the Republic of Georgia: Economic Situation and Prospects, p12

74 GeoWel (2011), Research into Milk Collection Centers in Samtskhe-Javakheti, for Mercy Corps p.25-26-28

Second patterns of demand, and with them, patterns of production are changing. As a GeoWel/Mercy Corps report explained in 2011

> Increasing incomes in certain sections of society, an increase in the role of supermarkets, a range of pressures to create improvements in phytosanitary standards – these factors suggest that a shift from home production of cheese to factory production is inevitable. Together, this seems to suggest that, across the country, the role of factory producers and milk collection centers is likely to grow even if milk and cheese consumption does not.[75]

That said, the same raising of incomes also probably increases demand for higher quality, and locally produced goods. Concentrated milk and milk powder imports stood at USD 9.5 million in 2009 (see section on imports).[76] But recently, government policy has started to shift and new laws are requiring milk products to be better labeled. If that trend continues then this will ensure that large retailers will have to source the raw inputs locally.

4.2.1 Milk collection centers (MCCs)

One crucial component of the dairy production value chain are milk collection centers. While considerable cheese production in Georgia is truly home-based and artisanal, an increasingly large proportion of it occurs through more commercial dairy (mostly cheese) production.

There exist two types of MCCs, the ones managed by private entrepreneurs or dairy farmer cooperatives and the ones owned by bigger dairy producers. Among the first group, an important distinction is between the MCCs that simply collect the milk and then sell it to dairy producers and the ones that also engage in cheese production.

Overall, the business model of MCCs is a fairly simple one. They collect milk from farmers in their village and sometimes from one adjacent village. They usually sell that milk to a cheese producer or process the milk themselves. An MCC makes a fixed profit on each liter when selling the milk (5 to 10 tetri per liter).

Unsurprisingly, the biggest determinant of success for MCCs is the amount of milk they can collect, and subsequently the amount of cheese some can produce and then sell.

A number of constraints can seriously hinder the sustainability of MCCs and their activities. First, supply is problematic and ensuring regular, high quality supply, is always a challenge. Not only is milk production and sale seasonal in a summer/winter sense but farmers taking their cows to summer grazing pastures located in mountainous regions can also disrupt supply.

Supply can also be disrupted by outbreaks of disease. For instance, MCC operators in Samtskhe-Javakheti often complained about the disruptions they endured in 2010 when foot and mouth disease struck cows.[77]

Second, most MCCs face cash-flow problems because they are usually paid by producers after a couple of weeks and so cannot pay farmers until then. Farmers, of course, would rather be paid cash on a daily basis.

Third, it is hard to ensure quality of supply from farmers. Certain rudimentary tests can be done by MCCs when collecting milk, but there is always a possibility that tainted milk will spoil an entire mornings collection. And that can be expensive

Fourth, milk collection is extremely hard work, requiring long hours and an entrepreneurial outlook with low returns. It requires managers who are able to plan ahead, to innovate and cope with difficulties. Optimistic new entrants expecting to just wait for the milk to be delivered have been disappointed.[78] Ensuring that milk collection rates are high enough need proactive individuals who are always in the process of negotiating with small farmers and making sure that the level of milk collected ensures profitability.

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75 GeoWel (2011), Research into Milk Collection Centers in Samtskhe-Javakheti, for Mercy Corps p3

76 GeoStat (reviewed May 28, 2010), *Food Security Situation: Trends in Figures* (issues 39-42)

77 GeoWel (2011), Research into Milk Collection Centers in Samtskhe-Javakheti, for Mercy Corps p32

78 GeoWel (2011), Research into Milk Collection Centers in Samtskhe-Javakheti, for Mercy Corps p34-35

4.3 Production of crops

Understanding production volumes of crops in Georgia is complicated by changes in the methodology that has been used in the Ministry of Agriculture for calculating agricultural production. These changes, that occurred in 2006, led to a dramatic reduction in one year in the official production figures across the board.

Therefore, when looking at growth and decline in crop production it is important to take these two time periods separately.

Figure 21: Production of agricultural product categories by volume 1999 to 2010 in Georgia (in tonnes)

Products	1999	2005	Change 1999-2005	2006	2010	Change 2006-2010
Potatoes	443,311	432,202	-3%	168,700	228,800	36%
Maize	490,491	421,347	-14%	217,400	141,100	-35%
Grapes	220,000	250,294	14%	162,500	120,700	-26%
Tomatoes	202,000	170,000	-16%	69,900	56,000	-20%
Tangerines, mandarins, clem.	52,000	113,400	118%	48,400	48,600	0%
Wheat	226,073	190,137	-16%	69,700	48,400	-31%
Watermelons	108,200	119,631	11%	37,800	40,900	8%
Hazelnuts, with shell	16,836	16,393	-3%	23,500	28,800	23%
Cucumbers and gherkins	42,000	47,000	12%	19,400	28,600	47%
Cabbages and other brassicas	117,000	86,000	-26%	35,500	27,100	-24%
Barley	50,800	65,399	29%	30,600	23,300	-24%

Source: FAO, (2012) FAOSTAT, *Agricultural Production of Georgia 1999-2010.*

While it is very difficult to assess the reliability of these numbers, between 1999 and 2005 some sectors decreased production volumes while others increased. The most sever declines were for cabbages and other brassicas (-26%), wheat (-16%), tomatoes (-16%) and maize (-14%). Conversely, other sector showed significant growth such as citrus fruits (118%), barley (29%), grapes (14%), cucumbers/gherkins (12%), and watermelons (11%).

Interestingly, of the sectors exhibiting high levels of growth in the first period, only cucumbers/gherkins and watermelons have retained growth between 2006 and 2010. While the production of citrus fruits has now stabilized, the production of grapes and barley are declining.

Sectors which have exhibited high growth levels between 2006-2010 have been cucumbers and gherkins (47%), potatoes (36%), and hazelnuts (23%).

Overall, the period between 2006-2010 is characterized by considerable fluctuations in production numbers. While a diversity of factors might explain the variations, a look at the dynamic between the occurrence of droughts and hail storms provides an interesting correlation.

If one looks at tangerines, mandarins, and clementines for instance, levels (in tonnes) fluctuated heavily between 2006 and 2010: 48,400 (2006), 93,600 (2007), 51,600 (2008), 90,500 (2009), and finally down to 48,600 (2010).[79]

There, drop in production in 2010 relative to 2009 seeems to be explained by more regions being hit by drought.

79 FAO, (2012) FAOSTAT, *Agricultural Production of Georgia 1999-2010.*

For regions of Western Georgia where the citruses are mostly grown, the share of villages affected by droughts was significantly larger in 2009-2010 than in 2008-2009: Samegrelo-Zemo-Svaneti (52% compared to 38%), Imereti (49% compared to 35%), Guria (66% compared to 46%), and Adjara (35% compared to 18%).[80]

The same can be seen in grape production. If one looks at the production of grapes, the numbers (in tonnes) also fluctuated significantly during the same period: 162,500 (2006), 227,300 (2007), 175,800 (2008), 150,100 (2009), and 120,700 (2010).

If we focus on the drop of production from 2009 to 2010, in Kakheti and Imereti (54% of grape production comes from Kakheti and around 21% from Imereti[81]) the occurrence of these factors were also significantly larger in 2010 compared to 2009. During that period, the share of villages affected by droughts rose from 66% to 81% in Kakheti and from 35% to 49% in Imereti. The share of villages affected by hail storms also increased from 49% to 59% in Kakheti and from 4% to 6% in Imereti.[82]

4.4 Export Products

In addition to the overall animal and crop production, Georgia also produces two other major export crops, wine and nuts.

Figure 22: Exports of agricultural goods from Georgia (thsd. USD)

Products	2000	2004	2005	2006	2007	2008	2009	2010	2011
Fruits*	487	972	743	2,556	2,440	7,889	4,429	5,166	4,613
Nuts	19,318	17,691	70,298	56,567	65,122	31,732	69,956	64,036	130,086
Spirits	4,021	18,915	29,215	30,077	57,690	59,102	54,019	55,036	71,271
Wine	28,991	48,719	81,329	41,051	29,197	36,863	31,997	39,269	54,103
Mineral waters	9,431	19,305	32,481	24,048	25,354	31,006	24,675	30,155	47,607
Soft drinks	4,012	14,034	20,441	23,045	29,378	7,931	10,684	13,420	15,051
Wheat	1,176	22,817	5,088	6,589	6,944	3,188	85	183	6,169
Citruses	2,450	2,620	5,897	2,545	4,619	3,878	15,703	12,143	5,263
Vegetables	560	1,126	1,054	1,151	852	1,436	2,599	5,120	4,854
Sugar	2,742	34,285	29,715	18,798	28,861	7,842	263	132	8

Source: GeoStat, External Trade, *External Trade of Georgia by HS Chapters,* http://geostat.ge/index.php?action=page&p_id=137&lang=eng (Reviewed February 6, 2012)
*excluding citruses and nuts

Traditionally wine and nuts competed to be the biggest export categories. As one can see from the chart above, following the export ban in 2006, wine exports dropped significantly. There has been recovery since that time and a significant increase in 2011 compared to 2010. The increase in total value of exports is partially explained by a change in the type of exports. The average liter of wine sold before the Russian wine ban, in 2005, was exported at USD1.95 per liter (USD1.46 per bottle). The average liter sold in 2006 after the wine ban exported at USD3.61 per liter (USD2.70 per bottle). The overall price has dropped a little since that time, but not much.[83]

This means two things. First, that wine volumes have not recovered as much as values.[84] Second any recovery

80 Village Infrastructure Census 2010 (published in 2011), GeoStat. p191

81 GeoStat (2010), Annual Statistical Publication: Agriculture of Georgia 2010, p55

82 Village Infrastructure Census 2010 (published in 2011), GeoStat. p191-193

83 Deduced from information provided in Department of Statistics (2010), Food Security Situation (Issue 39 p13 and issue 40 p14)

84 Understanding the scale of the problem is further exacerbated by the fact that prior to 2006 the data documenting wine exports was

taking place in the wine business has been driven by big producers who are able to produce wine to be marketed to the west for high prices. For them the wine ban may have been something of a blessing since it has allowed them to focus on the far more profitable end of their market. However, it suggests significantly less recovery for the majority of small wine producers.

For the rest of the producers, their export of wine has been substituted with an export of cheap spirits. In value terms, since the export ban, this has been more valuable than wine exports. Spirit exports rocketed following the wine export ban from Russia in 2006. While in 2005 wine was the major exported alcohol beverage worth 73% of total exported alcohol, by 2011 its share had declined to 42% while the share of spirits went up to 52%.[85]

These 'spirits' are the distilled product made from government subsidized grape production that is not made into wine. In 2006, the Government started to support companies to ensure that they would continue to buy grapes even if they did not have a market for the resulting wine. Rather than simply throw the grapes away, some companies process the grapes and then sell them to factories that make them into a spirit that can be used in the production of other alcoholic beverages, including brandy. This is then exported. Two companies Ruji and Guguli have an exclusive right to export brandy spirits from Georgia. They buy the excess in processed grapes from local wine factories, make brandy spirits and then export mainly to Ukraine.

The profile of wine and spirit exports also heavily emphasizes CIS countries, particularly Ukraine.

Figure 23: Alcohol beverages exports from Georgia in 2009 (thsd. USD)[86]

Countries	Alcoholic Beverages	% of total
Ukraine	28,798	53%
Azerbaijan	8,318	15%
Belarus	5,411	10%
Kazakhstan	3,771	7%
Netherlands	2,707	5%
Armenia	1,682	3%
Other countries	3,333	6%
Total	**54,020**	

Source: FAO (2012), FAOSTAT, *Detailed Trade Matrix*; http://faostat.fao.org/site/537/default.aspx (Reviewed April 17, 2012).[87]

In addition to wine and spirits, nuts are worth close attention as they are the clearest example of a profitable cash-crop in Georgia. Overall, the value of nut exports from Georgia has risen tremendously in recent years, from USD 19 million in 2000 to roughly USD 130 million in 2011 (See Figure 22: Exports of agricultural goods from Georgia (thsd. USD)).

Hazelnuts are interesting because they are an international commodity that can only be grown in a few micro-climates. As a result, Georgia is disproportionately significant in the global hazelnut market. Georgia is the world's sixth largest producer of hazelnuts; the fifth largest exporter of in-shell hazelnuts and the fourth largest exporter shelled hazelnuts in the world.[88]

After a decline in hazelnut production during the 2006 to 2008 period, production levels have increased through

almost certainly understated as large quantities of wine were smuggled to Russia through South Ossetia.

85 GeoStat (2012); *External trade of Georgia by HS chapters;* **http://geostat.ge/index.php?action=page&pid=137&lang=eng** (Reviewed April 26, 2012)

86 Includes undenatured ethyl alcohol (strength by volume < 80%); spirits, liqueurs and other spirituous beverages and preparations.

87 We used FAO statistics for this source as GeoStat does not provide this information publically. We understand from discussions with the FAO that they obtain their information from the Government of Georgia

88 USAID (2011)- Economic Prosperity Initiative (EPI)- Value Chain Assessment (Hazelnuts assessment) p2

2010.[89] For instance, the production levels of shelled hazelnuts stood at 28,800 tonnes in 2010, a 23% increase over the 2006 to 2010 period (See Figure 21: Production of agricultural product categories by).

The production is located in Western regions of Georgia, mostly in Samegrelo, Guria, and to a small extent in Imereti. In spite of considerable growth in the sector, according to a USAID value chain assessment report, there are several constraints to strengthening the hazelnut value chain:

- Georgian hazelnut yields are significantly lower than international averages. This reduces the potential income of farmers and quantities available for processing, as well as the quantities that can be exported.
- Because of the fragmentation and small size of hazelnut producers, they have different varieties which they harvest at different times, and they use different production and storage technologies which impacts quality.
- "Georgian hazelnut processors typically sell directly to the European market on the basis of price, or through Turkish suppliers who — take their margin before selling on to the European market. In both cases, other non-traditional buyers exist who will pay more for hazelnuts and who wish to develop long-standing relationships with consistent sellers".[90]

Georgia's fruit production has a long agricultural tradition. However, the fruit sector experienced tremendous decline in production following the collapse of the Soviet Union, and opportunities for growth were further constrained by the loss of the Russian market in 2006, traditionally Georgia's largest buyer.

The value of exported fruits (excluding citruses and nuts) has risen in the past decade from USD 456 thousand to USD 4.6 million in 2011 (SeeFigure 22: Exports of agricultural goods from Georgia (thsd. USD)). Over the same period, citruses' export value has also grown from USD 2.5 million in 2000 and peaked at USD 15.7 million in 2009. The value of citrus exports then dropped significantly, to USD 12 million in 2010 and USD 5 million in 2011.

At present, the total land area occupied by orchards decreased by more than 60% to about 40,000 ha out of which 12,000 are focusing on apple production and 10,000 ha on citrus.[91] Most of the grapes grown over the country are used to make wine and over 90% of Georgia's table grapes are imported from neighboring countries like Armenia, Azerbaijan and Turkey.[92]

Consequently, when looking at Georgian fruits exports, it makes sense to pay particular attention to apples and citruses. Georgia's climatic zones allow for the ability to produce and market crops over a longer season which could potentially be an advantage that producer could capitalize upon, especially if cold storage units are used.

An EPI report has recently looked at these sectors. The assessment offers three elements to look at in order for Georgia to increase its fruit exports:

i) In order to compete with international producers, Georgia has to introduce new varieties that correspond to market needs
ii) It is crucial for producers to obtain accreditations such as GlobalGAP, Critical Control Points (HACCP) and Hazard Analysis if Georgian exports are to enter European and Western markets
iii) Together with accreditations, the use of cold storage units would ensure the quality of the fruits and could increase the quantity of fruits available off-season hereby offering higher prices to producers who store their goods[93]

The EPI report highlighted that the export market for Georgian apples was severely affected by these three constraints.[94]Additionally, exports of Georgian apples destined to Ukraine have decreased in recent years due to similar factors. As the report says,

> old varieties were not being brought in the consumer market; high quality fresh apples were being sent to Ukraine by Eastern European countries (Poland, Serbia, Moldova, Slovakia, Slovenia), and an

89 USAID (2011)- Analytical Foundations Assessment- Agriculture (Rural Productivity) p135
90 USAID (2011)- Economic Prosperity Initiative (EPI)- Value Chain Assessment (Hazelnuts assessment) p2
91 USAID (2011)- Economic Prosperity Initiative (EPI)- Value Chain Assessment (Fresh Fruit Assessment) p4
92 USAID (2011)- Economic Prosperity Initiative (EPI)- Value Chain Assessment (Fresh Fruit Assessment) p4
93 USAID (2011)- Economic Prosperity Initiative (EPI)- Value Chain Assessment (Fresh Fruit Assessment) p11
94 USAID (2011)- Economic Prosperity Initiative (EPI)- Value Chain Assessment (Fresh Fruit Assessment) p11

increase of local production planting new, highly intensive varieties of apples on a yearly basis (800-900 hectares per year).[95]

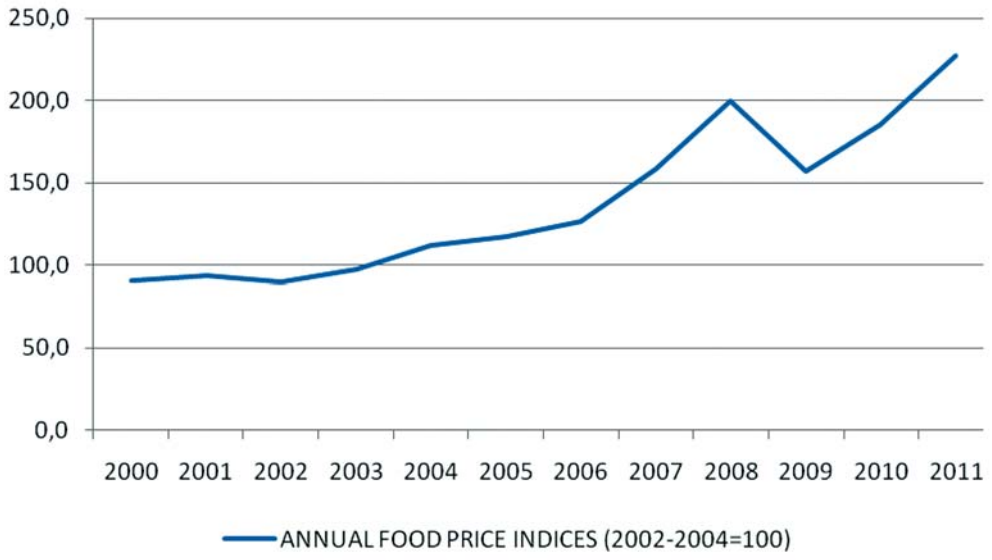
4.5 Food prices in Georgia

Any consideration of the agricultural sector in Georgia has to keep in mind general trends in local and global food prices. If one starts by looking at global food prices over the last decade one can see that in the first five years of the decade food prices were rising, but they were rising fairly slowly and the rises were stable.

The change that has occurred in food prices over the last five year, and particularly starting in 2006, is that food prices increases have become far more dramatic and far more volatile. In 2008, before the financial crisis was properly underway, food prices increased dramatically in a 12 month period, with some key categories almost doubling in cost. Prices dropped back as the financial crisis cooled the global economy generally, particularly reducting global oil prices.

In 2010, driven by a drought in Russia and then a Russian grain export ban, the same dramatic increases started to re-appear and prices are now slightly higher than their 2008 peak.

Figure 24: FAO global monthly food price indices[96]



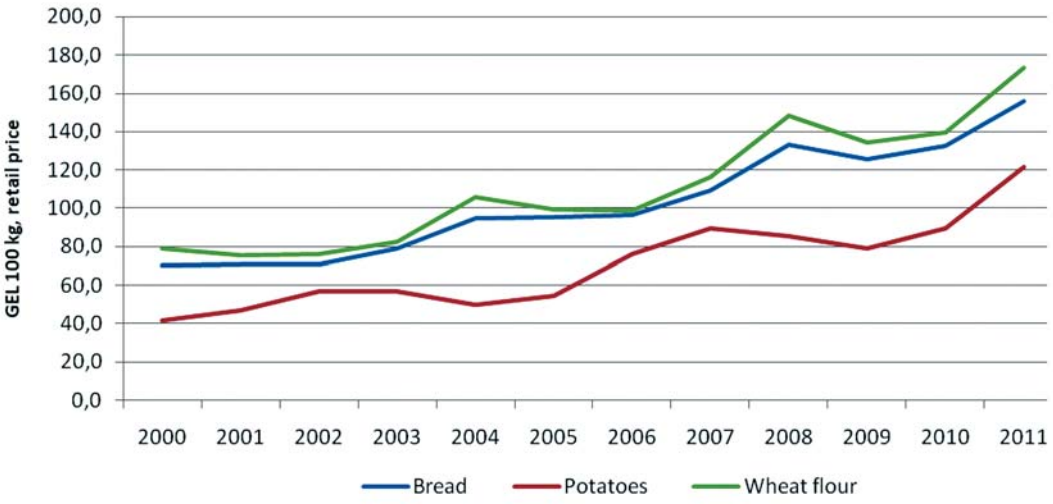
Source: FAO, Food Price Index, http://www.fao.org/worldfoodsituation/wfs-home/foodpricesindex/en/ (Reviewed February 3, 2012)

These price changes are more or less reflected in price changes in Georgia over the last ten years. Prices have certainly more than doubled in some areas in the last 5 years, though without quite the level of volatility. In particular, possibley because of the large stimulus package that Georgia received following the 2008 war, we did not see prices in Georgia drop for agricultural goods in quite the same way that they did elsewhere.

95 USAID (2011)- Economic Prosperity Initiative (EPI)- Value Chain Assessment (Fresh Fruit Assessment) p8-9

96 FAO Food Price Index consists of the average of 5 commodity group price indices (Meat, Dairy, Cereals, Oil and Sugar Price Indices) weighted with the average export shares of each of the groups for 2002-2004 - in total 55 commodity quotations considered by FAO commodity specialists as representing the international prices of the food commodities noted are included in the overall index.

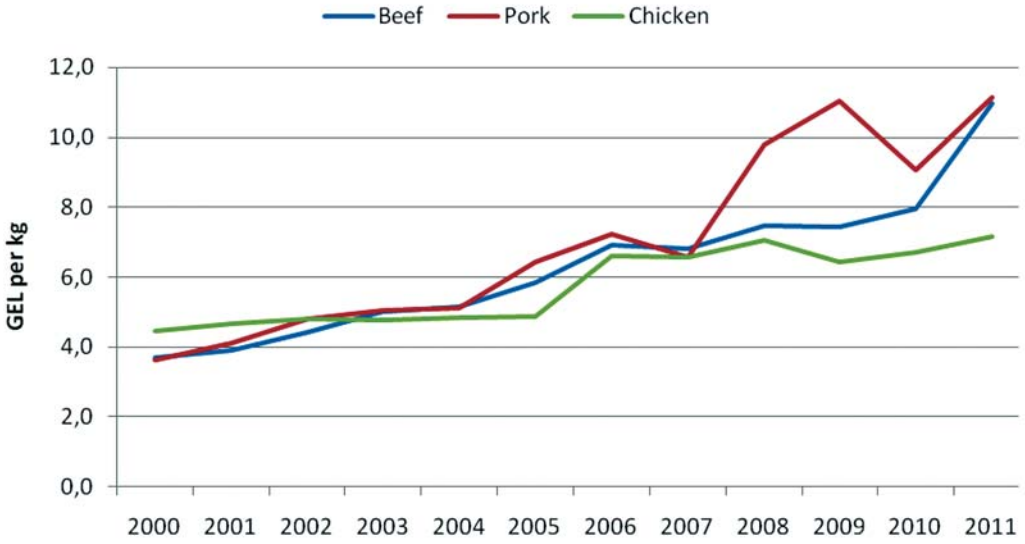
Figure 25: Retail prices of particular products 2000-2010 (GEL, 100 kg)



Source: GeoStat, Food Security, *Price Statistics* http://geostat.ge/index.php?action=page&p_id=434&lang=eng (Reviewed April 10, 2012)

Therefore, it is hard to tell exactly what drove up prices in staples in Georgia. Changes in international prices were clearly significant, but the local conditions, created by the post-war recovery package and the peculiarities of the local market are significant too.

Figure 26: Retail prices of meat products in Georgia by years



Source: GeoStat, Food Security, *Price Statistics* Exports, Imports and Foreign Markets http://geostat.ge/index.php?action=page&p_id=434&lang=eng (Reviewed April 17, 2012)

In meat prices we see far less connection to the general trends in food prices. Beef pork and chicken all see gradual increase in price that is probably consistent with food price increases generally until 2007. After that, while chicken maintains the general trend, pork prices increase dramatically, as a result of swine-flu and beef prices increase quite modestly in reaction to the increase in demand for live animals, but dramatically in reaction to the changes in the abbatoir rules that were brought in over 2010/11.

5 MARKET ACCESS

Another significant barrier to agricultural development in Georgia is market access/competition. This can be broken down into three separate problems. First, the ease with which farmers can get their produce to markets inside Georgia. Second, their access to markets outside of Georgia. Third, the competition that Georgian producers face from foreign competitors, particularly as the Georgian market has become more open. Each of these presents different challenges and opportunities.

5.1 Internal Market Access

The access to Georgian markets for producers has been traditionally restrained by the difficulties of the road network and the physical isolation of certain areas of the country. In terms of poor roads, this incurs two costs. First, poor roads increase the time involved in taking goods to the market. Second, poor roads damage both the goods and vehicle taking the goods and so increase the costs and lower the price of the goods when they finally get there. This is particularly problematic for easily bruised fruits and vegetables.

Road rehabilitation which was already a priority for the current government. With funding from a massive range of International Financial Institutions before the 2008 war, the post-war financial assistance package put even more resources into road reconstruction. Out of the USD 4.5 billion of post-war assistance that was pledged, USD 659 million was pledged for road reconstruction, not including the road rehabilitation taking place under the municipal development fund. USD 410 million was pledged to renovate the East-West Highway, USD 119 million for a bypass in Adjara, USD 60 million for improving the Varziani-Telavi road and USD 70 million on local roads.[97] Not only have most of these pledges been realized, but they have even been added to with organizations like Asian Development Bank actually expanding their road building commitments.

As a result, most of the main roads have been improved significantly. Clearly the next hurdle is the quality of local roads, which still remain fairly poor though connecting high mountainous regions like Racha and Svaneti has also become a major government priority recently, to help promote regional economic development, particularly in agriculture and tourism.

5.2 Access to Foreign Markets

Providing the Georgian economy with access to foreign markets has been a long-term objective of the Georgian government. Georgia has been a member of the WTO since 2000. It is no longer a member of the Commonwealth of Independent States (CIS), but still enjoys bilateral free-trade agreements with many of the CIS countries as well as with Turkey. Georgia has GSP+ provisions that give a particular list of goods preferential access to European and American markets.

It has also just started formal negotiations with the EU on the development of a Deep and Comprehensive Free Trade Agreement. This would not only see zero tariff barriers between Georgia and the EU on most goods, it would also require the harmonistion of Georgia's economic legislation with EU standards in areas like phyto-sanitary protections, labour regulations and competition policy. In an Oval Office meeting recently US President Barak Obama also signaled that the US has an interest in working with Georgia to deepen trade and investment relations between the two countries. Within the options under consideration is a free trade agreement with the United States.

However, there seems to be a strong consensus that the biggest hurdles Georgia faces to accessing Western food markets are not trade barriers, but productive capacity and quality standards. Most of Europe and America are driven by large food retail outlets that require large and reliable volumes and who are extremely price sensitive. For this kind of retailer Georgia is simply not able to provide the volume, quality and reliability of goods to be interested, particularly at the price-points that would be acceptable.

It is for this reason that so many people find huge potential benefits in the European Deep and Comprehensive Free Trade Agreement. The government of Georgia is clearly interested in this agreement for a combination of

97 George Welton (2009). *The Loan Component of the Post-War Pledge: an Evaluation.* Tbilisi, Open Society Georgia Foundation. p17

economic and geostrategic reasons as it will both open up new markets and further cement Georgia's European/ Western orientation.

At the same time, it will also force Georgia to comply with Western standards on food safety and quality. Proponents of the agreement see this as one of its biggest strengths, as the agreement will force Georgia to update its production standards so that it can start producing goods for the West. Opponents claim that Georgia is not at the level of development to be able to support this kind of regulatory regime and that the costs will be debilitating particularly to small farmers. The debate on this issue is unlikely to lessen as the negotiations proceed.

The one market where Russian exclusion has clear and material consequences, according to almost all experts, is Russia. Russia, is Georgia's most natural and traditionally largest trading partner, but the Russian market has been has been effectively closed to Georgian goods since the Russians put an embargo in place in 2006.

Assessing the overall impact of the Russian embargo on the agricultural market as a whole is difficult. The official statistics for agricultural good almost certainly massively understate the pre-2006 export figures, as exports to Russia were generally done in the grey market, through South Ossetia. As a result, one cannot say how many exports have been lost.

However, the current profile of exports suggest that Russia would be a large market if it opened again. In the absence of the Russian market, the majority of Georgian exports now go to a number of former Soviet and Eastern European countries, where the Georgian brand is still strong and neither volume requirements or quality standards are as high as they would be in Western supermarkets. Of course, given the erratic nature of the Russian authorities, it might be a risky strategy to organize investment strategy around a Russian-export plan but how long it would take Georgian suppliers to overcome their nervousness is also hard to judge.

5.3 Imports and competition from abroad

One commonly noted characteristic of the Georgian economy since the Rose Revolution is that imports into Georgia have increased far faster than exports out of Georgia. On aggregate exports were valued at USD 866 million USD in 2005 but by 2011 had USD 2.2 billiovre reached. In the same time, however, imports have risen from their 2005 level of USD 2.5 billion to the 2011 level of USD 7.1 billion. As a result the trade deficit tripled in that period from USD 1.6 billion to USD 4.9 billion.

One reason for this is trade liberalization. Since the *Customs System Development Strategy* in 2004 the Georgian customs regulations have both been dramatically simplified and the tax levels significantly reduced. Prior to the Rose Revolution customs rates were high, regulations were complex and the whole system was notoriously corrupt. According to the 2004 law customs rates were set at 0%, 5% and 12% and by 2006 Giorgi Baramidze, the Minister for European and Euro-Atlantic Integration argued that 'Georgia's Tariff rates are amongst the lowest worldwide, with customs duties for 90% of goods at 0% and the rest at 5% or 12%.'[98]

Agriculture remained better protected than other industries as agricultural products routinely attracted the 12% customs tariffs, however, in 2007 Georgia signed a Free Trade Agreement with Turkey which is the biggest agricultural exporter into Georgia and so removed that tariff.

98 Giorgi Baramidze, Vice Prime Minister and State Minister for European and Euro-Atlantic Integration, 26th May 2006, *NATO Parliamentary Committee, Economics and Security Committee.*

Figure 27: Import of Agricultural Products into Georgia 2004-2009 (USD Million)

	2004	2005	2006	2007	2008	2009
Wheat	75.0	45.1	99.1	139.2	108.9	104.1
Wheat flour	48.8	45.3	29.8	45.9	74.5	14.8
Potato	0.3	1.0	4.3	12.2	6.0	2.6
Meat (except poultry)	7.0	7.3	19.5	24.1	33.5	25.4
Poultry	9.7	13.8	22.2	36.3	44.8	37.2
Fish (including canned)	6.2	11.6	26.9	33.9	38.2	31.2
Milk and products (not concentrated)	1.2	2.0	2.9	3.4	4.8	3.1
Concentrated milk, milk powder	7.9	9.2	9.3	11.4	12.4	9.5
Butter	5.1	7.7	10.3	7.1	6.5	5.2
Eggs	4.4	4.3	4.2	3.0	2.6	1.8
Vegetable oil	17.1	23.8	24.8	31.8	50.1	31.1
Margarine	4.7	6.5	9.6	11.7	16.2	15.8
Vegetables	3.7	4.5	17.9	32.9	23.7	19.5
Fruit	5.3	4.5	8.6	12.5	12.9	16.6

Source: GeoStat (reviewed May 28, 2010), *Food Security Situation: Trends in Figures* (issues 39-42)

GeoStat does not provide import statistics by country and product breakdown. The FAO does provide this data and it shows that while the sources of these imports are fairly wide, there is some concentration in the CIS countries with wheat originating from Russia and Kazakhstan, wheat flour from Turkmenistan, beef from the Czech Republic and Kazakhstan, oil from Turkmenistan, sugar from Austria and chicken from the United States.

In terms of beef, pork is generally coming from Brazil and Canada. Poultry, which we have seen, is a growing import category, largely comes from the US and Brazil. Almost all of the imported 'beef' is buffalo and comes from India.

In vegetables, tomatoes, onions and potatoes almost exclusively come from Turkey, though a small proportion of potatoes also come from Armenia. Milk primarily comes from Russia and Ukraine and Maize comes from Ukraine, Austria and Russia.

However, the key issue here is the extent to which the Georgian market has seen an expansion in the import of agricultural goods that they could produce themselves. Often it is suggested in discussions of the agricultural sector, that Georgia's increase in food imports provides prima-facia evidence that Georgia has huge potential for import substitution. While there is undoubtedly merit in the argument, the issue is extremely complicated because Georgia can produce almost any agricultural goods. The question is, in what areas does it have a comparative advantage?

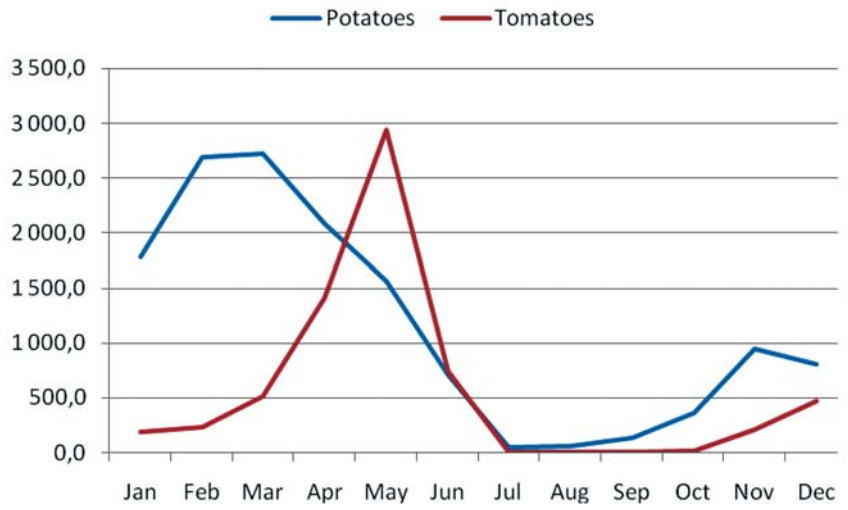
For example, does the fact that Georgia imports a lot of wheat, and that this has been growing in value in recent years (as prices for wheat have increased dramatically) mean that Georgia should produce wheat? Not necessarily. Wheat is a global commodity for which storage and transport are relatively easy. Therefore, to compete in wheat production one has to approach efficiency levels of countries like Russia and Kazakhstan (in the region) and the United States. This may not be realistic. In other areas, like fruits and vegetables, there exists far less of a global market as storage and transport are difficult. Therefore, it seems like switching wheat for fruits and vegetables would make sense.

Similarly, as we are seeing in meat production, the import of beef is the result of Georgia exporting live animals, which is a far more profitable trade. Clearly this presents an opportunity, but whether the opportunity should be to expand export or to substitute import is unclear. Again, given that live animals are not quite so easy to transport so not quite such a global commodity seems to suggest that Georgia should focus on fully exploiting its geographic proximity to a large and growing market, rather than substituting imports of frozen beef.

Finally, the timing structure of imports means that import-subsitution is not simply a matter of producing more. The Economic Prosperity Initiative did an assessment of fruit and vegetable imports into Georgia and found that they were very heavily concentrated at the beginning and end of the season. In the middle of the summer there are relatively few imports of fruits and vegetables as supply is plentiful and prices are low.

For instance, in the case of tomatoes, imports pick up in March and peak in May right before the season for Georgian tomatoes starts, and reach their lowest point in July in the middle of the season.[99] A similar situation applies to potatoes where imports peak in February and March, towards the end of the season in Georgia, and reach their lowest levels in the summer after the season has already started.

Figure 28: Potato and tomato imports in Georgia in 2011 by months.



Source: GeoStat (2012), External Trade of Georgia by HS chapters in 2011; http://geostat.ge/index.php?action=page&p_id=137&lang=eng (Reviewed May 11, 2012)

Therefore, the key is not just to produce more, but to produce slightly out of season or store your products for sale when the market is more depressed. It was on this basis that the EPI project focused on greenhouses and storage facilities as fixes for the sytem.

6 THE STRUCTURE OF LAND-HOLDINGS

One of the most commonly cited problem facing agriculture in Georgia is the structure of land-holdings. Average land-holding in rural Georgia is 1.25 hectares, which is spread over 3-4 land plots. Both the land plot size and its fragmentatation result from the first round of privatization that began in 1992 and were intended to create an equitable outcome and a degree of personalized food security. Part of the idea behind the privatization was to ensure that, where necessary, individual families could grow the food needed to provided for their own subsistence.

Out of the 3 million hectares of agricultural land in Georgia only about 1/3 of that is classified 'intensive agricultural land'. This is classified as follows:

99 USAID (2011)- Analytical Foundations Assessment- Agriculture (Rural Productivity)p144

Figure 29: Agricultural Land Usage by Regions (2008) Thsd. Ha

Region	Cultivated	Uncultivated	Permanent meadows and pastures	Land under permanent crops	Total
Adjara AR	7	0	6	6	**19**
Imereti	52	14	9	13	**88**
Samegrelo-Upper Svaneti	45	3	8	24	**80**
Shida Kartli	29	20	2	18	**69**
Kakheti	114	44	120	37	**315**
Kvemo Kartli	35	22	65	3	**125**
Samtskhe-Javakheti	26	7	18	1	**52**
Other regions	21	20	36	13	**90**
Georgia Total	**329**	**130**	**264**	**115**	**838**

Source: GeoStat, Annual Publication *Agriculture of Georgia 2008*, p24
http://www.geostat.ge/index.php?action=wnews&lang=eng&npid=8 (Reviewed May 5, 2010)

According to GeoStat, most of this land is privately owned. In the first round of land privatization starting in 1992 about 1.25 hectares of land was given, free of charge, to rural households. However, most of the land was still controlled by the government and leased to farmers with the result that it was often used with little thought for the long-term.

In an effort to correct this situation, in 2005, the *Law on State-Owned Agricultural Land Privatisation* was passed and there was a second big push to privatise the land. The remaining land was then offered to existing tenants in the first instance and sold at auction if the existing tenant was not able to buy it. As a result, according to official statistics, from 2006 to 2008 division on holdings of the 900,000 or so hectares of land went from 60% private and 40% public to around 80% private and 20% public.[100]

However, there still seems to be a lot of confusion over what exactly this means. While cultivated land may now be overwhelmingly privately owned, considerable communal land or forested areas, both of which are used for agricultural grazing is not private.

Communal grazing makes pasture management difficult so that grass is rarely given time to recover. Therefore, particularly close to the village, pasture is often over-grazed. As a result, animals have to travel longer distances to find quality grass and take a longer time to feed properly. This in turns severely affects both the quality and the quantity of growth and, most importantly, milk yield from dairy cows.

6.1 Land Registration

A consistent problem for the land market in Georgia has been poor documentation of land ownership. Land plots that have been registered in a range of different ways and have been subject to different form of traditional usage so that those who feel they have title may not have correct title. One result of this is that it investors trying to buy large tracts of land will often find it hard to ensure proper title.

A good example of this is the confectionary company Ferrerro who invested in hazelnut production in Gerogia. Over the last few years, Ferrero has been buying land in Georgia and at the current time has 5000 hectares. Even though this purchase was made with the assistance of the government, Ferrero found that when they tried to take control of the land that they had bought (which was mostly tea plantations that had gone wild) they found that their claim was contested. Some of this land had disputed borders with neighbouring land, sometimes even

100 GeoStat, Annual Publication *Agriculture of Georgia 2008,* p23 **http://www.geostat.ge/index.php?action=wnews&lang=eng&npid=8** (Reviewed May 5, 2010)

overlapping with someone else house. Therefore, before they could plant hazelnut trees on this land, Ferrerro had to fix this problem. Theseproblems applied to 300-400 hectares.[101]

Another example is the case of the South African farmers (ethnically Boers, and commonly referred to as such) who were approached by the Georgian government to settle in Georgia. According to members of one Boer consortium, who have now purchased 1000 hectares of land near Gardabani, the process of purchasing land was made incredibly difficult by lack of clarity on land title. As they put it, "even people on the ground do not know what is private or government owned land".[102]

In response to problems like these, a range of projects have attempted to improve the situation of land registration and transparency over ownership. One part of the system that the GoG implemented to try and achieve this was an online, GPS mapped, cadastral register.

Under article 203 of the current Georgian Tax Code, that came into effect at the beginning of 2011, land is only considered properly registered if it is registered in the Public Registry (with proper cadastral mapping coordinates).[103] Individuals are not considered as legal owners in the absence of land registration and are not allowed to sell their land, even if they hold older government documents showing title to the property.

This was intended to help avoid problems like those experienced by Ferrerro and the Boers. There is no doubt that when all land-holdings are properly registered then it certainly will make the situation better. However, in the short-term it has actually made the situation worse for a range of reasons. First, at the moment only about 15% of the land that is registered in the Public Registry is shown on the cadastral map.

Second, people are not motivated to register their land, because after registration they will be required to pay land property tax on agricultural land-plots, which varies from GEL 56 (USD 34) to GEL 100 (USD 60) per hectare according to different administrative entities.[104] For example, Boers were complaining that they had to pay about 95000 GEL (USD 57,4 thsd) land tax per year.

Third, the registration process for land is expensive, and can include payment for recognition of title, the cost of GPS mapping the plots and registration fee. These costs are made worse because of land fragmentation, as it means that separate registration is required for the individual plots. Costs for recognition of title is GEL 300 (USD 181) for Tbilisi and Batumi and GEL 50 (USD 30)for other regions.[105] Our discussion with land registration agencies in Tbilisi suggested that the price for making the cadastral land-plot plan, with GPS coordinates was 4-5 tetri per square meter, depending on how far it is outside of the city. This would suggest GEL 500-600 (USD 302-363) for 1.25 hectare plot. Finally, a registration fee has to be paid of GEL 50 (USD 30).

This creates a range of problems. First, individuals may simply not be in a position to sell their land at all, thus creating massive hurdles to investors. Second, there seems to be a strong consensus that even government privatized land may have incomplete records and so may bring with it future claims. As a result buyers might not be clear on what they are getting, or may find there are post-purchase disputes. However, the cost of GPS mapping the entire country would be significant and the government has not shown an interest in doing this yet.

7 IRRIGATION AND DRAINAGE

The second major structural problem facing the agricultural sector is irrigation. Georgia is a water-rich country with 1140 mm/yr according to the National Rainfall Index compared to 460 mm/yr in Azerbaijan and 352 mm/yr in Armenia.[106] Much of this falls in the form of snow and is stored over the winter, from where it is gradually

101 Interview with Merab Murghulia (February 21, 2012) – Former representative of Ferrero.

102 Interview with Boers (February 23, 2012).

103 Tax Code of Georgia, Article 203. (Adopted September 17, 2010 and came into force from January 1st, 2011.)

104 Resolution #50 on Basic Property Tax Rates on agricultural land-plots and forest lands (Adopted February 14, 2012).

105 Resolution #509 by the Government on Georgia on the Service Payments, *Rules on Payments and Service Proving Dates by the Public Registry under the Ministry of Justice;* Article 2. (Adopted December 29, 2011),

106 FAO (2012), AquaStat; *Water resource database;* **http://www.fao.org/nr/water/aquastat/data/query/index.html?lang=en** (Reviewed April 3, 2012);

released over the spring and summer. This is one of Georgia's greatest resources and generates the potential for great agricultural production and hydro-power.

Owing to the uneven distribution of this precipitation, the east and south of the country tends to need irrigation while the West tends to need drainage in order to be productive. Irrigation is vital because it not only provides improvements in productivity in a normal year, it is also a protection against drought and flooding. Georgia experiences drought during the growing season every 3-4 years and in the absence of irrigation this makes large expenditures in inputs an extremely risky proposition. This, in turn, encourages a 'low-input, low-output' approach to agriculture since low-input also means low risk.

Under the Soviet system, at its peak as much as 469,000 hectares of land were covered by irrigation and 163,000 hectares had improved drainage. At the time of the fall of the Soviet Union 386,000 hectares were still under irrigation with 291,000 hectares depending on gravity systems of irrigation and 95,000 relying on 120 pumping stations lifting water from rivers.

However, the current system fell into disarray after the country gained independence from the Soviet Union and despite efforts to rehabilitate it, much needs to be done. The causes of the substantial decline have been laid out in a USAID report:

> The fundamental causes of the decline in both irrigated and drained land since independence are the disruption of institutional capacity, to include the quality and continuity of management, and drastically reduced levels of funding for system operation and maintenance. In addition, civil strife, war, and vandalism contributed to the disruption. All these eventually led to inoperable head-works, broken and breached canals, broken gates, blocked pipes, and theft of marketable items. Once an irrigation system becomes inoperable for whatever reason, it can generally not be effectively placed back on-line without undertaking significant rehabilitation activities..[107]

7.1 The World Bank Irrigation and Drainage Project

In 2009 the WB completed an 8-year project Irrigation and Drainage Community Development Project that was intended to substantially improve the irrigation provided to farmers in Georgia. The plan was to provide emergency repair to central irrigation and drainage infrastructure and to support the development of locally run amelioration associations (AAs) that would manage the local maintenance and revenue collection for the Department of Amelioration and Water Economy (DAWE). The overall project, it was hoped, aimed to improve agricultural productivity on around 110,000 hectares.[108]

It was also expanded to include significant rehabilitation of drainage and repair to river banks afterflooding in 2005. The World Bank projects cost around USD 52 million.[109]

Many of the major repair and renovation components of the project were completed according to this plan. Slightly over the planned 20,000 hectares of higher order irrigation systems were repaired and both drainage and river-bank repair following the 2005 flooding has significantly diminished the likelihood of future flooding in those areas.

However, the World Bank's assessment of the project as a whole was extremely negative. The main reason for the failure in sustainability, their assessment argues, is that government policy at the time took an overly 'top-down' approach and failed to help build or support the amelioration associations that the original plan had called for.

According to the World Bank, at its core, this reflects the then Ministry's lack of understanding concerning the difficulties of irrigation maintenance and management. In particular, they point out that it is neither efficient nor

107 USAID (2011) - Analytical Foundations Assessment- Agriculture (Rural Productivity) p61

108 World Bank (2005). *Project Paper on Proposed Additional IDA Financing for an Irrigation and Drainage Community Development Project* Tbilisi, Georgia

109 World Bank (2010). *Implementation, Completion and Results Report for the Irrigation and Drainage Community Development Project* Tbilisi, Georgia, p22

effective to try and manage the system top-down as it is hard to force the collective responsibility needed for the maintenance of an irrigation system. Payment is part of the problem, as it is difficult to exclude non-payers from the system. But more important is the need for individual farmers and the community as a whole to take responsibility for clearing local channels if the system as a whole is going to work.

Drainage charges are even harder to collect since it is not possible to drain small areas and so it is almost impossible to exclude non-payers.

7.2 The current system

According to the Head of the Amelioration Policy Department at the Ministry of Agriculture, 73-80,000 hectares are currently irrigated, with a plan to irrigate another 20,000 next year and there is 10,000 hectares under drainage with the plan to add another 7,000 hectares next year.[110] Less than 27% of cultivated area is irrigated which will be increased up to 36% after the addition this 27,000 ha.[111]

This system is managed by a series of four Ltd companies who charge farmers directly: Sioni – M^1, Mtkvari – M^2, Alazani – M^3, and Kolkheti–M^4. The current charge for irritation of one hectare of land is GEL 75 (USD 45) for the year, and this can be paid in installments. Monitoring groups attempt to keep track of who has used and not paid and transgressors are fined.

According to Deputy Minister of Agriculture Kote Kobakhidze, the government plans to unite the four Ltds this year.[112] The priority of the government is to rehabilitate channels, which will remain under government supervision for the upcoming future, and which will only serve the agricultural sector.[113]

According to Vahktang Gardapkhadze, program manager for Sioni, the main challenge has been the lack of desire for farmers to irrigate their land. According to him, a problem Ltds are facing now is that farmers "mostly don't do anything, don't have money neither the willingness to irrigate".[114] For instance, initially the company had contracts with individual farmers to irrigate 25,000 hectares but farmers only paid for 15,000 hectares. The remaining 10,000 hectares include individuals who changed their mind, refused to irrigate their land or did not pay.

Generally, land registration issues have also been problematic for irrigation companies, making it difficult to know who the irrigated land plots belong to and who to bill. To curb that problem, Sioni holds the individuals who actually decide to irrigate the designated plots responsible for payments.

The maintenance and rehabilitation of channels has also been burdensome. In Kvemo Kartli, "only the main channels have been rehabilitated and secondary channels are in bad conditions".[115] This is partly due, they argue, to the fact that the income produced by their combined activities is not enough to cover on-going costs and the rehabilitation and maintenance of the systems.[116]

In addition, land in Georgia is almost entirely covered by flood irrigation since the pumping stations are not working. This is a major constraint since this irrigation method damages land-plots and soil. According to Gia Glonti of CARE international, "there is a need for modern systems acquainted to the appropriate farming which is done in Georgia".[117]

Monitoring is done through 5 groups of inspectors who monitor the irrigation system and deal with transgressors. If individuals have not paid the fees and inspectors issue a notice and they are requested to pay the amount which had been agreed upon on their individual contract with the company (usually GEL 75 (USD 45) per hectare). In

110 Interview with Vato Mchedlidze (December 2011), Head of the Amelioration Policy Department, Ministry of Agriculture, GoG, Tbilisi.

111 According to the GeoStat 329 thsd hectares of agricultural land was cultivated in 2008. GeoStat, *Agricultural Land Usage by Regions (2008).*

112 Interview with Kote Kobakhidze (March 1st, 2012) Deputy Minister of Agriculture

113 Interview with Kote Kobakhidze (March 1st, 2012) Deputy Minister of Agriculture

114 Interview with Vakhtang Gardapkhadze(March 16, 2012), Program manager at Sioni Ltd

115 Interview with Vakhtang Gardapkhadze(March 16, 2012), Program manager at Sioni Ltd

116 USAID- Analytical Foundations Assessment- Agriculture (Rural Productivity) (2011) p62

117 Interview with Gia Glonti (February 12, 2012), programs operations manager at CARE international.

the case of individuals still refusing to pay the fees, they are brought to court and prosecuted. At the end of 2011, Sioni had prosecuted almost 100 individuals for non-payment.[118]

The company offers different tariffs for water:

1- Irrigation fees for farmers are GEL 75 (USD 45) per hectare/for one year

2- Supply of water for private clients (i.e. factories): 1,000 cubic meters usually cost GEL 50 (USD 30), and up to GEL 100 (USD 60) for certain clients.

3- Price for hydroelectric power stations: a 10% return of the electricity they have produced

The majority of Sioni's income derives from these larger entities (private sector and hydroelectric stations). According to interviews conducted this could prove to be a significant structural problem. Since the state owned Ltds are profit-oriented, with significant problems financing themselves through irrigation provided to farmers (see above World Bank irrigation and drainage project), they might focus their activities on the non-agricultural sector as appears to be the case now.

Davit Kirvalidze, senior advisor for CNFA, mentioned that "the problem with irrigation is that if you run it as a large business then, of course, the business will think about how it can make money out of the electricity sector rather than irrigation provision to farmers".[119] According to experts, the solution would then be to shift the burden of renewal to the farmers where possible, run by their own associations.

8 AGRICULTURAL SUPPORT SERVICES

As Georgian agriculture develops, access to quality and affordable inputs in a timely fashion becomes crucial for the sector to expand and become more productive. Under the Soviet system, state-owned collective farms were in charge of suppliers, specialists and farmers. Once the system collapsed, farmers were left alone with their crops, without specialists such as agronomists and suppliers. This had a terrible effect on the country's agricultural sector since it drastically reduced the capabilities of farmers to get access to quality inputs, an activity which was not under their responsibility before.

When understanding the workings or failures of the agricultural sector in Georgia, it is important to understand the range of support services on which the sector depends. In the following section we will look at the availability of farm machinery, veterinary care, animal feed production, fertilizers and pesticides, storage for products grown and finance.

Today, agricultural support services are provided by a complicated array of cross-cutting service delivery organizations that exist in terms of agricultural inputs: development organizations like Mercy Corps, CARE, UNDP, MCC; private companies such as Cartlis and AgroGeo+; and government agencies like the Georgian Agriculture Corporation.

8.1 Farm Machinery

The latest Village Infrastructure Census conducted by GeoStat in 2010 did try to assess whether agricultural machinery services were available and accessible to farmers. The major findings are that 51% of farmers surveyed did use agricultural machinery rental/hiring services; 24% do not need or have not heard of the services; and 25% cannot use the services[120]. The main reasons cited for inaccessibility of the services were that the centers were

118 Interview with Vakhtang Gardapkhadze(March 16, 2012), Program manager at Sioni Ltd

119 Interview with Davit Kirvalidze (March 20, 2012), Senior Advisor for CNFA

120 Village Infrastructure Census 2010 (published in 2011), GeoStat. p133.

located too far from the villages and that the services were too expensive to afford.[121] The following table breaks that down on a regional basis.

Figure 30: Agricultural Machinery Rental/Hiring Service (By Region)

Region	Does not need/Has not heard	Can not use	Uses
Tbilisi	48%	43%	10%
Adjara	14%	25%	62%
Guria	13%	17%	70%
Imereti	16%	18%	66%
Kakheti	13%	36%	52%
Mtskheta-Mtianeti	58%	22%	19%
Racha-Lechkhumi and Kvemo Svaneti	28%	32%	40%
Samegrelo-Zemo Svaneti	15%	33%	53%
Samtskhe-Javakheti	14%	19%	67%
Kvemo Kartli	35%	26%	39%
Shida Kartli	19%	28%	54%
Total	**24%**	**26%**	**51%**

Source: Village infrastructure Census, GeoStat(2011) p. 132

In recent years, there has been a push by international donors and the Georgian government to create machinery service centers (MSCs) in an effort to provide different services to farmers who lacked farm machinery. Of particular interest were the MSCs established under the MCC compact between the Georgian government and the government of the United States. The compact made available a total of USD 295 million to support several different activities, and one of the activities was the Agricultural Development Activity (ADA)which was allocated USD 20 million.[122] Within this activity a total of 33 Farm Service Centers were created out of which 10 provide machinery services[123].

In addition to those, there have been 21 Machinery Service Centers established under the USAID Access to Mechanization Project (AMP).[124] For the AMP project, grants averaging around USD 100 000 were given out to either start MSCs or grow existing ones. This was done with the requirement that the for-profit grant recipients would match the grant contribution with an equal value of their own money.[125] With this money each MSC was equipped with 3-4 tractors and 12-15 different implements, and attention was paid throughout the process to regional needs. Moreover, each of the local service providers had trained agronomists on their staff.

The Georgian government has also stepped up its efforts in recent years in order to make farm machinery more accessible throughout the country. The company 'Meqanizatori' was created in 2009 under an initiative of the MoAg and the Ministry of Economic Development of Georgia, but in March 2010 the company became a subsidiary company of the Georgian Agriculture Corporation and iscurrently totallydependent on the MoAg for its operational budget.[126]

'Meqanizatori' is one of the largest mechanization agricultural service providers in Georgia, claiming to have 30% of the market. Since its creation, the company has grown quickly, doubling its client base between 2010/11 and

121 Ibid., p133

122 USAID- Analytical Foundations Assessment- Agriculture (Rural Productivity) (2011) p67.

123 Interview with Shalva Pipia (March 20, 2012), Project Manager CNFA (FTF, AMP)

124 Interview with Shalva Pipia (March 20, 2012), Project Manager CNFA (FTF, AMP)

125 CNFA- AMP General Eligibility Criteria **http://amp.ge/index.php?lang_id=ENG&sec_id=23** (Revised 2009)

126 LTD Meqanizatori Presentation. **http://www.slideshare.net/MEQANIZATORI/meqanizatori-llc** (Reviewed April 12)

increasing its profits from GEL 1.2 million (USD 673 thsd) in 2010 to GEL 3.6 million (USD 2.1 million) in 2011. It expects to add 12 new regional centers this year.

At the moment, the company provides farming services to farmers through mobile units which operate in more than 30 municipalities across the country; providing over 20 types of agro-operations. Its machines worked on 25 300 ha of cultivated area in 2010, increasing to 48 966 ha in 2011. Roughly 60% of the area covered is directed at farmers with farms over 15 ha. These figures are also expected to grow drastically because of the new service centers which will ease accessibility for farmers.

Figure 31: Mechanization Service Centers

- **Mechanization and Extension/ research station service centers:**
  1. Kakheti (Gurdjaani, Chalaubani);
  2. Kvemo-Kartli (Marneuli);
  3. Shida Kartli (Kareli);
  4. Samtskhe-Javakheti (Akhaltsikhe);
  5. Imereti (Zestafoni);
  6. Samegrelo (Abasha).
- **Mechanization service centers:**
  1. Kakheti (Dedoplistskaro);
  2. Kvemo-Kartli (Bolnisi);
  3. Shida Kartli (Kaspi, Rene);
  4. Racha-Lechkhumi, Kvemo-Svaneti (Ambrolauri);
  5. Guria (Ozurgeti);
  6. Imereti (Samtredia).
- **Tbilisi Central Base**

According to experts interviewed, the current number of MSCs in place is not sufficient and there is a need for up to 150 more service centers.[127] The reach of existing MSCs is limited since existing centers provide a full array of services to cover only 600-1000 hectares in a radius of 15/20 km. Shalva Pipia of CNFA has argued, for example, that even in Akmeta, which is a relatively small district of Kakheti, three or four new MSCs could be created without affecting the client base and business of the center already in place.[128]

However, the issue here is not simply one that relates to the number of MSCs. The interrelated issues of the orientation of the services provided, cost, and sustainability represent challenges to be addressed. First, the services provided by current MSCs are oriented towards large farmers. The reason for this is simple: in order for the centers to be economically viable, they need to target a client base which has the resources to pay.

Second, and connected to the first point, machinery service costs are often prohibitive and just too expensive for small farmers to afford. While adding new service centers makes sense since more farmers will have the opportunity to use them, it will do little for the small farmers unable to afford the services.

Third, since small subsistence farmers represent the bulk of the agricultural sector, there exist some doubts

127 Interview with Shalva Pipia (March 20, 2012), Project Manager CNFA (FTF, AMP)

128 Interview with Shalva Pipia (March 20, 2012), Project Manager CNFA (FTF, AMP)

regarding the sustainability of the current approach. If this target group has difficulties accessing the services, the impact of the current approach in increasing agricultural production will be restricted.

8.2 Seeds/Fertilisers/Pesticides

Along with tractors, one of the other obvious inputs to ensure increased productivity of crops is the availability of non-capital inputs like fertilizers, pesticides and seeds. The overall picture is that there seems to be plenty of general availability, but problems over the quality of the available product and knowledge about how to use it.

Figure 32 Availability of Seeds, Fertilizers and Pesticides (by regions)

National average	Adequate Supply	Moderate shortage	Inadequate Supply-Acute Shortage	There was no Need for such item
Seeds	71%	13%	7%	9%
Mineral Fertilizers	54%	15%	11%	20%
Chemicals/Pesticides	54%	11%	12%	23%

Source: Village infrastructure Census, GeoStat (2011) pp. 176-178

According to the village infrastructure census conducted by GeoStat, a relatively small proportion of the population says that there is inadequate supply of seeds, fertilizer and pesticides. The same survey also suggests that most have access to a shop that sells fertilizer/pesticides.

Figure 33: Fertilizer/Pesticide Shop (By Region)

Region	Does not need/Has not heard	Can not use	Uses
Tbilisi	33%		67%
Adjara	3%	5%	92%
Guria	2%		98%
Imereti	1%	1%	98%
Kakheti	18%	6%	76%
Mtskheta-Mtianeti	64%	14%	22%
Racha-Lechkhumi and Kvemo Svaneti	37%	20%	43%
Samegrelo-Zemo Svaneti	13%	7%	81%
Samtskhe-Javakheti	12%	5%	83%
Kvemo Kartli	34%	6%	60%
Shida Kartli	14%	3%	83%
Total	**21%**	**7%**	**73%**

Source: Village infrastructure Census, GeoStat(2011) p48

According to GeoStat 58% of the cropped area in Georgia uses either chemical fertilizers or manure, but only 20% uses pesticides.

Figure 34: Usage of fertilizers, manure and pesticides on annual crop planted area in Georgia

	2006	2007	2008	2009	2010
Area planted with annual crops (thsd. ha)	330	297	329	308	275
Mineral fertilizers used by agricultural holdings (thsd. tonnes)	96	51	53	60	52
Mineral fertilizers usage on annual crops (thsd. ha)	165	117	131	155	114
Of which nitrogenous fertilizers usage on annual crops (thsd. ha)	156	113	125	152	111
Share of annual crop planted area treated by mineral fertilizers	**50%**	**40%**	**40%**	**50%**	**42%**
Manure usage (thsd. tonnes)	531	448	385	388	446
Manure usage on annual crops (thsd. ha)		27	54	42	43
Share of annual crop planted area treated by manure		**9%**	**16%**	**14%**	**16%**
Pesticides usage on annual crops (thsd. ha)	52	20	27	31	57
Share of annual crop planted area treated by pesticides	**16%**	**7%**	**8%**	**10%**	**21%**

Source: Geostat, Agriculture of Georgia 2010, http://geostat.ge/cms/site_images/_files/georgian/agriculture/2010wlis%20soflis%20meurneoba.pdf (Reviewed April 10, 2012).

However, in Georgia there have traditionally been problems over the quality and reliability of the inputs. In terms of counterfeiting or adulteration of inputs, the situation was especially dire in the decade following the collapse of the Soviet Union until the mid-2000s. According to interviews conducted, problems related to contraband products have settled, but low quality products are still entering Georgia.[129]

A local production of nitrogen fertilizer has long existed in Georgia using ammonium nitrate produced by Rustavi Azot. However it is still difficult to obtain blended NPK fertilizers.[130] According to experts, the use of blended NPK fertilizers would have a direct positive impact on productivity since it provides additional active nutrients essential for maintaining soil productivity; not only nitrogen but phosphorous and potassium. Other major obstacles usually cited by experts are the intermittent supply of high quality seeds and saplings.[131]

In the past, the Georgian market was supplied mostly through imports coming from Armenia, Azerbaijan and through various NGO projects distributing seeds, fertilizers and pesticides. However, pesticide and fertilizer imports have diversified over the years and the Georgian market is currently more and more supplied by major international suppliers such as Bayer, Syngenta and DuPont. However, the tendency by most to use cheap and low quality pesticides and fertilizers, which are often falsified, is often cited as one of the reason behind the sector's low productivity.

For example, 1kg of pesticide from the leading worldwide producer Syngenta costs GEL 40 (USD 24) while the 'similar' Chinese product is GEL 17 (USD 10). The quality and reliability of the product mean that, from a business point of view, a farmer would be better served to use the more expensive product. However, the major challenge rests on ensuring that a proper price/quality balance is maintained and that farmers not only have access to the products but are educated as to their benefit and properly trained in using them.

There are three main problems here. First, farmers are not educated in how to use different products and, as

129 Interview with Rusudan Gigashvili (February 20, 2012), PR manager for Agro Development Group.

130 USAID (2011) Analytical Foundations Assessment- Agriculture (Rural Productivity) p64.

131 USAID (2011) - Analytical Foundations Assessment- Agriculture (Rural Productivity) pp64-65.

a result, may not know the benefits that higher quality inputs can create in terms of final productivity. Worse, their lack of education may mean that even if they are given high quality inputs, they fail to make effective use of them.[132]

Second, high levels of falsification have led to considerable mistrust.While farmers are aware that they need to use fertilizer they don't want to invest in more expensive inputs that may not work. To encourage higher quality inputs it is essential that at least the more expensive inputs are accredited in a way that Georgian farmers will understand.

Third, the structural uncertainties already mentioned discourage farmers from paying for expensive inputs generally. This occurs because of lack of cashflow, expensive financing or a general unwillingness to incur debt. But it is also caused by structural problems like irrigation and drainage which increase the likelihood of droughts and floods, so making high value investment even more risky

In the absence of sufficient information to communicate the value of buying more expensive products and training in their use, it is likely that most demand in Georgia will continue to orient towards low quality products that are backed by little or no agricultural expertise. As long as that continues to be the case, use of fertilizers and pesticides may be high but their impact will probably remain low.

A final issue is supply. As long as it is necessary to import inputs, particularly for seeds and fertilizers, and particularly from the west, the price is likely to remain prohibitively expensive, particularly for local farmers. The expansion of potato seed production has been a long-term goal of many international organizations working in the sector in Georgia, and the success they have enjoyed in this regard can at least partially explain Georgia's increasing self-sufficiency in potatoes.

One attempt to import high quality potato seeds from the Netherlands was implemented by the International Association of Agricultural Development (IAAD). They would usually import around 40-50 tonnes of seeds, which was enough only for about 15 hectares of land.[133] This project led to the successful cooperation of local farmers in Akhalkalaki as they started to import potato seeds annually and used machinery and equipment of the service center which was initially set up by IAAD. However, many local farmers still continue to use old, low quality seeds for many years and, subsequently, potato yields are quite low.[134]

Mercy Corps also actively assisted potato seed imports from the Netherlands. According to its director, Irakli Kasrashvili in total about 300-500 tonnes of quality seeds are currently being imported and thisis barely enough for the region of Samtskhe-Javakheti.[135] Even ifthe price of 1 kilo of high quality potato seeds is about two lari, it is reported to be more cost effective since yields more than double, from 6-8 to 15-20 tonnes per hectare. However, to achieve such results the use of quality seeds should be coupled with adequate machinery and equipment to ensure high productivity.

8.3 Veterinary and animal health

The provision of veterinary services has, like much of the agricultural sector, been subject to widescale privatization so that in the current form the state's role in providing services has been significantly reduced. One concern this has created amongst almost all of the experts that were interviewed for this research, is that this has left Georgia considerably exposed to potentially very damanging problems with animal disease. This, it is argued, like poor irrigation provision, totally undermines efforts to improve the sector as a whole and provides a risk factor that could undermine growth sectors like live animal exports.

According to Koba Dzmanashvili, head of the veterinary department at the National Food Agency, a decision was made after 2005 to privatize certain veterinary services previously provided by the Ministry of Agriculture directly. This move inserted itself in a strategy aimed at shifting most of the daily practical veterinary activities to the private sector and strengthening a structure divided between the state and private veterinary services.

132 Interview with Dmitry Kostarov (February 10, 2012), Head of Strategic Development Department, AgroGeo+

133 Interview with Malkhaz Chinchilikashvili (February 17, 2012), Director of IAAD

134 Interview with Malkhaz Chinchilikashvili (March 23, 2012), Director of IAAD

135 Interview with Irakli Kasrashvili (April 25, 2012), Director of MercyCorps Georgia

After 2011, the structure existing in the municipalities has been replaced by regional departments; 11 regional agencies instead of the previous structure which spread to 64 municipalities.

Currently, veterinary services are under the department of veterinary services at the National Food Agency (NFA) and its main function is to prevent diseases from spreading in the country. The NFA also carries-out the registration of imported or locally produced veterinary medicine, renewed registration, annulment of registration and/or quality/safety control.

Officially, there are five diseases the government is responsible for: foot and mouth disease (FMD), anthrax rabies, brucellosis, tuberculosis, plus they also monitor Bird flu and African swine fever. Before 2011, the government was providing vaccinations for rabies, FMD and anthrax. However, according to Koba Dzmanashvili, "now they leave it to the farmers to decide to hire private vets and get the animals vaccinated".[136] Thus, the NFA only makes preventive vaccinations of FMD in high risk border regions: Adjara, Samtskhe-Javakheti, and part of Kakheti and Kvemo Kartli.

That said, government surveys do suggest that most people feel they have access to veterinary services.

Figure 35: Veterinary Service Centre (By Region)

Region	Does not need/Has not heard	Can not use	Uses
Tbilisi	5%	24%	71%
Adjara	2%	6%	93%
Guria	3%	13%	84%
Imereti	2%	8%	90%
Kakheti	14%	43%	43%
Mtskheta-Mtianeti	17%	25%	58%
Racha-Lechkhumi, Kvemo Svaneti	8%	32%	59%
Samegrelo-Zemo Svaneti	4%	16%	80%
Samtskhe-Javakheti	4%	9%	87%
Kvemo Kartli	10%	24%	66%
Shida Kartli	6%	10%	84%
Total	**7%**	**18%**	**75%**

Source: Village infrastructure Census, GeoStat(2011) p. 142

According to official statistics, a majority of Georgian farmers have access to veterinary service centers though access is particularly restricted in several regions such as Kakheti (43%), Racha-Lechkhumi/Kvemo Svaneti (32%), Mtskheta-Mtianeti (25%), Kvemo Kartli (24%) and Tbilisi (24%).

However, the resources allocated to support this system are low. The table below provides an overview of the projected activities of the Ministry of Agriculture in 2012 regarding food security, plants protection and veterinary activities.

136 Interview with Koba Dzmanashvili (February 28, 2012), head of the veterinary department of the NFA.

Figure 36: Ministry of Agriculture budget spending on food security, plants protection and veterinary in 2012

	Costs for 2012 budget (thsd. GEL)	Share of program costs
Food security, plants protection and epizootive control program	**5,673.50**	
Work out and management of food security and plants protection program	2,661.50	47%
Government control on food security	200	4%
Epizootive control	392	7%
Plants protection and phytosanitary	1,200.00	21%
Diagnostics of food products and animals/plants diseases	1,220.00	22%
Ministry of Agriculture of Georgia	**119,998.20**	
Share of Food security, plants protection and epizootive control program costs in MoA budget	**4.7%**	

Source: Ministry of Finance (2012), *National Budget of Georgia 2012;* http://mof.ge/4623 (Reviewed April 17, 2012);

As one can see, the overall activities targeting veterinary services and animal health are less than GEL 6 million (USD 3.6 million) or less than 5% of the Ministry's budget. Perhaps worse is that only GEL 1.2 (USD 725 thsd) million is allocated to diagnosis of diseases.

The reliance on private vets for monitoring, prevention and treatment of animal disease creates different kinds of problems. The first kind of problem is that while treatment of individual diseases may be effectively provided by individual vets, national monitoring and national disease treatment plans require a different kind of infrastructure and that infrastructure probably needs to be publically financed. For example, swine fever, brucellosis, foot and mouth disease and many others, require government vets who can identify disease and who have powers to quarantine farms and destroy diseased animals, backed by a government that will provide compensation when that happens.

In the best of circumstances, this would be difficult in Georgia. Animals in Georgia roam more or less freely and that animal routes are not properly monitored, and this makes it extremely easy for diseases to spread. There is currently no identification system for animals (birth/deaths, diseases, animal herd status, and vaccinations) in place. The government does believe that all sheep intended for export should be registered and numbered. The NFA has been preparing to implement a project in that regard and expect to implement it next year. The FAO will provide them with the program and semi-financing by the EU will allow implementation to take place.[137]

However, the rest of the structure of animal disease monitoring and management is unlikely to be provided by private vets, and there are not enough public vets to provide it as there are a total of 125 veterinarians employed by the NFA.[138]

There are many reasons why private vets are unlikely to provide this service effectively. Private vets may not see any benefit to their customers, the farmers, in reporting diseases and may even feel that there is political pressure not to do so. Even if they do report the sickness, without a system for monitoring the movement of herds, quarantining or killing sick animals and compensating farmers, the epidemic disease risks will continue to be a problem.

137 Interview with Koba Dzmanashvili (February 28, 2012), head of the veterinary department of the NFA.

138 Interview with Koba Dzmanashvili (February 28, 2012), head of the veterinary department of the NFA.

The quality of the service provided in regional veterinary shops is also questioned by many. A range of experts we spoke to questioned whether the people working in the shops had the skills necessary to make these places the hubs of information exchange that they have the potential to be. Issues of particular concern include access to quality medicine, storage, and knowledge related to proper use and dosage.

The second problem with the current system of veterinary provision is whether it is even well structured to provide good private care in a sustainable fashion. An immediate problem with the privatized system is that people tend to rely mostly on the informal network of old Soviet vets[139] and as this population ages, the number of vets will decrease Georgia will not have veterinarians since only a relatively few students are actually enrolled in Universities.[140]

Even where there are private vets, there seems to be little structure for veterinary accreditation or the development of skill-sets and most of the vets are not used to operating a sustainable private practice as they are used to working for the government.

As a result It is very difficult to assess the quality of the services provided by private veterinarians in the country. Before 2011, veterinarians had to have trainings at the Agrarian University and only after passing the classes they could get the certificate required to work. The law was abolished in 2011 and now people do not need this certificate anymore, meaning that anyone with a University degree can work as a veterinarian.

Part of the commonly identified solution to this problem is to help vets organize as associations. Currently under a project by USAID and GIPA, the National Food Agency is working on setting up associations for private veterinarians in four regions: Samtskhe-Javakheti, Kakheti, Kvemo-Kartli and Samegrelo-Zemo Svaneti. Each of these associations is expected to unite 25 veterinarians for a total of 100 private vets.

In addition potential problems with the reliability and sustainability of veterinary service provision there is also, again, a problem of education on the part of the farmers themselves. It is commonly noted that farmers have a fairly limited understanding of the needs of animal health themselves. Part of this is blamed on an over-dependence on the state. According to one expert “these people [the farmers] had always relied on the government and still think the government has to carry out vaccination campaigns free of charge”[141].

An example of this low level of expertise is that in Georgia cows are often kept in very low-roof buildings which are not ventilated in the winter. As they are not ventilated the sheds become incubators of all kinds of diseases and the cattle breath ammonium and CO2 created from the manure.[142] However, farmers don’t like to ventilate the barns as they believe that the cold is dangerous to the cattle.

In a slightly different way, the farmers don’t see the benefit of paid for services that may generate better returns. The state of the breed in Georgia has been degraded over the years by a lack of artificial insemination use and inbreeding. According to experts and despite the creation in recent years of artificial insemination centers, “to say that people have a high interest in artificial insemination is difficult; the access is currently not easy”[143].

8.4 Feed

The improper feeding of animals with a very low use of high concentrate feed is also problematic. Usually, cattle in Georgia feed through natural grazing. Given the limited monetary resources of most farmers, they tend to avoid any additional costs apart from the herder they employ. This creates two major problems.

First, dependence on grazing has over the years tended to create a problem of overgrazing and a depreciation of quality pastures. The problem is simple and relates to a typical “tragedy of the commons” case where individuals acting independently and rationally deplete a share limited resource when it would be in everyone’s long-term

139 Interview with Misha Sokhadze (February 28, 2012), Program manager at Food and Agriculture organization.

140 Interview with Gia Glonti (February 12, 2012), programs operations manager at CARE international.

141 Interview with Giorgi Khatiashvili (February 24, 2012) cattle-breading expert.

142 Interview with Gia Glonti, programs operations manager at CARE international and Interview with Giorgi Khatiashvili (February 24, 2012) cattle-breading expert.

143 Interview with Misha Sokhadze (February 28, 2012), Program manager at Food and Agriculture organization.

interest for this not to happen. As one expert put it, since "no one has the responsibility to take care of these pastures, it keeps degrading. No one uses electric fences to define grazing pastures and rotational grazing is not practiced".[144]

Second, the lack of feed means that the capacity for producing meat is significantly reduced as it takes far longer to raise an animal to maturity. Male cattle born in the spring will often be immediately sold or, maybe, sent to summer grazing for one summer. However, after 9 months of maturation based on grazing alone they will still not be optimal weight for slaughter. But, in winter, the main food available is hay and even this is limited in its supply and kept for the cows that will give birth again the following spring. Therefore, if cattle are kept over the winter they may not gain any additional weight, costing feed but not bringing any profit, and only gaining weight again in the summer. At this rate beef cattle can take 2-3 years to mature and will never achieve a high weight as grazing is always a sub-optimal means of achieving weight gain, as it involves a lot of energy use to find and digest the grass.

With high quality food, animals could be fattened quicker and could produce a higher quality and higher turnover product, thus increasing the meat production of the country as a whole and the profitability of the farmers who use it.

8.5 Storage

According to experts, the current situation is quite problematic since the storage capacity is limited and 20-30% of the amount of food stored is lost.[145] Storage practices are quite archaic. Storage often has no ventilation, and products are often stored together which makes it easy for diseases to spread, and not all farmers apply the necessary phytosanitary measures. George Glonti of CARE international pointed out that "farmers usually keep potatoes in cellars or holes in the ground and cover it with hay, but 70-80% of whatever they have stored is damaged".[146]

The issue here is simple, since Georgia cannot store products, only part of the annual demand is covered by local products, when competition between local producers is quite fierce and prices are low.

International donors continually highlight the importance of storage facilities in efforts to make sure the government understands that this is a gap that needs to be filled. There are several different kinds of storage that would usefully support the agricultural sector in Georgia. The most commonly discussed is grain storage.

Most experts acknowledge that the lack of storage or the inadequacy of existing facilities prevents farmers to store their products in places where they would be readied and sent to markets. The problem here is that after the collapse of the Soviet Union, many of the facilities in place fell into disarray. The situation regarding storage facilities was summed-up quite well in a recently published USAID report:

> Since the break-up of the Soviet Union many of these facilities have been allowed to run down and deteriorate. In some cases the facilities have been pilfered and demolished, some have been refurbished for uses outside of agriculture, and still others have been abandoned and are decaying into conditions that prevent rehabilitation, particularly true for much of the flat storage. Grain silo storage during the Soviet times totaled a capacity of 1.1 million metric tonnes. Today, of this capacity, about 566, 000 tonnes is being used after having been rehabilitated. During Soviet times nearly every district had an elevator but, much of this capacity, if not destroyed, is in poor condition and not useful as storage, meaning that only 566,000 MT remains in use.[147]

144 Interview with Giorgi Khatiashvili (February 24, 2012), cattle-breading expert.

145 Interview with Gia Glonti (February 12, 2012), programs operations manager at CARE international

146 Interview with Gia Glonti (February 12, 2012), programs operations manager at CARE international

147 USAID- Analytical Foundations Assessment- Agriculture (Rural Productivity) (2011) p80.

Figure 37: Grain Storage by Region

Region	Does not need/Has not heard	Can not use	Uses
Tbilisi	100%		
Adjara	98%	2%	1%
Guria	98%	2%	
Imereti	99%	1%	
Kakheti	73%	18%	9%
Mtskheta-Mtianeti	98%	2%	0%
Racha-Lechkhumi and Kvemo Svaneti	90%	10%	
Samegrelo-Zemo Svaneti	98%	2%	
Samtskhe-Javakheti	90%	10%	
Kvemo Kartli	91%	7%	2%
Shida Kartli	89%	10%	1%
Total	**93%**	**6%**	**1%**

Source: Village infrastructure Census, GeoStat(2011) p135

Official statistics show a very low use of storage facilities with the highest recorded use being in Kakheti with 9%, followed by Adjara and Shida-Kartli with 0.9%.[148] This suggests that either most Georgian farmers are unaware of the existing facilities or that more facilities are actually needed. On average, around 1% of Georgian farmers use grain storage facilities and most farmers unable to use the service mention as reasons for inaccessibility that the storage centers are located too far (50%) or that the service is expensive (34%).[149]

The Georgian government has also stepped up its efforts in this area. GAC currently operates two recently built grain storage centers each with a storage capacity of 45,000 tonnes, one located in Abasha (Western Georgia) and the other in Lagodekhi (Eastern Georgia). These centers have been strategically located based on the findings and preliminary results of the maize project that had already been carried out by GAC. In Eastern Georgia, the center was built in Lagodekhi since the region accounted for 24% of the corn seeds purchased under the maize program, the level of production was higher (yield per hectare), the livestock importance in the region/demand for forage, and the potentially strategic location for exports to Azerbaijan. Similar calculations were made and account for the decision to locate one center in Western Georgia. Located in Abasha, the center not only covers Samegrelo, Imereti and Guria, regions where the maize production was sensibly higher, but also allows easy access to major imports from Poti.

In terms of accessibility, the storage facilities are designed mainly for large farmers who actually need storage and can afford the services.[150] Farmers have to pay GEL 0.8 (USD 0.48) per kg of maize for cleaning and drying, with additional monthly costs of GEL 0.1 (USD 0.06) per kg for storage.

Beyond grain, good storage can be used in many different sectors to allow farmers to store their products so that they can be sold off-season. Almost all agricultural products in Georgia experience considerable price seasonality. Fruits, vegetables and cheese are a lot cheaper in the summer and prohibitively expensive in the winter.

Recent efforts of the international community have contributed to increase Georgia's storage capacity have sought to provide opportunity for this kind of price-seasonality arbitrage, although, it is usually acknowledged that there is a need for more storage capacity. Of particular interest are the storage facilities that were built by AgVantage (mandarin, bay leaf, herbs and potatoes) and by the Mercy Corp project (potato, cheese).[151]

148 Village Infrastructure Census 2010 (published in 2011), GeoStat. p136

149 Village Infrastructure Census 2010 (published in 2011), GeoStat. p137

150 Interview with George Jakhutashvili (February 17, 2012), General Director of Georgian Agriculture Corporation.

151 USAID (2011) Analytical Foundations Assessment- Agriculture (Rural Productivity) p82.

8.6 Finance

If one asks farmers directly why they do not invest in order to increase production the commonest answer is the simple 'no money'. Certainly cashflow limitations are problematic, but in the modern world, if gains were easy enough to justify one would expect that farmers would take out loans to support their investment. In Georgia this does not happen for a range of reasons. The most obvious explanation is cost. There is no doubt that the high cost of financing is debilitating for some sections of the agricultural sector.

Figure 38 Financial institutions agro-lending rates

	Interest rates	
Financial institutions	Minimum	Maximum
Microfinance		
Alliance Group	28%	42%
Constanta	16%	42%
Finagro	18%	36%
Finca	19%	40%
Crystal	29%	36%
Banks		
Bank of Georgia	16%	28%
Bank Republic	26%	36%
Liberty Bank	30%	40%
ProCredit Bank	16%	36%
TBC Bank	17%	36%

Source: GeoWel Research, based on interviews conducted with financial institutions (2012)

Banks have generally refrained from lending in the agricultural sector, and if so they have focused on larger agro-enterprises and not small farmers. For instance, the share of agricultural lending in the banks' total loan portfolio stood at 1.8% as of August 2011.[152] The commercial banks have mostly focused their activities in Tbilisi where their networks are extensive as opposed to regions where the network is far more restricted (only Liberty Bank has a widespread regional network).

Several reasons are usually put forth as obstacles which have prevented banks from expanding their activities to the agricultural sector. As with any small loans, the first concern is that operational loan servicing costs are high. There is also concern over how to make reasonable assessments of credit risk because of a lack of a trained bank loan personnel who can evaluate the peculiarities of agricultural lending, and the lack of reliable information, such as meteorological data and annual crop production.[153]

Loan conditions across financial institutions, whether commercial banks or MFIs, remain essentially the same. Grace periods are offered and generally no collateral is required on cheaper loan products. The biggest difference between different kinds of lending institutions are the interest rates charged. The banks offer some products that can be as low as 16% but are routinely around 20%. Microfinance institutions are generally more expensive, over 30%, but can offer very small loans for a very short period of time.

Given that loan conditions are fundamentally similar, the question becomes why small farmers turn to MFIs instead of commercial banks despite the higher interest rates charged by the former? It appears that interest rates or loan conditions are not determining factors, but that time and accessibility are crucial. Because of tight cash flow circumstances farmers make short-term choices and require very small loans for urgent purposes (buying fertilizer or renting farm machinery for instance).

152 USAID (2011)- Analytical Foundations Assessment-Financial Sector Assessment p. 13

153 USAID (2011)- Analytical Foundations Assessment-Financial Sector Assessment p. 14-15

Since MFIs and their personnel, for whatever reasons, are perceived by many farmers as more accessible and the loan approval period is much faster than in banks, this is the option favored by small farmers in most cases. The bank procedures, which can take up to two weeks or even more, are prohibitive for many small scale farmers who need cash urgently.

In addition, it is a commonly accepted fact of microfinance organizations that interest rates are not the key determining factor on short-term loans. This point is often missed by analysts who treat all loans as though they are the same. The main thing that concerns most people taking out a loan is whether they will be able to afford to make repayments. In long-term loans the size of the repayment is principally the result of the interst rate charged, but in a short-term loan, the capital repayment is the largest part. For example, if you borrow USD 600 for 6 months, the monthly repayment will be USD 100. If the interest rate is 20% then the total interest for the period will only be USD 60 – or USD 10 per month. If the interest rate is 30% then the repayment will be USD 115 instead of USD 110. For many people, for good reason, this relatively small difference in repayment is not the determining factor on which loan they choose. They may be more interested in where the lender is located, or the flexibility of the lender in case of delayed payments.

Therefore, when looking at the problems of agricultural lending it is important to distinguish between long and short-term debt. In the case of short-term debts, the cost of financing may not be a determining consideration. However, for longer term commercial debt the cost of financing is almost certainly prohibitive as the interest payments on longer-term debt are a more significant proportion of the repayment.

According to Bernard Wendel, rural finance expert and EBRD's Georgian Agriculture Finance Facility project team leader, there are three major obstacles to overcome in strengthening Georgia's banking sector agricultural lending:

1- Formation/knowledge of the staff: The sector is characterized by a low knowledge of the agricultural sector hence the need to hire professionals and agronomists, and the possibility to provide banks with software to facilitate agricultural analysis.

2- Institutional capacities: Banks see micro-loans to farmers as too expensive and associated with high operational costs.

3- Banks see the agricultural sector, especially small farmers and SMEs as risky clients: so far Georgian banks have financed low risks loans backed by strong collateral, particularly real estate.[154]

However, the issue here is not simply the need for better loans, or better terms on the loans. While investors clearly benefit from access to cheap capital, and many may not be able to invest when the prices are as high as they are in Georgia, there is ample evidence to suggest that rural households generally do not want to take on debt, even if that debt is subsidized.

There are two major reasons for this. The first is that farmers may not understand the potentially enormous returns that can be generated from relatively small investments, for example, investing in new potato seeds more often or artificial insemination. The second is more insidious and simply reflects the risk aversion of farmers. This may be entirely rational and consistent with the insecurity of their situations. Many of the factors that we have been discussing in this reseaerch so far related to the security challenges facing (particularly small) farmers. Droughts and floods are fairly regular parts of Georgian life, and without good irrigation and drainage, they can be catastrophic. Similarly, animal disease has wiped out herds of cattle and pigs in the last 5 years, and farmers are less likely to invest in feed for fattening or artificial insemination to produce better breeds, if they are not confident that animals will live to sale.

The result of the challenges facing credit (either that it is too expensive, or that farmers do not want to take it or both) is not just that it reduces the likelihood of investment, it also means that farmers find themselves in extremely tight cashflow circumstances. This forces them to make short-term choices and further undermines the preparedness of a farmer to engage in commercial relationships that might require that a farmer is owed money for short periods of time.

154 Interview with Bernard G. Wendel (March 20, 2012), Rural Finance Expert/ EBRD-GAFF Project team leader

Evidence of the short-term choices that farmers are forced into can be seen in the timing of sale of certain goods. Agriculture is, obviously, a seasonal activity with steep seasonal price variations so that almost all agriculture related products are a lot cheaper in late summer and autumn than they are in winter and early spring. Nonetheless, most farmers continue to sell their products as soon as they are harvested. This is unavoidable in some cases, like quickly perishable fruit and vegetables, but in some sectors, like grains, potatoes and cheese, which can be relatively easily stored, the decision to sell as quickly as possible is, at least partially, driven by immediate needs for money. This is particularly true since the autumn is a fairly high expense season when children go to school and when food-stores for the winter are purchased.

Of course, it is hard to know exactly how much this issue is driven by storage concerns. All agricultural goods, even those with a relatively long shelf-life, need a place to be stored, usually where it is dry and cool. And many farmers use fairly innovative techniques to allow for that storage through the summer periods. In Georgia it is a long tradition for farmers to take their cattle to high mountain pastures in the summer. This is done for a range of reasons, including giving the animals access to better pasture, reducing stress from summer heat and from summer insects and because entire families often move into the mountain for the summer where it is more comfortable than the plains. One of the significant positive consequences of this move is that. as the temperature is lower, farmers can store the cheese they produce during the summer months and sell it in the autumn. This is further helped because they sometimes store it in pools of mountain rivers. This can increase the sale price of the cheese dramatically.[155]

Another problem is that farmers are generally not comfortable engaging in contracts that might see a delay in their payment. One of the big challenges that individuals have found starting milk collection centers is that cheese producers (who run or buy from the milk collection centers) will generally only pay for their milk every 15 days or so. This means that an average farmer, with four cows, may be owed around GEL 200 (USD 121) by the time he or she is first paid. This is a significant amount of money to wait for and requires considerable trust on the part of the farmer that the MCC will actually pay at the end of that time.[156]

9 GOVERNMENT SPENDING AND THE STRUCTURE OF GOVERNMENT INTERVENTION

The profile of government spending on agriculture in Georgia has been fairly erratic over recent years. Aggregate spending of the Ministry of Agriculture went up by almost seven times from 2000 to its highpoint in 2007, but then fell back by 2/3. At its recent low-point in 2010, at less than ½ percent of government spending, it was proportionally smaller than any time since 2000. 2011 saw a revival in spending as the government refocused on agriculture as a priority area and 2012 has seen that increase continue.

Over the same period there is little doubt that the Ministry of Agriculture has undergone considerable downscaling of responsibilities in the last ten years. A report by the Ministry of Agriculture itself highlights reductions in its own functions since 2000. Most of these occurred as part of the general downsizing of government ministries and departments that occurred in 2005. But from 2000-2007, the report points out, 19 regulatory and inspection departments were closed and municipal branches of the Ministry were replaced with regional branches (therefore reducing dramatically the local representation dramatically). Livestock breeding and agro-engineering departments were merged and dramatically downsized and the department of melioration (irrigation) was replaced by four state owned LLCs. Between 2000-2007 the staff of the MoAg dropped by 87%.[157]

155 Mercy Corps (2011), Research into Milk Collection Centers in Samtskhe-Javakheti (conducted by GeoWel Research), p5

156 Mercy Corps (2011), Research into Milk Collection Centers in Samtskhe-Javakheti (conducted by GeoWel Research), p29. This finding was also verified by an interview with Giorgi Khatiashvili, (February 24, 2012)

157 Ministry of Agriculture (2008), Overview of the Budget of the Ministry of Agriculture 2000-2007. p13

Figure 39: Budget of the Ministry of Agriculture, in absolute terms/ as a share of the budget and GDP

Years	Budget of MoA (thsd GEL)	Share of total budget	Share of GDP
2005	41,356	1.6%	0.36%
2006	63,166	1.7%	0.46%
2007	111,100	2.1%	0.65%
2008	70,871	1.0%	0.37%
2009	75,160	1.1%	0.42%
2010	30,641	0.4%	0.15%
2011 projection	86,042	1.1%	
2012 projection	119,998	1.5%	

Source: State Budget of Georgia, Ministry of Finance of Georgia. http://mof.ge/Budget (Reviewed May 7, 2012)

However, more important than the absolute spending of the ministry is what the money has been spent upon and a close examination of the individual line-items of the ministry suggests that the ministry has often acted as more of a distribution system for rural social support programs, than an agricultural development agency.

In the table below we have highlighted the largest line-items of the Ministry of agriculture budget, not including the administration of the ministry itself. This gives a convenient summary of the Ministry's priorities year-to-year.

Figure 40: Largest line-item spending for the Ministry of Agriculture 2007-2012

Years	Budget of MoA (thsd GEL)	Priority areas	Line item budget
2007	111,100	Program providing flour for households living in municipalities	47, 344
		Renovation of agricultural machinery	22, 187
		Program providing food for socially vulnurable households	5,808
2008	70,871	Providing fuel for households living in municipalities	33,212
		Village Development Project	7,285
		Program grape-collection support activities	6,394
2009	75,160	Rehabilitation of Irrigation System	12, 840
		Program for providing fertilizer	23,808
		Mountainous and high mountinous regions development program (IFAD)	5,665
2010	30,641	Grape collection support activities	4,812
		Village Development project (WB, IFAD)	8,748
		Mountainous and high mountainous regions development program (IFAD)	2,999
2011 projection	86,042	Agricultural Development program in the regions	49,600
		Grape collection support activity	9,000
		Village Development Project (WB, IFAD)	9,939
2012 projection	119,998	Intensification of agricultural production	41,500
		Supporting usage of unused agricultural plots	20,000
		Renovation of agricultural technics	15,400

Source: Ministry of Finance of Georgia. State Budgets. http://mof.ge/4979 (Reviewed May 4 2012).

As we can see from 2007-2010 the majority of the large line-items in the Ministry of agriculture budget were social support of one kind or another, providing hand-outs of flour food and fuel.

Two programs, the village development project and mountainous/high mountainous regions development program aim to address small infrastructural projects in every village. Projects included fixing water and sewage systems, paving village roads, opening sports and recreation centers. The program has been in operation for almost five years. Initially, there has been a criticism about financing projects which were not in interest of a community. The recent experience however includes increased participation of a community so that they can choose which project to finance.

The only clearly agricultural-oriented big-ticket items in the time are the machinery project in 2007 and the irrigation project in 2009.

In a document produced by the Ministry of Agriculture, the Ministry examines its own spending in the 2000-2007 period and suggest that the only consistently supported program over that period is a livestock breeding program, but even that had a dramatically changing profile so that it is very difficult to assess its impact.[158]

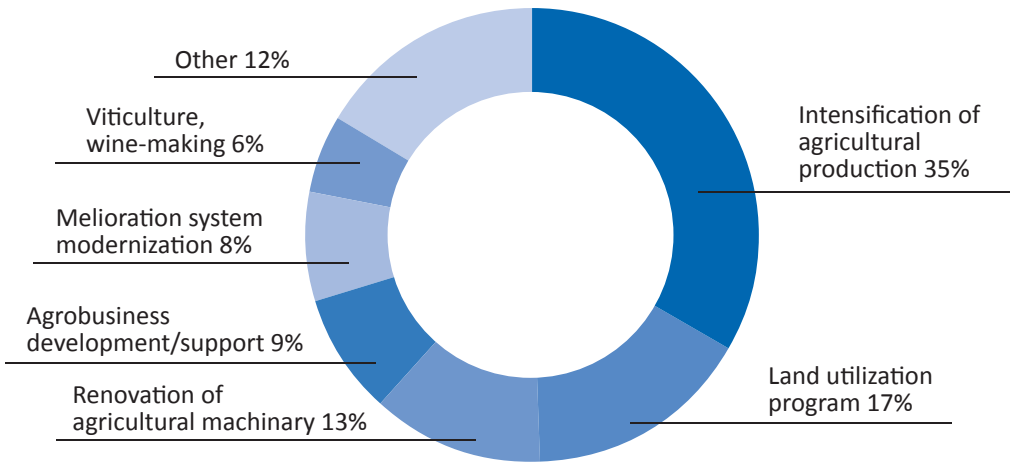
Over the last five years the only areas of consistent support have grape collection support activities, which basically ensured that grape producers gain a minimum price for their grapes.

In the same document produced by the Ministry of Agriculture in 2008, they assessed their own activities in the 2000-2007 period and concluded that

> Considerable inconsistency of the MoA budget is observed; large discrepancy is detected between approved and actual expenditures almost in each year of the analyzed period. The inconsistency is well demonstrated by substantial expenditures on wheat flour distribution executed at the end of year 2007. As it seems, more ad hoc type measures rather than planning has been exercised.[159]

In 2011 the total MoA budget costs cannot be broken down because 65% (excluding administrative costs) of the programmes budget (GEL 49.6 million) (USD 29.4 million) is utilized by a line-item called 'Agricultural Development Program in the Regions' and the budget law contains no breakdown of this amount. In 2012 we have the following breakdown of the Ministry of Agriculture budget.

Figure 41: Programmatic budget of Ministry of Agriculture in 2012 (total GEL 120 million)



Source: Ministry of Finance, State Budget of Georgia 2012, p55.

158 Ministry of Agriculture (2008), Overview of the Budget of the Ministry of Agriculture 2000-2007. p6

159 Ministry of Agriculture (2008), Overview of the Budget of the Ministry of Agriculture 2000-2007. p3

Interestingly in 2012 we are seeing a shift to a far more traditional range of agricultural support activities, even if they do put significant emphasis on government provision of services that ultimately need to be provided by the market. A large proportion of the budget targets three programs in particular. First, the intensification of agricultural production program will showcase modern technology using demonstration plots, rehabilitate green-houses, establish extension/research/mechanization centers, and create cattle-breeding and poultry raising farms. Second, the land utilization program aims to support the renovation of existing agricultural techniques and technological appliances in the regions and to assist in increasing the use of agricultural land.

Third, the renovation of agricultural machinery program's goal is intended to curb the deficit of farm machinery in the country by purchasing agricultural techniques and machines, facilitate access for farmers, and eventually contribute to increase the productive output of the agricultural sector as a whole. Most of these activities are already being carried out by GAC (see below section 9.1).

The role of local government in agricultural development is negligible. The organic law on local self-government gives no responsibility for developing agriculture to the municipal government and while the regional governor is given some economic oversight role, the exact responsibilities that go with that are not clearly laid out or financed. Municipal government does devote some funds to the support of agriculture, but these are fairly small. The total regional and municipal budget for 'agriculture' was GEL 7.8 million (USD 5.2 million) for 2008 though this is currently concentrated in a very few areas. The region with the largest agricultural support program was Adjara that is currently projected to spend GEL 4.5 million (USD 2.7 million).[160]

9.1 Georgian Agriculture Corporation

The Georgian Agriculture Corporation (GAC), a 100% state-owned for-profit organization, was established in March 2010 in an effort by the MoAg to develop the Georgian agriculture sector; particularly boost commercial agriculture in the country. At the moment, GAC draws funding strictly from the state budget. However, the government of Georgia has recently created the Agriculture Development Fund (ADF) under the Ministry of Economic Development and the MoAg which will allow the company to draw funding from different sources: equity funding, joint ventures, grants, and Foreign Direct Investments (FDI). In terms of decision-making, the company operates under decisions made by the board where different ministries are represented.

GAC is made up of five distinct subsidiary companies and covers most of the agricultural sectors in terms of activity: demonstration plots; irrigation projects; food processing; mechanization (farm machinery/service centers); grain storages facilities; and pilot projects for corn, wheat, blueberries, and potatoes.[161]

- "Akura" JSC: specializes in primary processing of grape and production of wine
- "Meqanizatori" LTD: focuses on agricultural machinery services
- "Gruzwinprom" LTD: receipt/processing of concentrated juice of grapes, receipt/production of wine materials and fruit natural juices and production of brand spirit.
- "Georgian Greenhouse Company" LTD: operates green-houses in Tserovani and plan to cover an additional 4.6 hectare this year.
- "Grain Logistics Company" LTD: currently operates two grain storage facilities located in Abasha and Lagodekhi.[162]

160 Material provided by David Basiashvili (September 2009), Working Group on Regional Finance, Task Force on Regional Development.

161 GAC projects about Mechanization/MSCs and grain storage are discussed respectively in sections and .

162 Based on interviews conducted with GAC (February 2012); GAC- Description of Georgian Agriculture Corporation (2011) booklet; and **www.gac.com.ge.**

9.1.1 Maize program

One of the agricultural projects that have received a lot of media attention in recent the last year was the maize project carried out by GAC. The project started in September 2010 and officially ended last December, although the project is expected to continue.[163] Farmers who participated could either buy the seeds by direct payments or they were offered seeds on credit given that they provided sufficient collateral to the banks (land, property).

According to Giorgi Jakhutashvili, General Director of GAC, the project was a good concept which motivated farmers, but GAC did acknowledge some difficulties, especially with regards to small farmers who lacked the knowledge and information to make it possible to increase production. The problems they experienced mainly related to proper use of pesticides, fertilizers, and access and use of proper irrigation methods.[164]

According to Cartlis[165], a leading Georgian agriculture company who has been working with Pioneer for seven years, the issue also rested with the politicization of the project. As they said, "I wouldn't say that the project of the Government failed. People who failed created a lot of noise and it became a political issue, but most people did absolutely nothing in terms of irrigation, pesticide and fertilizer use."[166] Interestingly, they noted that they have never had problems with the seeds, even achieving results which prompted the President of Pioneer to visit their corn fields. Moreover, their order for Pioneer seeds increased twofold this year and sales over the years have kept increasing.

Overall, the program covered a total of 33,700 farmers of which 3,000 were big farmers. Although it is difficult to assess the overall scale of the project, big farmers covered a total of 15,000 ha and were able on average to increase the yield per ha from 1.8 tonnes to 4.6 tonnes.[167]

9.1.2 Demonstration plots and irrigation projects[168]

GAC is currently implementing a demonstration plot program together with different irrigation projects. In total, the budget for both ventures is GEL 7-8 million (USD 4.2-4.8) funded entirely by the MoAg. The goal is to cover a total of about 450 to 500 hectares in 8 different municipalities/communities. During the project, 12 different kinds of vegetable will be grown with newly installed drip irrigation systems for around 200 hectares and pivot irrigation systems for about 300 hectares. In total, municipalities in 5 regions will be covered by drip irrigation (Adigeni, Samtredia, Bolnisi, Gori, Khashuri) and municipalities in three regions with pivot irrigation systems (Shindisi, Ajameti, Tserovani). As far as production goes, GAC intends to sell its primary products on the local market

The rationale behind the project is that the demonstration plots will allow GAC to display to farmers different types of irrigation systems, their impact in terms of production, different agro procedures for seeding and harvesting, and the proper use of pesticides and fertilizers. In order to do so, they will hold trainings and consultations for local farmers. At the moment, it is estimated that 30 farmers will participate in each region for the first year of project implementation.

Plans for the future include spreading the demo plots to other regions, although decisions have not been made regarding whether existing demonstration plots need to be 'given' to the farmers or not. A decision in that regard should be made in November 2012.

163 Interview with George Jakhutashvili, General Director of Georgian Agriculture Corporation.

164 Interview with George Jakhutashvili, General Director of Georgian Agriculture Corporation.

165 Formerly known as Garemo Da Analitika Ltd.

166 Interview with Robert Revia, Director of Cartlis.

167 Interview with George Jakhutashvili, General Director of Georgian Agriculture Corporation.

168 Based on an interview with Ani Kobalia, Project Manager of Georgian Agriculture Corporation.

9.1.3 Blueberry[169]

GAC has started blueberry demonstration plots in Western Georgia, covering the regions of Adjara, Guria and Samegrelo. Each of the three demonstration plot covers an average of 5 ha for a total of 15 ha, and the plots are going to be irrigated with newly installed drip irrigation systems.

The rationale behind the project was to put to good use the abandoned tea plantations left unused since the collapse of the Soviet Union because these acid soils were suited for blueberries. At present, fresh locally produced blueberries are practically absent from the Georgian market which is supplied mostly by wild berries, leaving a niche which could be potentially profitable.

The Georgian government adopted a Law on Conduct for Forest Products in 2005 which makes it only legal to collect berries in public forests for private use. According to the Economic Prosperity Initiative value chain analysis for berry production, "It is illegal for a collector, processor, or exporter to sell these to a consumer. Nonetheless, several local companies collect, process, and export berries.[170] In addition, as world demand increases, Georgia could potentially find export markets for blueberries.

Last year, GAC imported different varieties of blueberry bushes from the United States to determine which are best suited for Georgia. Given the fact that blueberry bushes are a slow growing plant, full harvest is only expected after 4-6 years. Still, since they planted the bushes last year they are expecting to start harvesting later this year.

The priority here is to transfer knowledge to farmers through seminars and consultations and act as a bridge between farmers and suppliers. According to GAC, farmers are going to be involved from the very beginning through special agro days. They are expecting the involvement of 50-100 farmers for each demonstration plot.

GAC intends mostly to sell its product to blueberry processing companies in the European Union; thus, they are currently in the process of identifying potential buyers. In the future, it will be up to the MoAg to decide what will happen to the plots; possibilities include the creation of a cooperative to take over the demonstration plots or the involvement of private investors.

9.2 Encouragement of Investment

In recent years, the Georgian government has tried to put forward measures in order to attract more FDI in agriculture. At the forefront of these efforts is the Georgian National Investment Agency (GNIA) which is the sole public agency responsible for promoting and facilitating FDI in Georgia. In its strategy, GNIA has put forward several factors which make the agricultural sector attractive to potential investors: labor force statistics (unemployment figures, low salaries), climatic conditions and fertile lands, ease with which investors can enter the market/ buying land/doing business, a low cost but experienced workforce, presence of untapped business opportunities (broken value chain), and import substitution opportunities.[171]

Several foreign companies did invest in Georgia over the years in sectors such as poultry (Perdue, United States, 2011), fruit and juices (Jablunevіy Dar, Ukraine 2007; Hipp, Germany 2007), dairy (Wimm Bill dann, Russia 2009), wine (Chateau Mukhrani, Denmark 2003; LLC GWS, Denmark 1994), olive oil (Geolive, Turkey 2009), and nuts (Ferrero, Italy 2007).

Despite these efforts, the initiatives so far have produced very moderate results. Investments in Georgia, especially in the agricultural sector, are perceived by investors as risky and complicated. Official statistics show that absolute FDI in agriculture represents an extremely small proportion of the total FDI share (see). Apart from 2009 where the percentage of absolute FDI in agriculture accounted for 3% of total FDI, their share usually have amounted to no more than 1%.

Georgia has a range of major challenges when it comes to attracting FDI in agriculture. As we have already

169 Based on an interview with Lika Mikautadze, Project Manager of Georgian Agriculture Corporation.

170 USAID (2011) EPI Value Chain Assessment Report p3.

171 Georgia National Investment Agency- Agriculture: Invest in Georgia… ripe for investments (2011) **http://www.investingeorgia.org/upload/file/Agriculture_Investment_Proposal.pdf** (Reviewed April 12, 2012)

suggested, the small scale farming in Georgia and challenging land market make it difficult for investors to buy land on the scale to make in investment worthwhile. After that, probably the biggest challenge is the inherent complexity of managing an agricultural operation. Central to this issue is the lack of trained workforce. Despite Georgia's agricultural past, the quality of graduates in the agricultural sector has diminished and most experts agree that this "knowledge gap" in the agriculture sector constitutes one of the most pressing problems Georgia has to address. If companies have to rely on external experts then Georgia might lose a lot of its appeal and investors might shy away from investing in the country since hiring external experts comes at a high price.

According to the Economic Prosperity Initiative (EPI) sector assessment report, most agricultural sectors (apart from wine, poultry, fruit/vegetables) do exhibit limited skills and capacities; this includes dairy, fish and sea products, grain, hazelnut, honey, meat, and tea sectors.[172] For instance, even the hazelnut sector, which has exhibited high market growth in recent years and shown a high potential for investment, has to cope with limited skills and capacities,

> there is virtually no technical/agronomic assistance provided to the numerous small individual hazelnut producers. The trees are a fixed and depreciating asset and appropriate pruning, fertilization, pest management and irrigation is required to extend their life and increase production. However, only a small number of large producers properly maintain their trees.[173]

Despite Georgia's fertile soils and climate conditions, which are often presented to investors as assets, the outmoded infrastructure in place and backward agricultural practices in the past years imply significant starting costs for potential investors. As an example, Ferrero had to spend about EUR 6000-7000 per hectare to make the land productive since it had not been cultivated for years and left in terrible conditions.

As for members of the Boers' consortium interviewed, they have had to invest a substantial amount of money in getting their land properly irrigated.[174] The irrigation infrastructure in place, surface irrigation, was outdated and not in working so they have had to have the irrigation company Sioni clean and upgrade the main irrigation channels and open trenches.

The experience of the Boers is particularly insightful with regards to buying land in the country, land taxes, and access to credit.

First, their experience seems to confirm that it is extremely difficult for investors to find land. The individuals interviewed found that the process of purchasing land in the country was utterly complicated stating that "even people on the ground do not know what is private or government owned land".[175]

The scale of Georgian agriculture, in terms of farm size, does not compare very well to the scale of farming done elsewhere around the world; 10 hectares land-plots compared to farms in South Africa which are usually over 100 hectares.

Second, land taxes have been described as extremely expensive. For the majority of Georgian small farmers with no more than 2 ha of land, the taxes may be low. But but for larger land-plots, annual land taxes represent a significant amount. According to current law, land taxes vary according to regions and municipalities. In Marneuli, the land tax fees per ha are GEL 95 (USD 57) per year. In the case of the Boers, who own 1000 ha in Gardabani, this means a minimum of GEL 95 000 (USD 57 thsd).[176] Easing land taxes could potentially be a step in the right direction to attract investors.

Third, access to credit was mentioned by Boers as one of the biggest problem for investors. According to them, banks in Georgia have difficulties providing loans for agriculture,"we went to all the different banks and all of them refused to give us credit".

172 USAID (2010). Economic Prosperity Initiative- Sector Assessment Report

173 USAID (2010). Economic Prosperity Initiative- Sector Assessment Report) p50

174 Interview with Boers (February 23, 2012).

175 Interview with Boers (February 23, 2012).

176 Some administrative entities also add some fees to payments per ha.

9.3 Projects by the international community

Given the limited amount of money that is available through government channels for economic development, one of the key avenues for agricultural development over the years has been through international organizations. International organizations have helped the agricultural environment in Georgia in a range of different ways.

A large number of projects have focused on agricultural development directly. The Food and Agricultural Organization posts a list of on-going agriculture projects in Georgia and as of June 2009 they listed 59 projects that were not completed. Many of these projects do not list their value, and many of them are multi-year projects but the total worth of those listed is approximately USD 120 million.[177]

These projects work on a wide range of different issues, generally attempting to target the weaknesses in the agricultural supply chain and to help fix them. At a production level this involves help with selection, development and training in higher yield-crops/animals, assistance in collective buying of inputs and agricultural services. In connection to these programs run by/financed by Swiss Development Corporation, CARE International, CHF, Mercy Corps, Millennium Challenge Georgia, USAID, the United Nations, and many others, have focused considerable attention on the development of agricultural service centers which offer access to farm machinery, veterinary services and agricultural advice.

There are two main models for international development work in agriculture in the Caucasus. The first, and most common, is 'development' oriented in the broadest sense. In this way, it is not just trying to achieve economic growth, but also to ensure that growth explicitly aims to achieve other social goals, so that it is interested to reduce poverty, promote democracy and civil participation, gender equality and help ensure the health and security of vulnerable groups.

A particularly clear example of this model is the program implemented by the Swiss Development Corporation (SDC). SDC (who ultimately funded this research project) are currently instituting five programs in Georgia, four of which is intended to develop agriculture and the fifth is promoting rural development more broadly.

These projects work in specific regions, so cover, Racha Lechkhumi (implemented by CARE International), Samtskhe-Javakheti (implemented by Mercy Corps), Kvemo Kartli (implemented by Mercy Corps) and a new project (to be implemented by Heks, but currently in its inception phase) in Kakheti. The tourism and rural development project is located in Samtskhe-Javakheti and Racha-Lechkhumi (implemented by Elkana).

The main agricultural projects implemented within this overall program are largely focusing on meat and dairy production in the target geographies. They utilize a developmental strategy called 'Making Markets work for the Poor', or M4P, which is heavily focused on trying to use donor funds to fix difficulties in the supply chains, rather than simply giving subsidies or direct inputs to farmers. Nonetheless, as it pro-poor and pro-'development', the interventions to focus on helping smaller farmers, rather than supporting commercial farmers, or supporting the large structural changes that would ultimately see them leave agriculture altogether.

This is also generally the model of agricultural development support favoured by European donors and UNDP.

These projects often end-up working with municipal government for a number of reasons. First, when going into communities, municipal government can provide useful information about local networks. Second, in order to try and help facilitate sustainability, many development projects will try to ensure that key elements of the support networks are sustained by local government when they leave. This, for example, has been a key component of CARE International's work in Samtskhe-Javakheti, Kvemo-Kartli and, more recently, Racha-Lechkhumi as well as Mercy Corps work in Samtskhe-Javakheti and CHF's work in twenty different muncipalities. Third, working with and through regional and municipal government is simply a requirement of many donors for the practical reasons already listed, but also because they believe that this is a good method for developing local government capacity. For example, the Municipal Development Fund, which is one of the primary vehicles for allocating donor money on infrastructure projects, is primarily designed to operate on projects designed by municipal government.

An alternative model of agricultural support is to try and help the more self-consciously commercial farms. This

177 Spreadsheet provided by, *Food and Agricultural Organization of the United Nations, Donor Agricultural Interventions in Georgia – Coordination June 18, 2009* provided July 2009.

usually also has wider social goals, as it is intended to encourage FDI and ultimately hopes to raise employment. Projects of this kind may, therefore, while supporting commercial farming, still orient towards the labour-intensive commercial farming, so that they can help facilitate rural employment at the same time. However, this model of development projects generally focuses on growth, and assumes that development, more broadly speaking, will follow.

USAID often takes this approach, has completed one large project of this kind in recent times and is also conducting another now. Finishing in 2010, the AgVantage project implemented during the period from 2002 through 2009 spent USD 23.4 million in this area. The goal of AgVantage project was to raise the rate of economic growth in Georgia through expanded production and sales of added-value agricultural products. The project aimed to assist private enterprises and associations, to formulate agricultural strategy and analyze its policy, including export promotion, to create information system for agricultural market and to ensure food safety.

During the life of the project, USAID/AgVANTAGE reports that it facilitated production, processing, and sales of value-added agricultural products, generating over USD 37 million and creating 1,880 permanent jobs; provided 63 grants to agricultural enterprises; supported 120 firms; and directly benefited 31,100 individuals.[178]

Another project that is on-going at the current time, that includes similar goals, is the Economic Prosperity Initiative. This project, which was initially valued at USD 40.4 million is broken into three major components, of which support to the agriculture sector is the main one.

The initial assessment looks at the dairy, fish and sea products, fruits, grains, honey, meats, non-timber forest products, nuts, poultry, tea, vegetables and wine. From these, they identify wine, nuts, fruits and vegetables as target markets deserving of further investigation. However, before considering why they focus on the sectors that they focus on, it is worth considering why they reject the others. Largely using government data they argue that in the other sectors Georgia either has little market growth opportunity OR little comparative advantage, or both.

In dairy they argue that while there is clearly inefficiency in the system, the overwhelming majority of dairy products consumed are produced locally (so little opportunity for import substitution) but the market is far too constrained to produce at a level that would be internationally efficient so exports in this area are unlikely. Therefore, the main challenge to the sector is to make it more efficient so that it makes better use of grazing resources and frees up time for farmers to do other things.

In grain, they argue, 'The small size of many of Georgia's farms, high unemployment, and high grain prices, are all very conducive to the importation of grains so that land can be more properly utilized in higher value agricultural production' [179]. This is the view that was also shared by a report produced by another large USAID Project *AgVantage* in 2007.

On meat the picture there is more potential for import subsitution, particularly in poultry and pork, which are still largely imported, but here the argument is that with high feed prices it is hard to become competitive.

10 EDUCATION AND SKILL SETS

It is commonly accepted that the agricultural skill sets of small farmers tend to be fairly low. While there are certainly structural reasons for the low-input and low-output system it is also the result of a lack of knowledge about new farming techniques or the ability to calculate the benefits of small investments.

It is usually recognized that no part of the Georgian education sector is suited to provide manpower for Georgia's agribusiness sector.[180] As experts usually agree, on a day to day basis, organizations and companies for the most part lack the specific knowledge associated with the sector. According to Dmitry Kostarov of AgroGeo+, Georgia

178 USAID, (2011). *Final Evaluation of AgVANTAGE Project in Georgia 2011,* **http://pdf.usaid.gov/pdf_docs/PDACR900.pdf** (Reviewed December 19, 2011);

179 Economic Prosperity Initiative (December 2010), Economic Prosperity Initiative: Sector Assessment Report, p45

180 USAID (2011) Analytical Foundations Assessment- Agriculture (Rural Productivity) p43

has to rely on external experts, visits or seminars which have limited impact because on a daily basis farmers and agricultural organizations do not benefit from such expertise.[181] According to him, larger agricultural producer in the country and other agricultural companies still rely mostly on the use of international experts.

In general, the most obvious way to assess agricultural training is to look at the courses that teach it. The main educational institute which provides education in agriculture is the Georgian State Agrarian University. This currently has up to 5,000 students who are involved in seven departments of the university. The university offers undergraduate and graduate courses, including doctorate.

In addition to its facilities in Tbilisi, it also has its own teaching-experimental labs in Mtskheta (Mtskheta-Mtianeti region), Dedoplitskaro (Kakheti region), Lanhckhuti (Guria region), Samtredia and Kutaisi (both in Imereti region).

The work of the University is supplemented by the work of several VET centres in regions. In the academic years of 2009-2010 there were 932 people accepted into agricultural training programs at VET centers. These covered a wide range of different skill sets as shown below.

Figure 42: Agricultural courses at Public Vocational Education and Training Centers

Course type	Length of course			
	1-6 months	1-1.5 yrs	2 and over	Grand Total
Agricultural products specialist	32	37		69
Beemaster	25	32		57
Environment protection		30		30
Farmer	89	171	188	448
Gardener	13			13
Mechanic		22		22
Medical Herb Grower		55	19	74
Plant Protection		18		18
Veterinary	39	54		93
Wood Specialist		84		84
Grand Total	**198**	**503**	**207**	**908**

Source: Derived from information provided by the Ministry of Education and Science (January 2010)

In addition to these courses there are a handful of cheese-maker and wine maker places. The courses are distributed across the country but are most heavily concentrated in Imereti, Khaketi, Shida Kartli and Samtskhe-Javakheti.

In addition to these courses a new VET training, operating under the umbrella of the Gori University has opened a regular 4 year university program, 2 year community college, and a VET centre. Together with other courses, the community college offers the 'agricultural business management' course. The VET centre is funded by the European Union and is very well equipped. In addition to studying facilities, the VET centre also owns a small milk factory and a lab where they can test milk products.

Additionally, interest and demand for agriculture education is extremely low with only a handful of students enrolled in agronomist programs at University.[182] Part of the reason for this may be that, in the public perception and according to government statistics, salaries in the agricultural sector remain low. According to official statistics, although the sector's average salary has increased throughout the years and stood at GEL 279 (USD 157) in 2010, it has remained significantly lower than all other economic sectors. This has been highlighted by

181 Interview with Dmitry Kostarov (February 10, 2012), Head of Strategic Development Department, AgroGeo+

182 USAID- Analytical Foundations Assessment- Agriculture (Rural Productivity) (2011) p46

experts as a serious disincentive preventing students from showing interest in agriculture, "agronomists are at the bottom of the list when it comes to salaries in Georgia and we have to reverse that, we have to work on career development".[183]

However, if investment in high-capital agriculture continues to increase, then we can expect this to change. In areas like greenhouses the investments are considerable. One square meter of heated green-houses in Georgia is estimated to cost about USD 100, which translated into USD 1 million per hectare. The return on those investments can be crucially affected by the level of experience and expertise of the manager, so much so that it can justify very large salaries.[184]

However, in addition to the limited expertise that is available for commercial farming, perhaps the bigger problem is the low level of expertise amongst the overwhelming majority of small farmers who are unlikely to ever take an agricultural course.

At the current time the most likely source of basic information for the farmers are the various service centers that have been set up by international organisations and, more recently, by the government. The Georgian Agricultural Compay, CARE, Mercy Corps, CNFA and many others have, over the last few years, been developing agricultural service centersin order to provide a combination of farm supplies, some machinery and advice on issues like seed types, pesticides and animal husbandry. The idea is that these centers become a trusted source of help and advice.

11 COOPERATION AND SOCIAL CAPITAL

As we have already mentioned, the size of Georgian farms is commonly considered to be one of the biggest impediments to agricultural developments. Very small landplots seem to make the unit cost of anything that is produced and sold considerably higher because input costs and transportation costs are high, supply is unreliable so sellers have to be market-price takers and any investments in either machinery or know-how seem to be disproportionate to the likely gains. One response to this is to encourage land consolidation. Another is to encourage more collective action on the part of farmers through the use of cooperatives or simply with coordinated action.

Cooperatives can serve a range of different purposes. They can coordinate to buy inputs less expensively, or buy capital like farm machinery that could not be justified by one farmer. If they are producing the same kind of products, then they may be able to save on transportation costs of getting the good to market, or may be able to collectively package goods so as to gain a higher price.

Collectives can also potentially help to manage local resources and so avoid the 'tragedy of the commons'. One very obvious example of this is that local organizations could help in the management of the irrigation system by collectively maintaining large equipment and channels and making clear what the responsibilities of individuals are in maintaining their part of the system. Similarly, they can try and ensure that resources are not damaged or put at risk by managing the response to common threats. For example, farmers groups can try to agree on policies for combating disease or maintaining flood defences.

They can also become hubs for communication and education. If we accept, as was suggested in the last section, that few farmers are going to take-on formal education, then the role of informational networks becomes paramount. Cooperatives, particularly if they are organized along sectoral lines (like bee-keeping associations and cattle herding association) can become organized structures through which experiences and expertise is shared.

For all of these reasons, most of the major donor organizations believe that facilitating cooperatives is crucial for the development of agriculture, particularly in the absence of land consolidation. Providing incentives for the creation of farmers cooperatives, while removing current disincentives (see below), is a top priority for the European Union. According to Juan Echanove, Agriculture Attaché for the delegation of the Europan Commission

183 Interview with Dmitry Kostarov (February 10, 2012), Head of Strategic Development Department, AgroGeo+

184 Interview with various agronomists (2012) in the greenhouse sector.

to Georgia, enabling a legal environment to push for the creation of cooperatives is a precondition for the implementation of an upcoming EUR 40 million agricultural package.[185] A significant portion of this project, EUR 15 million, would be directed in the form of grants to stimulate farmers' cooperation.[186]

However, the government and farmers have remained fairly skeptical. So far, Georgian farmers have refrained from organizing and cooperating through farmer associations or cooperatives to any significant degree. At the moment, there are roughly 150 farmer cooperatives or associations in Georgia which cover only 5-10% of the total number of farmers in the country and it is unclear the level of activeness of even that group.[187]

The refusual to form cooperatives or collectives, is often seen as a failure of social capital. In the Former Soviet Union generally, the lack of social capital is often considered to be a major problem. This may seem odd. Georgian communities are extremely traditional and depend heavily on kinship networks. However, ironically, the flipside of kinship network seems to be a fundamental distrust in strangers or those with whom one does not have a strong friendship or familial relationship.

In addition, in the socialist system, since almost all responsibility for resource management was taken by the state, there was no need for spontaneous social organization. Therefore, ironically while working in 'collectives', farmers have no experience of managing themselves collaboratively.

The level of social capital and participation also reflects two broader social issues; trust and the desire to 'get involved'. Georgian communities are generally poor on both of these, not very socially active generally and not really trusting those outside of a small circle of family and close friends.

Indeed and according to a recent CRRC report, despite the fact that "Georgia exhibits high degrees of bonding social capital, of trust and of collaboration within tightly-knit groups. Georgia still has low levels of bridging social capital – particularly of the type that facilitates more systematic co-operation between relative strangers".[188] This not only affects day-to-day life but a range of different sectors, including agriculture.

For example, one of the organizations interviewed throughout the course of the research, Agro Development Group, has started a farmer's association to work on a rabbit farm. They have found that rabbit farmers are motivated to create a cooperative with the help of a distributor in order to create a market chain and ensure an adequate supply of the meat. According to them, guiding farmers in that process "is very much needed since there is a general lack of trust on the farmer's side".[189]

However, the failure to organize collectively is not simply the result of a lack of trust in other farmers. Because of the Soviet pasgt the whole concept of 'collectives' has bad associations to the soviet kolkhoz farming system, and so commonly generated instinctive resistance. In addition, according to George Glonti of CARE international the Georgian political system does not encourage collectives.[190]

A recent USAID report points out the same problem in the Georgian tax code, saying that it currently hinders the formation of cooperatives:

> The structure of the Georgian tax code creates a financial disincentive to the formation of cooperatives. Agriculture is as a tax free enterprise for individuals deriving an income below GEL 200,000 (USD 121 thsd). Nonetheless, when multiple individuals form a cooperative, the GEL 200,000 (USD 121 thsd) limitation on tax-free income does not rise in corresponding fashion. Further to this, producer groups can potentially be liable to VAT taxation of primary production. This actually creates a significantly increased tax burden for individuals forming cooperatives, significantly diminishing their viability as business units.[191]

185 Interview with Juan Echanove (March 28, 2012), Agriculture Attaché, Delegation of the European Commission to Georgia,

186 Interview with Juan Echanove (March 28, 2012), Agriculture Attaché, Delegation of the European Commission to Georgia,

187 Interview with Juan Echanove (March 28, 2012), Agriculture Attaché, Delegation of the European Commission to Georgia,

188 CRRC (2011).An assessment of social capital in Georgia. p4

189 Interview with Rusudan Gigashvili (February 20, 2012), PR Manager, Agro Development Group

190 Interview with Gia Glonti (February 12, 2012), programs operations manager at CARE international

191 USAID(2011) Analytical Foundations Assessment- Agriculture (Rural Productivity) p55

This overall analysis of the situation is corroborated by a senior FAO official who mentioned that there is currently "little incentive from the legal and tax point of view and that the government should put some incentives to stimulate farmers to organize themselves".[192] People still tend to say that farmers remember the collective farms in the Soviet Union and that hinders their willingness to cooperate, but according to him "that is only partially true since farmers do get an understanding of the current situation; farmers are not against this but incentives are needed".[193]

At the moment, the Georgian government is well aware of the situation and has included in its Agriculture Development Strategy sections about farmer cooperatives. Kote Kobakhidze, Deputy Minister of Agriculture, mentions that three of the strategy's objectives do include 'farm group development' and that the government is in the process of creating incentives in order for farmers to cooperate; a law is currently discussed in parliament and expected to be adopted this year.[194]

192 Interview with Mamuka Meskhi, (12 February 2012), Food and Agriculture Organization

193 Interview with Mamuka Meskhi, (12 February 2012), Food and Agriculture Organization

194 Interview with Kote Kobakhidze (March 1st, 2012) Deputy Minister of Agriculture

ARMENIA EXECUTIVE SUMMARY

History

In late 1980s, the agro industrial complex was the second largest sector of the country's economy, accounting for about 21% of productive output and about 27% of employment[195]. Around 16,600 specialists were involved in agricultural activities, including 7,422 agronomists and veterinarians.[196]

Livestock production was central to Armenian agriculture in the pre-independence period, both in terms of the amount of resources employed (around 75% of agricultural labor force and 80% of agricultural land) and aggregate value created.[197] In addition, about 80% of Armenian agricultural imports were related to livestock production, including feed additives, veterinary supplies and milk powder.

The economic challenges that came with the collapse of the Soviet system were massively exacerbated by the war with Azerbaijan. The war which went on from 1988 to 1994, left 800,000 ethnic Azerbaijanis and 230,000 ethnic Armenians displaced from their homes.

The war particularly hindered urban employment prospects and encouraged de-urbanization. People returned to the land where they could at least provide for their own subsistence. But outside the Soviet system of supply and demand, productivity collapsed. Meat production was hit hardest as it was entirely dependent on imported fodder from Russia. Pig and chicken production reduced by as much as 70% and cattle and sheep reduced by around 50%..

Crop production also experienced a shift from high value fruits and vegetables to staple crops like grain and potatoes.

The significance of agriculture is driven by its importance in poverty reduction, employment, economic growth and food security.

According to the World Bank around 44% of employed population is involved in agriculture.[198] In addition, in rural communities in 2010 about 38% of income came from agriculture (if one combines monetary and non monetary income). Slightly less than half of this came as monetary income generated by the sale of agricultural products. 29% of rural income came from wage employment and 20% came from pensions and social payments. About 9% came from remittances.[199]

As a result of these two facts, increasing agricultural productivity would be one of the surest ways to increase rural incomes. This is important because while rural households are generally less poor than urban households (outside of Yerevan), rural income levels are generally very low. Therefore, reducing rural under-employment is a clear mechanism for poverty reduction.

In relation to the rest of the economy, the role of agriculture declined slightly between 2006-2010, though employment in the sector has also gone down. In absolute terms the contribution to the value added by agriculture has gone up by 24% over the same time period.

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195 Avestisyan S. (2010) *Agriculture and Food processing in Armenia,* Yerevan. p22 **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf**, (Reviewed April 27, 2012).

196 Armenian Soviet Encyclopaedia (1987). *Soviet Armenia* Yerevan, p279.

197 World Bank. (1995). *Armenia: the challenge of reform in the agricultural sector*. Washington, D.C. p111.

198 World Bank (checked April 2012), Databank, (**http://databank.worldbank.org/ddp/home.do?Step=3&id=4**)

199 National Statistical Service of the Republic of Armenia (ARMSTAT) *Armenia: Sources of Household Nominal Income by Urban/Rural Communities, 2008 and 2010 (Average Monthly Income per Household Member*. p94 **http://www.armstat.am/file/article/poverty_2011e_3.pdf** (Reviewed April 27, 2012). Though there is significant evidence that remittances are significantly under-reported. See IMF Working Paper, "Garbage In, Gospel Out? Controlling for the Underreporting of Remittances, **http://www.imf.org/external/pubs/ft/wp/2008/wp08230.pdf** (Reviewed April 27, 2012).

Structure of the Agricultural Economy

At the current time, Armenian production is about 1/3 meat and 2/3 crops, which is a significant reversal from the mid-1980s when Armenia was largely a meat producer. In the last 15 years, we can see that livestock has shown extremely steady recovery (in value terms) while crops declined between 1995 and 2000 but then recovered from 2000 to 2010.

If we look at the production dynamics in volume terms over this period we find that the stories differ significantly in different sub-categories. Beef production has increased since 2000, first slowly and more rapidly in recent years, though part of that reflects the slaughter of milk cows in response to dropping milk prices since the financial crisis. This will ultimately lead to a decline in production numbers, but overall the sector has grown significantly and beef is now about 70% of Armenia's meat output.

Mutton has also grown steadily since 2000, driven by demand in Iran, though the dramatic increase in prices for live animals in 2008/9 did lead to a reduction in the size of herds by 10-20%.

After a 70% decrease in production from 1980s levels, pork recovered quite strongly (in percentage terms) from 1995-2007, though this was largely coming from small producers. The swine fever epidemic that started in 2007 decimated pork stocks, but the increase in prices has encouraged the development of larger commercial pig farms (who are better placed to protect themselves from the disease) and so pig numbers have gradually recovered. Pork has not yet reflected this recovery because of the lag in production.

Poultry declined dramatically from 1985-2000, but quickly recovered its production capacity in 2000-2005 thanks to the completion of privatization that was followed by large private investments in the sector and technological renovations.

The poultry industry benefited largely from zero duty on animal feed, the general income tax and VAT exemption for agricultural production, and some natural protection because of transport costs to a landlocked state. The ability to build production rapidly is also much greater than it is for sheep, goats, and cattle.

Beef prices have gone up alongside increases in production, suggesting that production increases have been, at least partially, price-led in that sector. Mutton prices have risen alongside production as well, though in the 2005-2010 years prices have risen far faster. In the poultry sector it is hard to connect production and prices in any clear way. This is unsurprising given the dramatic nature of the transformation of the industry.

Milk production has also increased dramatically, increasing by half in the ten years from 1998 to 2008. This resulted from increased effective use of collective farming, an upgrade in the quality of the breeding stock (through the import of new breeds) as well as substantial focus on developing the skill base of dairy farmers. It has not, however, involved significant consolidation, and most milk is still produced by farmers with 2 or 3 cows.

Crop production is extremely hard to analyze because fairly significant swings in the year-to-year production levels are usually the result of weather patterns and, particularly, periodic droughts. Nonetheless, from 1995-2010 there are fairly good aggregate increases in grain (28%), potatoes (13%), vegetables (57%) and grapes (44%), with declines only in berries (12%) and forage crops (40%).

Potato yields were poor until about 2002, but, have seen noticeable and persistent growth since, showing averages about 35% higher after 2004 than in the 6 years before. Growth in vegetables seems to have shown the same trend, with sustained growth beginning in 2002 and average yields in the last five years 50% higher than they were in the preceding decade.

Favorable weather conditions, stable demand by processors, establishment of high quality seed imports (and, as a result, increased usage of high quality seeds), improved planning due to contract farming, and stabilization in irrigation are the main reasons behind increasing yield numbers. This was also helped because many of the vegetable farmers were located in the Ararat Valley and had a strong history of vegetable production. They were, therefore, well placed to utilize improvements in the structural environment to significantly improve production.

Improved planning has been most significant in grape production where the company Pernod Ricard, which owns Armenia's largest cognac factory, has been building long-term relationships with farmers by offering them yearly

contracts, sometimes involving prepayment. Similar practices have been employed by Spayka, the large fruit and vegetable shipping and agricultural investment factory, as well as by other processors. This has allowed farmers to plan ahead better and to use more and better inputs.

Improved seeds have had an impact in the vegetable sector but particularly in the production of potatoes. At the beginning of the millennium, Armenian importers secured reliable supplies of Grade A potato seeds from the Netherlands, even becoming a regional exporter. Improved vegetable seeds have also increased general productivity.

Another consequence of this range of activities is that the Armenian agricultural sector has seen a gradual shift towards fruits and vegetables, where it seems to have the highest value added.

In most crop categories prices have gone up significantly in the last five years or so. In wheat, price changes matched global trends and, as another staple, potato prices, followed. However, prices for most (particularly perishable) fruits and vegetables in Armenia reflect the weather conditions and productivity on a given year.

Market Access

Another significant barrier to agricultural development in Armenia is market access/competition. This can be broken down into three separate problems: first, the ease with which farmers can get their produce to markets inside Armenia; second, their access to markets outside of Armenia; and third, the competition that Armenian producers face from foreign competitors. Each of these presents different challenges and opportunities.

Recently, roads in Armenia have been improving significantly. During 2008–2010, loans invested in capital road repairs amounted to roughly AMD 100 billion (USD 288 million). While the road network in Armenia has benefited from a significant injection of foreign funds during the past ten years, these funds have been targeted to the rehabilitation of the main (mainly interstate) roads, with the intention of returning them to good condition.

In terms of access to international markets, Armenia has free trade agreements with other CIS countries, is a member of the WTO, an Eastern Partnership Member and has GSP agreements with the EU and the US. However, its biggest challenge in terms of access to international markets is its closed border with Turkey and Azerbaijan that makes Georgia its only viable route for transit of goods to Russia and the West. This is made even more difficult because, between 2006 and 2011, Armenian goods had no land route into Russia. Because the land-border was closed to Georgian goods, Armenian goods were also excluded. This border has recently been opened again for Armenian goods.

In terms of competition from the West, Armenia's physical isolation also protects it from international competition. This is further compounded by administrative difficulties and high levels of informal payments for any movement of goods into Armenia.

Land Holdings

Land holdings are shared between 330,000 households with an average of 1.3 hectares of land each. This land is also fragmented. Out of these 330,000 households who have been allocated plots of land, ACDI/VOCA believes that only around 200,000 are functioning farms with half of those operating on a subsistence basis. ACDI/VOCA estimates that there are approximately 20,000-30,000 farms with at least 3-5 hectares per farmer. Large farms with more than 10 hectares currently represent only six percent of all farms. A rough estimate is that 50 percent of the units produce only for home consumption, 30 percent only for the market and 20 percent both for home consumption and for the market.

Land use went down by 19% between 1995 and 2010 for grain production, 9% for potatoes and increased by 11% for vegetables. Considering the reported increase in output, productivity per hectare must have gone up by 59% in grains, 24% in potatoes and 41% in vegetables.

The land market in Armenia is hampered by a poor land register. The number of sales suggest somewhere between a 0.3% and a 0.8% turnover of land plots in a given year.

Irrigation

In Soviet times, the irrigated area reached 300 000 ha in 1985 but later declined significantly in the 1990s to the point where only about 112,300 ha were irrigated while 180,000 ha had reverted to dry land due to failure of pumping and conveyance systems.[200]

In order to reverse the decline and rehabilitate the overall irrigation network, the Armenian government in a joint effort with the World Bank and IFAD implemented the first Irrigation Rehabilitation Project (IRP) that started in 1994 and closed in 2001. Following the joint World Bank/IFAD project of 1994, the bank carried out an Irrigation Development Project which lasted until 2009.

The project secured important legislative improvements and showed significant achievements: the beneficiary households' income increased on average by 30% and the project covered an area of 128,860 ha instead of the targeted 40,000 ha. In the process 54 water users associations (WUAs) were established instead of the planned 8-10 and the number of hectares irrigated increased from 112,300 ha to 128,860 ha. The cost-recovery rate of operation and maintenance expenses increased to 45% from 8% in 2000 and the system achieved a reduction in the amount of energy consumed, saving of 50.9 million KWh per year valued at over USD 3 million.

In addition to these changes, during 2006-2011 the Millennium Challenge Corporation in partnership with the Millennium Challenge Account of the Republic of Armenia (MCA) undertook a major irrigation project of USD 177 million. The main component of the project regarding irrigation infrastructure, which targeted 298 communities for a total of 421 thousand beneficiaries, allowed 47,000 ha to be put under new and improved irrigation and 10,000 hectares under improved drainage.[201] The second component of the project (Water to Market activity) allowed for over 45,000 farmers to be trained in irrigation practices, and over 36,000 of the targeted farmers were also trained in higher value agriculture.

According to the World Bank, the establishment of WUAs was a real revolution in the maintenance of the irrigation system in Armenia since through this initiative 14 public agencies responsible for irrigation water delivery were replaced. There are 44 associations operating in the country currently, signing agreements with farmers, delivering water and maintaining the irrigation network.

Collection rates have increased countrywide, standing at 70% in 2008 and in some cases at practically 100%. Even non-rehabilitated WUAs managed 50% in the same period. The efficiency of the system has made it possible to increase water fees (which stood at 9 AMD (USD 0.02) per cubic meter in 2008-09, which is close to full cost recovery estimated at 10.5 AMD (USD 0.03)).

Productivity benefits for the agricultural sector as a whole. The increase in the irrigated area from 112,300 to 130,000 ha and the reliability of the system have allowed an increase in crop yields between 10-15%, and a diversification towards higher value fruit crops and away from extensive crops: vegetables, grapes and orchard growing from 38% to 50% between 2004-08.

While the amount of agricultural machinery reduced in the post-Soviet period, it only reduced by about 17% by the mid 1990s and since that time has grown beyond Soviet levels. The new tractors have been provided under a range of international and government programs including through Japan and India.

Fertilizer, while only produced in Armenia in relatively small quantities, is imported from Georgia and often subsidized. The most significant change in agricultural inputs has been the dramatic improvement in the quality of available seeds in the last 10 to 15 years. This has been most notable in the areas of wheat seeds, which has been subsidized and potato which has generally not been.

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200 World Bank (2009) *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145), p1. **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009/Rendered/INDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012).

201 The program allowed the rehabilitation/installation of 5 gravity schemes, 6 main canals, 220 km of tertiary canals, 17 pump stations, and 13 drainage systems. See Millennium Challenge Account- Armenia (2011) p19 **http://www.mca.am/files/M&E_Publication/mca_brochure_02_web_eng.pdf** (Reviewed 27,a 2012).

Agricultural Support Services

Armenia did not experience a significant drop in levels of farm machinery after the collapse of the Soviet system and they have largely recovered since. However, as there has been a significant shift from meat production to horticulture during that time, this may still leave substantial under-provided demand. Armenia has been provided with agricultural equipment by grants from a number of different countries including Japan and India. Most of these have been sold at auction.

In the provision of variable agricultural inputs, like fertilizers, pesticides and seed, there is little direct government provision. Provision of fertilizers and pesticides continues to be a challenge. While Armenia is a small producer of chemical pesticides, most of its pesticides are imported and the import of these goods is generally controlled by a small group, keeping the prices high..

Improvement in seed provision, on the other hand, has been one of the key factors in increasing output of arable crops. This has been particularly true in the case of the import of Dutch 'elite' seeds in potato and improved grain and vegetable seeds. These have been supported by a number of different government and international organisation programs. Generally speaking potato seed imports have been subsidized by the state or IOs while potato and vegetable seeds have not.

In the provision of veterinary care, the situation is unclear. The state provides a very modest income to a network of vets who are also able to take on private work but who, in exchange for their salary, have to conduct mandatory vaccinations and carry out surveillance. However, the system has been hampered by multiple re-organisations and because disease control has become politicized vets may feel disinclined from reporting diseases to the state.

Finally, farmers in Armenia still find it extremely hard to secure financing. In 2009 there were 22 commercial banks with 367 branches operating in Armenia. Only about 5.9% of total credit investments of the commercial banks went to agriculture. The only bank that has a serious share in lending to the agricultural sector is the ACBA-Credit Agricole Bank with approximately USD 253 million (or 30%) of its loan portfolio in 2008 in the agricultural sector. In 2010, there were also 29 licensed universal credit organizations with 60 branches and assets comprising about 86.4 billion AMD (USD 231.2 million).

This year, the government plans to substantially increase the volume of subsidized agricultural loans. For this purpose the government has provided AMD 7.5 billion (USD 19.3 million) to the banks. The goal of the program is to provide loans to the farmers at 10% interest rate, which is much lower than the market rate of 18-22 percent; but according to some farmers they actually end up paying 18% interest on these subsidized loans.

But perhaps the change in financial structure which has so far generated the biggest change in Armenia, has been the success in the development of forward contracts, particularly in fruit and vegetable production and in grapes. This is not 'financing' *per se*, but it does produce improvement in the predictability of the financial situation facing most farmers and this is often attributed as one of the key elements in facilitating the expansion of fruit and vegetable production.

Government Spending

Government spending in the agricultural sector over recent years has fluctuated but remained fairly low

For instance, in 2010 the total budget of the Ministry of Agriculture stood at AMD 9.2 billion (USD 24.6 million) which in current terms represents roughly USD 23.4 million.That represented only around 1% of total government spending for that year.[202]

Moreover, the average annual support expenditures administered by the Ministry of Agriculture of Armenia in the period of 2004-2008 was just 1.22% of the value of the total agricultural production. However, this does not include expenditures on infrastructure rehabilitation.The level of investment in the irrigation network by far surpassed the level of investment in agriculture as whole for 2011 and stood at AMD 35.3 billion (USD 94.8

202 E-gov.am (2012) *Interactive Budget.* **https://www.e-gov.am/interactive-budget/** (Reviewed April 27, 2012)

million).[203] This was almost four times the overall budget of the Ministry of Agriculture.

In 2011, 54% of the Ministry's total budget was allocated for the support of international projects. Apart from those, the main activities carried out by the government consisted of veterinary activities (13%), support to agricultural land users (9%) and plant protection and phytosanitary activities (7%).

The veterinary sector was the largest budget line item in 2011 at roughly AMD 1.3 billion (USD 3.5 million). That included measures to support artificial insemination, animal inoculation, the implementation of veterinary quarantine restrictions, the laboratory diagnosis of animal diseases and animal origin raw materials, and the investment in "Anti-epidemic and Veterinary Diagnostic Center" SNCO of the Ministry of Agriculture.

The Ministry has also provided support to agricultural land users in the amount of AMD 864 million (USD 2.2 million). That program has been supplemented over the years by the provision of extension services through the existing network, particularly the funding of national and marz Agricultural Support Centers (ASCs). Funds allocated to the provision of such services increasedbetween 2008 and 2011, from AMD 141.5 million (USD 462 thsd) to AMD 293 million (USD 787 thsd).[204]

Third, plant protection and phytosanitary measures have also occupied a large portion of the Ministry's budget. Budgeted line items for 2011 included measures that relate to the installation of hail settings, the implementation of preventive and diagnostic services based on the monitoring/laboratory testing of the plant quarantine/ phytosanitary condition.

Overall and apart from those measure, the government priorities in recent years have also been to invest in seed production, support animal breeding through enhanced artificial insemination practices, and provide subsidies for agricultural lending and partial subsidies for fertilizer.[205]

The Armenian government has also supported activities that overlap with these priorities through state programs. For instance, in the midst of the global financial and economic crisis of 2008, the government of Armenia started implementing a Sustainable Development Program (SDP) which included agriculture related activities such as the allocation of USD 27 million worth of loans provided to 765 agricultural enterprises within the scope of IFAD and WB loan programs for the development of agricultural infrastructure and the modernization of agricultural goods production. [206]

International Projects

Armenian agriculture has benefited from the assistance of many international actors, including the US government, the World Bank, the FAO and the EU. However, most efforts have been directed towards the improvement and rehabilitation of the irrigation and road networks.

The largest international assistance in agriculture came from the Millennium Challenge Corporation (MCC). Since 2006, USD 235 million was spent through the MCC. Primary activities included the construction of roads and irrigation infrastructure rehabilitation. USD 67 million was spent on rehabilitating and constructing 943 kilometers of rural roads, which connect villages to markets, services, and the main road network. USD 146 million was spent to improve water supply and the irrigation network.[207]

Since 1994, the World Bank has carried continuous irrigation projects. From 1994 to 2001, it implemented with IFAD an Irrigation Rehabilitation Project (IRP) valued at USD 51.8 million. That was followed by an Irrigation

203 The Government of the Republic of Armenia (2012); 2011-2013 Medium-Term Public Expenditure Framework; http://www.gov.am/files/docs/706.pdf (Reviewed May 2, 2012)

204 The Government of the Republic of Armenia (2012); 2011-2013 Medium-Term Public Expenditure Framework; http://www.gov.am/files/docs/706.pdf (Reviewed May 2, 2012)

205 S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, p133 **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012).

206 IMF (2011). Republic of Armenia: Poverty Reduction Strategy Paper: Progress Report. p32. **http://www.imf.org/external/pubs/ft/scr/2011/cr11191.pdf** (Reviewed April 30, 2012)

207 USAID (2006) Independent Evaluation of US Agriculture Sector Activities in Armenia, p21

Development Project which lasted until 2009 and the World Bank is currently implementing an Irrigation Emergency Rehabilitation Project which was prolonged until 2013.[208]

Overall, investments to rehabilitate and maintain Armenia's irrigation network have been constant since 1994 and are known to have improved the overall system in terms of physical installations, productivity of the agricultural sector, and the capacity of institutions in charge of operations and maintenance of the network (Water Supply Agencies- WSAs, and Water Users Associations-WUAs).

To rehabilitate and improve its road network, the Armenian government has also relied on external sources such as the World Bank, Asian Development Bank, the EBRD, the European Investment Bank, and the Lincy Foundation. Other agricultural projects have focused on introducing technical expertise and know-how, improving Armenian farmers' marketing skills, strengthening specific value chains and improving access to rural finance.

Education

It is in the education sector that some of the longest-term developments have occurred. The Base Lyceum and State College train the future specialists for the Agrarian University. Currently there are 7 faculties in the Agrarian University (Agronomy, Veterinary Medicine and Animal Husbandry, Agriculture Mechanization and Automobile Transportation, Hydro Melioration, Land Management and Land Cadastre, Foodstuff Technologies, Economics, Agribusiness and Marketing). There are 4500 fulltime and 5800 parttime students in these faculties, choosing respectively from 37 and 22 specialties.Also, the University has more than 450 master students and 240 postgraduate students.s.

These developments have not yet impacted on the publication track-record of Armenian agronomists, which remains dire, but they are increasingly involved in international projects. Graduates of the Armenian State Agricultural University have good employment prospects relative to other sectors.

The graduates of the Agribusiness Teaching Center of ASAU are even better prepared for the job market. As of November 2010, the number of the Agribusiness Teaching Center (ATC) graduates was 287 (10 graduate classes), including 32 graduates from the Georgia. The center is a special department of the ASAU which is based on the Texas A&M University educational standards and curricula.

191 graduates (74.3%) are currently employed in Armenia, Georgia, the Russian Federation, North and South Americas (U.S. Canada, Paraguay), Europe (Hungary, Germany, and the Netherlands). Another 40 graduates (15.5%) currently pursue Master and PhD degrees in Armenia, Georgia, the U.S. and Europe.

The salary range of ATC graduates working in Armenia starts is USD 190 - 280 per month (for their first job). For second jobs, that increases to around USD 700. The average monthly salary is around USD 416 while some graduates receive USD 970 and more. On top of this, Armenia has a fairly extensive network of research companies distributed nationwide.

Social Capital

While cooperatives generally are not widely used in Armenia, one area where they have demonstrated their importance is in the field of milk collection. A combination of international organisations and private organisations work together to supply milk. Cooperatives have grown dramatically, in terms of the number of farms included and their level of milk collection. The cooperative structure has proved particularly useful in milk collection as it allows a range of issues, like quality control, to be managed internally within the group. Nonetheless the institutional framework still needs to be developed to better facilitate the work of cooperatives.

208 World Bank (2011). *Project paper on a proposed loan in the amount of US$18 million to the Republic of Armenia for an Irrigation Rehabilitation Emergency Project* (Report No: 63649-AM) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/10/05/000112742_20111005120118/Rendered/INDEX/636490PJPR0R200ficial0Use0Only00090.txt** (Reviewed April 27, 2012)

1 BACKGROUND TO AGRICULTURAL PRODUCTION

In late 1980s, the agro industrial complex was the second largest sector of the country's economy, accounting for about 21% of productive output and about 27% of employment[209]. Around 16,600 specialists were involved in agricultural activities, including 7,422 agronomists and veterinarians and hadhigher or specialized vocational education[210].

Figure 43: Main agricultural categories by hectares in 1985

Agricultural Products	Hectares
Grain	135,600
Potato	42,600
Vegetables	17,800
Melons and gourds	59,000
Grapes	34,000
Fruits	54,000

Source: Armenian Soviet Encyclopedia (1987). *Soviet Armenia,* Yerevan

Livestock production was central to Armenian agriculture in the pre-independence period, both in terms of the amount of resources employed (around 75% of agricultural labor force and 80% of agricultural land) and aggregate value created.[211] In addition, about 80% of Armenian agricultural imports were related to livestock production, including feed additives, veterinary supplies and milk powder.

In 1987-88, when livestock numbers peaked, Armenia's livestock population was estimated at 850,000 cattle (including about 310,000 cows), 340,000 pigs (including 35,000 sows), 1.75 million sheep, 30,000 goats, 7,500 horses, and 12 million poultry. There were also an estimated 25,000 rabbits and 120,000 bee hives.

Big poultry industry plants were located in Kotayq Region and nearby Yerevan city. Prior to transition, the milk processing industry had an annual capacity of 320,000 tonnes of dairy production (mostly cheese and ice-cream).[212] Armenia was exporting fresh fruits and vegetables, geranium oil, alcoholic beverages, especially brandy and wines (particularly cognac), various canned foods and mineral water. Imports comprised wheat, dairy products, meat, and potatoes.

After the fall of the Soviet system, the collapse of the state-run economy and the privatization of state farms, collective farms, factories and services meant that the majority of the population lost their employment since there was, under communism, very little employment outside the state sector. Many enterprises simply shut down.

The loss of secure employment in towns and cities meant that huge numbers of people left and returned to their villages. In Armenia, this meant that the agricultural work-force doubled while the industrial work-force dropped by two thirds.

The nature of agriculture changed from industrial to subsistence within a decade following land privatization. The lack of money and very limited investment in agriculture made inputs such as herbicides, fertilizers and new seeds unaffordable. Agricultural infrastructure, including irrigation systems, warehouses, and farm machinery, were not suitable for small size agriculture and created drastic reduction in productivity and efficiency. As a result, a shift occurred from high value crops such as vegetables and fruit (previously exported, in Soviet times) to wheat for bread. This was accompanied by a reduced cash and labor investment in cultivation.[213]

209 Avestisyan S. (2010) *Agriculture and Food processing in Armenia,* Yerevan, p22 **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf**, (Reviewed April 27, 2012).

210 Armenian Soviet Encyclopaedia (1987). *Soviet Armenia* Yerevan, p279.

211 World Bank. (1995). *Armenia: the challenge of reform in the agricultural sector.* Washington, D.C. p111.

212 Vardan Urutyan (2009). *The Role of Milk Marketing Cooperatives in the Recovery of the Armenian Dairy Sector.* Budapest, Hungary p3. **http://www.icare.am/publications/urutyan_fao_09.pdf** (Reviewed 11 April, 2012).

213 Dr. Monica Janowski (2003). *Rural Non-Farm Livelihood Activities In Romania, Georgia And Armenia: Synthesis Of Findings From Fieldwork Carried Out At Village Level 2001–2002.* University of Greenwich, UK p10. **http://www.nri.org/projects/rnfe/pub/papers/2724.pdf** (Reviewed 11 April, 2012).

The livestock sector was hit the hardest by all of these changes as it was vastly dependent on import of animal fodder. The worst affected livestock species were pigs and poultry (down by about 75%, with sows down by over 50%), followed by cattle (down by over 60%, with cows down by 18%) and sheep (down by over 50%, with ewes down by 55%). Livestock production accounted for about one-third of the output value of primary agricultural production in 1992, down from 46% in 1991 and 53% in the late 1980s.

Due to heavy livestock inventory culling, overall meat production decreased much slower than livestock numbers in the period. Meat production underwent a drop of 38% with poultry experiencing the largest contraction of 70% in 1992 relative to the late 1980s. Overall livestock numbers more or less stabilized by 2000 and even started to rise again in the first decade of the 21st century.[214]

2 POVERTY AND AGRICULTURE

Helping to develop agriculture is generally important for reducing poverty for three main reasons. First, agriculture is one of the main sources of income for rural households. Second, increased food production in Armenia is likely to create downward pressure on food prices and this will improve the lives of all Armenians, but particularly poor Armenians as they tend to spend a disproportionate amount of their income on food. Third, poverty levels are often higher in rural communities.

According to the World Bank around 44% of employed population is involved in agriculture.[215] In rural communities in 2010 about 38% of income came from agriculture (if one combines monetary and non monetary income). Slightly less than half of this came as monetary income generated by the sale of agricultural products. 29% of rural income came from wage employment and 20% came from pensions and social payments. About 9% came from remittances.[216]

That said, even though farming is commonly the biggest source of income, cultivation of land is often considered to be part-time employment and only one-third of the agricultural labor force works throughout the year.

However, in Armenia, if one excludes Yerevan, urban households are generally poorer than rural households; although rural income levels are generally very low.

Figure 44: Poverty frequency by urban/rural areas in Armenia in 2008-2010

Region	Poor		Very Poor		Extremely Poor	
	2008	2010	2008	2010	2008	2010
Yerevan	20.1	27.1	8.1	14.3	1.1	2.2
Other Urban	35.8	45.4	18.2	28.9	2.8	6.1
Rural	27.5	36	11.9	21.5	1.2	1.1
Total	27.6	35.8	12.6	21.3	1.6	3

Source: NSS (2012); ILCS 2008-2011; Social Snapshot and poverty in Armenia 2011, p30. http://www.armstat.am/file/article/poverty_2011e_2.pdf (Reviewed April 12, 2012).

214 The World Bank. (1995) *Armenia, The Challenge of Reform in the Agricultural Sector*, Washington D.C. p127 **http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1995/05/01/000009265_3961219112041/Rendered/PDF/multi_page.pdf** (Reviewed April 26, 2012).

215 World Bank (checked April 2012), Databank, **(http://databank.worldbank.org/ddp/home.do?Step=3&id=4)**

216 National Statistical Service of the Republic of Armenia (ARMSTAT) *Armenia: Sources of Household Nominal Income by Urban/Rural Communities, 2008 and 2010 (Average Monthly Income per Household Member.* p94 **http://www.armstat.am/file/article/poverty_2011e_3.pdf** (Reviewed April 27, 2012). Though there is significant evidence that remittances are significantly under-reported. See IMF Working Paper, "Garbage In, Gospel Out? Controlling for the Underreporting of Remittances", **http://www.imf.org/external/pubs/ft/wp/2008/wp08230.pdf** (Reviewed April 27, 2012).

The economic crisis has increased the rural poverty rate by about 10%. In 2010 every 3rd person was poor and every 5th person was extremely poor.

3 AGRICULTURE IN THE WIDER ECONOMY

If we look at official statistics for 2006 and 2010 then we can see that agricultural value added has gone up, though the number of people employed in it has gone down.

Figure 45: Key indicators of agricultural development

Indicators	2006	2010
Value added, million USD in current prices (Exchange rate 373 AMD in 2010)	1,320	1,634
GDP ratio, in percent	18.7	17.4
Number of employed, thousand	504.3	454.8
Export of agricultural goods, mln USD	26.8	39.4
Specific weight in total export, %	2.67	3.9
Import of agricultural goods, mln USD	179.3	366.4

Source: IMF (2011). *Republic of Armenia: Poverty Reduction Strategy Paper-Progress Report.* http://www.imf.org/external/pubs/ft/scr/2011/cr11191.pdf (Reviewed April 12, 2012).

4 STRUCTURE OF THE AGRICULTURAL ECONOMY

If we look at agricultural output in simple financial terms, then crops are worth about 62% of output compared to livestock, which is worth about 38% though this ratio has moved up and down over the last 15 years.

Figure 46: Overall Agricultural Production in Armenia, in value (Million AMD) (1995-2010)

	Livestock	Crop
1995	105	228
2000	145	136
2005	205	288
2006	200	356
2007	204	430
2008	222	406
2009	205	347
2010	244	393

Sources: National Statistical Service of Armenia. Statistical Yearbook 2010. http://www.armstat.am/file/doc/99466678.pdf, http://www.armstat.am/file/doc/99458108.pdf
Statistical Yearbook, 2009. http://www.armstat.am/file/doc/616.pdf
Statistical Yearbook, 2004. http://www.armstat.am/file/doc/99452323.pdf
Statistical Yearbook, 2001(1996-98).(Pages Reviewed May 4 2012),
Armenian Soviet Encyclopedia, (1987) *Soviet Armenia*. Yerevan.

Based on these numbers we can calculate the equivalent annual percentage growth rate for each of the five year periods where we have data.

Figure 47: Average Annual Growth Rates in Agricultural Production in Value Terms (1995-2010)

Year	Livestock	Crop
1995-2000	7%	-10%
2000-2005	7%	16%
2005-2010	4%	6%

Source: National Statistical Service of Armenia, Statistical Yearbook, 2010. http://www.armstat.am/file/doc/99466678.pdf; Statistical Yearbook, 2009. http://www.armstat.am/file/doc/99458108.pdf; Statistical Yearbook, 2004 http://www.armstat.am/file/doc/616.pdf; Statistical Yearbook, 2001(1996-98) http://www.armstat.am/file/doc/99452323.pdf; (Pages reviewed May 4 2012). Armenian Soviet Encyclopedia, (1987) *Soviet Armenia.* Yerevan

Here we can see that the production of meat has seen dramatic expansion in the period from 1995-2010 with an average annual growth rate of 6% over the period. If we look at it in 5 year increments, the average growth rate in 1995-2000 and in 2000-2005 was 7%. In crops the story is more complicated, with crops actually decreasing significantly in the 1995-2000 period but then growing fast after 2000.

However, to understand the growth it is important to break this down and look at the meat and the crop sectors separately, and to look at the different agricultural sub-sectors within those categories.

4.1 Meat

Official statistics give us a breakdown of the production levels of different types of meat going back to 1985.

Figure 48: Meat Production in Armenia in 1995-2010 (thsd. tonnes)

Year	Beef	Mutton	Pork	Poultry
1985	44.8	30.5	34.7	21.5*
1995	29.7	7.1	4.8	6.8
2000	30.1	5.5	9.6	1.2
2005	34.2	7.6	9.3	4.6
2006	40.4	7.2	14.1	5.1
2007	43.3	7.3	13.3	5.8
2008	49.3	7.4	7.5	6.7
2009	49.6	8.9	7.2	5
2010	48	8.2	7.9	5.4

Sources: National Statistical Service of Armenia, Statistical Yearbook 2010., http://www.armstat.am/file/doc/99466678.pdf Statistical Yearbook 2009. http://www.armstat.am/file/doc/99458108.pdf Statistical Yearbook 2004; http://www.armstat.am/file/doc/616.pdf (Statistical Yearbook 2001(1996-98) http://www.armstat.am/file/doc/99452323.pdf *Armenian Soviet Encyclopedia* (1987) Soviet Armenia. pp287-89

* The number is from year 1986.

By 2010 beef is around 70% of the Armenian output of meat in volume terms and experiences the greatest growth.[217] Pork also grows considerably in percentage terms, while mutton enjoys modest growth and poultry output declines. This progression of production translates into the following annual growth rates.

Figure 49: Average Per Year Growth Rate in Meat Production (by weight)

Year	Beef	Mutton	Pork	Poultry
1985-1995	-3%	-8%	-9%	-7%
1995-2000	0%	-5%	15%	-17%
2000-2005	3%	7%	-1%	15%
2005-2010	7%	2%	-3%	4%

Sources: National Statistical Service of Armenia. Statistical Yearbook 2010 http://www.armstat.am/file/doc/99466678.pdf, Statistival Yearbook 2009. http://www.armstat.am/file/doc/99458108.pdf, Statistical Yearbook 2004. http://www.armstat.am/file/doc/616.pdf (Statistical Yearbook 2001(1996-98). http://www.armstat.am/file/doc/99452323.pdf, Armenian Soviet Encyclopedia (1987). *Soviet Armenia*. Yerevan. pp287-289

Consistent with the account already provided, the end of the Soviet period was marked by significant decrease in production of meat, followed by differing degrees and time periods for recovery. The decline continued for mutton and poultry in the next five years. In the case of beef, growth was practically non-existent in the 1995-2000 period, and then gradually increased, growing fast in the last five years.

It is also useful in understanding these numbers to grasp the dynamic of animal stocks.

Figure 50: Livestock Numbers in Armenia 1990-2011 (1,000 head)

	1990	1996	2000	2005	2006	2007	2008	2009	2010	2011
All Cattle	640	507	478.7	573.3	592.1	620.2	629.1	584.8	570.6	571.4
Cows	250.9	276.8	262.1	290.1	297.1	307	310.6	283	273.9	272.6
Pigs	310.9	54.3	68.9	89.1	137.5	152.8	86.7	84.8	112.6	114.8
Sheep & goats	1,186.2	578.8	540	603.3	591.6	632.9	637.1	559.2	511	523.5
Poultry		2,920.7	3975.2	4861.7	4,954.1	4,098.1	4018.2	4188.2	4134.6	3462.5

Sources: http://www.armstat.am/file/doc/99450533.pdf p18; http://www.armstat.am/file/doc/696.pdf p18; http://www.armstat.am/file/doc/99452323.pdf, p17 and http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1995/05/01/000009265_3961219112041/Rendered/PDF/multi_page.pdf.

Generally the increase in beef production reflects the increase in investment that occurred after 2000. The increase of beef production from 2008 onwards is explained by the fact that farmers were slaughtering their milk cows in response to the drastically declined milk prices during the economic crisis. The milk prices started to recover in 2010, which slowed down the decline in cattle number. This means that Armenia will observe a decline in beef production in the coming years due to reduced cattle stocks.

Mutton contracted in the 1995-2000 period, grew quickly from 2000-2005 but has experienced fairly slow growth since. Growth in mutton is due in part to a recent surging demand from overseas, mostly from neighbouring Iran. As shown in Figure 6, the official number of sheep and goats decreased in 2009 and 2010.

217 It is 70% of the combined output of beef, mutton, pork and chicken. This does not include other meat categories like rabbits.

Pork experienced dramatic growth from 1995-2000 but since then production has slowly declined. The sector is dominated by small local family farms and micro enterprises (70-80%).[218] This declining trend is due to two factors: relatively low pork prices and African Swine Fever. Officially reported in the second half of 2006, this disease wiped out the grazing swine population from the forests zones of the North and North East of Armenia and largely explains the dramatic drop in pork from 2007 to 2008.

Many relatively large-scale production facilities close to Yerevan were also infected and had to cull the livestock. This drastic decline in the swine population has significantly increased local pork prices which helped some of the commercial operations to recover. The swine population, however, has not been able to recover in the forest grazing areas since then.

Poultry declined dramatically from 1985-2000, but quickly recovered its production capacity in 2000-2005 thanks to the completion of privatization that was followed by large private investments in the sector and technological renovations. Growth was dramatic between 2000-2005.

After independence, the domestic egg production declined and apparent demand increased as eggs and poultry became cheaper sources of protein than red meat. Imports expanded to fill demand until 1997 when increases in domestic production on commercial farms began to drive the relatively predominant and low quality Iranian eggs out of the market. Today, Armenia no longer imports whole eggs and has started to export them in small volumes to neighboring countries.

However, because the country is small and the agricultural land has other, higher value uses, the grains used in poultry feed must all be imported. The high cost of inputs makes poultry production less competitive.

The poultry industry benefited largely from zero duty on animal feed, the general income tax and VAT exemption for agricultural production, and some natural protection because of transport costs to a landlocked state. The ability to build production rapidly is also much greater than it is for sheep, goats, and cattle.[219]

Poultry meat production peaked at 6,700 tonnes in 2008 has since declined due to the economic crisis and competition from cheap imports.

The case of "LUSAKERT PEDIGREE POULTRY PLANT" (LPPP).

LPPP was created in 1964 and reached its highest productivity levels in 1987-1888, when the quantity of birds exceeded 1.000.000. At that time, the factory produced daily 650.000 eggs. In 1998, LPPP became a member of MAX Concern and at once began the restoration and modernization of its manufacture. Owing to timely and powerful investments, the high qualification of management experts and the personnel, in 2002 the factory with its separate parameters had already exceeded indicators of the end of 80s. Today LPPP occupies more than 60 % of the local manufactured egg market and 25% of the chicken meat sector. The companyhas its transport service that allows the daily delivery of fresh products of to approximately 2000 trading objects of Yerevan and the nearest areas. LPPP exports its products to Georgia where there is high demand.

In 2008, the Lusakert Biogas Plant, which can process 220 tonnes per day of liquid poultry manure coming from (LPPP), started its operations.

In March 2011, the State Commission for the Protection of Economic Competition of the Republic of Armenia fined LPPP for about 100 million drams (about $273,973 US). According to the Commission, the poultry operation intentionally created a supply shortage in late 2010 by abusing its dominant position and not putting its products in the market.

In 2011, Rafik Sargsyan, the owner of "Getamej Poultry", the leading local broiler operation, has purchased LPPP thus further increasing monopolisation in the poultry sector.

218 EV Consulting (2009). *Meat Market.* Yerevan. p2 **http://www.evconsulting.am/media/documents/BRAINWORK/2008%20insights/English/MeatMarket_2009.pdf** (Reviewed April 11, 2012).

219 The World Bank (2007). *Armenia, Managing food safety and Agricultural Health: An Action Plan.* p24. **http://siteresources.worldbank.org/INTRANETTRADE/Resources/Topics/Standards/Armenia_Action_Plan.pdf** (Reviewed April 11, 2012).

The local poultry industry has been in strong competition with imported eggs and frozen chicken[220]. If we look at prices over the period one can see that prices and production have shown vaguely similar trajectories over the period, but with wide variation across sectors.

Figure 51: Average increase in price in AMD for different categories of meat (1995-2010)

	Beef	Mutton	Pork	Poultry
1995-2000	1%	3%	1%	-1%
2000-2005	7%	6%	9%	2%
2005-2010	8%	18%	4%	4%
Absolute price increase 1995-2010	114%	268%	106%	30%

Sources: National Statistical Service of Armenia, Statistical Yearbook 2011. 386.
http://www.armstat.am/file/doc/99452348.pdf Statistical Yearbook 2003. pp 437-438, 444-445.
http://www.armstat.am/file/doc/645.pdf Statistical Yearbook 2006 p432.
http://www.armstat.am/file/doc/489.pdf Statistical Yearbook 2011, p432.
http://www.armstat.am/file/doc/99466703.pdf (Pages reviewed May 4 2012).

Beef prices have gone up alongside increases in production, suggesting that production increases have been, at least partially, price-led in that sector. Two factors explain the increase of beef prices despite the growing production due to the slaughter of dairy cows. First, some of that production was exported and second, the local demand was also growing. This means that Armenia was still struggling to satisfy local market demand.[221]

Mutton prices have risen alongside production as well, though in 2005-2010 prices have risen far faster. In the poultry sector it is hard to connect production and prices in any clear way. This is unsurprising given the dramatic nature of the transformation of the industry.

Again, one can see that the biggest part in the overall growth of output value in Armenia is the rise in price of beef, as this has doubled over the 15 year period and so, as the biggest overall impact in value output, as the volumes produced are so much higher than anywhere else.

However in simple proportional terms, mutton has seen by far the greatest rise in prices, with a fourfold increase over the 15 year period, significantly aided by the 57% increase in prices in 2010. These price increases seem to be the simple result of an increase demand for lamb in the Middle East, most notably Iran.

Overall, the meat production sector in Armenia faces several challenges. One major hurdle is that the meat market is irregular, especially in regions, since the country does not have a sufficient number of slaughterhouses. Farmers have to deal with buyers and middlemen whose visits are random, making it difficult for them to plan ahead.[222] Another major issue that has been reported is that these buyers visually assess the value of the live animals to be sold and do not use a scale to properly weigh them.[223] This can prove to be a serious disincentive for livestock owners to invest in inputs such as concentrate feed or fodder as the weight gains achieved might not be reflected in the price the animals are sold for.

Experts also agree that animal husbandry practices are more or less backwards apart from specific regions where international projects are being implemented, such as in the northern part of the country and in Goris. All in all, the quality of the meat produced and the productive capacity of cattle remain low.

220 Nathan Associates Inc. and J.E. Austin Associates Inc. (2004) *Armenia Competitiveness Assessment* p110. **http://pdf.usaid.gov/pdf_docs/PNADD292.pdf** (Reviewed April 11, 2012).
221 Interview with Karina Harutyunyan (29 May 2012) Strategic Development Agency, SDC livestock development project in Syunik (Armenia)
222 Interview with Karina Harutyunyan (29 May 2012) Strategic Development Agency, SDC livestock development project in Syunik (Armenia)
223 Interview with Karina Harutyunyan (29 May 2012) Strategic Development Agency, SDC livestock development project in Syunik (Armenia)

4.2 Dairy

Production of milk in Armenia increased steadily during 1998-2008. In 2008, 661.9 thousand tonnes of milk were produced, which was 48% higher than in 1998, though this fell back slightly in 2009 and 2010. The sector was hard hit by the Russian ban on dairy, especially cheese exports to Russia, which is one the main reasons why milk prices went down in 2009.[224] Overall,one of the main reasons behind this production increase was the positive trend in the prices.

Figure 52: Changes of production and price (in percent)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Production of milk	5.2	1.9	-0.9	2.9	5.2	4.9	8.1	7.1	4.3	3.5	3.1	-7	-2.4
Price of milk	4.1	-9.6	-5.9	-1.1	-4.1	3.5	-1.2	0.8	6.3	4.3	2.9	-8.6	8.4

Source: Economic Development and Research Center (2011), *The Price of Meat and Dairy Products, Prices and Vulnerability in Armenia, Prices and Vulnerability in Armenia.* p6 http://www.edrc.am/WP/Prices_and_Vulnerability/Prices_and_Vulnerability_sept_eng.pdf, (Reviewed April 27 2012)

The government's program to support large dairy farms with high quality cattle breeds also contributed to the increase in milk production. During 2007-2011, the government of Armenia imported about 1500 pure breed cattle from Germany, Austria, and Czech Republic, and provided them to the leading 15 dairy farms as a loan with gradual repayment (note that out of total 173,716 dairy farms only 50 farms have more than 100 cows).

Heifer Project International together with CARD Foundation are actively trying to enhance milk productivity through training the heads of the communities, farmers, veterinarians, animal breeders and specialists of artificial insemination (237 people up to now) on subjects including cattle breeding, lactation, animal care, genetic improvement of dairy cattle and artificial insemination.[225]

No single dairy processing company dominates the market for major dairy products. There are no foreign direct investments and joint ventures in the dairy sector. Currently the bulk of dairy production originates from small private farms with 1-2 milking cows, which on average sell or barter half of their milk.

Armenia also seems to export fairly significant quantities of cheese, though the volumes are erratic, according to official numbers. Reaching USD 3 million in value in 2005, this dropped by half by 2009 and then increased again dramatically. The recent increase in exports pushed up prices by 12% in 2010.[226]

According to official figures, commercial producers use relatively little powdered milk in their production (less than 10%). However, there is a discrepancy in the official statistics which suggests that either unofficial imports are about five times higher than they are reported to be or the statistics of milk production, cattle population and the volume of local milk collection by the processors do not correspond to reality. So, the elimination of the shadow economy in the dairy sector and customs registration of all imported milk powder is essential in the development of the dairy industry.

224 Interview with Karina Harutyunyan (29 May 2012) Strategic Development Agency, SDC livestock development project in Syunik (Armenia)

225 CARD (2011) *Card Holds Community Trainings With Heifer Project International Armenia.* **http://www.card.am/index.php?option=com_content&view=article&id=99%3Acard-holds-community-trainings-with-heifer-project-international-armenia&catid=9%3Alocalnews&Itemid=6&lang=en** (Reviewed April 26, 2012).

226 Economic Development and Research Center (2011); *Prices and Vulnerability in* Armenia **http://www.edrc.am/WP/Prices_and_Vulnerability/Prices_and_Vulnerability_sept_eng.pdf** (Reviewed April 11, 2012).

4.3 Crops

Overall crop production figures in Armenia are fairly erratic, so it is worth showing broken-down output figures in total for the last 15 years.

Figure 53: Crop volume output (thsd. tonnes) 1995-2010

Year	Grains, legumes	Potatoes	Vegetables	Fruit, berries	Grape	Forage crops
1995	254.5	427.7	450.9	146.1	154.9	17.3
1996	318.8	423.2	444.5	158.2	158.5	6.5
1997	258	359.8	369	108.8	107.7	5.2
1998	325.6	440	395.2	126.7	106	4.6
1999	301	414.1	449	88.1	114.8	5.6
2000	224.8	290.3	375.7	128.5	115.8	4.7
2001	367.3	363.8	456	102.4	116.5	6
2002	415.5	374.3	466	82.6	104	6.8
2003	310	507.5	569.4	103.1	81.6	8.6
2004	456.9	576.4	600.8	113.7	148.9	7
2005	396.2	564.2	663.8	315.6	164.4	10.3
2006	212.5	539.5	780	286	201.4	6.2
2007	452.5	583.9	845.3	260.2	218.9	15.1
2008	415.4	648.6	825.3	317.8	185.8	13.2
2009	374.9	593.6	819.8	332.2	208.6	12.5
2010	326.4	482	707.6	128.5	222.9	10.3

Source: National Statistical Service of Armenia, Statistical Yearbook 2010. pp312-313 http://www.armstat.am/file/doc/99466678.pdf. Statistical Yearbook 2001(1996-98), p279 http://www.armstat.am/file/doc/616.pdf, Statistical Yearbook 2004. p308 (Pages reviewed May 3 2012).

There is little point in presenting average growth rates over the different periods in the case of crops, as crop volumes are highly dependent on weather. As a result, on a year-by-year basis, crop volumes can go up or down fairly dramatically. For example 2000 was a major drought year and resulted in the reduction of harvest volumes for all crops. The same thing happened for some crops in 2010.

As a result of the drought, using 2010 as reference point for overall growth gives a slightly more pessimistic view than is probably the case. Nonetheless, from 1995-2010 there are fairly good aggregate increases in grain (28%), potatoes (13%), vegetables (57%) and grapes (44%) with declines only in berries (12%) and forage crops (40%).

Another way of looking at the crops is in terms of average productivity over different periods of time. Looked at it this way, one sees that almost all products have experienced fairly good growth, mostly starting in the mid-2000s. Wheat yields in the 2000-2010 period were about 20% higher on average than they were in 1995-1999, but with occasional very bad years.

Potato yields are poor until about 2002, but, after that see noticeable and persistent growth, showing averages after 2004 about 35% higher than in the 6 years before. Growth in vegetables seems to have shown the same trend, with sustained growth beginning in 2002 and average yields in the last five years 50% higher than they were in the preceding decade.

Favorable weather conditions, stable demand by processors, establishment of high quality seed imports (and, as a result, increased usage of high quality seeds), improved planning due to contract farming, and stabilization in irrigation are the main reasons for the increase in yield. This was also helped because many of the vegetable

farmers were located in the Ararat Valley and had a strong history of vegetable production. They were, therefore, well placed to utilize improvements in the structural environment to significantly improve production.

Today Armenia's vegetable market is also dominated by imported seeds – about 91%. Tomato is the most popular vegetable covering about 25-30% of the vegetable plantations. Many vegetable and fruit processing plants also use contract farming, though this practice is not as widely applied as in the grape farming sector. According to the farmers, during the harvest season, the vegetable processing plants offer much lower price to non-contract farmers.

Altogether, this has led to very significant increase in output of fruits and vegetables. As IFAD explains, this has seen a shift away from grain, in relative terms, and significant increases in the value added.

In 2003 the vegetable sub-sector represented 10.3% of GAV [Gross Added Value] rising to 26.1% in 2007. The fruit sector represented 33.4% of gross added value in 2003, rising to 39.2 in 2007. In 2007 the two sub-sectors represented 65.3% of GAV, but occupied only 28% of the arable land, translating into gross productivity 4.8 times higher than for grain and livestock combined.[227]

SPAYKA Company, the leading fresh fruit and vegetable exporter in Armenia, is working with thousands of farmers via purchase contracts that are concluded at the beginning of each season. The company often provides advance payments to farmers.

The productivity increase of the potato fields in early 2000 was due to the stabilization of good quality potato seed imports from the Netherlands and Germany. This has allowed Armenia to become a small net exporter.

Berries saw flat, but fairly erratic production patterns up until 2004 but in 2005 production tripled and since then (with the exception of the 2010 drought) levels have remained 2.5-3 times higher than their previous historic level.

Similarly, grapes and forage crops have seen significantly higher production volumes in the last five years. The productivity increase is due to the widely applied contract grape farming practices implemented in the last decade by the cognac producers. Contract farming allows farmers to plan their production and spend on improving the health of the vineyards (also via improved application of herbicides and pesticides).

According to Gevorg Ghazarian of the Food Security and Agro-processing Department of the Ministry of Agriculture, there are about 8,000 contracts with the farmers for grape supply.

Purchasing the Yerevan Brandy Factory, the largest grape processor in the country in 1999, Pernod Ricard company initiated the building of a stable long-term relationship with the grape producing farmers. Currently, it has the highest number of farmer contracts – about 5,500. The price offered for non- contract purchases of grapes is much lower than the one offered to contract farmers. The farmers receive contracts based on estimates of the previous year's harvest. This means that in a good yield year they have to sell the extra harvest for a much lower price than the contract price.

4.4 Prices

Taking 2000 as the benchmark for prices, food prices across most sectors have gone up significantly in the last 10 years.

Figure 54: Prices for major crops in 1997-2010 (AMD per kg)

	Wheat	Potato	Apple	Grape	Tomato
1997	113	98	88	123	49
2000	86	70	81	86	54
2005	82	78	137	156	64

227 The International Fund for Agricultural Development (2010), Republic of Armenia, Rural Assets Creation Program Final Design Report

2006	87	121	187	162	58
2007	103	133	185	164	62
2008	119	101	159	168	89
2009	94	73	142	131	76
2010	120	131	291	206	101

Sources: National Statistical Service of Armenia. Prices and Price Indices 2005. pp79-80. http://www.armstat.am/file/article/gner_08_6.pdf; Prices and Price Indices 2001 pp65-66 http://www.armstat.am/file/article/gner_11_6.pdf (Pages reviewed May 4 2012).

Wheat is of particular importance in the Armenian context. Nearly 22 percent of the minimum consumption basket is made of bread and bread products, and the actual bread consumption is higher still.

Two factors are crucial for understanding the cost of wheat in Armenia; international prices and the Armenian currency. Armenian wheat prices, matching global wheat prices, went up in 2007-2008, dropped in 2009 and then went up in 2010 following the drought in Russia and ban on wheat exports. This was exacerbated by a change in the background currency market conditions. The Armenian dram had been gradually appreciating in value between 2003 and 2008, going from 578 AMD to the 1 USD (at its lowest point in 2003) to 306 AMD to 1 USD (at its highest point). This did help to reduce some of the price increases, as grain is priced in USD.

This situation started to reverse significantly in 2008 and with dropping currency values, appreciation in USD market prices were made even worse.

The chart below shows how over this period Armenia has become increasingly dependent on exports. However, it is important to keep in mind that there is no simple correlation between self-sufficiency and security. During Russia's grain export ban, Russia's grain prices still continued to rise and fall more or less in line with global prices.[228]

Figure 55: Availability of grain crops in Armenia, 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Grain crops, thousand tones	**643.0**	**689.3**	**779.1**	**649.1**	**895.7**	**735.0**	**562.7**	**994.5**	**796.1**	**813.0**	**759.1**
Share of domestic production, %	35.0	53.3	53.3	47.8	51.0	53.9	37.8	45.5	52.2	46.1	43.0
Share of imports, %	65.0	46.7	46.7	52.2	49.0	46.1	62.2	54.5	47.8	53.9	57.0
Russian Federation % imports	2.9	6.5	33.3	8.3	30.4	41.1	53.0	38.7	34.6	49.3	47.7

Source: Economic Development and Research Center, *Prices and Vulnerability in Armenia (Issue 3, August 2011)* p3. http://www.edrc.am/WP/Prices_and_Vulnerability/Prices_and_Vulnerability_aug_eng.pdf (Reviewed April 12, 2012).

Potato prices are not directly affected by the international prices, or by the price of AMD (as they are produced locally), however, as a substitute staple for wheat, it is not surprising that there seems to be some similarity between the surges and declines in the prices of the two markets. But the biggest individual factor affecting erratic potato prices in Armenia is the local weather conditions, like the drought that damaged the 2010 harvest and pushed prices up.

The self-sufficiency rate regarding apple and grape is also very high in Armenia. Therefore, their prices also depend on the local yield in any given year. These products are more perishable than potatoes and the available

228 GeoWel Research (2010), the Impact of Russia's 2010 Grain Export Ban, Oxfam, Moscow

stocks from the previous year are either consumed or spoiled by May. Therefore, these stocks do not affect the prices of the current yield. As explained previously, the yield is mostly dependent on the weather conditions. For example, due to bad year in 2010 Armenia observed lower yields and higher prices for those products. The high local prices for fresh apples and grapes encouraged imports of these products.

Figure 56: AVERAGE ANNUAL PRICES FOR SELECTED GOODS in AMD (1kg)

Product group	2006	2007	2008	2009	2010
Beef	1533	1551	1582	1613	2069
Mutton	1423	1439	1687	1979	3106
Pork	1816	1619	2542	2420	2352
Poultry	1232	1286	1231	1336	1408
Milk	286	296	304	326	328
Cheese (Brinza)	1336	1403	1456	1461	1563
Eggs (10)	543	578	559	516	484

Source: National Statistical Service of Armenia, *Average Annual Prices for Selected Goods;* http://www.armstat.am/file/doc/99466703.pdf, p23 (Reviewed April 2012)

In meat, prices of beef and mutton went up significantly in 2009/10, possibly in reaction to the increase in exports of live animals. This was certainly the case for mutton because of growing exports to Iran. However, the situation for beef was slightly different. The crucial fact here is that the local demand grew to outpace local production capacity. This was made worse to some extent because some of the production was also exported. As a result, this meant that Armenia was still struggling to satisfy local market demand despite an increase in beef production.[229]

Pork prices increased dramatically in reaction to the swine flu in 2007 and have never come down again. Poultry prices have increased gradually over the time shown.

4.5 Export Goods

In the agribusiness sector, exports are dominated by wine and spirits, particularly brandy.

Figure 57: Export products from Armenia by years (thousand. USD)

Product group	2000	2004	2010
Alcoholic, nonalcoholic and vinegar	22,473	57,030	109,071
Live animals	3.6	18	13,757
Food from vegetables, nuts, fruits	2,735	5,813	8,676
Tobacco and manufactured tobacco substitutes	1,765	4,603	8,307
Fish and crustaceans, mollusks and other	477	2,907	7,707
Fruit and nuts	1,267	1,192	6,887
Coffee, tea, other spices	118	6,051	6,061
Vegetables, roots and tubers	140	81	2,595

Sources: National Statistical Service of Armenia, Economic Activity 2004. p15. http://www.armstat.am/file/doc/702.pdf External Economic Activity 2004, p1 http://www.armstat.am/file/article/trade_2n_11.pdf External Economic Activity 2010. p449 http://www.armstat.am/file/doc/99466708.pdf (Pages reviewed May 4 2012).

229 Interview with Karina Harutyunyan (29 May 2012) Strategic Development Agency, SDC livestock development project in Syunik (Armenia)

Russia and other CIS countries are the main destinations for many of the exported products, including alcohol, vegetables and fruit and nuts. Alcoholic products (mainly brandy) have been the main food export item and have been increasing their sales for the last decade. This followed privatization and effective growth, particularly in the traditional CIS markets.

The overwhelming majority of grapes used for wine are sold to make brandy.

Figure 58: Local Grape Distribution

	Grape Distribution (in %)
Brandy factories	92
Wine factories	2
Canneries	3.5
Barter	0.1
Market	2.4

Source: Fund for Rural Economic Development in Armenia (FREDA)

However, while there has been significant growth in brandy production, to significantly over Soviet levels, wine production has not come close to recovering its previous position.

Figure 59: Wine, champagne, and brandy production in Armenia[230] by years (thsd. liters)

Year	Grape wine	Champagne	Brandy
1990	41,910	2,530	6,140
1995	9,390	1,010	3,250
2000	3,622	600	2,875
2005	6,786	519	9,146
2006	3,831	543	9,375
2007	3,672	579	14,131
2008	3,342	464	16,047
2009	3,549	248	8,469
2010	4,961	408	11,331

Source: National Statistical Service of Armenia, *Wine, Champagne, and Brandy production in Armenia;* http://www.armstat.am/file/article/bnexen_11_2010.pdf; http://www.armstat.am/file/article/bnexen_11_09.pdf; http://www.armstat.am/file/article/bnexen_11_08.pdf; http://www.armstat.am/file/article/bnexen_11_07.pdf; http://www.armstat.am/file/article/bnexen_11_06.pdf; http://www.armstat.am/file/articlebnexen_11_05.pdf (Pages reviewed April 27 2012).

A significant proportion of production is exported.

230 Armenia produces about 1.7 million tonnes of fruit wines.

Figure 60: Export of Brandy from 2000-2008

Year	Thousand liters	Thousand USD	Average price per liter, USD
2000	4,701	20,688	4.4
2004	10,803	48,401	4.5
2005	16,101	72,613	4.5
2006	14,806	62,665	4.2
2007	23,974	104,160	4.3
2008	27,642	122,120	4.4

Source: Fund for Rural Economic Development in Armenia (FREDA)

As one can see, the increase in exports in both value and volume terms has been very high. In the 8 years shown here, exports have grown by an average of 25% per year. Its brandy exports sharply increased after 2006, when Russia instituted a ban on a range of products from Moldova and Georgia. Moldova is a significant producer of brandy and the growth in Armenia probably results from the substitution of Moldovan brandy. According to national statistics of Moldova, export of 'beverages, spirits and vinegar' from Moldova to Russia dropped from USD 235 million in 2005 to USD 59 million in 2006 and then to USD 39 million in 2007.[231]

Armenia exported around USD 13.75 million worth of live animal exports in 2010 compared to USD 17.9 thousand in 2004, making live animals the second biggest agricultural export product. This was mostly the result of a sudden increase in lamb demand on the part of neighboring Iran.

This was the result of very large increases in both volumes and value of the exports. Export value per tonne rose from USD 869 in 2004 to USD 2,570 in 2010. This increase in prices and sales precipitated a fairly significant over-sell of sheep which led to a 20% decline in sheep stocks in 2009 and 2010. The decline was so severe in some places that it affected the livelihood of the Yezidi and Kurd population (who are the main sheep breeders in the country) of Armenia, forcing some of them to leave the country. The government of Armenia announced a ban on exports of ewes from the country in 2010[232]. This is, however, impractical to implement because it is hard and costly for the customs officials to separate ewes from other sheep.

For fruits and vegetables, the main exporter is Spayka. Founded in 2001 Spayka LLC is the biggest exporter of fruits and vegetables from Armenia. They carry out international freight forwarding to the CIS countries and Europe.

Recently, Spayka LLC has established a specialized fleet of 100 trucks designed for long distance transportation of perishable products to allow large scale exports of fruits and vegetables to the Russian market. Another large scale private investments project is the construction of the infrastructure of the Zvatnots free economic zone, which also includes a state of the art cold storage facility. "Jermuk" bottled water is the main product in the water category that has a stable market abroad within the Armenian Diaspora.

Through 2011 Spayka planned to export about 24,000 tonnes of fresh vegetables and 30,000 tonnes of fresh fruits to Russia. However, according to the MoA minister Sergo Karapetyan, the country actually exported 16,200 tonnes of fruits and vegetables.

Spayka also intends to actively participate in the Government program on farm mechanization. Together with Krone, a world-famous German company, they have designed flexible leasing schemes for farming organization and are planning to provide tractors, ploughs, seeding–machines and rippers. According to the scheme designed together with the Ministry of Economy, Spayka will establish purchasing-distribution centers. These structures will help them to purchase and export more that 30 thousand tonnes of fresh fruits and vegetables this year.

231 National Bureau of Statistics of the Republic of Moldova, *External trade of the Republic of Moldova with C.I.S. countries in 2001-2010, by countries and groups of goods*, available at **http://www.statistica.md/category.php?l=en&idc=336&** (reviewed on April, 26, 2012).

232 Marianna Grigoryan and Anahit Hayrapetyan (2010). *Armenia: Reported Sheep Shortage Targets Yezidi Minority.* **http://dev.eurasianet.org/departments/civilsociety/articles/eav040510b.shtml** (Reviewed May 1, 2012).

Because of the strategic role of the company in Armenia's agricultural development, they recently accessed concessional financing (EUR 100 million) for a large-scale greenhouse project covering over 100 hectares using state of the art Dutch methods. Starting September this year they plan to launch the first block covering 5 hectares. The entire greenhouse production will be exported. This year is also remarkable for the launch of their own vegetable production project covering 100 hectares of open soil. Within the next 5 years Spayka plans to bring the annual exports volume to 200 thousand tonnes.

5 MARKETS ACCESS

Another significant barrier to agricultural development in Armenia is market access/competition. This can be broken down into three separate problems, first the ease with which farmers can get their produce to markets inside Armenia, second, their access to markets outside of Armenia and third, the competition that Armenian producers face from foreign competitors. Each of these presents different challenges and opportunities.

5.1 Internal Market Access

One of the biggest hurdles to market access is the access of farmers physically to markets. During 2008–2010, loans invested in capital road repairs amounted to roughly AMD 100 billion (USD 288 million). Moreover, under the Lifeline Road Network Program prepared in 2004, the government set a target of 784 high-priority feeder roads (secondary and local roads), totaling some 3,000 km for repairs in order to provide better access to national highways[233].

Figure 61: Road Budget in Armenia, 2006–2011 (AMD billion)

Road Works	2006	2007	2008	2009	2010	2011
Capital repair of roads	12.62	13.80	12.66	16.01	2.00	3.78
Operation and maintenance	5.05	5.99	6.19	6.13	6.29	5.87
Capital repair of structures	0.55	0.65	1.10	0.54	0.43	0.18
Total AMD billion	18.22	20.04	19.95	22.68	8.72	9.83
Total $ million	43.30	56.13	61.35	77.68	22.57	27.02

Source: Ministry of Transport and Communications of Armenia in Asian Development Bank, (2011), *Armenia's Transport Outlook,* p5 http://www2.adb.org/documents/reports/armenia-transport-outlook/armenia-transport-outlook.pdf, (Reviewed April 27 2012).

Although budget allocations for capital road repairs have not increased much, the government is off-setting the shortfall by borrowing from the following external sources:

- World Bank
- Asian Development Bank
- European Bank for Reconstruction and Development
- European Investment Bank
- Lincy Foundation
- the Millennium Challenge Corporation (MCC) of the United States (US).

233 Asian Development Bank (2011). *Armenia's Transport Outlook* p13. **http://www2.adb.org/documents/reports/armenia-transport-outlook/armenia-transport-outlook.pdf** (Reviewed April 26, 2012).

Due to these efforts, the main road network has been largely rehabilitated. Nevertheless, the challenge is to maintain the capacity and efficiency of the international road corridors, which are considered lifelines of the economy. Many secondary and local roads feeding into international road corridors and major economic centers require rehabilitation or reconstruction, however.

Rural Roads. While the road network in Armenia has benefited from a significant injection of foreign funds during the past ten years, these funds have been targeted to the rehabilitation of the main (mainly interstate) roads, with the intention of returning them to good condition.[234]

Out of a total of 934 communities in Armenia, 871 are located in rural areas. The average distance of rural communities from the center of the regional administrative unit, the *marz*, ranges from 22.5 to 71.3 kilometers, while the average distance from the lower administrative level of the Raiyon is from 10.4 kilometers to 21.0 kilometers. The majority of the road network traverses mountainous terrain and altitudes frequently exceed 1,500 meters above sea level. Steep gradients, deep cuttings, and high embankments are common in mountainous areas, and landslides occur frequently.

The severe winter weather requires extensive efforts to maintain access. In many areas of the road network, high intensity rainfall and poor road drainage cause traffic problems and road infrastructure damage. The extreme climate also negatively impacts the condition of road pavements, particularly because of freezing and thawing in the spring.[235] Improvement of the quality of rural infrastructure, therefore, can serve as a catalyst for economic growth. In general, there is a large amount of infrastructure and much is severely degraded. This imposes high transaction costs on the rural population. For example, 61 percent of rural roads are in poor or very poor condition, of which only 16 percent are fully passable during the winter.[236]

5.2 Access to International Markets

Armenia is in a free trade regime with the CIS and a number of developed countries including the US offer Armenia one-way benefits on customs and duties within the framework of the Generalized System of Preferences (GSP) plus system since January 2009.

Armenia's relations with the EU started with the adoption of a Partnership and Cooperation Agreement that was agreed upon in 1996 and entered into force in 1999. Relations between Armenia and the EU were enhanced when Armenia became part of the European Neighborhood Policy in 2004.

Armenia has benefited from the EU Generalized System of Preference Plus (GSP+) for 2009-2011. This means that a whole set of goods were given preferential access to EU market. The overarching goal of the system was to further diversify Armenia's export structure and improve the country's export performance.[237]

In July 2010, negotiations were started to replace the Partnership and Cooperation Agreement by an Association Agreement in order to further deepen the political association and economic integration with the EU.[238] Given Armenia's progress regarding the signature of an Association Agreement with Brussels, the European Union recently decided to start the negotiation process of adopting a DCFTA with Armenia in the end of February 2012 and negotiations started in early March 2012.

Given that the EU is officially Armenia's first trading partner, it could potentially enhance exports and spur economic growth. The move is generally seen as positive although it would require significant changes to align Armenia's policing regarding food quality and safety to EU standards.

However, Armenia's border with Turkey has been closed since in 1993 and its border with Azerbaijan has been

234 The World Bank (2004) *Rural Infrastructure in Armenia: Addressing Gaps in Service Delivery.* p26.

235 Asian Development Bank (2007) *Proposed Loan and Technical Assistance Grant Republic of Armenia: Rural Road Sector Project*, p15. **http://www2.adb.org/Documents/RRPs/ARM/40610-ARM-RRP.pdf** (Reviewed April 26, 2012).

236 The World Bank (2004) *Rural Infrastructure in Armenia: Addressing Gaps in Service Delivery.* p26.

237 European Commission (2010)- Implementation of the European Neighbourhood Policy in 2009: Progress Report Armenia. p10. **http://ec.europa.eu/world/enp/pdf/progress2010/sec10_516_en.pdf** (Reviewed April 26, 2012).

238 European Union External Action- Armenia. **http://eeas.europa.eu/armenia/index_en.htm** (Reviewed April 26, 2012).

closed since the end of the Nagorno-Karabakh war. Therefore, Armenia can connect to the rest of the world through Iran to the South and Georgia to the North. Armenia's main trade route, therefore is through Georgia to the Black Sea and the World or through Georgia by land to Russia.

Unfortunately, the main transportation route to Russia from Armenia, Kazbek-Upper Lars checkpoint on the Russia/Georgia border was closed from July 2006 through March 2010, thus eliminating the least expensive and fastest opportunity of exporting large volumes of fresh fruits and vegetables to Russia and other CIS markets.

The other available routes (by containers) are through the Black Sea ports of Batumi and Poti, the only warm water ports Armenia has access to. USDA MAP-sponsored clients' shipments of canned fruits and vegetables and cheese to Russia, Ukraine, Belarus, and Latvia have transited.[239] For more than 13 years "Apaven" company, one of the leaders the field of freight forwarding, has undertaken the transportation of more than 50 percent of imported and exported products in and out of Armenia (mainly by containers).

Given the relative isolation of Armenia geographically, for freight transport, air freight becomes particularly important. Yerevan-Frankfurt flights are operated on Sundays and Wednesdays and flights from Frankfurt to Yerevan are operated on Mondays and Thursdays. Any corporation having more than 10 tonnes of cargo for transportation may apply to Air Armenia to deliver its merchandise directly to the airport of destination, without transiting Frankfurt. It is equally possible to charter the entire airplane for round trip from Yerevan to any desired destination.[240]

Figure 62: Transport rate for export by air from Yerevan airport "Zvartnots" terminal to different destinations effective since 01 June 2009. Costs per Kg - USD

Destinations	Minimum Cost	1-44 kgs	45 kgs	100 kgs	250 kgs	500 kgs
Moscow, Russia	20	1.2	0.8	0.6	0.5	0.4
Krasnodar, Rostov, Russia	15	0.8	0.65	0.55	0.45	0.4
Kiev, Ukraine	20	1.3	1.1	0.9	0.8	0.65

Source: Irina Belubekyan (2010). *Transport Situation and Transport Cost Measuring. Export Promotion Conference*. AUA, Yerevan. p12. http://www.edrc.am/WP/Export_Promotion/Irina_Belubekyan_eng.pdf (Reviewed May 1, 2012).

According to the World Bank Doing Business report for 2012, Armenia was ranked 104th on trading across borders. Exporting required 5 documents, an average of 13 days, and entailed an average cost per container of USD 1,815.[241] If Turkey ever reopens the border with Armenia, this might significantly reduce the transportation costs. Despite periodic glitches in terms of supply, they are seeking to expand beyond the Armenian market in France. "We are approaching the larger retailers and their number one concern is price. Sure, the quality must be there but cost is the bottom line," he says." [242]

5.3 International Competition

Another commonly cited hurdle to agricultural development is the competition that comes from outside producers selling into your country.

239 Jeffrey E. Engels (2003). *Armenia-Georgia Cross-Border Trade: A Market Development Brief,* p3. **http://www.jeffreyengels.com/USDAMarketDevelopmentBriefArmeniaGeorgiaCrossBorderTrade.pdf** (Reviewed April 26, 2012).

240 The American Chamber of Commerce in Armenia (2012). *Cargo Transportation.* **http://www.amcham.am/index.cfm?objectid=F5974320-b4396-11DE-AE2D0003FF3452C2** (Reviewed April 11, 2012).

241 World Bank/IFC- Doing Business Report 2012 pp79-80-97.

242 Hrant Katarikyan (2010). *Armenian Agriculture: Breaking Into The European Market.* p3. **http://www.gab-ibn.com/IMG/pdf/Ar11-_Armenian_Agriculture_-_Breaking_Into_The_European_Market.pdf** (Reviewed 11 April, 2012).

5.3.1 Imports

The easiest way to get a sense of the impact of the international environment on Armenian markets is to look at the structure of imports.

Figure 63: Import Values Food and Beverages by years (thsd. USD)

Product groups	2000	2004	2009	2010
Alcoholic, nonalcoholic and vinegar	536	8,138	42,077	52,569
Live animals	760	863	3,758	2,746
Food from vegetables, nuts, fruits	2,909	7,351	16,353	15,924
Tobacco and manufactured tobacco substitutes	20,580	39,451	65,610	80,156
Fish and crustaceans, mollusks and other	41	86	4,872	3,068
Fruit and nuts	4,597	9,402	33,712	43,597
Coffee, tea, other spices	14,047	12,643	26,314	28,627
Vegetables, roots and tubers	2,191	2,694	8,642	13,400
Milk and dairy, bird's eggs, natural honey	12,283	13,864	18,547	25,566
Sugar and confectionary	19,179	21,983	29,900	42,955
Prepared meat and fish	3,965	3,651	11,154	10,851

Sources: National Statistical Service of Armenia. External Economic Activity 2004. p15. http://www.armstat.am/file/doc/702.pdf. External Economic Activity 2004. p1 http://www.armstat.am/file/article/trade_2n_11.pdf. External Economic Activity 2010, p449. http://www.armstat.am/file/doc/99466708.pdf (Pages reviewed May 4 2012).

Two biggest groups in fruit imports were citruses with 42% and bananas with 35% in total fruits imports in Armenia in 2009[243]. 71% of citruses, like oranges and lemons, were imported from Greece, mandarins and tangerines came from Georgia (53%) and Pakistan (35%). 91% of bananas were imported from Ecuador.

34% of total USD 8.6 million cost vegetables imports in Armenia in 2009 were onion and garlic from Iran (56%), Georgia (26%) and Pakistan (13%). Another big import product group was leguminous vegetables with USD 2.5 million imports, mainly from Ukraine.

The biggest category in the USD 18,5 million cost dairy products imports in 2009 was butter with total USD 5.6 million import, mainly from Belarus (44%) and Finland (26%). Another dairy product with highimports was dried milk with USD 4.7 million, mainly from Belarus (93%). Whole milk imports took 17% of total dairy product imports and was imported from Ukraine (67%) and Russia (27%).[244]

The imports of alcoholic, nonalcoholic and vinegar category has increased drastically since 2000. The main reason for this increase is that Armenia brandy producers have been importing cheaper grape spirits from other countries in large quantities. The spirits are re-exported under Armenian Brandy (or Armenian Cognac) name after passing through the brandy technological process and aging. To correct the situation, the Armenian government has decided to ban local brandy producers that use imported alcohol and label it “Armenian cognac.” The measure will be fully effective in 2015.[245]

Alcohol, tobacco, sugar, and dairy products are the main subcategories that Armenia could produce for itself. However, the local production cannot compete with cheap imports. Sugar beet production is a good example. The Akhuryan sugar factory in Shirak province, which is a USD 102 million investment, started its operations

243 2009 was taken because FAO does not provide more recent breakdown of imports by importing countries and ArmsStat does not provide any country breakdown by products at all.

244 FAO (2012), FAOSTAT, *Detailed Trade Matrix,* **http://faostat.fao.org/site/537/default.aspx** (Reviewed May 11, 2012)

245 Radio Free Europe/Radio Liberty (2012). *Armenia Moves To Restrict Brandy Imports.* **http://www.rferl.org/content/Armenia_Moves_To_Restrict_Brandy_Imports/2108715.html** (Reviewed April 11, 2012).

in late 2010.[246] The plant works 24 hrs per day and is designed to process not only imported half processed materials but also local beets. But currently, the plant is operating mostly on the imported raw material because of relatively high cost and unstable supply and quality of the local sugar beet.

Milk production in Armenia is based on pasture grazing and, therefore, is highly seasonal. Late spring through early fall is the only period when the local milk is in relative abundance and can compete with milk powder imports. During the grazing season, however, the milk available for processing is very insignificant.

Live animals are often exported through Armenia, from Georgia, to Iran and so will be counted in both the import and export categories – as they are hard to 'transit'.

"Coffee, tea, other spices" and "Tobacco and manufactured tobacco substitutes" categories are also mostly oriented for local consumption and re-export.

6 LAND HOLDING

6.1 Topography

Armenia classifies about 2.1 million hectares (or 70% of its total land area) as agricultural. Most of that land is 1,000 to 2,500m above the sea level. In addition, a considerable amount of land lies on some steep slopes.

About 1.1 million ha, or half of the agricultural land, serves as pastures and about 21% or 450,000 hectares is cultivated.[247]

Dry continental climate with low average annual temperatures in the upland regions is the primary reason for growing certain cereals, mostly winter and spring wheat and barley and fodder in these regions, while the production of grapes and fruit relies upon lower lying lands.

6.2 Land holdings

As the result of rapid land transformation reforms in Armenian agriculture in 1991 and 1992 more than 800 former Soviet state and collective farms were decentralized into some 440,000 small plots of land.[248] The demise of the non-farm industries at a massive scale in the early 90s left the rural population with no alternatives other than farming which, at the time, resembled subsistence-level farming on small land plots.

Around 20 years into independence, household farms are still responsible for almost all production in both crops and livestock. The share of the commercial organizations in the total value created has been swaying between two and four percent in the period from 1995-2010 with any increases attributable to expansions in the livestock production from 2000 onward.

An average rural household owns only about 1.3 ha of agricultural land, a figure which has not changed very much over time. In addition to the small size of the land-plots, they are also fragmented, because during the privatization process there was an effort to give different families small pieces of orchards, hayfields, vineyards, irrigable and non-irrigable arable land.[249]

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246 ArmeniaNow, (2010). *Sweet business: Shirak plant will cover the sugar demand (and then some) in Armenia.* **http://www.armenianow.com/economy/25478/sugar_plant_gyumri_export** (Reviewed April 30 2012).

247 National Statistical Service of Armenia (2011) *Statistical Yearbook 2011* **http://www.armstat.am/file/doc/99466678.pdf** (Reviewed April 11, 2012).

248 USAID (2006). *Independent Evaluation of US Government Agriculture Sector Activities in Armenia.* pvi. **http://pdf.usaid.gov/pdf_docs/PDACI948.pdf** (Reviewed April 11, 2012).

249 Max Spoor (2006). *Land Reform, Rural Poverty and Inequality in Armenia: A Pro-Poor Approach to Land Policies. United Nations Development Programme, Bureau of Development.* New York. **http://www.icarrd.org/po/eventos/tem_Armenia.pdf** (Reviewed April 11, 2012).

Out of these 330,000 households who have been allocated plots of land, ACDI/VOCA believes that only around 200,000 are functioning farms with half of those operating on a subsistence basis. ACDI/VOCA estimates that there are approximately 20,000-30,000 farms with at least 3-5 hectares. Farms of this size can be targeted to produce high-value horticulture products.[250] Large farms with more than 10 hectares currently represent only six percent of all farms.[251] A rough estimate is that 50 percent of the units produce only for home consumption, 30 percent only for the market and 20 percent both for home consumption and for the market.[252]

6.3 Land Usage

The amount of land used to produce different crops has declined over the last 15 years.

Figure 64: Growth in Land Use in Armenia (1995-2010)

Products	1995	2000	2005	2006	2007	2008	2009	2010	Growth in land use
Grains	175	181	210	182	176	173	172	159	-9%
Potatoes	33	34	34	33	32	34	32	28	-13%
Vegetables	21	20	23	24	26	24	24	24	11%
Forage crops	120	62	61	66	65	65	64	66	-45%
Total	352	303	332	310	306	305	300	284	-19%

Sources: National Statistical Service of Armenia. Statistical Yearbook 2011. pp301-305. http://www.armstat.am/file/doc/99466678.pdf; Statistical Yearbook 2006. pp 303-305. http://www.armstat.am/file/doc/484.pdf; Statistical Yearbook 2002 pp328-333. http://www.armstat.am/file/doc/662.pdf; Statistical Yearbook 2001 p271 http://www.armstat.am/file/doc/99452323.pdf (Pages reviewed May 4 2012).

In combination with the previous information this seems to suggest dramatic increases in productivity over the period.

Figure 65: Increase in productivity 1995-2010

Products	Land used 2010 relative to 1995	Output 2010 relative to 1995	Productivity increase
Grains	81%	128%	159%
Potatoes	91%	113%	124%
Vegetables	111%	157%	141%

Sources: National Statistical Service of Armenia. Statistical Yearbook 2011 pp 301-305. http://www.armstat.am/file/doc/99466678.pdf; Statistical Yearbook 2006 pp303-305. http://www.armstat.am/file/doc/484.pdf; Statistical Yearbook 2002, pp 328-333 http://www.armstat.am/file/doc/662.pdf; Statistical Yearbook 2001 p271. http://www.armstat.am/file/doc/99452323.pdf; (Pages reviewed May 4 2012).

As will be discussed later, this increase in productivity can be attributed to a range of things, but particularly, improvements in the quality of seed, irrigation and forward contracting.

250 USAID (2010). *Rapid Assessment of Value Chain Opportunities in Armenia.*

251 FAA interview, confirmed by ACDI/VOCA.

252 Kristian Hjulsager (2011). *Mission Report on Agricultural Census, Activity D.1, Assessment of Situation.* p5 **http://www.dst.dk/en/consulting/projects/Armenia/ComponentD.aspx** (Reviewed April 27, 2012).

6.4 The land market

A general problem is the lack of good administrative registers. Existing registers are not properly updated and no common identification number exists.[253] As a result, the numbers on sales of land do not seem to suggest a vibrant or consolidating land market.

Figure 66: Land Trade and Number of Transactions in Armenia, 2003-2010

Year	The number of transactions of purchase and sale of agricultural land	The number and land area (ha) of state owned agricultural land purchase and sale transactions
2003	3,203	145 transactions (296.44ha)
2004	5,774	1116 transactions (7504.09 ha)
2005	7,143	2132 transactions (11328.61 ha)
2006	8,307	2445 transactions (11502.46 ha)
2007	9,869	3133 transactions (8218.67 ha)
2008	8,438	2114 transactions (4895.17 ha)
2009	6,329	1004 transactions (5073.68 ha)
2010	6,632	742 transactions (1894.24 ha)

Source: www.cadastre.am

7 IRRIGATION AND DRAINAGE

Due to Armenia's high altitude and the regularity of droughts the agricultural system is heavily dependent on irrigation. [254]

Armenia's irrigation infrastructure was mainly inherited from the Soviet Union and as of 2006 comprised 80 reservoirs, more than 3 000 km of main and secondary canals, and about 15 000 km of tertiary canals. [255] Nearly 80 percent of the irrigated area is supplied through open channels, the remaining 20 percent through pipelines, and roughly all of the area covered is irrigated through surface irrigation.

According to the FAO, in 2006 the equipped area for full or partial irrigation covered 273,530 ha and the area actually irrigated stood at only 176,000 ha, which represents roughly 64% of the area covered.[256] However, estimates by the World Bank suggest that the total irrigated area is much lower than the suggested figures by the FAO and stood at only 112,300 ha in 2004.[257]

253 Kristian Hjulsager (2011). *Mission Report on Agricultural Census, Activity D.1, Assessment of Situation.* **http://www.dst.dk/en/consulting/projects/Armenia/ComponentD.aspx** (Reviewed April 27, 2012).

254 A severe drought affected most of the northern areas of the country in 2000 and an assessment mission of the FAO estimated the overall damage at USD 40 million. See: IFAD (2001). *Report and Recommendation of the President to the Executive Board on a proposed Loan to the Republic of Armenia for the Agricultural Services Project* (ASP) EB 2001/72/R.22/Rev.1, p1.

255 The system also includes over 400 small and large pumps, 1 276 tube wells, and 945 artesian wells. See: FAO-Aquastat (2008) *Armenia* **http://www.fao.org/nr/water/aquastat/countries_regions/armenia/index.stm** (Reviewed April 11, 2012).

256 FAO- Aquastat (2009) *Armenia, FAO Water Report 34* **http://www.fao.org/nr/water/aquastat/countries_regions/armenia/tables.pdf#tab2** (Reviewed April 11, 2012).

257 World Bank (2009) *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145), p11. **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009/Rendered/INDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012).

7.1 The fall of the Soviet system

In Soviet times, the irrigated area reached 300 000 ha in 1985 but later declined significantly in the 1990s to the point where only about 112,300 ha were irrigated while 180,000 ha had reverted to dry land due to failure of pumping and conveyance systems.[258]

Overall, the irrigation system was in a dilapidated state and in an urgent need of repair and rehabilitation. As the World Bank states,

> poor construction and inadequate maintenance expenditures were primarily responsible for the failing state of the irrigation infrastructure and inability to deliver when needed. Originally, all irrigation canals were lined, but landslides, erosion, and deterioration of poor quality concrete caused excessive water losses and reduced conveyance efficiency. Steel pipelines were heavily corroded. Leaking aqueducts threatened system continuity, and many storage dams needed urgent repair.[259]

A more pressing concern was thatthe ability of the state to operate, manage and maintain irrigation infrastructure was severely constrained.Primarily by thecollapse of the Soviet Union and the macroeconomic crisis of 1991-94 but also by another major structural factor: the delivery system in place was ill-suited for the new post-soviet reality with on-farm systems designed to service large state farms (50 to 400 ha) and not numerous small water users.[260]

The structural hurdles that shift entailed and the high pumping costs to run the entire system basically made operation and maintenance impracticable for the state and its water management agencies.[261]

7.2 International community irrigation projects

In order to reverse the decline and rehabilitate the overall irrigation network, the Armenian government in a joint effort with the World Bank and IFAD implemented the first Irrigation Rehabilitation Project (IRP) that started in 1994 and closed in 2001. The project was valued at USD 51.8 million. According to the World Bank, three main issues required urgent attention at the time to reverse the decline:

(i) The unsustainability of the model since the high cost of water delivery duetoenergy intensive pumping meant that the system relied on high government subsidies

(ii) The continuous deterioration of infrastructure in place caused by the lack of an effective cost recovery policy, adequate funding and timely execution of Operation and Maintenance (O&M) activities

(iii) Wasteful irrigation practices and high water losses at all levels because of a lack of participation from water users in the management of the irrigation system[262]

Overall, the project was deemed satisfactory since after1995 the declining trend was not only reversed but the irrigated area grew by 5 ha/year.[263]

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258 World Bank (2009) *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145), p1. **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009/Rendered/INDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012).

259 World Bank (2004)-*Project Assessment Report Armenia : Irrigation Rehabilitation Project (Credit 2667-AM) Report No.: 28847,* p5 **http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/1D1D167C4C4AD1C385256E8B005523DF/$file/ppar_28847_armenia.pdf** (Reviewed April 27, 2012).

260 World Bank (2009) *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145), p1. **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009/Rendered/INDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012).

261 FAO-Aquastat (2009). *Armenia,* FAO Water Report 34, **http://www.fao.org/nr/water/aquastat/countries_regions/armenia/index.stm** (Reviewed April 11, 2012).

262 World Bank (2009). *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145), p1 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009/Rendered/INDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012).

263 World Bank (2004). *Project Assessment Report Armenia : Irrigation Rehabilitation Project (Credit 2667-AM) Report No.: 28847* p7 **http://lnweb90.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/1D1D167C4C4AD1C385256E8B005523DF/$file/ppar_28847_armenia.pdf** (Reviewed April 27, 2012).

Following the joint World Bank/IFAD project of 1994, the bank carried out an Irrigation Development Project which lasted until 2009. The project, initially targeting 30,000 rural households, involved the rehabilitation of critical irrigation infrastructure, the conversion from pump to gravity irrigation, and institutional development of agencies in charge of operation and maintenance.[264]

The project secured important legislative improvements (see below) and showed significant achievements: the beneficiary households' income increased on average by 30% and the project covered an area of 128,860 ha instead of the targeted 40,000 ha. In the process 54 water users associations (WUAs) were established instead of the planned 8-10 and the number of hectares irrigated increased from 112,300 ha to 128,860 ha. The cost-recovery rate of operation and maintenance expenses increased to 45% from 8% in 2000 and the system achieved a reduction in the amount of energy consumed, saving of 50.9 million KWh per year valued at over USD 3 million.[265]

The World Bank is currently implementing an Irrigation Emergency Rehabilitation Project approved in 2009 and which was prolonged until 2013.[266]

In addition to these, during 2006-2011 the Millennium Challenge Corporation in partnership with the Millennium Challenge Account of the Republic of Armenia (MCA) undertook a major irrigation project of USD 177 million. The main component of the project regarding irrigation infrastructure, which targeted 298 communities for a total of 421,407 beneficiaries, allowed 47,000 ha to be put under new and improved irrigation and 10,000 hectares under improved drainage.[267] The second component of the project (Water to Market activity) allowed for over 45,000 farmers to be trained in irrigation practices, and over 36,000 of the targeted farmers were also trained in higher value agriculture.[268]

Overall, investments to rehabilitate and maintain Armenia's irrigation network have been constant since 1994 and are known to have improved the overall system in terms of physical installations, productivity of the agricultural sector, and the capacity of institutions in charge of operations and maintenance of the network (Water Supply Agencies- WSAs, and Water Users Associations-WUAs).

7.3 Current system

Starting in 2001 and in response to conditions for further World Bank lending, the Armenian government undertook a major overhaul of the country's water management system. The four agencies responsible for water were reorganized into two: the Water Supply Agency (WSA) responsible for infrastructure that captured and stored water and the temporary Drainage and Irrigation Management Agencies (13 DIMAs) responsible for operation and maintenance of primary and secondary canals and drainage.

A major addition was the implementation of the Law on Water Users Associations and Federations that was approved by the Parliament on June 4, 2002.[269] The establishment of WUAs quickly took pace and 54 had been

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264 World Bank (2009). *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145) p4 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009/Rendered/INDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012).

265 World Bank (2009). *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145)pp11-12 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009RenderedINDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012).

266 World Bank (2011). *Project paper on a proposed loan in the amount of US$18 million to the Republic of Armenia for an Irrigation Rehabilitation Emergency Project* (Report No: 63649-AM) p2 **http://www-wds.worldbank.org/default/WDSContentServer/WDSP/IB/2011/10/05/000112742_20111005120118/Rendered/INDEX/636490PJPR0R200ficial0Use0Only00090.txt** (Reviewed April 27, 2012).

267 The program allowed the rehabilitation/installation of 5 gravity schemes, 6 main canals, 220 km of tertiary canals, 17 pump stations, and 13 drainage systems. See Millennium Challenge Account- Armenia (2011) p19

268 Millennium Challenge Account- Armenia (2011) p19. **http://www.mca.am/files/M&E_Publication/mca_brochure_02_web_eng.pdf** (Reviewed 27, 2012).

269 According to the Law on Water Users Associations and Federations adopted in 2002, a WUA is defined as an organization established voluntarily by water users. WUAs are non-profit legal entities that operate in the public interest to carry out the operation and maintenance of irrigation systems. The WUAs supply water to users located in their service areas – the geographical territory served by a WUA. Members are required to pay charges and fees levied by the WUA: for the supplied irrigation water; for operation, repair and maintenance of the irrigation system operated by the WUA; and membership fees. The state still provides a major financial support to the WUAs, but plans are to gradually move these associations towards self sustainability in the coming years.

established by 2004, taking over and successfully replacing the 13 temporary DIMAs for on-farm irrigation operations and maintenance.

The central Water Supply Agency was also reformed into four regional branches. The branches became separate legal entities and took the responsibility for operation and maintenance of respective river basin's infrastructure and supply of irrigation water to WUAs of those areas.

As a result of the successive reforms, the water management system at present includes the four WSAs (basin organizations "Djrar") who supply water to WUAs. The latter have the responsibility of irrigation management on secondary and tertiary irrigation systems.

Currently, the highest advisory body in water management is the National Water Council with the Prime Minister serving as a chair.[270] It provides recommendations on the management and other issues concerning water use in Armenia.

Some 208,000 ha of lands which are equipped and irrigable are registered by the national land cadastre and 196,000 ha are under the 44 operating WUAs. The remaining 12,000 ha are community lands which are far from the main irrigation systems and are irrigated from local sources.

7.4 Achievements and Challenges

According to the World Bank, the establishment of WUAs was a real revolution in the maintenance of the irrigation system in Armenia since through this initiative 14 public agencies responsible for irrigation water delivery were replaced. There are currently 44 associations operating in the country, signing agreements with farmers, delivering water and maintaining the irrigation network.[271]

Due to rehabilitation work and the institutional support that WUAs received, irrigation supply is more timely and in enhanced quantities.[272] An assessment published by the World Bank in 2009 illustrates some of the subsequent benefits:

- Since the irrigation network is more reliable, more farmers are willing to pay for irrigation services and their involvement in WUAs increases the sustainability of repair and maintenance operations on the system

- Consequently collection rates have increased countrywide, standing at 70% in 2008 and in some cases at practically 100%. Even non-rehabilitated WUAs managed 50% in the same period

- The efficiency of the system has made it possible to increase water fees (which stood at 9 AMD (USD 0.02) per cubic meter in 2008-09, which is close to full cost recovery estimated at 10.5 AMD (USD 0.03))

- Productivity benefits for the agricultural sector as a whole. The increase in the irrigated area from 112,300 to 130,000 ha and the reliability of the system have allowed an increase in crop yields between 10-15%, and a diversification towards higher value fruit crops and away from extensive crops: vegetables, grapes and orchard growing from 38% to 50% between 2004-08)[273]

Despite some clear improvements and the fact that the system is now functional, there still exist some obstacles. According to the Integrated Living Conditions Survey (ILCS) 2010 data, just over half of those who received irrigation were happy with both the timing and the quantity of the irrigation supply. This is the case in Meghri

270 FAO-Aquastat (2009) *Armenia*,FAO Water Report 34 **http://www.fao.org/nr/water/aquastat/countries_regions/armenia/index.stm** (Reviewed April 11, 2012).

271 World Bank (2011) *Armenia Irrigation Rehabilitation Emergency Project* **http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/0,,contentMDK:22258668~pagePK:146736~piPK:146830~theSitePK:258599,00.html** (Reviewed April 13, 2012)

272 World Bank (2009) *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145) p22. **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009/Rendered/INDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012).

273 World Bank (2009) *Implementation completion and results report: Irrigation Development Project* (Report No: ICR00001145) pp 32-33.**http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/12/31/000333038_20091231002009/Rendered/INDEX/ICR11450P055021C0Disclosed012130191.txt** (Reviewed April 27, 2012)

where farmers usually complain about the frequency of water delivery.[274] On-farm irrigation is also affected in some regions by the constrained capacity of WUAs to maintain and repair irrigation channels which have not been rehabilitated.[275]

8 AGRICULTURAL INPUTS

As Armenian agriculture develops, access to quality and affordable inputs in a timely fashion becomes crucial for the sector to expand and become more productive. Under the Soviet system, state-owned collective farms were in charge of suppliers, specialists and farmers. Once the system collapsed, farmers were left alone with their crops, without specialists such as agronomists and suppliers. This had a terrible effect on the country's agricultural sector since it drastically reduced the capabilities of farmers to get access to quality inputs, an activity which was not under their responsibility before.

When understanding the workings or failures of the agricultural sector in Armenia, it is important to understand the range of support services on which the sector depends. In the following section we will look at the availability of farm machinery, veterinary care, animal feed production, fertilizers and pesticides, storage for products grown and finance.

8.1 Farm Machinery

Armenian agriculture was characterized by the ample availability of agricultural tractors and machines under the Soviets unlike most other republics in the union. During Soviet times Armenia imported about 1000 tractors annually. The number of tractors experienced a decline from more than 15,000 in 1986 to some 12,500 in the early 1990s. Since 1995 the numbers have largely recovered to Soviet levels.

Figure 67: Number of different categories of farm machinery (1995-2010)

Year	Tractors	Trucks	Seeders	Cultivators	Combines	Forage harvesters	Mowing tractors
1995	12.6	10	2	2.2	1.3	0.6	2
2000	13.1	12.7	1.6	2	1.3	0.4	1.4
2005	14.3	14.4	1.8	2	1.4	0.3	1.6
2006	14.6	14.7	1.8	2	1.4	0.3	1.6
2007	14.7	14.8	2	2.2	1.4	0.3	2
2008	14.7	14.7	1.8	2	1.4	0.3	1.9
2009	14.8	15.3	1.8	2.1	1.4	0.3	1.9
2010	14.8	15.6	1.8	2.1	1.4	0.3	1.9
Growth 1995-2000	17%	56%	-10%	-5%	8%	-50%	-5%

Source: National Statistical Service of Armenia, Statistical Yearbook 2001. p266. http://www.armstat.am/file/doc/99452323.pdf;. Statistical Yearbook 2002 p327. http://www.armstat.am/file/doc/662.pdf; Statistical Yearbook 2007 p276. http://www.armstat.am/file/doc/99450533.pdf; Statistical Yearbook 2011 p300 http://www.armstat.am/file/doc/99466678.pdf (Pages reviewed May 4 2012)

Currently, a large part of the national stock of agricultural equipment is over 30 years old and the equipment is

274 Interview with Arthur Hayrapetyan (24 May 2012) Program Manager at SHEN, SDC rural development project in Meghri

275 Ibid.

not only outdated but was generally designed for larger plots and so inappropriate for small farms.[276]

Since 1997 Armenia has received a total of nine Japanese Government grants for the procurement of agricultural equipment and has purchased 305 tractors and 63 combines. This equipment was given through agricultural leasing or in auction to support needy farmers. The agricultural equipment mostly belongs to farmers who use it for their own land and may also provide services to their neighboring farmers for a fee. The Government of the Republic of India also donated 300 tractors equipped with agricultural implements (worth USD 5 million) to the Ministry of Agriculture of the Republic of Armenia in 2005-2006. The tractors were sold in an open auction.

The main private importers of agricultural equipment tend to source their equipment in the CIS and China.

The main commercial agricultural equipment importers are "Galoper" LLC, "CHINVAN", and CARD. 'Galoper' was established in 2001 and is the official dealer for the key Russian, Ukrainian, and Belarusian tractor and combine factories (i.e., Minsk Tractor Factory, Volgograd Tractor Factory, Lipetsk Tractor Factory) meanwhile serving as an official dealer for the New Holland Company. Galoper's impact has been quite modest since it has only imported 120 tractors (80% of which from Belarus) and 24 combines from Rosselmash (Russia) destined to be sold.[277]

"CHINVAN" is an Armenian-Chinese joint venture operating since 2003. It is an agricultural machinery manufacturing/assembling enterprise, which imports small tractors' spare parts from China and Belarus and assembles them in Armenia. So far the factory has assembled over 500 tractors.[278] CARD is the official dealer of the John Deer Company; however, it imported only very few tractors so far

According to Gagik Mkrtchyan of Armenian Technology Group Foundation, obsolete mechanical stock and its inefficient use due to small land parcel, the high cost of fuel and mechanical services and the lack of affordable and reliable mechanisms all have a major negative impact on Armenia's agriculture.

Furthermore, access to farm machinery appears to be impacted dramatically by economic status. According to the Integrated Living Conditions Survey (ILCS) 2010 data, non-poor households had better opportunities to acquire or rent agricultural machinery than poor households.[279] During the reporting period, extremely poor households did not possess and use any agricultural machinery recorded in the survey. This compares with fairly ease of access and use by non-poor households.

8.2 Fertilizers and seeds

Armenia is a minor fertilizer producer but mainly imports ammonium nitrate from Russia, Georgia, and Iran. In March 2012, Armenia has imported 2,865 tonnes of nitrogen fertilizer from Ukraine. Under the government program, 25 thousand tonnes of nitrogen fertilizer will be imported to Armenia by April 10. One bag of fertilizer which costs AMD 8,000 (USD 21) will be sold for AMD 6,000 (USD 15).[280] The absence of potash and phosphate fertilizers as well as other microelements depleted the fields and reduced their productivity. But farmers are not able to pay for relatively more expensive potash and phosphate fertilizers and there is no government support related to these fertilizers.

The government program suffers from other weaknesses. According to experts, the provision of fertilizer is usually late and in some cases it had to return money to farmers who had paid for the service.[281]

Overall, access to quality inputs is problematic, especially in the regions where input suppliers are absent. For instance in Meghri, where SDC is active, no agricultural shops are present which makes the purchase of fertilizer,

276 National statistical Service of the republic of Armenia (2011) *Armenia: Global Economic Crisis and Poverty Profile, Labor Market Development in 2008-2010.* **http://www.armstat.am/file/article/poverty_2011e_2.pdf** (Reviewed April 11, 2012).

277 "Galoper" LLC. **http://www.galoper.info.am/indexarm.html** (Reviewed April 11, 2012).

278 Armenpress.am (2009). Minister of Agriculture of Armenia visited "Chinvan" enterprise in Vanadzor. **http://armenpress.am/arm/print/671010/** (Reviewed April 11, 2012)

279 ArmStat (2010); Part 1 Armenia: Global Economic Crisis and Poverty Profile, Labor Market Development 2008-2010 p58 **http://www.armstat.am/file/article/poverty_2011e_2.pdf** (Reviewed April 26, 2012)

280 News.am (2012) *High quality nitrogen fertilizer imported to Armenia*, **http://news.am/eng/news/94093.html** (Reviewed April 11, 2012).

281 Interview with Arthur Hayrapetyan (24 May 2012) Program Manager at SHEN, SDC rural development project in Meghri

pesticides, and seeds very difficult.[282] The use of chemicals is even more restricted since government licenses are required for businesses to operate. Moreover, the fertilizer import is controlled by a small group of companies which allows them to exert market dominance and one has recently been prosecuted for abuse of this position.

One area where there have been recent improvements has been the provision of certified, high quality seeds.

Armenia is importing a variety of vegetable, grain, and potato seeds. It also has its own production of super elite and elite seeds mainly for wheat varieties that are well adapted to the country.

The Armenian Technology Group Foundation (ATGF), which is financed by the Armenian Diaspora and the Gyumri Selection Center, has been the main supplier of the local wheat seed, providing wheat growing farmers with elite, first and second generation seeds.

However, through the program of seed development for 2010-2014, the government imported elite seed and distributed this on the basis that volumes of seed would be returned from the harvest the following year.

According to Gagik Mkrtchyan, the director of ATGF, this subsidy had a negative impact on the sector as it undercuts a decade long learning curve in highly specialized production practice by reducing the profitability of commercial seed producers.

Another challenge facing the seed sector is tight restrictions on the import of new seeds. There are few potato seed dealers in the country who import "Elite" or A type potato seed every year.

Established in 1997, the Agro Project Center is one of the leading importers of potato seeds in the country. The center's goal is to create a bridge between the Armenian agricultural sector and the Dutch Agro industry, which offers know-how, equipment and seeds. According to Korion Hovakimian, the owner of Agro Project Center, the company, acting as an agent for Agrico Seed Potato, imports and distributes 1,500 to 2,500 tonnes of seed potatoes to Armenia on yearly basis.

The production and distribution of potato seed is usually not subsidized in contrast to wheat and barley seeds. However, through the end of its operations in late 2011, the Water to Market Project of MCA (Millennium Challenge Armenia) has supported Armenian Farmers' Association to import "Elite" potato seeds from Holland and distribute it to farmers around the country.[283]

8.3 Veterinary and animal health

Armenia lies in a region in which many reportable infectious and potentially epidemic animal diseases are endemic. Testing and vaccination is mandatory for a number of diseases. These efforts, however, are frustrated by budget shortfalls and sometimes by the active resistance of smallholders who do not want their animals tested because they fear the diseased animals will be slaughtered with little or no compensation, or because they fear that low quality vaccines will infect their animals.[284]

The veterinary service has passed through several reorganizations which hindered the effectiveness of the veterinary system as a whole. The last reorganization was in 2010 which abolished the community veterinarians.[285] At the moment, the system is divided between the state and the private sector. Apart from vaccination services which are covered by the state, most of the other activities are carried out by private veterinarians.

In recent years, the state has invested in several activities targeting the veterinary sector. For instance, 850 veterinarians have been working in Armenia since 2009 and receiving a salary from the state.[286] Moreover, over

282 Interview with Arthur Hayrapetyan (24 May 2012) Program Manager at SHEN, SDC rural development project in Meghri

283 Water to Market - *Potato Production.* **http://www.wtm.am/page.php?31** (Reviewed April 27, 2012).

284 The World Bank (2007). *Armenia Managing Food safety and Agricultural health: an Action Plan.* p11. **http://siteresources.worldbank.org/INTRANETTRADE/Resources/Topics/Standards/Armenia_Action_Plan.pdf** (Reviewed 11 April, 2012)

285 Interview with Karina Harutyunyan (29 May 2012) Strategic Development Agency, SDC livestock development project in Syunik (Armenia)

286 S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, p132 **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012).

AMD 1 billion (USD 2.9 million) per year from 2008-2010 has been allocated for the vaccinations of animals. The state provides free vaccination and testing services for a number of diseases. For cattle, that includes brucellosis, tuberculosis, anthrax, FMD, blackleg and bradsot.Swine fever is covered for pigs and Newcastle disease for poultry.[287]

Excluding international projects and forestry, the veterinary sector represented the largest budget line item for the Ministry of Agriculture in 2011 and stood at roughly AMD 1.3 billion (USD 3.5 million). Funds were allocated to strengthen food security/safety measures and the government has invested in the laboratory diagnosis of animal diseases and expert examinations of animal raw products and materials.

On the community level, the state vets carry out mandatory disease vaccinations and do basic surveillance. In addition to receiving a monthly salary AMD 45,000 (USD 116) for this mandatory work, these veterinarians are allowed to earn income by providing additional fee based veterinary services to the community.

Armenia also made some progress towards convergence with EU sanitary and phytosanitary standards. It adopted laws on food safety and on plant quarantine and plant protection as well as implementing legislation. Following a European Commission's Food and Veterinary Office inspection in Armenia on fishery products, the European Commission extended its authorization on the export of live crayfish to the EU to cooked and/or frozen crayfish.[288]

However, in many cases the official reporting of dangerous animal diseases is more of a political decision than a veterinary one, and so official statement of disease problems can be extremely different than accounts on the ground as reported by independent observers. According to some sources, questionable practices in state procurement of vaccines lead to significant inefficiencies.[289]

In 2009, the International Livestock Research Institute (ILRI) conducted an assessment of the national surveillance system and made a number of discussions with stakeholders and field visits for the introduction of participatory epidemiology to strengthen animal disease surveillance and control of zoonosis diseases.

They reported that awareness about diseases was not up to mark among most of the livestock farmers in all pilot *marzes*. There was also a lack of communication between the state veterinary services and livestock farmers. Disease surveillance system needed improvement, as the veterinarians were only contracted for the prevention of certain infection diseases and were afraid to report diseases not to lose their contracts. In addition, there were no preventive measures and surveillance activities at summer pastures.[290]

On the whole, the efficiency of the veterinary system varies greatly according to regions. It is much more developed where international donors are active, especially the north of the country where artificial insemination and animal breeding are more widespread, and largely ineffective in others. For instance, the situation in the mountainous region of Goris was dire before SDC's intervention in livestock development started in 2006,

> […] vets had previously perceived themselves as government employees and, due to reductions in government funding for vet services, had either ceased operating or only operated when the government undertook inoculation or disease control measures. Vets lacked equipment, medicines and premises from which to work and therefore before the intervention, there were effectively no demand-led veterinary services operating in these villages.[291]

Despite vaccination campaigns of the government which are largely seen as positive, significant steps then need to be taken to strengthen disease control in general. For instance, sick animals need to be dealt with properly

287 Information provided in an email exchange with Karina Harutyunyan (30 May 2012) Strategic Development Agency, SDC livestock development project in Syunik (Armenia)

288 Commission of the European Communities (2008) *COMMISSION STAFF WORKING DOCUMENT Accompanying the Communication from the Commission to the Council and the European Parliament 'Implementation of the European Neighbourhood Policy in 2007'* Progress Report Armenia, p9 **http://ec.europa.eu/world/enp/pdf/progress2008/sec08_392_en.pdf** (Reviewed 11 April, 2012)

289 Grisha Balasanyan (2011) *Foot & Mouth Disease Spreads in Armenia: Who's to Blame?* Hetq Online, Yerevan Armenia. **http://hetq.am/eng/articles/3817/foot-&-mouth-disease-spreads-in-armenia-whos-to-blame?.html** (Reviewed 11 April, 2012).

290 Syed Noman Ali et al. (2011). *PE/PDS program in Armenia.* **http://participatorysearching.blogspot.com/2011/02/pepds-program-in-armenia.html** (Reviewed 11 April, 2012).

291

and the coordination between different stakeholders should be enhanced.[292] Efforts should also be undertaken to commit farmers to follow better animal husbandry practices and to strengthen the capacities of private veterinarians in providing different services such as artificial insemination.

8.4 Finance

The vast majority of Armenian banks refrain from financing agriculture due to the low financial discipline, low pledge liquidity and high risks in the agriculture sector. According to Ararat Ghukasyan, Chief Executive Officer of Byblos Bank Armenia, the banks tend not to provide a mortgage loan if the income level of a borrower is not stable or low, even if the collateral exceeds the loan manifold. Byblos Bank Armenia had provided AMD 1.6 billion (USD 4.3 million) worth of agricultural loans (7% of total loan portfolio of the bank) as of January 1, 2011.

Figure 68: The agricultural credits provided by the commercial banks operating in Armenia (in million AMD)

	2005		2006		2007		2008		2009	
	Total	Maturity of 1 year and more	Total	Maturity of 1 year and more	Total	Maturity of 1 year and more	Total	Maturity of 1 year and more	Total	Maturity of 1 year and more
Total Credits, Leasing and Factoring	187,804	106,630	233,673	138,018	416,660	260,821	626,575	413,885	710,606	563,547
Of which										
Food Industry	15,152	11,064	19,591	14,750	24,432	19,136	32,683	25,317	51,668	44,099
Agriculture Total	11,304	7,273	14,196	8,533	22,374	16,242	36,467	28,440	44,177	36,480
Share of Agriculture in the Total Credits	6.0%	6.8%	6.1%	6.2%	5.4%	6.2%	5.8%	6.9%	6.2%	6.5%

Source: CBA, "The Credits of Commercial Banks", 2005-2009.

In 2009 there were 22 commercial banks with 367 branches operating in Armenia. Only about 5.9% of total credit investments of these commercial banks went to agriculture. The only bank that has a serious share in lending to the agricultural sector is the ACBA-Credit Agricole Bank, which, according to financial statements provided to Central Bank of Armenia represented about 72% of the total commercial bank portfolio in agriculture in 2008; that share decreased by 5.6% in 2009.

The case of ACBA, Armenia.

With technical assistance by the consultants of Credit Agricole, ACBA bank started in 1996. Currently, the bank occupies nearly three-quarters of the total agricultural credit market in Armenia. Approximately USD 253 million (or 30%) of its loan portfolio in 2008 was in the agricultural sector. The non-performing loan ratio in the agricultural portfolio is only 0.15 percent. The principal risk management mechanisms used by ACBA includes: (i) a credit policy that is based on the gradual increase in the amount and terms of clients' liabilities and on the credit history of the borrowers; (ii) a risk analysis method chosen based on the amount of the loan and on the borrowers' credit

292 Interview with Karina Harutyunyan (29 May 2012) Strategic Development Agency, SDC livestock development project in Syunik (Armenia)

history; and (iii) permanent control over the disbursed loans by the loan specialists. Other features of ACBA's risk management approach include a flexible collateral policy, mandatory field visits, restrictions on credit to certain sectors, and credit decision levels based on loan size.

In 2003, ACBA Leasing Company, the first society of leasing in Armenia, was established by ACBA Bank, Credit Agricole Leasing, and IFC and a significant technical assistance by USAID.

ACBA Bank operates at a three level structure created by the model of European Banks.

First level – Mutual Village Associations; Second level - Agricultural Cooperative Regional Unions; and Third level – Banks. In 2009 there were 735 Mutual Village Associations with a total of 50,000 members.

The bank's credit policy statistics are as follows:

- The maximum amount of the loan:
  - Long-Term Agricultural Loans: 158,000 USD for old clients, 79,000 USD for new clients
  - Short- Term Agricultural Loans: 79,000 USD for old clients, 1,800 USD for new clients.
- The average amount of the loan: 1,776 USD.
- The maximum term of the loan: 7 years.
- The average term of the loan: 2 years.

In 2010 there were also 29 licensed universal credit organizations with 60 branches and assets of about AMD 86.4 billion (USD 231 million). In 2009 these credit organizations provided loans and leasing that amounted to AMD 66 billion, of which a bit more than AMD 10 billion (27.5 million) were agricultural credits comprising about 15.4% in total credits.

The only documented official assessment conducted by the Central Bank of Armenia in 2005 showed that only 17% of the demand was satisfied by the commercial banks and universal credit organizations.[293]

The assessment also showed that the preferred currency of agricultural loans is the Armenian Dram (88% of the respondents), and the most acceptable interest rate are between 9-12%. According to the CBA survey, the farmers had a perception that the main barrier hindering the development of agricultural finance and credits is the "risk" (31% of the respondents), about 28% said that the "lack of collateral is the main problem"; other responses were "high interest rates" and "bureaucracy".

The local banks and credit organization usually take the following items as collateral: industrial premises, buildings, lands, fish ponds, orchards; transport vehicles, agricultural machinery; building machinery; cattle, sow, etc. The range of the index of "Loan compared to collateral value" is from 50% to 80%.

In 2011, the Government of Armenia allocated AMD 250 million (USD 671) for subsidizing the interests on agricultural loans. Three banks were involved in the program: ACBA-Credit Agricole Bank, Ardhsininvest bank and Converse Bank. The government funds will reduce by 4% the interest on loans provided to farmers and by 6% to 200 especially vulnerable communities. This year, the government plans to substantially increase the volume of subsidized agricultural loans. For this purpose the government has provided AMD 7.5 billion (USD 20.1 million) to the banks. The goal of the program is to provide loans to the farmers at 10% interest rate, which is much lower than the market rate of 18-22 percent. According to experts access is restricted and a very limited number of farmers actually benefit from it.[294] Somefarmers also mention that they actually end up paying 18% interest on these subsidized loans, which is very similar to what other financial institutions actually offer.

293 Urutyan, V. (2009). Rural Credit and Finance Overview. ICARE. p6 **http://www.icare.am/publications/ruralfin_09.pdf** (Reviewed May 1, 2012)

294 Interview with Arthur Hayrapetyan (24 May 2012) Program Manager at SHEN, SDC rural development project in Meghri

9 GOVERNMENT SPENDING

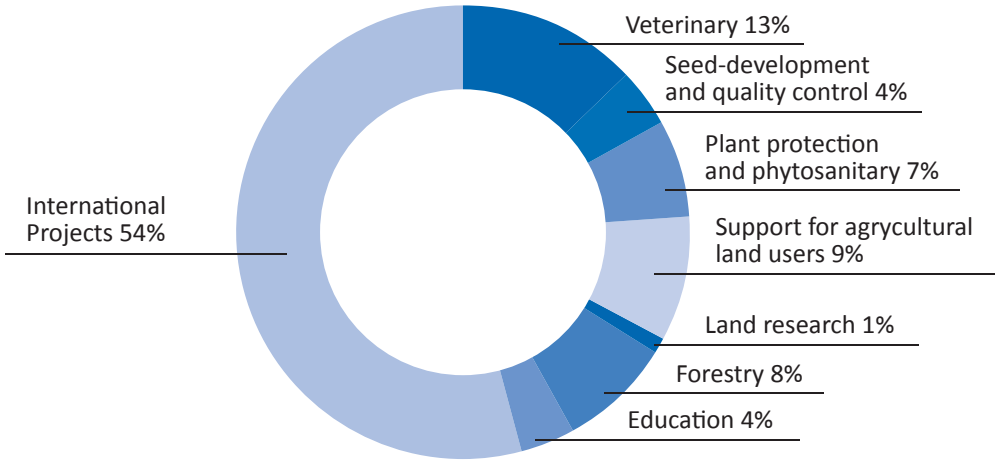
Government spending in the agricultural sector over recent years has fluctuated but remained fairly low.

For instance, in 2010 the total budget of the Ministry of Agriculture stood at AMD 9.2 billion (USD 24.6 million), which in current terms represents roughly USD 23.4 million, which represented only around 1% of total government spending for that year.[295]

Furthermore, the average annual support expenditures administered by the Ministry of Agriculture of Armenia in the period of 2004-2008 was just 1.22% of the value of the total agricultural production.

However, these figures do not include investments on infrastructure rehabilitation, especially the irrigation network which has received increased attention and support. For instance, the level of investment in the irrigation network by far surpassed the level of investment in agriculture as whole for 2011 and stood at AMD 35.3 billion (USD 94.8 million).[296] This was almost four times the overall budget of the Ministry of Agriculture.

Figure 69: Programmatic budget of the Ministry of Agriculture in 2011 (Total AMD 9,545,384 thousand)



Source: The Government of the Republic of Armenia (2012); *2011-2013 Medium-Term Public Expenditure Framework*; http://www.gov.am/files/docs/706.pdf (Reviewed May 2, 2012)

As the figure above illustrates, 54%of the Ministry's total budget in 2011 was allocated for the support of international projects. Apart from those, the main activities carried out by the government consisted of veterinary activities (13%), support to agricultural land users (9%) and plant protection and phytosanitary activities (7%) Apart from those, the budget also included measures related to food safety/security, land research (measures to increase soil fertility), and government support to professional (Vocational) and secondary professional education.

Overall, if one excludes international projects and forestry, three sectors have received the most amount of funding in recent years.

First, the veterinary sector was the largest budget line item in 2011 at roughly AMD 1.3 billion (USD 3.5 million). That included measures to support artificial insemination, animal inoculation, and the implementation of veterinary quarantine restrictions. Funds were also disbursed forthe laboratory diagnosis of animal diseases and the investment in "Anti-epidemic and Veterinary Diagnostic Center" (SNCO) of the Ministry of Agriculture.

295 E-gov.am (2012) *Interactive Budget.* **https://www.e-gov.am/interactive-budget/** (Reviewed April 27, 2012)

296 The Government of the Republic of Armenia (2012); 2011-2013 Medium-Term Public Expenditure Framework; **http://www.gov.am/files/docs/706.pdf** (Reviewed May 2, 2012)

Figure 70: Ministry of Agriculture spending in 2011 according to 2011-2013 Medium-Term Public Expenditure Framework (thsd AMD)

Seed-development and quality control	328 026
Veterinary	1 258 986
Plant protection and phytosanitary	695 900
Food security	5 000
Support for agricultural land users	863 980
Land research	42 295
Forestry	790 750,50
Initial Professional (Vocational) and Secondary Professional Education	421 715,40
Total government spending (excluding international projects)	**4 406 652**
Community Resources Management and Agricultural Competitiveness Project (WB)	1 484 255
Rural Capacity Building Project (IFAD)	1 349 870
Support to the farmers of marketing plan (IFAD)	103 898
Rural Capacity Building Project (OPEC)	1 920 305
Marketing opportunities for the farmers grant program (IFAD)	20 860
Danish support of the 'farmers marketing opportunities' grant program	259 544
Total	**9 545 384**

Source: The Government of the Republic of Armenia (2012); *2011-2013 Medium-Term Public Expenditure Framework*; http://www.gov.am/files/docs/706.pdf (Reviewed May 2, 2012)

In recent years, veterinary activities have been at the forefront of the Ministry of Agriculture's activities. For instance, 850 veterinarians have been working in Armenia up until now and have been allocated a salary of AMD 45,000 (USD 116) from the state budget.[297] Moreover, over AMD 1 billion (USD 275 thsd) per year from 2008-2010 has been allocated for the vaccination of animals.

In Soviet times, artificial insemination was practiced on a large scale, but starting in the 1990s and for more than a decade the activity was ignored.[298] To reverse that trend,the government has provided assistance to enhance artificial insemination practices to stimulate the expansion of milk production and the development of cattle breeding.[299] . For instance, the government invested AMD 1 billion (USD 3.3 million) in 2008 and 2009 on a project for the development of cattle breeding and AMD 345 million (USD 923 thsd) in 2010 for a similar projectimplemented with the support of the Japanese Government.

Second, the Ministry has provided support to agricultural land users. When it started in 2007, the program provided an assistance of around AMD 35,000 (USD 102) per hectare for a total target area of 4,800 hectares. The pilot project covering 15 communitieswas extended to over 253 communities and 8 marz in 2008.[300]

An assistance of AMD 1.6 billion (USD 5.2 million) was offered that yearto cultivate 49,855 hectares, and a similar amount was poured into the project in 2009 (for 181 communities in highland areas of 8 marz) to grow cereals

297 S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, p132 **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012).

298 S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, p131 **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012).

299 Ibid p131

300 Ibid. p130

on 45,073 hectares.[301] Project funding was reduced to AMD 558 million (USD 1.5 million) in 2010 and increased to roughly AMD 864 million (USD 2.3 million) in 2011.

That program has been supplemented over the years by the provision of extension services through the existing network, particularly the funding of national and marz Agricultural Support Centers (ASCs). Funds allocated to the provision of such services increasedbetween 2008 and 2011, from AMD 141.5 million (USD 462 thsd) to AMD 293 million (USD 786.6 thsd) (for more information on extension services see the Section 10 below on education). [302]

Third, plant protection and phytosanitary measures have alsobeen supported.. Starting in 2005 the government has provided support to agricultural producers by setting up anti-hail systems which were not properly operating since the collapse of the Soviet Union. 42 stations were set up before 2010 and 80 more were to be set up in 2010 alone.[303] That budget item for 2011 stood at AMD 696 million (USD 1.9 million) and also included measures for soil and plant laboratory testing.

Figure 71: Funding of agriculture from the state budget, million AMD

#	Measures taken	Years		
		2008	2009	2010
1	Plant protection	300	300	150
2	Vaccination of agricultural animals	1,353.8	1,531.4	1,000
3	Funding of national and marz Agricultural Support Centers (ASCs) to implement advisory services	141.5	183.1	293.1
4	Laboratory diagnosis of animal diseases and expert examination of animal raw products and materials	184.3	217.4	185
5	Maintenance and improvement of agricultural lands and rehabilitation of engineering structures	369.1	844.7	547.1
6	State assistance to agricultural land users	1,645.0	1,602.4	558
7	Project on development of cattle breeding in the Republic of Armenia	500	500	0
8	Cattle breeding development project within the “Grant support to lower income farmers” project implemented through the support of the Japanese Government	0	0	345
9	Seed breeding development project in the Republic of Armenia	105.1	188.2	76.6
10	Implementation of forest maintenance, forest protection and forestation activities	1,465.5	1,465.5	765.5
11	Forestation measures implemented at the expense of partnership fund formed within the “food production growth” project of the Japanese Government	400	300	0
SUB-TOTAL		6,464.3	7,132.7	3,920.3
Other projects		2,275.6	1,925.6	1,874.8
Loan means		589.5	4,408.4	3,387.3
TOTAL		**9,329.4**	**13,466.7**	**9,182.4**

Source: S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, p133 http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf (Reviewed April 27, 2012).

The table above provides a detailed budget breakdown of the Ministry of Agriculture from 2008 to 2010 and highlights other government activities that have been carried out to a lesser extent, such as seed growing and the provision of subsidized loans.

301 Ibid p131

302 The Government of the Republic of Armenia (2012); 2011-2013 Medium-Term Public Expenditure Framework; **http://www.gov.am/files/docs/706.pdf** (Reviewed May 2, 2012)

303

The government has constantly invested in seed growing in order to improve the productive capacity of agricultural crops. The program started in 2007 and allowed for different seed varieties to be brought in and given to seed farms: winter wheat and spring barley in 2007 and hybrid corn in 2008.[304] Investment also focused on increasing local seed production capacities by allocating some funds to research centers in the Ministry of Agriculture.Roughly AMD 370 million (USD 1million) was allocated between 2008 and 2010 for the seed breeding development project of the government. Wheat and barley seed development projects were also carried out in 2011.

The Armenian government also increased its support to the system of subsidized agricultural loans from AMD 590 million (USD 1.9 million) in 2008 to AMD 3.39 billion (USD 9.1 million) in 2010. Furthermore, itallocated AMD 250 million (USD 671 million) to subsidize the interests on agricultural loans in 2011 and plans to substantially increase the volume of subsidized agricultural loans.

The Armenian government has also supported activities that overlap with these priorities through state programs. For instance, in the midst of the global financial and economic crisis of 2008, the government of Armenia started implementing a Sustainable Development Program (SDP).

An IMF progress report on the implementation of the SDP provides an overview of the activities that targeted the agricultural sector and which were implemented in 2009-2010:

- the provision of USD 27 million to agricultural enterprises within the scope of IFAD and World Bank programs
- loans have been provided by commercial banks through the Rural Finance Facility Project to increase of the availability of credit to agricultural enterprises and the government subsidized interest rates on agricultural loans
- about AMD 3.2 billion (USD 9.6 million) in 2008-2009 was allocated from the state budget to subsidize agricultural producers
- irrigation technologies were introduced in horticulture (drip irrigation, spray irrigation)
- the area with high added value cultured plants was expanded
- livestock cattle were imported to develop cattle breeding[305]

9.1 Projects by the international community

Armenian agriculture has benefited from the assistance of many international actors, including the US government and large international organizations such as the World Bank, the FAO and the EU. The largest share of assistance was directed at improving water and irrigation infrastructure, as well as village roads. However, many projects were focused on providing access to finance, introducing technical expertise and know-how, and improving Armenian farmers' marketing skills.

One of the first assistance projects was administered by the US government, when it quickly reacted to the requests and needs in the region in 1992. The assistance project covered all areas of agriculture. In the initial phase, from 1992 to1995 , the US started small scale extension service support programs, which were scaled up in 1995. As a result, Marz Agricultural Support Centers (MASC) were established in each region.[306] The aim of these programs was to provide technical advice to Armenian farmers.

Another direction in which the US government helped Armenian agriculture was through its Marketing Assistance Project. The basic idea of the project was to help Armenia to produce "light weight high value" agricultural products which primarily would be sold to the Armenian diaspora in America and elsewhere. About USD 7.5 million was spent annually to provide assistance in production, processing, marketing, and credit assistance.[307] Since 2005, these activities have been implemented by a locally registered NGO, the Center for Agribusiness and Rural Development (CARD).

304 S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, p132 **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012).

305 IMF (2011). Republic of Armenia: Poverty Reduction Strategy Paper: Progress Report. p32. **http://www.imf.org/external/pubs/ft/scr/2011/cr11191.pdf** (Reviewed April 30, 2012)

306 USAID (2006) Independent Evaluation of US Agriculture Sector Activities in Armenia, p5

307 USAID (2006) Independent Evaluation of US Agriculture Sector Activities in Armenia, p5

USAID also financed Armenia's Small to Medium Enterprise Market Development Project (ASME). This project assisted Armenian SMEs by providing trainings and financing directly, or through intermediaries. The goal was to strengthenthe capacities of service providers, such as consulting firms, SME support centers, and financial institutions. [308]

The largest international assistance in agriculture came from the Millennium Challenge Corporation (MCC). Since 2006, USD 235 million was spent through the MCC. The major goal of this project was to decrease rural poverty through a sustainable economic development in agricultural sector. Primary activities included the construction of roads and irrigation infrastructure rehabilitation. USD 67 million was spent on rehabilitating and constructing 943 kilometers of rural roads, which connect villages to markets, services, and the main road network. USD 146 million was spent to improve water supply.[309]

Another important player in assisting agriculture has been the World Bank. It has worked together with the United States Department of Agriculture on establishing and assisting extension services in all regions of Armenia. From 1998 to 2010, the World Bank has spent about USD 42 million on activities which aimed strengthening capacities of local farmers.[310]

IFAD is also involved in supporting agriculture in Armenia through its Rural Areas Economic Development Programme. The aim is to support agricultural businesses by providing finances and credit systems.[311]

At the policy making level, the EU/TACIS program supported the Armenian European Policy and Legal Advice Center (AEPLAC), which provided expertise in issues related to WTO accession and the EU/Armenian Partnership and Cooperation Agreement (PCA). AEPLAC was basically producing recommendations on how Armenian legislation and policy-making process should be amended in order to comply with EU and WTO standards and regulations.[312]

FAO has mainly offered technical assistance such as food safety capacity building, strengthening trans-boundary animal disease diagnosis, and support for land consolidation. FAO is present in Armenia since 1993 and has also provided emergency assistance, such as distributing potato seeds and animal feed.[313]

The Sisian Self-Reliance Development Programme has provided assistance to specific agricultural sub-sectors. The program was administered by Accion Contra el Hambre (ACF) and is funded by the Swiss Agency for Development and Cooperation (SDC). It focused on the milk sector and included three main components: 1) access to artificial insemination; 2) use of more nutritious fodder; 3) assisting in accessing markets.[314]

SDC is currently funding two agricultural projects in Armenia. The first one focuses on livestock development (2011-2013) in the Syunik region and is implemented in collaboration with a local NGO, the Strategic Development Agency. The overall goal is to strengthen the livestock sector in the regions of Goris and Sisian and increase the income of farmers in the target communities.[315] They achieve this goal through the provision of trainings and consultancy services to different stakeholders involved in the livestock sector (milk processors, veterinarians, input suppliers) and by ensuring meat and dairy market access to farmers.[316]

The second project aims to improve rural development in the region of Meghri (2009-2012). It is implemented by the Helvetas Swiss Intercooperation and a local NGO, SHEN.[317] The goal of the project is to provide an increased

308 USAID (2006) Independent Evaluation of US Agriculture Sector Activities in Armenia, p12

309 USAID (2006) Independent Evaluation of US Agriculture Sector Activities in Armenia, p21

310 Samvel Avetisyan (2010) Agriculture and Food Processing in Armenia, pp 95-100

311 USAID (2006) Independent Evaluation of US Agriculture Sector Activities in Armenia, pp 23-24

312 USAID (2006) Independent Evaluation of US Agriculture Sector Activities in Armenia, p24

313 USAID (2006) Independent Evaluation of US Agriculture Sector Activities in Armenia, p24

314 Samvel Avetisyan (2010) Agriculture and Food Processing in Armenia, p115

315 Swiss Cooperation Office in the South Caucasus, *Livestock Development in Syunik Region Phase III*, Project Factsheet available at **http://www.swiss-cooperation.admin.ch/southerncaucasus/en/Home/DEVELOPMENT_COOPERATION/Economic_Development_and_Employment_Armenia** (Reviewed 22 May 2012)

316 Ibid.

317 Swiss Cooperation Office in the South Caucasus, *Rural Development in the Region of Meghri Phase I,* Project factsheet available at **http://www.swiss-cooperation.admin.ch/southerncaucasus/en/Home/DEVELOPMENT_COOPERATION/Economic_Development_and_Employment_Armenia** (Reviewed 22 May 2012)

and sustainable income to small-scale horticulture producers (value chains of fig, persimmon and pomegranate) by facilitating market access.[318] The linkage between market players is primarily strengthened through the provision of relevant services and market information to producers. Most of the production is destined for the local market, essentially Yerevan, since the quantities produced are not enough to justify exports.[319]

10 EDUCATION AND SKILL SETS

The Agrarian University trains skilled specialists in 37 fields. It has a three-level education system which enables it to be integrated into the international educational system.

The structural sub-divisions of the Agrarian University, with seven educational departments, are the following: agronomy, veterinary medicine and animal husbandry, farm mechanization and transport, food technology, water conservation, land tenure and land cadastre, economics, agribusiness and marketing, part-time education and agribusiness teaching departments agricultural college and lyceum.

The structural sub-divisions of the research center are farm mechanization, electrification, and trucking, food safety and biotechnology research institutes, pesticides, crops genetic fund, ecology concepts, viticulture and vegetable growing, veterinary medicine and veterinary expertise, agricultural animal nutrition, the molecular biology genetics and the laboratories of the science issues of the biotechnology, post-graduate courses, Master's Studies Department, editorial publishing, credential boards and the science library.

In recent years such majors as "Commodity Research and Quality Expertise", "Agribusiness and Marketing", "Consultation in Agri-production System" have been taught at the University, which are unique not only on a regional level, but also compared to agrarian universities of CIS member countries.

The Base Lyceum and State College train future specialists for the Agrarian University. Currently, in the 7 faculties of the University (Agronomy, Veterinary Medicine and Animal Husbandry, Agriculture Mechanization and Automobile Transportation, Hydro Melioration, Land Management and Land Cadastre, Foodstuff Technologies, Economics, Agribusiness and Marketing) there are 4500 fulltime and 5800 part time students. The University has more than 450 master students and 240 postgraduates.[320]

With regard to agro-institutions, the Armenian public agricultural research and extension service is under the Ministry of Agriculture's Department of Science, Education and Consultancy. Over the past few years the service has received considerable capacity building support, primarily from the World Bank and the United States Department of Agriculture (USDA). In particular, ten Marz Agricultural Support Centres (MASCs) were established in 2000 with some 250 staff members in total.

The MASCs provide specialist consultancy services to farmers including training, field demonstrations, mass media products and marketing information. Technical back-up to MASCs is provided by the Republican Centre for Agricultural Support, the Armenian State Agrarian University (ASAU) and specialist agro-science centers, as well as regional agricultural state colleges listed in Figure 25.[321]

MASCs provide support through 145 village agents acting in 916 communities in all 10 *marzes* across the country.[322]

On top of that the Ministry of Agriculture took steps to further promote the development of agricultural research and extension services, providing for seven research organizations implementing fundamental and applied agricultural research and providing extension services (introducing new technologies in horticulture and animal husbandry and importing new varieties of crops and breeds). These operate as State Non-Commercial Organizations

318 Ibid.

319 Interview with Arthur Hayrapetyan (24 May 2012) Program Manager at SHEN, SDC rural development project in Meghri

320 Higher Education in Armenia. Armenian Agrarian University. http://studyinarmenia.org/html/344.html (Reviewed April 11, 2012)

321 S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, p124. **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012)

322 S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, p128. **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012)

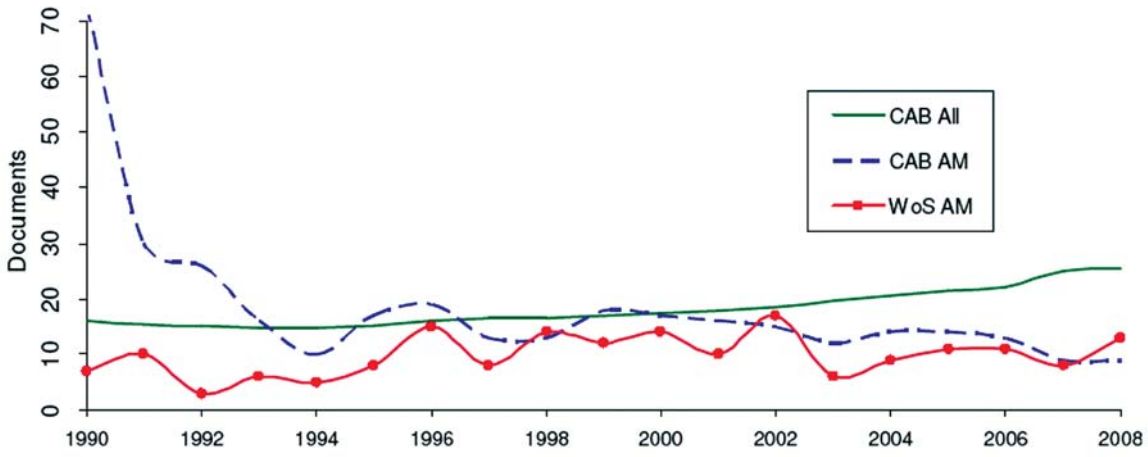
(SNCOs). Currently six of these are active: Research Center for Vegetable and Technical Crops; Research Center for Agriculture and Plant Protection; H. Petrosyan Research Center for Soil Science, AgroChemistry and Melioration; Research Center for Viticulture, Horticulture and Winemaking; Research Center for Animal Husbandry and Veterinary Service, and Research Center for Agri-BioTechnologies. Combined, these centers employ a total of 249 specialists, including 122 doctors.[323]

Funding for the system has been gradually transferred from official development donors to the Ministry of Agriculture, which now accounts for over 90% of the finance. Funds allocated under the Ministry to the provision of extension services increasedbetween 2008 and 2011, from AMD 141.5 million (USD 462 thsd) to AMD 293 million (USD 786.6 thsd).The current concern is focused on positioning the system as a sustainable, market-oriented business, under which its services can be contracted by individuals and by both private and public sector organizations.

10.1 Scientific Publishing

CAB International and CAB Armenia, as well as the ISI Web of Science, document the number of professional publication coming out of Armenia.

Figure 72: Indexing of Armenian authors by CAB Abstracts and Web of Science (WoS)



Source: Tomaz Bartol and Narine Khurshudyan (2010) *The state and exchange of agricultural scientific and technical information in Armenia.* p2. http://iaald2010.agropolis.fr/proceedings/final-paper/BARTOL-2010-The_state_and_exchange_of_agricultural_scientific_and_technical_information-IAALD-Congress-147_b.pdf (Reviewed April 11, 2012).

As one can see, publishing patterns of Armenian agricultural scientists exhibit two decades of decline and stagnation. However, it is difficult to consistently assess Armenian output after independence because the initial period is marked by a high participation of Armenian scientists in Russian or regional publications and the current transfer to more Western-oriented publications requires a shift in the kind of material produced.

Many research products are cooperation initiatives, such as those by the FAO. Some projects can also serve as a venue for international dissemination of domestic agricultural information.

For Armenian agronomists to fully participate in international publications, as users and contributors, it will be

323 S. Avetisyan (2010) *Agriculture and Food processing in Armenia*, Yerevan, pp120-122. **http://www.chamber.org.il/images/Files/17295/%D7%A1%D7%A7%D7%99%D7%A8%D7%94%20%D7%90%D7%A8%D7%9E%D7%A0%D7%99%D7%94.pdf** (Reviewed April 27, 2012)

necessary to develop Armenian international language skills. The university should play a more vigorous role to this end as it is the single most important source of future experts. Consequently, the inclusion and empowerment of the local scientific community should result in better agricultural productivity indicators and also in better overall stability.

10.2 Situation in the Labor Market

Armenia's labor market is still characterized by an extremely high overall level of unemployment and a structural mismatch between labor supply and demand. University graduates face the problem of finding the right job each year, not only as the result of overall lack of awareness of job openings but also due to a mismatch between graduate skills and the market demand.[324]

To understand the general employment picture of the full time graduate students of the Armenian State Agrarian University (ASAU), the career center of ASAU has completed a survey of 503 ASAU full time graduates: 253 graduates from 2010 and the other half were the 2006-2009 graduates in 2011. The employment data are presented in below.

Figure 73: Share of Employment of the ASAU Graduates of 2006-2010

	2006	2007	2008	2009	2010	Total
Employed, %	93.7	85	75.5	45	27	54

Source: ASAU Career Center.

Clearly, this study suggests that in good economic times, graduates of ASAU have fairly good employment prospects. Around 46% of the employed are working according to their graduate specialization. The rest either do not work according to their specialization or do work that does not require graduate qualification.

The apparent decline in employment numbers from 2006 to 2010 is a reflection of a number of different factors. First, it might take a couple of years for a graduate to find a job and second, hiring rates dropped drastically after the 2008 financial crisis. The one very positive picture presented by this data is that the 2006 graduates mostly had a job in 2011, suggesting that while hiring rates were low, those with skills and experience were not losing their jobs in large numbers.

Agribusiness Teaching Center: The graduates of the Agribusiness Teaching Center of ASAU are even better prepared for the job market. As of November 2010, the number of the Agribusiness Teaching Center (ATC) graduates was 287 (10 graduate classes), including 32 graduates from Georgia. The center is a special department of the ASAU which is based on the Texas A&M University's educational standards and curricula.

191 graduates (74%) are currently employed in Armenia, Georgia, the Russian Federation, North and South Americas (U.S. Canada, Paraguay), and Europe (Hungary, Germany, and the Netherlands). Another 40 graduates (16%) currently pursue Master and PhD degrees in Armenia, Georgia, the U.S. and Europe.

Only 26 ATC graduates (10%) are currently unemployed, but this group includes those who are serving in the Armenian National Army, mothers busy with childcare and some of the November 2010 graduates who are still in the process of finding employment.

According to Dr. Vardan Urutyan, the director of ICARE foundation that is funding the operation of the center, ATC graduates work in the agribusiness sector, non-agricultural fields, the banking system, and international agencies. The salary of ATC graduates working in Armenia starts (for their first job) anywhere between USD 190 - 280 per month, and increases to around USD 700 for their second jobs. Overall, the average salary is around USD 416 while some graduates receive USD 970 and more.[325]

324 Dr. Joseph Prokopenko (2008). *The Role of Republican Union of Employers of Armenia in Promoting Youth Employment and Strengthening Professional Education Institutions.* ILO, ACT/EMP, Geneva. p18 **http://www.ilo.org/public/english/dialogue/actemp/downloads/projects/youth/armenia_report.pdf** (Reviewed 11 April, 2012).

325 International Center for Agribusiness Research and Education (2011) *Career Statistics.* **http://www.icare.am/cpcc/crst** (Reviewed April

One major problem in the educating practically and technically trained farmers and agricultural service providers is that the educational system still leans heavily towards university education over vocational or skill based education. This is supported by a cultural bias towards university education and the rejection of vocational training as anything other than a second-class option. 40 - 45 thousands students study in universities while only 8 thousands study in vocational schools.

The teachers and trainers in the VET system do not have sufficient experience in teaching, particularly in occupational areas. Many of them worked in agriculture for over 30 years but lack the knowledge and practical experience of modern agriculture. In addition, there is a general orientation towards classical lectures, not necessarily practical activities. Moreover, since the salary of VET teachers is extremely low, many of them have second jobs and young and well-trained specialists do not want to take these positions.[326]

An OSCE-funded study surveyed some of the students in order to assess challenges facing the Armenian education system. According to the study, almost 40% of Armenian students found that corruption at the university level is of a systemic nature and poses severe restrictions on the system. The second reason in importance being the "reluctance of the students" (25%), and the third (14%) being the unfavorable economic living conditions of the teaching staff.[327]

On top of these colleges, Armenia has a wide range of different agricultural research institutes.

Figure 74: Agricultural Research and Education System of Armenia

Research Center for Agriculture and Plant Protection
Research Center for Animal Husbandry and Veterinary
Research Center for Grape and Fruit Growing and Wine-making
Research Center for Vegetables and Technical Crops
Research Center for Soil Science, Agro Chemistry and Melioration
Research Station for Bee Keeping
Gyumri Selection Station
PAREN Research, Production and Design Company
Research Institute of Agricultural Economy
Agricultural Education System
Armenian Agricultural Academy
College of the Armenian Agricultural Academy
High Scholl of the Armenian Agricultural Academy
Nor Geghi National Agricultural College
Yerevan National Agricultural College
Gavar National Agricultural College
Stepanavan National Agricultural College
Vanadzor National Agricultural College
Shirak National Agricultural College
Armavir National Agricultural College
Goris National Agricultural College
Masis National Agricultural College

Source: Ministry of Agriculture, Armenia

12, 2012)

326 Dr. Joseph Prokopenko (2008). *The Role of Republican Union of Employers of Armenia in Promoting Youth Employment and Strengthening Professional Education Institutions.* ILO, ACT/EMP, Geneva. p19 **http://www.ilo.org/public/english/dialogue/actemp/downloads/projects/youth/armenia_report.pdf** (Reviewed 11 April, 2012).

327 OSCE (2010) Students perception on corruption in the Armenian Higher Education system. p11 **http://www.osce.org/yerevan/75096** (Reviewed April 27, 2012).

11 SOCIAL CAPITAL

There is still no single law regulating cooperatives, meaning no legislative framework which could implement the different taxation regimes needed to make cooperatives truly effective. Efforts have been made by some NGOs to encourage farmers to organize through the provision of services such as loans, extension services, trainings and marketing assistance. The idea of cooperating has been adopted by some farmers who have formed organizations, but the majority of farmers are still disorganized[328]

Overall, the post-Independence farmer cooperative movement in Armenia has historically been weak. The Federation of Agricultural Associations (FAA), established in 2001, has revived interest among farmers in having their own organizations. However, currently there are only 21 associations with only 700 members, or less than 1% of the total farmer population, and many members operate medium-size farms rather than the standard 1.5 ha smallholdings.

The core activities of the FAA are lobbying, public relations, trainings, research and consulting. It can also provide financing, credit and leasing, marketing of members' products and input supply to members. With its knowledge of the sector and its farmer membership, the FAA may be able to assist the planned Rural Assets Creation Program (RACP), particularly in the selection of smallholders for contract farming operations and training events planned for private nurseries and non-contracted farmers.

Overall, the cooperative system still faces considerable hurdles. For a start, it is important to have a defined status and criteria for farms, cooperatives, unions, as well as other types of organizations in order to foster a proper environment within which these entities can operate. Moreover, the elaboration of relevant taxation mechanisms for the application of VAT and other measures, which fall within WTO requirements, need to be implemented.

Also, farmers still associate cooperatives with the old kolkhozes system and its flaws, which creates a discincentive to participate in the movement from the start.[329] Moreover, farmers' interest in the collective decision-making processes and the management of cooperatives tend to be low.

CARD (Center for Agriculture and Rural Development) Cooperative Development Program

The role of the Center for Agribusiness and Rural Development (CARD), as a third-party facilitator in the development of dairy marketing channels in Armenia, has been and remains significant. Through a package of marketing, technical and financial assistance, CARD aims at increasing rural incomes, creating jobs and raising the standard of living in rural communities.

In particular, CARD contributed to the development of dairy marketing channels in Armenia by establishing milk marketing cooperatives and milk collection centers in many villages across the country. These cooperatives are non-profit organizations with the objective of marketing the milk produced by their members.

The cooperatives work closely with CARD clients (dairy processors), by supplying improved quality milk, and are able to work with other processors as well. Overall, contracting is relatively developed in the Armenian dairy and grape sectors. However, farmer cooperative relationships are practically new for Armenia which hinders the development of the movement. Like processors, cooperatives also possess cooling tanks and storage facilities, which enable them to continuously procure milk from farmers.

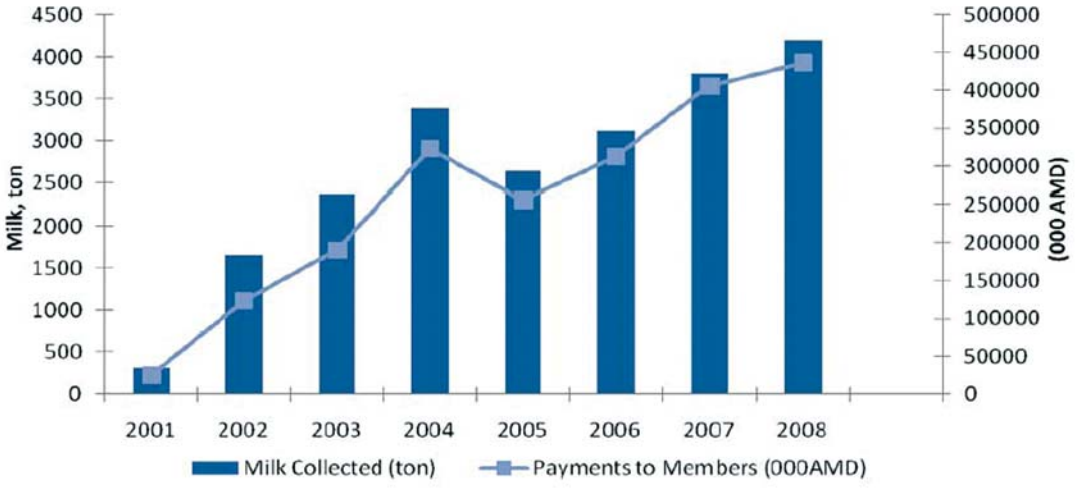
Following the activities and examples of CARD, many international and national organizations and large dairy processors assisted farmer groups to establish cooperatives aimed at improving management practices in dairy farms, thus consequently improving the quality and quantity of milk supplied. Currently, there are almost 30 milk marketing cooperatives throughout Armenia.

The Figure 36 below shows the milk collection and payment levels to member farmers by marketing cooperatives supported by CARD. Cooperatives pay their entire income to farmers, after subtracting operating expenses.

328 A. Grigoryan, Tigran Hakhnazaryan and Nana Afranaa Kwapong. (2008) *Farmers Organization in the development of Agriculture in the South Caucasus: Case of Armenia.* p6. **http://www.acdivocacoopex.org/acdivoca/CoopLib.nsf/dfafe3e324466c3785256d96004f15a8/a14646a173d2924f852575e0005a631c/$FILE/Farmers%20Organization%20in%20the%20development%20of%20Agriculture%20in%20the%20South.pdf** (Reviewed April 27, 2012).

329 Interview with Arthur Hayrapetyan (24 May 2012) Program Manager at SHEN, SDC rural development project in Meghri

Figure 75: Milk Collection and Payments by Selected Cooperatives, 2001-2008



Source: Financial Statement of Cooperatives (2001-2008) and CARD Cooperative Development Program Reports.

In the field of dairy processing the impact of the cooperative movement in increasing the income of member farmers remains significant. "Ashtarak-Kat" CJSC, the biggest dairy processor, along with its 11 milk collection centers, is working with 5 milk marketing cooperatives. The company is collecting milk from a total of 5,000 farmers and pays them regularly on every 15th day. However, not all processors are able to provide prompt payments to milk producers. [330]

In a study about dairy cooperatives development constraints in Armenia published in 2008, experts found that farmers hardly realize their affiliation to cooperatives. In most of the cases farmers still confuse cooperatives with Soviet-type collective farms. This very fact still remains a major constraint in the establishment and efficiency of cooperative organizations.

For instance, 57% of all respondents surveyed were either unsure, disagreed or strongly disagreed with the statement that they exercise their "one-member, one-vote" right, and only 35.4% out of 294 farmers either agreed or strongly agreed with the statement that they exercise their "one-member, one vote" right. [331]

In addition, regarding the user-owner principle, a majority of respondents answered that they either strongly disagreed, disagreed or were unsure when they were asked whether they are user-owners in their cooperatives.[332]

With regards to the user-control principle, the situation was very similar. 56% of all respondents were either unsure or disagreed or strongly disagreed when were asked whether they are user-controllers. [333]

Cooperatives can be useful for the operation of the dairy sector because milk collection centers can use the 'social capital' associated with this kind of organizations in a range of ways. Hygiene and quality standards are easier to self enforce than to enforce externally. For instance, for dairy cooperatives self-enforcement is more efficient since if one farmer supplies low quality milk, the entire cooperative will suffer since the milk will not be accepted

330 Vardan Urutyan (2009). *The Role of Milk Marketing Cooperatives in the Recovery of the Armenian Dairy Sector.* IAMA 19th Annual World Forum & Symposium Global Challenges - Local Solutions. p5. **http://www.icare.am/publications/urutyan_fao_09.pdf** (Reviewed April 11, 2012).

331 Melkonyan et al. (2008). *Dairy Cooperatives' Development Constraints in Transition Countries. Analysis of Basic Cooperative Principles (Armenian Dairy Sector Case)* p11 **http://icare.am/seminar2008/download/christ.pdf** (Reviewed April 27, 2012).

332 Ibid p11

333 Ibid p11

by the processor, or the cooperative might receive a penalty for it.[334] Therefore, cooperative members have an incentive to monitor themselves and strive to constantly improve the quality of milk produced in order to meet the requirements set by the processors.

334 Hakobyan, A., (2004). *Evolving Marketing Channels in Armenia: A Structure-Conduct- Performance Analysis.* Prepared for Poster Presentation at the 14th Annual IAMA World Food Forum and Agribusiness Symposium in Montreux, Switzerland.

AZERBAIJAN EXECUTIVE SUMMARY

History

In Azerbaijan, the economic challenges that came with the collapse of the soviet system were massively exacerbated by a war with Armenia. The war, that went on from 1988 to 1994, left the *de facto* independent state of Nagorno-Karabakh in the hands of ethnic Armenians who control not only Karabakh but also outside Azeri territories linking the contested region and Armenia.

As a result of the conflict, 800,000 ethnic Azerbaijanis and 230,000 ethnic Armenians have been displaced from their homes[335] and up to 30,000 have been killed. A Russian-brokered cease-fire in 1994 left the conflict unresolved and negotiations so far (Minsk Group) have failed to produce a permanent peace agreement. As a result, 16% of Azerbaijan's territory is still under Armenian control and several sporadic breaches of the ceasefire have occurred.

In the agricultural sectors, this was compounded by separation from Soviet demand and supply of inputs. This pushed the country from the production of specialized goods to subsistence production. Agricultural GDP dropped from by 50% between 1990 until 1997[336].

This situation, was gradually improving from the mid- 1990s but turnaround became faster towards the end of the 1990s as a result of two changes. First, in the mid-1990s, Azerbaijan conducted its 'deal of the century' which led to massive investment for the joint development of the 'Azeri', 'Chirag' and 'Gunashli' fields. It was followed by a deal on the 'Shah Deniz' gas field in 1996 and other agreements.

Largely as a result of these agreements, the Azerbaijani economy started to grow dramatically, recording an average GDP growth rate of 14% (in PPP terms) from 1999-2005 and an average GDP growth rate of 24% from 2005 to 2008. This provided the state with massive resources to invest in and subsidise agriculture.

Second, specifically in relation to agriculture in 1997, the government started to initiate land agricultural reforms. State and collective farms were replaced by small land-owning farmers and after a rather difficult adaptation period, the country saw increased in areas under cultivation, yields, and production levels.

The significance of the agricultural sector

The importance of the agriculture sector for Azerbaijan comes from its role in poverty, employment, prevention, food security and product diversification. The collapse of the Soviet system had a particularly strong impact on rural poverty. As many people returned to the countryside to ensure for their subsistence overall productivity fell and the number of people sharing that output rose.

Official statistics suggest that this poverty level has fallen dramatically in the last 10 years, but independent experts suggest that these numbers are overstated. Nonetheless, according to the World Bank, poverty remains almost twice as high in rural areas as it is in Baku. According to the World Bank, the lack of employment, assets, and commercial opportunities, as well as weaker access to basic infrastructure, health, and education services have been major factors keeping poverty relatively high in provincial towns and rural areas.

In addition, poverty in rural areas has a strong gendered dimension as women are over-represented in rural employment and deficiencies in public services in rural areas, such as access to adequate sanitation and safe drinking water, market centres and health services, affect poor rural women disproportionately. This is made worse because land-ownership excludes one from consideration of targeted social assistance payments, the rural poor often have no opportunity to gain from this government program.

335 PwC Azerbaijan (2011). *Doing Business and Investing in Azerbaijan 2011* Edition. p15 **http://www.pwc.com/az/en/assets/document/az-dbg-2011.pdf** (Reviewed April 30, 2012).

336 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report) p3. **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

Despite its low contribution to overall GDP, only 6% for 2010, agriculture provides income and employment for about 40% of the workforce. About 850,000 rural households own the 1.3 million hectares distributed from state farms and produce over 90% of agricultural output in the country.[337]

Agriculture is also important to Azerbaijan from the point of view of food security and economic diversification. At the current time oil and gas are the main drivers of Azerbaijan's economy. However, this kind of economy runs the risk of the so-called 'Dutch disease' where extractive riches force up the prices of goods and the value of the currency, making imports cheap and exports expensive, over time this can mean that an economy is damaged by its resources rather than developed by them.

This is particularly dangerous if an economy becomes entirely dependent on imported foods as changes in world food prices will then have a direct and unmoderated impact on one's economy. In Azerbaijan using some of the wealth created by oil and gas sales, to facilitate the expansion of the agricultural sector is seen as a good approach for helping Azerbaijan diversify generally, and also offering a buffer to future changes in food prices.

General structure of the agricultural economy

In the most recent five years, according to official figures, plant output doubled and livestock output increased by 150%. That is equivalent to a 15% annual growth rate in plants and a 20% annual growth rate in animals. Both of these reflect a rise in productive output combined with a rise in prices.

In the case of meat, this rise in value output reflects significant and long-term growth in production. Beef, chicken and lamb have all seen their output go up enormously in the last 10 years. Beef and mutton have seen average growth rates in productive output (in volume terms) of 7-8% per year. Chicken has been even more dramatic, increasing at 14% per year over the last decade.

In crops, in the early transition period, domestic demand focused on staples and products which could be produced on small farms and could be used for local consumption. Cash, industrial and export-oriented products like cotton and tea decline dramatically while production of potatoes, fruits, vegetables, wheat, milk, beef and mutton soon recovered to pre-independence levels.

If we look at production over the 15 years allowed by the AzStat data, cotton and tobacco production has more or less collapsed with cotton production in 2010 at around 14% of its 1995 levels and tobacco production at 27%.

For the rest, the biggest output growth occurred between the middle of the 1990s and the middle of the 2000s. From 1995-2006, cereals more than doubled to over 2 million tonnes, potato production went up 6 times and vegetables generally nearly tripled. There is very little analysis that provides a clear understanding of how this was brought about.

There are strong indications that this has been supported and maintained with significant subsidies. A 2010 EU report explained that limited progress has been reported on accession negotiations and a blocking point concerns a significant reduction of state subsidies on agriculture (such as pesticide, fertilizer and seeds).

Also, it is worth noting that according to the World Bank, this expansion has occurred more in the areas where Azerbaijan does not enjoy a comparative advantage (like potatoes and grain) as it has in the areas where it does enjoy this advantage (like fruit and vegetables).

The distortionary effect of market intervention can also be seen in exports. Azerbaijan's two main commodities of agricultural exports in recent years (in thousand USD) have been sugar and fresh fruits. Sugar enjoyed the most meteoric rise in exports, increasing from 31 million USD in 2006 to about 146 million USD in 2010 while fruits rose from 98 million USD in 2006 to 112 million USD in 2010.

The expansion of sugar production was certainly the result of subsidies. The government invested 100 million in 2006 to create Azersun holding who owns the only sugar production plant in the country. Azersun processes

337 IFAD (2010) *Republic of Azerbaijan: Integrated Rural Development Project (IRDP)* Project Design report, p2 **http://www.ifad.org/operations/projects/design/102/azerbaijan.pdf** (Reviewed May 2, 2012).

imported and locally grown sugar beet. Before that, the production of sugar stood at zero according to the US department of agriculture.

Market Access and Competition

One of the key issues that is always considered important in assessing the effectiveness of agricultural development is access to the market. This usually involves three components, first, the access to the local market, both physically and institutionally. Second, we can look at the access of the local companies to foreign markets to sell their exports. Third, we can evaluate the openness of the economy to imports and the competitive strains this might place on a market.

Internally, access to markets is limited by a poor market environment. In particular, inadequate contract law and enforcement, undeveloped judicial system, corruption, and poor management of the import/export regime reduce the likelihood of people investing in the sector. This is made worse by high transaction costs and burdensome bureaucracy that is often used to facilitate corruption, but even where it is not, creates hurdles to starting and growing a business.

In access to foreign markets, Azerbaijan is not a member of the WTO. This means that Azerbaijan does not enjoy Most Favoured Nation status and so faces higher tariffs on its exported agricultural goods. It also means that Azerbaijan is unlikely to be considered for the Deep and Comprehensive Free Trade Agreement of the kind that are currently being negotiated between the EU and Georgia/Armenia.

In addition, Azerbaijan faces practical hurdles. The Doing Business reports of 2011 and 2012 are consistent with these observations. In the 2011 report, Azerbaijan was ranked as the 177th of the 183 countries assessed in terms of trading across borders (it was ranked 170th in the 2012 report), meaning that the country had one of the worse environments for importing/exporting).[338]

However, Azerbaijan does still have access to the Russian market and enjoys a land border with Russia. This puts it in a better situation than both Georgia (whose goods are banned) and Armenia (who does not enjoy a land-border with Russia). Therefore, Azerbaijan's export growth has generally been directed towards Russia.

Finally, agriculture in Azerbaijan does not seem to be exposed to the level of competition from producers outside the country that one would find in places like Georgia because the hurdles to international trade are far greater for companies that want to export to Azerbaijan than for those who want to export out of Azerbaijan.

Land Holding/Usage

Azerbaijan has a land area of 8.6 million hectares of which around 4.8 million hectares (about 55%) is designated agricultural land, and about 1.9 million hectares of that (or 40% of agricultural land) is arable land.

Land privatization started in 1997. Altogether, about 95% of arable farmland has now been privatized and 850,000 rural households own the 1.3 million hectares distributed from state farms and produce over 90% of the country's agricultural output.

In absolute terms the majority of cultivated land is used for the production of cereals and pulses. While land-use has gone up significantly, output per hectare has actually gone down in the last decade or so, in the production of cereals and pulses as well as in cotton. Output per hectare has stayed more or less stable in vegetables (though remains 30% lower than in 1990) and productivity has only gone up in vegetables and watermelons

Work on irrigation has been particularly interesting. Due to the arid climate, irrigation is essential to Azerbaijani agricultural production. According to the World Bank around 30% of the overall agricultural land, or 14.2 thousand sq km in Azerbaijan is actually irrigated. Assuming that most of that land is cultivated (rather than pasture), that would mean that around 80% of the cultivated land is irrigated. This is a similar level of irrigation to that experience in 1990.

338 World Bank/IFC (2011) *Doing Business 2011* p148. **http://www.doingbusiness.org/~/media/FPDKM/Doing%20Business/Documents/Annual-Reports/English/DB11-FullReport.pdf** (Reviewed April 30, 2012).

This may overstate the effectiveness of the system as various organizations suggest that while coverage may be high, water losses and salinity may still lead to reduction in productivity over considerable areas.

One of the major problems has been the inability to manage the system effectively. In Azerbaijan a State Amelioration and Irrigation committee is responsible for maintenance of the primary and secondary off-site irrigation system. This was then served by the Water Users Associations which are supposed to collect fees from farmers and manage the maintenance of the more localized infrastructure.

The WUAs were for-profit entities that had no involvement of farmers, but simply collected fees in order to maintain the system. However, they were required to charge at such a low level that they lacked the resources for maintaining the infrastructure which generated a negative cycle of non-payment and under-provision.

In an effort to help correct this system the World Bank undertook a 7 year project to improve the irrigation on about 4% of the total irrigated land. One of the major objectives of the World Bank was to convert WUAs into non-profit entities, independent from local government and focused only on governance, management and financing irrigation and drainage at the on-farm level.

Compared to the bulk of non-rehabilitated associations, the 22 targeted WUAs saw an over 40% increase in the total amount of water supplied, better planning of water delivery, and reduced water losses. Over time and given the improvement of services delivered, farmers became more inclined to pay the required fees and the collection rates increased by 3 to 5 times. Over 2006-2009, it is estimated that the budget of rehabilitated WUAs increased by more than four times compared to other associations. This income increase enabled the rehabilitated WUAs to conduct most of the planned operation and maintenance of rehabilitated systems.

Extension Services

The shift in the nature of agriculture from large state and collective farms, to a huge number of small landholders intensified the need for a proper network of extension services to be put in place. A majority of farmers following the transition lacked the proper the information and technical knowledge to make private farming economically viable and productive, a necessity in order to rebuild agricultural productivity to levels they had once achieved.

Significant steps were taken by the World Bank as part of its Agricultural Development and Credit Project (ADCP) to establish a functioning network capable of providing farmers with extension services and the technical information they needed.

As a result, all of the country is currently covered by these extension service centers. The services are mostly provided through village-based advisors, a total of 216, and they are generally well-known in their areas and farmers usually have positive feedbacks about the experience, reporting significant increases in output as a result.

However, there are continued issues about the sustainability of this model and it seems unlikely that it will be able to shift over to a market basis anytime soon.

Similarly, veterinary provision in Azerbaijan remains dominated by the state. The heir of the soviet state-controlled veterinary system in Azerbaijan is the State Veterinary Committee[339] (SVC), a branch of the Agriculture Ministry. It is responsible for running the veterinary system. While the private sector has been increasingly contributing to the system, the state apparatus still dominates. Locally, the SVC has 65 branches in all but one of the country's 66 municipalities.

This has recently been joined by a network of private veterinary provision. Since 1999, as a part of Agricultural Development and Credit Project (ADCP), the World Bank collaborated with the Ministry of Agriculture to establish Veterinary Field Units (VFUs), which comprise SVC-contracted private veterinarians working in different areas of the country. At the outset, 25 VFUs were created in 5 pilot regions of the country.

Building on the success of its pilot project, the second phase of the ADCP program expanded the network of private vets to 160 VFUs, therefore covering all of the country's districts. As a result, the current system combines both the public and private sector; the central and local state veterinary apparatus and the 160 private veterinarians in VFUs.

339 At the Ministry of Agriculture, The State Veterinary Service, **http://www.vet.gov.az/?lang=2&id=1** (Reviewed April 18, 2012).

This mixed system still has considerable challenges, notably the private sector still finds it hard to compete with state provision. However, the World Bank argues that veterinary provision in Azerbaijan is, as a result, more effective than in the rest of the region.

In farm machinery the national stock has diminished significantly since 1990, but has not declined much in the last decade. The current largest provider is 'Aqrolizinq', a state-owned provider that was funded to the value of AZN 221 million (USD 280 million) from 2005-2009, or 56 million per year.

This investment seems to have brought with it fairly dramatic increases in the number of machines brought into the country. However, in spite of this investment, it is unclear whether the service provided is either cost-effective or appropriate to the context.

Despite the presence of farmers specialized in seed production, private seed producing companies, Aqrolizinq, small input dealers, and individuals in the villages who sell uncertified seeds, most farmers tend to either buy from neighbours or relatives or use what they have set aside from their annual produce as "seed".

Therefore, while there are two relative new seed manufacturers for wheat and barley seed, supply is generally not emerging due to lack of demand.

Inputs are also subsidized by the state. Seed producers are subsidized by the state, but in order to collect the subsidy they have to demonstrate that the purchaser planted the seed. This makes collection difficult and, according to IFAD, undermines the effectiveness of the project. Fertiliser is subsidised by the state to 50% of its value. However, even with the subsidy, fertilisers seem to be used ineffectively, often with the wrong types and volumes and fertilisers are still hard to obtain outside of urban areas.

Financing

In 2000 a World Bank report suggested that access to finance in rural areas in Azerbaijan was dire. In order to address the situation, the World Bank started to implement the first phase of its Agriculture Development and Credit Project (ADCP), of which the largest component was to increase rural finance.

Although the project got off to a slow start and was marred by problems, 30 Credit Unions (CUs) and 1,498 informal borrower groups (BGs) were established by 2006 as a result of the first two phases.[340]

Agricultural lending quickly took pace, repayment rates followed suit and the outreach of both CUs and BGs was enhanced. The ADCP allowed for roughly AZN 75 million (USD 95.4 million) to be provided to both CUs and BGs and up to 24,500 members of these institutions have received 52,800 loans with an average size of AZN 2450 (USD 3,116) for CUs and AZN 650 (USD 827) for BGs.

Overall, improvements in the financial sector, whether by commercial banks or Credit Unions and Borrowing Groups, have allowed for agricultural lending to increase both in volume and in reach.

According to Rufiz Vakhid Chirag-Zade, World Bank Senior Operations Officer for Azerbaijan, it is much easier for farmers to access to credit, especially short-term financing, and there has been a significant increase in the volume of short-term loans.[341] On the whole, the sector is currently occupied mainly by commercial banks, CUs and BGs created under the World Bank ADCP project, micro-finance organizations (MFIs) and the Azerbaijani state which subsidizes loans at lower interest rates (7%).

However, some of the experts that were interviewed for this project question the effectiveness of the subsidized loan system, suggesting that bureaucratic hurdles and informal payments increase the effective rate of the loans to near market rates. In addition, market rates remain high, in the 14-40% range, and so are generally only suited for short-term or small loans.

340 World Bank (2008) - *Project Performance Assessment Report: Farm Privatization Project/ Agriculture Development and Credit Project* (Report No. 44831) p13. **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/08/20/000333038_20080820011126/Rendered/PDF/448310PPAR0P0410Box334040B01PUBLIC1.pdf** (Reviewed May 1, 2012).

341 Interview with Rufiz Vakhid Chirag-Zade (April 18, 2012), World Bank Senior Operations Officer for Azerbaijan

According to the World Bank, the sector is still underdeveloped and the volume of loans being disbursed remains relatively small,

> Though credit financing for agriculture has been increasing steady, the volumes remain comparatively small, and the sector continues to be under-financed. Demand for the financing remains very high, especially for the long-term funding. In addition, the menu of financial products is limited to simple working capital and investment loans. Structured products, including transaction finance and use of non-physical asset-based collateral, are almost non-existent, which limits the opportunities for the sector to access the needed loan products. Agricultural insurance which would improve access to finance for the sector is almost nonexistent too.[342]

Government Policy

Starting with the land reform process of the late 1990s, the primary goal of the agricultural strategy has been to make the transition to a market-based and more productive sector. Two major objectives underpinned this strategy:

1. Privatizing and distributing to individual rural families the lands of the former collective farms

2. Establishing and building the various agricultural services (for instance, agricultural extension, credit, and irrigation) needed for the new farmers to restore agricultural productivity and enhance their incomes[343]

To date, the government has prioritized a diversification strategy using revenues from the oil boom to finance infrastructure projects and strengthen the agricultural value-chain. In the past decade and through collaboration with international organizations, such as the World Bank, the government has made significant progress in harnessing the agricultural sector as an engine for growth. For instance, through the Agricultural Development and Credit Project (ADCP) of the World Bank, Azerbaijan has supported farmers with extension, business advisory and rural credit services, as well as increasing its agricultural policy capacity.[344]

It is extremely difficult to get a precise Ministry of Agriculture's budget or exact information on how money is spent, and the same situation applies for other state programs. As a result, while it is possible to gain insights on a number of specific programs, it is not possible to get a comprehensive picture of the spending priorities of the government.

However, concern is widely expressed regarding the over-use of government subsidies. This concern has two parts. First, that the subsidies are poorly directed and could have been used more effectively to fix critical components of agricultural infrastructure. Second, the subsidies seem to have been directed towards sectors where Azerbaijan does not enjoy a comparative advantage. As the World Bank explains, the farm subsidies in the early 2000s were 15 times the level of foreign aid to Azerbaijan and encouraged the production of cereal crops for which Azerbaijan does not have a comparative advantage.

This level of agricultural subsidy, considered to be around 15% in the wheat sector, was over the 10% allowed by the World Trade Organisation and created considerable hurdles for Azerbaijan's WTO negotiations. Subsidies continue to be high. In 2011, subsidies for fuel, seed, wheat sowing and fertilisers, subsidies were just over AZN 100 million (USD 126.6 million).

342 World Bank (2011) *Third Agricultural and Credit Project: Project Information Document (PID) Concept Stage* (ReportNo.: PIDC10) pp1-2. **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2011/09/27D00B9EDB27DE72CF85257918003E7311/1_0/Rendered/PDF/P1228120PID0Print0092720110131712252672 7.pdf** (Reviewed May 1, 2012).

343 Ibid. p9

344 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report) pvii. **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

International Projects

A range of international donors have been active in Azerbaijan. However, the most significant projects have been carried out by the World Bank to improve the irrigation and road networks.

The World Bank has implemented three consecutive irrigation projects.[345] It is currently implementing the Water Users Development Support Project (WUAP) valued at USD 114 million to strengthen the capacities of the Amelioration and Irrigation Open Joint Stock Company (AIOJSC) and WUAs, and rehabilitate on-farm irrigation and drainage networks on 85,000 ha managed by 34 WUAs.[346]

The organization has also supported efforts of the Azerbaijani government to bring its road infrastructure up to par through three projects: the first Highway Project that started in 2001 for USD 40 million, the second phase of the project which was approved in 2006 for USD 675 million, and the Third Highway Project that was approved in 2010 for USD 242 million.[347]

The organization has also created 10 rural advisory centers (RACs) and 160 veterinary field units at the outset of the consecutive phases of its Agricultural Development and Credit Project (ADCP).

Other projects have similarly focused on agricultural development directly. Organizations such as USAID, IFAD, the FAO, the European Union, and the Swiss Development and Cooperation Agency have worked on a wide range of different issues such as the provision of extension services to farmers, strengthening the veterinary service, improving access to agricultural inputs, and developing access to rural finance.

Education

At present, Azerbaijan's State Agricultural University forms graduates for the agricultural sector. According to information made public by the institution, 2937 bachelor students, 120 master students, and 10 PhD students are currently attending the University.[348] The University comprises an extensive list of departments and offers trainings in most agricultural sectors.[349]

In recent years, the University has gone through several reforms and usually these changes are considered to be positive. For example the rector was replaced and the University has implemented a number of exchange programs. It has joined the Bologna Process and is in the course of implementing the necessary changes to make the education provided more compatible and comparable to European higher education standards, for instance by reforming its programs (modules).[350]

According to University lecturers and head of departments, the number of students is also increasing for several reasons. First, the University has taken concrete measure to attract students, not only by implementing reforms but also by conducting student fairs involving a lot of enterprises for graduates and facilitating the job selection process and stimulate students.[351] The University has also received increased investments, for instance the veterinary faculty now has several well-equipped modern laboratories, a surgery room for animals and other labs.[352] Second, growth in the agricultural sector and demand for skilled labor is creating incentives for students to enroll. According to experts, there is a tendency at the moment for large commercial farmers to invest in the graduates they need, for instance veterinarians and agronomists in their 2nd and 3rd year.[353]

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345 First, the Rehabilitation and Completion of Irrigation and Drainage Infrastructure Project from 2000 to 2007 valued at around USD 47 million. Second, the Irrigation Distribution System and Management Improvement Project (IDSMIP) from 2003 to 2010 valued at USD 39 million.

346 Ibid.

347 World Bank- *Azerbaijan Highway Program* **http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/AZERBAIJANEXTN/0,,contentMDK:22739570~pagePK:141137~piPK:141127~theSitePK:301914,00.html** (Reviewed April 25, 2012).

348 Azerbaijan State Agricultural University, Statistics **http://www.adau.edu.az/view.php?lang=en&menu=21** (Reviewed April 30, 2012)

349 Azerbaijan State Agricultural University, Chairs [Departments] **http://www.adau.edu.az/view.php?lang=en&menu=35** (Reviewed April 30, 2012).

350 Interview with Nizami Ibrahimli, Soil science specialist, lecturer at Azerbaijan State Agrarian University

351 Interview with Nizami Ibrahimli Soil science specialist, lecturer at Azerbaijan State Agrarian University

352 Interview with Subhan Valiyev Animal technician at Azerbaijan State Agrarian University

353 Interview with Elmaddin Namazov agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

1 HISTORY/BACKGROUND

In Azerbaijan, the economic challenges that came with the collapse of the soviet system were massively exacerbated by a war with Armenia. The war, that went on from 1988 to 1994, left the *de facto* independent state of Nagorno-Karabakh in the hands of ethnic Armenians who control not only Karabakh but also outside Azeri territories linking the contested region and Armenia.

As a result of the conflict, 800,000 ethnic Azerbaijanis and 230,000 ethnic Armenians have been displaced from their homes[354] and up to 30,000 have been killed. A Russian-brokered cease-fire in 1994 left the conflict unresolved and negotiations so far (Minsk Group) have failed to produce a permanent peace agreement. As a result, 16% of Azerbaijan's territory is still under Armenian control and several sporadic breaches of the ceasefire have occurred.

The combined effect of the war and the post-soviet collapse was that Azerbaijan's economy nearly collapsed in the early 1990s and production levels across the spectrum dropped significantly. The effects of the break-up of the Soviet Union were particularly acute for the agricultural sector.

First, Azerbaijan not only lost its prime market Russia, which accounted for 75% of the fruit and vegetable production exports, and other traditional markets, but had to manage local marketing channels which were also disrupted.[355]

Second, socio-economic conditions dictated a shift in demand from luxury items to locally produced commodities such as potatoes, vegetables and fruits. Combined with the collapse of the state owned collective farms, local production from small household farms reallocated itself towards subsistence farming.

Third, drastic reductions of formerly subsidized inputs such as fertilizer as well as parts and maintenance for physical infrastructure like irrigation had a significant impact on the ability of farms to produce at the same levels.

Consequently, the Azerbaijani agricultural sector in the 1990s had to cope with dramatic decline in production and trade. These shocks pushed the government to delay reforms and preserve the collective and state farm system longer. As a result, the total area of cultivated crops decreased considerably together with yields, and livestock numbers. Accordingly, agricultural GDP dropped significantly, by 50% between 1990 until 1997[356]...[357]

Change started to occur because the an oil and gas strategy which led to a significant flow of foreign investment in its oil and gas sector. It started in 1994 when a production sharing agreement signed by 11 major oil companies from 8 countries, known as 'the Contract of the Century', was put in place for the joint development of the 'Azeri', 'Chirag' and 'Gunashli' fields. It was followed by a deal on the 'Shah Deniz' gas field in 1996 and other agreements.

 for a significant increase in Azerbaijan's oil and gas revenues and eventually drove the country's economic growth up. To date, 27 Production Sharing Agreements (PSA) have been signed between SOCAR, the state oil company of Azerbaijan, and foreign oil companies.[358] The agricultural sector has recovered since then due to land privatization and other reforms, particularly the government comprehensive reform agenda that began in 1997.[359] State and collective farms were replaced by small land-owning farmers and after a difficult adaptation period, the country saw increased in areas under cultivation, yields, and production levels.

The growth figures for the economy as a whole clearly show the dramatic recovery which the whole economy experienced since the new millennium.

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354 PwC Azerbaijan (2011). *Doing Business and Investing in Azerbaijan 2011* Edition. p15. **http://www.pwc.com/az/en/assets/document/az-dbg-2011.pdf** (Reviewed April 30, 2012).

355 World Bank (2005) *Azerbaijan agricultural markets study* (Final Report) p2. **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

356 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report) p3. **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

357 World Bank (2005) *Azerbaijan agricultural markets study* (Final Report) p3. **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

358 SOCAR (2012) *Projects in Azerbaijan* **http://www.socar-germany.de/eng/socar/projects.html** (Reviewed April 5, 2012).

359 World Bank (2005) *Azerbaijan agricultural markets study* (Final Report) pVI. **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

Figure 76: GDP indicators for Azerbaijan

Indicator Name	1995	1999	2005	2006	2007	2008	2009	2010
GDP (current million US$)	3,052	4,581	13,245	20,982	33,049	48,852	44,291	51,774
GDP growth (annual %)	-11.8	7.4	26.4	34.5	25.0	10.8	9.3	5.0
GDP per capita, PPP (current $)	1,508	1,960	4,496	6,176	7,860	8,714	9,499	9,943
Agriculture, value added (% of GDP)	27.3	19.2	9.9	7.5	7.0	6.0	6.6	5.8

Source: The World Bank; Database – *World Development Indicators & Global Development Finance (Databank)*; http://databank.worldbank.org/ddp/home.do?Step=1&id=4 (Reviewed April 30, 2012)

Largely as a result of these agreements, the Azerbaijani economy started to grow dramatically, recording an average GDP growth rate of 24% from 2005-2008. If one looks at more recent years in more detail, it makes sense to divide the pre-financial crisis period and the post financial crisis period.

Figure 77: Macro-economic trends for 2005-2010

Indicators	2005-2008 (yearly average)	2009-2010
Real GDP growth rate	24.2%	7.2%
Oil GDP growth rate	42.9%	8.3%
Non-oil GDP growth rate	11.8%	5.6%
Inflation	13.9%	3.6%
Nominal revenue growth rate	31.8%	10.7%
Nominal wage growth rate	27.0%	8.9%
Growth rate of nominal expenditure of state budget	64.3%	6.8%
Growth rate of bank assets	65%	14%

As one can see the growth-rate throughout the period was impressive and, though growth was slowed by the financial crisis, oil revenue did significantly protect the economy from the global recession.

2 POVERTY AND AGRICULTURE

Even though the agricultural sector suffered at the end of the Soviet Union, the lack of employment opportunities in urban areas ensured that many stayed on the land. This resulted in a sharp decline in productivity and wages and increase in rural poverty.[360]

Growth in the last decade does appear to have brought significant gains in poverty reduction, though there are issues over the reliability of the data provided by the Azerbaijani government in this area. Following commitments to reduce poverty made in accordance with Millennium Development Goals, in 2003 the Azerbaijani government implemented the State Programme on Poverty Reduction and Economic Development (SPPRED) which consisted mostly of social transfers to rural areas financed by oil revenues. It was then followed-up by the State Program on poverty reduction and sustainable development in the Republic of Azerbaijan for 2008-2015 (SPPRSD), which is the main national poverty reduction strategy document.

360 World Bank (2005)- *Azerbaijan Agricultural Markets Study* (Final Report) pvi. **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

According to official statistics, poverty has dropped from 68.1% below the poverty line in 1995 to 24% in 2005.[361] However, in a recent report, IFAD suggest that these reductions in poverty may be significantly overstated. As they say, while 'social transfers have substantially contributed this apparent steep decline in poverty, the official figures overstate the degree of poverty reduction due to methodological and data collection discrepancies'.[362]

Furthermore, they highlight that there are dynamics of poverty that are still worthy of attention. Particularly, they point out that the risk of poverty increases directly with the number of children and inversely with the education level of the household head. The Household Budget Survey for 2006 gave the poverty rate of households of over six members as 57 per cent, and that of households with no children as 23 per cent.[363]

Over half of Azerbaijan's poor live in rural areas even if these areas account for only 45% of the population.[364] Despite significant improvement, poverty remains almost twice as high in rural areas as it is in Baku. According to the World Bank, the lack of employment, assets, and commercial opportunities, as well as weaker access to basic infrastructure, health, and education services have been major factors keeping poverty relatively high in provincial towns and rural areas.[365]

Vulnerable groups. Poverty remains especially problematic for refugees and internally displaced people because they not only lack assets and employment opportunities but are also heavily reliant on state transfers. Moreover, data suggests that gender and rural poverty also plays a crucial role. According to an IFAD report, women "have a higher risk of unemployment, lower status and pay, less effective social networks and a loss of autonomy and status as traditional male authority is reasserted".[366] This is an important element of the analysis when one looks at poverty and agriculture since women in Azerbaijan are disproportionately employed in the sector. 41.8% of the economically active population of women are included in agriculture compared to only 35.1% of men.[367] Moreover, women constitute the majority, 54.1%, of all those engaged in agricultural production.[368]

According to IFAD, if one looks at rural areas, the conditions of women also worsen for several reasons. First, their status is unclear with regard to property issues and to decision-making within households. Second, deficiencies in public services in rural areas, such as access to adequate sanitation and safe drinking water, market centres and health services, affect poor rural women disproportionately by increasing workloads and the time commitments of meeting basic family needs. As a result, rural women suffer from 'time poverty', which is especially pronounced when they have small children, as only 2 per cent of rural children attend preschool institutions.[369]

Drivers of rural poverty. The most important factors in dealing with poverty are employment and education. Combined, these factors facilitate social mobility not only through the possibility of gaining a stable income from employment but also by enabling individuals to have a higher social capita.

Apart from these factors, poverty is also linked with the lack of resources for agricultural activity. In Azerbaijan, the characteristics of extremely poor people are that

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361 World Bank (2009) *Azerbaijan: Country Economic Memorandum/ A new silk road-export led diversification* (Report No. 44365-AZ) p10-11.**http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/01/07/000333037_20100107230943/Rendered/PDF/443650ESW0AZ0P1IC0Disclosed01161101.pdf** (Reviewed May 1, 2012).

362 IFAD (2010) *Republic of Azerbaijan:* Country Strategic Opportunities Programme p4. **http://www.ifad.org/gbdocs/eb/99/e/EB-2010-99-R-9.pdf** (Reviewed May 1, 2012).

363 IFAD (2010) *Republic of Azerbaijan*: Country Strategic Opportunities Programme p4. **http://www.ifad.org/gbdocs/eb/99/e/EB-2010-99-R-9.pdf** (Reviewed May 1, 2012).

364 World Bank (2011) *Third Agricultural and Development and Credit Project* (Report No. PIDC10) p1 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2011/09/27/D00B9EDB27DE72CF85257918003E7311/1_0/Rendered/PDF/P1228120PID0Print00927201101317122526727.pdf** (Reviewed May 2, 2012).

365 World Bank (2009) *Azerbaijan: Country Economic Memorendum/ A new silk road-export led diversification* (Report No. 44365-AZ) p11 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/01/07/000333037_20100107230943/Rendered/PDF/443650ESW0AZ0P1IC0Disclosed01161101.pdf** (Reviewed May 2, 2012).

366 IFAD (2010) *Republic of Azerbaijan*: Country Strategic Opportunities Programme p3 **http://www.ifad.org/gbdocs/eb/99/e/EB-2010-99-R-9.pdf** (Reviewed May 2, 2012).

367 Ibid, p3

368 Ibid, p3

369 Ibid, p3

they have very limited or no possibilities even for subsistence farming, owing to some combination of lack of irrigation, lack of markets, small landholding, flooding, distance of the land plot from the house, no start up money for the investment, or poor soil.[370]

Moreover, since eligibility criteria for targeted social assistance (TSA) exclude those who own land, many of the poorest landowners are not receiving social assistance payments.

Given the physical location of poor villages which are often far from district centres and main roads, it makes it difficult for individuals to engage in profitable economic activity, especially accessing markets to sell goods. Added to the facts that irrigation and drinking water supply are insufficient or deficient and that poor health facilities and services exist, the poor in rural areas seem trapped in a vicious poverty cycle.

Agriculture then retains an economic importance that is far greater than its share of Azerbaijan's GDP because of its role in food security and rural poverty reduction. Since Azerbaijan rural areas have not benefited from Azerbaijan's petroleum wealth as urban areas did, the agricultural sector provides an important source of income and stability for Azerbaijani small household farms.

3 AGRICULTURE IN THE WIDER ECONOMY

The agricultural sector is a key part of Azerbaijan's non-oil economy. Despite its low contribution to overall GDP, only 6% for 2010, agriculture provides income and employment for about 40% of the workforce. After the sector experienced major declines in production in the transition period of the 1990s, it started to recover in 1998 and has been growing at an average 6% rate ever since.[371]

Despite this growth, the sector has been outpaced by other sectors in terms of GDP importance such as industry (63%) and services (31%). According to an IFAD report, "these figures provide a strong indicator of the agricultural sector's low productivity and relative poverty contained within the sector."[372]

Azerbaijan's agriculture is largely dominated by smallholders. Over 850,000 rural households own the 1.3 million hectares distributed from state farms and produce over 90% of agricultural output in the country.[373]

The sector is then crucial not only to improve rural income and provide food security, but also to make significant contributions to economic growth. Improving the competitiveness of the sector would help diversify Azerbaijan's economy away from oil and spread the benefits of economic growth to rural areas. Given Azerbaijan's limited oil and gas reserves, the government's main challenge and priority at the moment is to do just that in an effort to diversify its economy and reduce the economic dependence on the oil sector.

Agriculture is also important to Azerbaijan from the point of view of food security and economic diversification. At the current time oil and gas are the main drivers of Azerbaijan's economy. However, this kind of economy runs the risk of the so-called 'Dutch disease' where extractive riches force up the prices of goods and the value of the currency, making imports cheap and exports expensive, over time potentially retarding, rather than developing, the growth of the rest of the economy.

This is particularly dangerous if an economy becomes entirely dependent on imported foods as changes in future changes in world food prices have direct and unmoderated impact on one's economy. In Azerbaijan, using some

370 IFAD (2010) *Republic of Azerbaijan: Country Strategic Opportunities* Programme p4 **http://www.ifad.org/gbdocs/eb/99/e/EB-2010-99-R-9.pdf** (Reviewed May 2, 2012).

371 World Bank (2011)-*Third Agricultural and Development and Credit Project* (Report No. PIDC10) p1 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2011/09/27/D00B9EDB27DE72CF85257918003E7311/1_0/Rendered/PDF/P1228120PID0Print0092720110131712252672 7.pdf** (Reviewed May 2, 2012).

372 IFAD (2010) *Republic of Azerbaijan: Integrated Rural Development Project (IRDP)* Project Design report p2 **http://www.ifad.org/operations/projects/design/102/azerbaijan.pdf** (Reviewed May 2, 2012).

373 IFAD (2010) *Republic of Azerbaijan: Integrated Rural Development Project (IRDP)* Project Design report p2 **http://www.ifad.org/operations/projects/design/102/azerbaijan.pdf** (Reviewed May 2, 2012).

of the wealth created by oil and gas sales to facilitate the expansion of the agricultural sector is seen as a good approach for helping Azerbaijan diversify generally, and also offering a buffer to future changes in food prices.

4 OVERALL STRUCTURE OF THE AGRICULTURAL SECTOR

The character of agriculture changed following the transition. Structurally, it moved away from the larger and diversified collective farms towards small household farms. Given lower incomes, demand shifted from luxury products to locally produced goods, and at the same time production patterns followed suit.

In the early transition period, domestic demand focused on staples and products which could be produced on small farms and could be used for local consumption. Cash, industrial and export-oriented products like tea, fodder, cotton and pork started to decline dramatically while production of potatoes, fruits, vegetables, wheat, milk, beef and mutton soon recovered to pre-independence levels.[374]

Figure 78: Gross Production of Agricultural Products 1995-2010 (million manats)

	Plant-growing products	Livestock products	Total
1995	418	295	713
2000	618	443	1,061
2005	988	744	1,732
2006	1,124	845	1,970
2007	1,726	1,039	2,765
2008	2,085	1,223	3,308
2009	2,106	1,699	3,805
2010	1,999	1,879	3,878

Source: The State Statistical Committee of the Republic of Azerbaijan – Azstat (2012), *Agriculture, Forestry and Fishing; 'Gross output of Agriculture 1995-2010* http://www.azstat.org/statinfo/agriculture/en/index.shtml (Reviewed March 26, 2012)

In general, as one can see, both plant growing and livestock have both seen dramatic growth in value of productive output. In the most recent five years, according to official figures, plant output doubled and livestock output increased by 150%. That is equivalent to a 15% annual growth rate in plants and a 20% annual growth rate in animals.

However, in the case of crops most of this growth was the result of rising prices while in the meat sector, productive output also went up.

But the truly remarkable story of Azerbaijani agricultural development is not from the last five years, but from the decade before that. In 1995 to 2005 growth in agriculture went up in value terms around 2.5 times in both meat and crop production. This is equivalent to 9-10% growth per year for 10 years.

374 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report) pp 8-9 **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 2, 2012).

4.1 Meat

Azerbaijan is almost self-sufficient in the meat sector and as most indicators show, production in beef, veal, poultry, goats and mutton has been steadily increasing since 2006.

Figure 79: Local production and imports of meat products in Azerbaijan

Meat Categories (thsd tonnes)/Years	1995	2000	2006	2007	2008	2009	2010
Beef and veal (production)	41.2	55.5	73.4	75.4	77.0	102.5	114.2
Beef and veal (import)			6.2	4.7	5.2	4.1	3.9
Poultry (Production)	14.3	17.2	36.3	49.2	51.5	67.0	64.5
Poultry (Import)			11.8	18.7	16.7	12.7	13.5
Mutton and goat meat (production)	24.4	35.0	44.4	45.0	46.4	66.8	74.3
Pork (production)	2.1	1.0	1.4	1.0	0.8	0.8	0.8
Total	**82.0**	**108.7**	**155.5**	**170.6**	**175.7**	**237.1**	**253.8**

Source: AzStat (2012), *Agriculture, Forestry and Fishing*; *Meat Production 1985-2010;* http://www.azstat.org/statinfo/agriculture/en/index.shtml (Reviewed March 27,2012)
AzStat (2012), *Trade, Service and Tourism; Main commodities imports 2006-2010;* http://www.azstat.org/statinfo/consumermarket/en/ext_t.shtml (Reviewed March 27,2012)

Beef and veal, poultry and mutton have all increased impressively since independence and in the last 5 years or so. Production has tripled since 1995, increasing by almost 50% between 2008 and 2010 alone. In the last ten years, their production growth has averaged 7.5% per year. Imports of beef and veal have also dropped, from 6,000 tonnes in 2006 to roughly 4,000 thousand tonnes in 2010.

Mutton and goat production has also more than tripled since 1995. Both beef and mutton have averaged 7-8% growth every year for the last 10 years. Poultry has seen the most impressive growth, more or less doubling output between 2006 and 2010, with an average of 14% growth in output over the last 10 years.

Production of pork is extremely low and has been declining, as one would expect in a largely Islamic country.

Several factors account for the overall increase in meat production over the past decade. First, Azerbaijan has a long tradition and culture of meat consumption and consumers usually prefer and consume fresh meat to frozen products.[375] As a result, there is a huge internal market demand for meat. For instance, the market for beef is extremely strong and farmers usually consider the meat sector as a primary activity, before dairy.[376] Almost all of the meat produced is consumed locally and exports are close to non-existent.[377]

Second, the meat production sector (including beef, lamb and poultry) is considered safe and preferred by many risk averse producers. Production occurs in closed areas and do not depend on the weather as opposed to crops which are affected by droughts, floods, frost and hail.[378]

Third, beef can be turned into cash very rapidly, which is an advantage for farmers who lack capital and are in tight cash-flow circumstances. According to Vugar Babayev, chairman of the Ganja Agribusiness Association GABA, because of the structure of land holdings farmers turn to meat instead of other crops because they are not as

375 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

376 Interview with John O'Connell (April 20, 2012) Head of Agriculture Component, USAID Azerbaijan.

377 Interview with Elmaddin Namazov, agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

378 Interview with Vugar Bashirov, agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

lucrative.[379] For instance, farmers who import calves and fatten them locally can buy them in March, April, or May for approximately AZN 300 (USD 382) and then sell them in October or November for AZN 800-900 (USD 1,017-1,145), though seeing a considerable return on their initial investment.[380]

Fourth, the government has provided a significant amount of support to the meat industry in the past decade such as the introduction of artificial insemination practices. A case in point has been the support provided to beef companies and the introduction of highly productive breeds from Germany or the Netherlands for milk and meat production. 50% of the cost of this genetic improvement has been covered by the government and the rest by farmers which literally means that producers are able to increase their meat/milk production at a discount.[381]

The poultry industry has also benefited from government incentives and feed imports are tax free. If one takes into account the low energy costs in Azerbaijan, this means that poultry farmers face smaller unit costs and are able to increase their revenues.

Last but not least, the meat production market has been consolidated into larger commercial farms, especially for the beef and poultry sectors. However, according to Elmaddin Namazov, agricultural expert and lecturer at Azerbaijan's State Agricultural University, small producers find it difficult to compete with these larger companies since it is very complicated for them to keep large numbers of animals due to the agrarian reforms which affected grazing pastures, whereas larger commercial farms are able to rent grazing land from the government. [382]

4.2 Crops

Evidence suggests that once the agricultural sector recovered from the transition period, the agricultural shifted away from other industrial, export-oriented crops such as cotton and tobacco. While most commodity crops such as cereals/dried pulses, potatoes, vegetables, melons, and sugar beets have shown tremendous increase in production since 1995 while tobacco and cotton production levels slumped. Cotton dropped from 274,000 tonnes in 1995 to 38,000 tonnes in 2010, and tobacco from about 12,000 tonnes in 1995 to 3,000 tonnes in 2010.

Figure 80: Crop production by Azerbaijan

Crops (thsd tonnes)/Years	1995	2000	2005	2006	2007	2008	2009	2010
Cereals and dried pulses	921	1,540	2,127	2,079	2,004	2,498	2,988	2,001
Cotton	274.1	91.5	196.6	130.1	100.1	55.4	31.9	38.2
Tobacco	11.7	17.3	7.1	4.8	2.9	2.5	2.6	3.2
Potatoes	156	469	1,083	999	1,037	1,077	983	954
Vegetables	424	781	1,127	1,186	1,227	1,228	1,179	1,190
Watermelons and melons	42	261	364	362	418	408	411	434
Sugar beets	28	47	37	167	142	191	189	252
Sunflower for seed	0.7	3.7	16.1	15.9	13.4	16.5	14.4	15.5

Source: AzStat (2012), *Agriculture, Forestry and Fishing; Crop Production 1985-2010;* http://www.azstat.org/statinfo/agriculture/en/index.shtml (Reviewed March 27,2012)

379 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

380 Interview with Vugar Bashirov, agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

381 Interview with Vugar Bashirov, agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

382 Interview with Elmaddin Namazov, agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

If we look at production over the 15 years allowed by the AzStat data, cotton and tobacco production has more or less collapsed with cotton production in 2010 at around 14% of its 1995 levels and tobacco production at 27%.

For the rest, the biggest output growth occurred between the middle of the 1990s and the middle of the 2000s. During that time, cereals more than doubled to over 2 million tonnes, potato production went up 6 times and vegetables generally nearly tripled. A similar pattern can be discerned if one looks at the more detailed production information on vegetables.

Figure 81: Vegetable production by Azerbaijan

Types of vegetables (thsd tonnes)	1996	2000	2006	2007	2008	2009	2010
cabbage	66	72	100	107	101	98	94
cucumber	57	105	186	195	208	210	217
tomato	246	338	466	465	468	425	434
sugar beet	1.0	2.5	5.2	4.8	4.8	4.9	5.0
carrot	1.3	3.0	8.7	5.9	7.4	8.8	8.9
onion	59	89	184	191	185	169	172
garlic	7	17	24	24	22	23	21
peas, green other	0.0	0.6	2.8	0.8	0.9	0.7	3.2
vegetable	97	127	209	235	232	240	235
Total	**570**	**781**	**1,186**	**1,227**	**1,228**	**1,179**	**1,190**

*since 2001 vegetables of closed land were included in harvest

Source: AzStat (2012), *Agriculture, Forestry and Fishing; Vegetable Production 1996-2010;* http://www.azstat.org/statinfo/agriculture/en/index.shtml (Reviewed April 25, 2012)

According to the World Bank, this is due to factors such as the small farm size, abundance of labor, and favorable natural resource of the country. They argue that the country's comparative advantage lies in the production of fruits and vegetables such as oranges, apples, olives, tomatoes, cabbage, and chickpeas, and livestock products such as beef and milk.[383] However, due to market constraints (explained in details in section 5) Azerbaijan has not fully realized its comparative advantages potential.

Instead the World Bank analysis suggests that Azerbaijan have enjoyed gains in potato and wheat production even though Azerbaijan did not appear to have any comparative advantage in this area. In the first that followed independence, this was likely the result of their use for "subsistence and barter, their relative ease of storage, constraints on markets for the other crops, and in the case of potatoes ease of production on household plots".[384] More recently, the growth in wheat production for instance can easily be attributed to government subsidies since the sector is its primary recipient (see below section 0 on government subsidies).

A similar situation applied to milk which can easily be produced on small household farms and used for local consumption and the sector has experienced a steady increased in production. Milk production increased steadily since the 1990s and reached 1.5 million tonnes in 2010, which is 85% higher than in 1995.[385] Local production of dairy however satisfies only 45% of the local demand while the rest is imported, mostly in powder form.[386] For instance and according to experts, up to 90% of the milk produced by small land holders does not

383 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report) pvi **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 2, 2012).

384 World Bank (2005)- *Azerbaijan Agricultural Markets Study* (Final Report) p8-9 **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 2, 2012).

385 AzStat (2012) *Production of main animal products 1995-2010;* **http://www.azstat.org/statinfo/agriculture/en/index.shtml** (Reviewed April 26, 2012).

386 FAO (2012) *Status of animal nutrition research and development activities in Tajikistan, Kyrgyzstan and Azerbaijan,* by Harinder P.S. Makkar. Animal Production and Health Working Paper. No. 6. Rome. p54. **http://www.fao.org/docrep/015/i2582e/i2582e00.pdf** (Reviewed May 1, 2012).

leave the farm.[387] Therefore, although there is a lot of processing capacity, not a lot of it is actually produced on a commercial scale. A major impediment for the sector is the low use of proper feed which affects the quality of the milk produced.[388]

Overall, the growth in crop production which started in 1995-6 is largely attributed by experts to the agrarian reforms and the land privatization process.[389] Since production levels fell so drastically after the collapse of the Soviet Union and growth was non-existent, the privatization process and the transfer of agricultural land into the hands of small land holders allowed for productivity levels to slowly recover over time.

4.3 Exports

Overall, most of Azerbaijan's export commodities have increased since the 1990s (apart from alcoholic beverages which have decreased in recent years). According to the FAO the value of food exports increased from USD 14 million in 1995 to USD 419 million in 2008.[390] For 1995-2000 the average growth rate of exports was 16.8% and it increased to 50.2% for 2005-2008.[391]

Azerbaijan's two main commodities of agricultural exports in recent years (in thousand USD) have been sugar and fresh fruits. Both sectors exhibited significant growth, sugar increasing from USD 31 million in 2006 to about USD 146 million in 2010 and fruits from USD 98 million in 2006 to USD 112 million in 2010.

Other exported commodities which have also increased significantly include vegetable oil, tea, margarine, and cotton. Fresh vegetables, fruit juice and potatoes have increased in exported value, but not as much as the previous group of products.

Figure 82: Main commodities of agricultural exports (thsd USD)

Products (thsd USD)	2006	2007	2008	2009	2010
Sugar	31,065	149,647	83,410	102,052	145,948
Fresh fruits	98,412	124,254	151,584	142,033	112,273
Vegetable oil	26,477	30,308	44,990	49,215	67,294
Tea	17,996	18,400	18,640	26,947	39,287
Margarine	10,574	15,943	24,653	25,212	33,393
Fresh vegetables	20,503	21,857	32,614	27,750	25,657
Fruit juice and vegetables	14,631	24,074	19,851	17,198	16,378
Potatoes, tonnes	12,778	16,968	30,622	23,323	16,238
Cotton yarn	3,926	8,410	10,331	10,903	10,643
Alcoholic beverages (except wine)	16,744	18,246	15,096	8,455	9,651

Source: AzStat (2012), *Agriculture, Forestry and Fishing; Main commodities of agricultural exports 2006-2010;* http://www.azstat.org/statinfo/agriculture/en/index.shtml (Reviewed March 27,2012)

The expansion of sugar production was certainly the result of subsidies. The government invested 100 million in 2006 to create Azersun holding that owns the only sugar production plant in the country. Azersun processes imported and locally grown sugar beet. Before that, the production of sugar stood at zero according to the US department of agriculture.

387 Interview with John O'Connell (April 20, 2012) Head of Agriculture Component, USAID Azerbaijan.

388 Interview with John O'Connell (April 20, 2012) Head of Agriculture Component, USAID Azerbaijan.

389 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

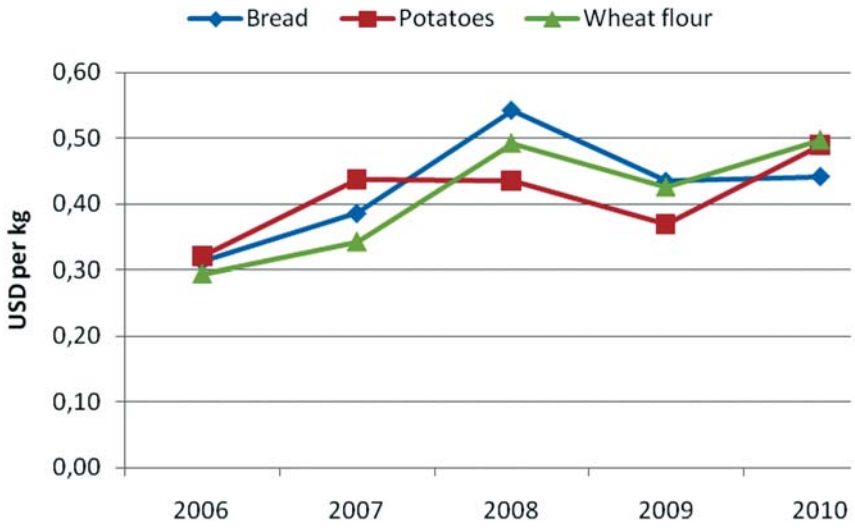
390 FAO- *Status of animal nutrition research and development activities in Tajikistan, Kyrgyzstan and Azerbaijan* (FAO animal protection and health working paper 2012) p53-54. **http://www.fao.org/docrep/015/i2582e/i2582e00.pdf** (Reviewed May 1, 2012).

391 Ibid. p54.

4.4 Food prices

Movement in staple food prices generally match movements in world prices, with prices rising fairly sharply from 2006 to 2008 and the dropping back in 2009, following the financial crisis, and resurging in 2010 following the poor Russian grain harvest and the grain export ban.

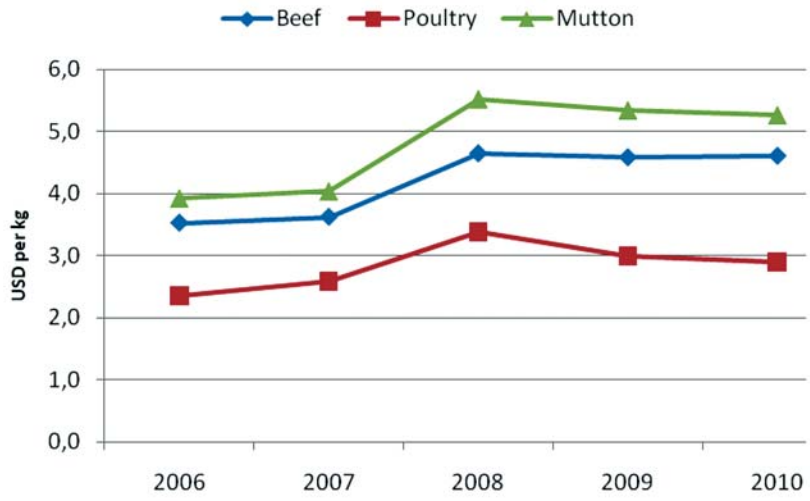
Figure 83: Retail prices of particular products in Azerbaijan 2006-2010 (USD per kg)



Source: AzStat (2012), *Average annual prices of consumer goods and services;* http://www.azstat.org/statinfo/price_tarif/en/index.shtml (Reviewed April 26, 2012)

Prices for meat do not rise as quickly and have not gone up and down in the same way. Instead meat prices generally seem to rise until the middle of 2008 (in line with world food prices generally) before falling flattening off in 2008-2010.

Figure 84: Retail prices of meat products in Azerbaijan 2006-2010 (USD per kg)



Source: AzStat (2012), *Average annual prices of consumer goods and services;* http://www.azstat.org/statinfo/price_tarif/en/index.shtml (Reviewed April 26, 2012)[392]

392 AZN to USD conversion is done with official exchange rates from the Central Bank of the Republic of Azerbaijan **http://www.cbar.az/other/azn-rates** (Reviewed April 26, 2012).

5 MARKET ACCESS AND COMPETITION

One of the key issues that is always considered important in facilitating agricultural development is access to the market. This usually involves three components, first, the access to the local market, both physically and institutionally. Second, we can look at the access of the local companies to foreign markets to sell their exports. Third, we can evaluate the openness of the economy to imports and the competitive strains this might place on a market.

5.1 Internal market access

One of the country's main weaknesses that severely hamper internal market access is the very poor state of its road infrastructure. Despite significant investment by the Azerbaijani government in recent years to improve the road infrastructure network, about USD 5 billion between 2005 and 2010, the World Bank estimates that about 55% of primary roads and 70% of secondary roads are still past their lifespan.[393]

Although the condition of the road network does not only affect the agricultural sector but other businesses and road users in general, its effects are particularly acute for producers trying to get their goods to markets. The poor quality of roads entails increased maintenance, fuel and diesel costs for vehicles, as well as longer travel times.

Three consecutive projects have been carried out by the World Bank to support efforts of the Azerbaijani government to bring its road infrastructure up to par: the first Highway Project that started in 2001 and provided USD 40 million, the second phase of the project which was approved in 2006 and received additional financing in 2008 and 2009 made available a total of USD 675 million, and the recent Third Highway Project that was approved in 2010 for the amount of USD 242 million.[394]

A significant problem with the current approach is that, as their names imply, projects are almost entirely for major roads rehabilitation and secondary roads have mostly been left out of the equation. For instance, out of the USD 675 million of the bank's most substantial project, about only three percent of funds went to rural roads.[395]

Rehabilitating secondary and rural roads is essential especially for remote villages affected disproportionately by rural poverty. It would not only ease market access for farmers willing to sell their goods but would enhance their ability to travel to regional centers and purchase inputs such as fertilizer, pesticide and seeds.

Overall, there exist significant discrepancies between the agricultural sector's needs and most of the investments targeting road infrastructure. A World Bank assessment highlighted this very problem in more details,

> The agricultural sector would be a beneficiary of such highway projects through reduced costs of transporting inputs and agricultural produce. Yet agricultural development does not appear to have been systematically considered in the planning and implementation of the road rehabilitation program. No sector work was done to assess the roads program in an economy-wide strategy or to identify road priorities in rural areas.[396]

Apart from the road network, other obstacles restrict internal market access/competition. It is recognized that constraints such as disorganized markets, inefficient processing, high transaction costs, and a poor business environment have combined to make it difficult for producers to get higher prices for their products and benefit from the country's comparative advantages, especially in the fruit/vegetables and the dairy sector. As a result of

393 World Bank- *Azerbaijan Highway Program* **http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/AZERBAIJANEXTN/0,,contentMDK:22739570~pagePK:141137~piPK:141127~theSitePK:301914,00.html** (Reviewed April 25, 2012).

394 World Bank- *Azerbaijan Highway Program* **http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/AZERBAIJANEXTN/0,,contentMDK:22739570~pagePK:141137~piPK:141127~theSitePK:301914,00.html** (Reviewed April 25, 2012).

395 World Bank (2011) *Promoting Azerbaijan's Agricultural Productivity 1997-2010* (IEG Working Paper 2011/03) p17 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/04/000333037_20111104011657/Rendered/PDF/653560NWP0Box30anWorkingPaper201103.pdf** (Reviewed May 2, 2012).

396 World Bank (2011) *Promoting Azerbaijan's Agricultural Productivity 1997-2010* (IEG Working Paper 2011/03) p17. **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/04/000333037_20111104011657/Rendered/PDF/653560NWP0Box30anWorkingPaper201103.pdf** (Reviewed May 1, 2012).

these constraints, incentives for investment and production in the agricultural sector are reduced.[397]

Despite the privatization process and the shift to a market-based economy market structures and institutions necessary for the shift are still underdeveloped. This not only affects the ability of farmers and processors to sell their products and receive a good price, but also for processors to receive the quantity and quality of inputs they need in a timely fashion.[398] As a result of market constraints, the agricultural sector has exhibited a restricted level of growth below its potential.

There are known to be multiple problems affecting the competitiveness of the Azerbaijani supply chain starting from on-farm production, to handling, distribution, warehousing, distribution centers, and processing.[399]

The major constraints affecting markets in Azerbaijan have been broken down into several inter-related causes in a World Bank report. There are five main problems.

First, disorganized supply chains make it difficult to attract FDI and develop the system as a whole.

Second, the poor business environment discourages private and public investments which could improve the efficiency of the supply chain. It also affects the ability of processors to buy supplies from suppliers at adequate prices.

Third, the drawbacks in the supply chain entail high transaction costs for market organization and trade. This is caused by the absence of producer organizations and professional associations, lack of appropriate standards, grades and packaging.

Fourth, there is a lack of agricultural extension services, and appropriate research and market information systems. These entail higher costs for investors since they have to carry the activities themselves.

Fifth, inadequate public investment in electricity and gas supply also imposes higher production costs on processors and producers. The poor road infrastructure affects the ability of farmers to get their products to markets. The lack of public marketing infrastructure like wholesale markets further reduces market opportunities for producers.[400]

5.2 Foreign market access

In addition to the challenges in the local market according to a World Bank working paper of 2011 Azerbaijani exporters also face hurdles because of "complex government procedures and regulations, which also provided opportunities for rent seeking, resulted in significant delays and extra costs for marketing and exporting agricultural produce."[401]

This is made worse by the fact that agriculture is especially vulnerable to such controls and barriers because agricultural goods are perishable. Given the eventual decline of oil revenues and the importance of agriculture for the non-oil sector, agricultural growth and exports should be seen as a priority. As the World Bank report on Azerbaijan highlights, "it is in horticulture where Azerbaijan has its highest comparative advantage. And agriculture, as the main non-oil exporter, will need to shoulder a large share of the forty-fold increase in non-oil exports that will be needed to make up for declining oil revenues. Agricultural growth and exports are, thus, one of Azerbaijan's most critical needs."[402]

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397 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report) p26 **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

398 Ibid. p26.

399 World Bank (2011) *Third Agricultural and Development and Credit Project* (Report No. PIDC10)p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2011/09/27/D00B9EDB27DE72CF85257918003E7311/1_0/Rendered/PDF/P1228120PID0Print0092720110131712252672 7.pdf** (Reviewed May 2, 2012).

400 Ibid. p26-27.

401 World Bank (2011) *Promoting Azerbaijan's Agricultural Productivity 1997-2010* (IEG Working Paper 2011/03) p6-7 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/04/000333037_20111104011657/Rendered/PDF/653560NWP0Box30anWorkingPaper201103.pdf** (Reviewed May 1, 2012).

402 Ibid. Pxii

An additional constraint which affects Azerbaijan's ability to reach foreign markets is that the country is not part of the WTO. This means that Azerbaijan does not enjoy Most Favoured Nation status and so faces higher tariffs on its exported agricultural goods. It also means that Azerbaijan is unlikely to be considered for the Deep and Comprehensive Free Trade Agreement of the kind that is currently under negotiation between Georgia/Armenia and the EU. As the EU reports,

> Limited progress can be reported on Azerbaijan's accession negotiations to the World Trade Organisation (WTO)…. Successful accomplishment of Azerbaijan's accession to the WTO is the first and foremost pre-condition for the EU to start considering the possibility to enter into negotiations with Azerbaijan on a bilateral Deep and Comprehensive Free Trade Area.[403]

On the other hand the Organization of Economic Co-operation and Development (OECD) report states that Azerbaijan's WTO accession could negatively affect the nation's agricultural outputs due to the lowering of customs duties, reduced subsidies and declining competitiveness. This is why, the report states, Azerbaijan hopes to join WTO with the status of a developing country, which allows it to keep high subsidies in the agricultural sector.[404]

This is confirmed by a 2010 EU report which discusses the limited progress on accession negotiations and points out that a major difficulty in the negotiations concerns a significant reduction of state subsidies on agriculture (such as pesticide, fertilizer and seeds):

> The last Working Party meeting and bilateral consultations with the EU were held in July 2009 did not bring much new development. Azerbaijan continued to request to be considered as a developing country, which would have direct implications for the application of a number of WTO provisions to Azerbaijan, particularly in the area of agriculture [subsidies]. [405]

Azerbaijan joined the European Neighbourhood Policy (ENP) in 2004. The ENP works to facilitate broader cooperation and integration between members and the European Union. The ENP is designed to help their closer trade and economic integration with the EU, in particular through the gradual harmonization of their regulatory systems.

The new EU Eastern Partnership (EaP) launched in May 2009 builds upon the ENP and aims at enhancing the EU relations with the Eastern ENP countries. The EaP has brought with it enhanced bilateral framework agreements, called 'Association Agreements'. These firmly embed the possibility and the aspiration that partnership countries can, at a future point, negotiate to join a deep and comprehensive free trade area with the EU. In the long-term, the partner countries are also encouraged to establish deep and comprehensive free trade areas among themselves.

Through the ENPI (European Neighbourhood and Partnership Instruments), the EU also aims to facilitate change with financial and technical assistance, in order to help achieve regulatory alignment of the partners' trade and investment related laws and procedures. This is to be significantly enhanced through the EaP with the development of a Comprehensive Institution Building (CIB) programme for each country.

However, successive reports monitoring the ENP Action Plan have suggested very limited progress in its implementation in Azerbaijan. In the case of customs, for example, the conclusion of the EU's 2010 evaluation were particularly harsh,

> No significant developments occurred as far as the implementation of the customs related part of the ENP AP (action plan) is concerned. The revised Customs code has yet to be adopted. The customs service still needs to make additional efforts as far as the enforcement of the existing legal framework and the implementation of the concept of trade facilitation are concerned. Azerbaijan made some progress on the free movement of goods and technical regulations.[406]

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403 European Union (2010) *Implementation of the European Neighbourhood Policy in 2009*. Progress Report Azerbaijan.p.9 **http://ec.europa.eu/world/enp/pdf/progress2010/sec10_519_en.pdf** (Reviewed May 1, 2012).

404 OECD (2011) *Development in Eastern Europe and the South Caucasus: Armenia, Azerbaijan, Georgia, Republic of Moldova and Ukraine*, OECD Publishing. p81 **http://books.google.ge/books?id=3q8lFnmJ1qsC&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q=agricultural%20sector&f=false** (Reviewed May 2, 2012).

405 European Union (2010) *Implementation of the European Neighbourhood Policy in 2009*. Progress Report Azerbaijan.

406 European Commission (2010) *Implementation of the European Neighbourhood Policy in 2010*, Country report: JOINT STAFF WORKING PAPER; Azerbaijan, p8 **http://ec.europa.eu/world/enp/pdf/progress2011/sec_11_640_en.pdf** (Reviewed June 17, 2011).

In addition to its limited involvement in international trade relations, Azerbaijan also has an extremely burdensome regulatory environment which makes exporting goods extremely difficult. The Doing Business report of 2011 and 2012 are consistent with these observations. In the 2011 report, Azerbaijan was ranked as the 177th of the 183 countries assessed in terms of trading across borders, meaning that the country had one of the worse environment for importing/exporting.[407] Exporting from Azerbaijan required 9 documents, and average of 43 days and entailed an average cost of USD 2,980 per container.[408] Procedures in the country were far more bureaucratic, lengthy and costly than other countries in the region. For the basis of comparison, Georgia was ranked in the same report 35th on trading across borders; exporting required 4 documents, an average of 10 days, and entailed an average cost of USD 1,329 per container. [409]

The Doing Business report of 2012 shows only slight improvement: the country is now ranked 170th in trading across borders. To export requires 8 documents, an average of 38 days, and entails an average cost of USD 2,905 per container.[410]

In spite of these challenges, Azerbaijan still faces growing exports, for two reasons. First, the profile of exports out of Azerbaijan is massively dominated by oil. Non fuel related exports are only amount to 6% of the total. However, as a proportion of non-fuel exports, food is worth 1/3 of exports and animal and vegetable oils another 12%. Therefore, in its efforts to diversify its economy, agricultural products are a natural place to start.

Figure 85: Structure of exports on Standard International Trade Classification (SITC) (million US dollars)

Sections of commodities	2006	2007	2008	2009	2010	% of 2010 total
Mineral fuels and related	5,390	4,931	46,363	13,639	20,110	94%
Total non-fuel	982	1,127	1,393	1,062	1,250	6%
Breakdown of non-fuel						**% of non-fuel**
Food and live animals	228	408	408	404	415	33%
Machinery and transport equipment	122	147	174	201	218	17%
Manufactured goods	176	221	408	171	171	14%
Animal and vegetable oils	53	67	99	104	155	12%
Chemicals	135	98	174	90	130	10%
Other	269	186	129	91	161	13%
Total	**6,372**	**6,058**	**47,756**	**14,701**	**21,360**	

Source: AzStat (2011),*Structure of exports on Standard International Trade Classification (SITC)*, http://www.azstat.org/statinfo/consumermarket/en/ext_t.shtml (Reviewed March 27, 2011)

Second, Azerbaijan does still have access to the Russian market and enjoys a land border with Russia. This puts it in a better situation, vis-à-vis exports to Russia than either Georgia (whose goods are banned) or Armenia (who does not enjoy a land-border with Russia). However while exports have certainly seen an expansion that expansion has not been dramatic except in refined sugar.

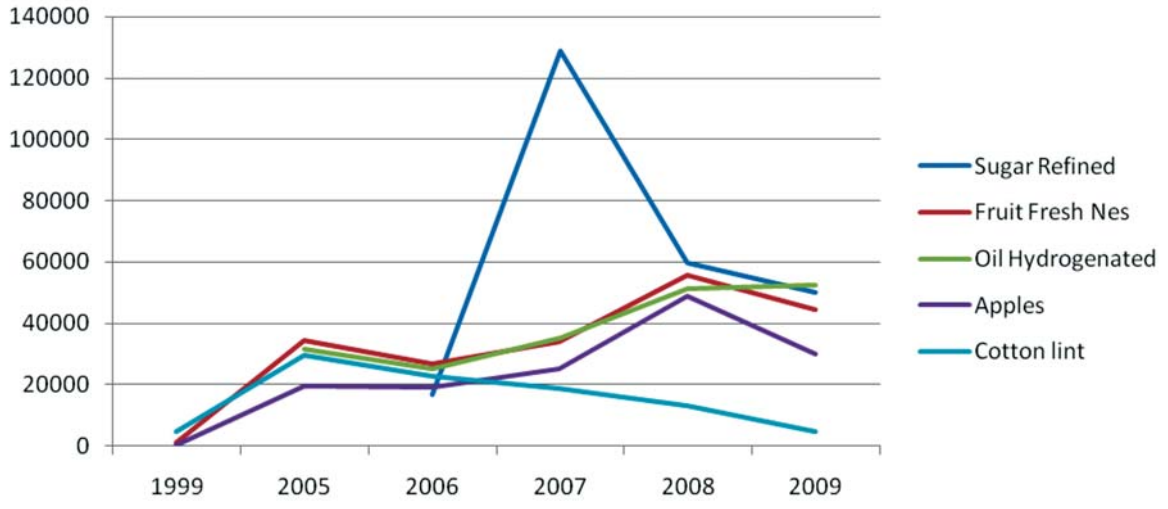
407 World Bank/IFC (2011) *Doing Business Report 2011,* p148 **http://www.doingbusiness.org/~/media/FPDKM/Doing%20Business/Documents/Annual-Reports/English/DB11-FullReport.pdf** (Reviewed April 30, 2011).

408 Ibid. p148

409 Ibid. p164

410 World Bank/IFC(2012) *Doing Business Report 2012,* p80 **http://www.doingbusiness.org/~/media/FPDKM/Doing%20Business/Documents/Annual-Reports/English/DB12-FullReport.pdf** (Reviewed May 2, 2012).

Figure 86: Top agricultural product export from Azerbaijan to Russia by years



Source: FAO, FAOSTAT; *Detailed Trade Matrix*; http://faostat.fao.org/site/537/default.aspx (Reviewed April 26, 2012)

5.3 External Market competition

Agriculture in Azerbaijan does not seem to be exposed to the level of competition that one would find in places like Georgia because the hurdles to international trade are far greater for companies that want to export to Azerbaijan than for those who want to export out of Azerbaijan.

Companies that want to export to Azerbaijan need to be legally registered in the country or have an Azerbaijani partner that is registered there. Also, phytosanitary documents, required for the import of any agricultural product, need to be verified by the Government of Azerbaijan and this can take a month.

Discussions with importers and exporters confirmed the World Bank list of 10 documents to import and USD 2,905 costs for the export of one container and a time requirement of 38 days. This compares to a regional average cost of USD 1,600 USD or an OECD average cost of around USD 1,000. In the last five years, the time taken to export has gone down a little, but the costs have gone up.[411]

However, even though there have been some improvements in the legislative and administrative regulations, a wide range of reports and analysis agree that corruption remains the biggest hurdle to business operation, particularly if a company is importing or exporting. This has been acknowledged by the Azerbaijani government and, at the beginning of the year, there was a political push to try and reduce corruption which, according to our survey and interview, did have some short-term positive effects. Long term effects are, so far, less convincing.

411 World Bank. Doing Business 2012. p80 **http://www.doingbusiness.org/~/media/FPDKM/Doing%20Business/Documents/Annual-Reports/English/DB12-FullReport.pdf** (Reviewed April 30th 2012).

6 THE STRUCTURE OF LAND-HOLDING

Azerbaijan has a land area of 8.6 million hectares of which around 4.8 million hectares (about 55%) is designated agricultural land, and about 1.9 million hectares of that (or 40% of agricultural land) is arable land.

Following the transition period, the character and structure of the agricultural sector shifted. From the large, heavily subsidized and diversified former collectives emerged a large number of smaller farms averaging below 3 hectares with a few head of livestock, for the most part without any machinery or agricultural inputs.[412]

The initial shocks from the collapse of the Soviet Union pushed the government to delay reforms and preserve the collective and state farm system longer. The reform process did not start in earnest until 1997 with the privatization of land and agro-enterprises, promotion of market-oriented production, free-market prices and the liberalization of procurement and trade policies brought a recovery in the agricultural sector.[413]

The most important of the changes made was the privatization of the 2,020 former state and collective farms. The process started with pilots in 1997 and was later rolled-out on a national scale.[414]

Altogether, about 95% of arable farmland has now been privatized and 850,000 rural households own the 1.3 million hectares distributed from state farms and produce over 90% of the country's agricultural output.[415]

The privatization process has generally been considered a success creating a new class of private farmers and putting resources of land and other assets into their hands in the late 1990s. The process resulted in the creation of three recognized production categories: agricultural enterprises, peasant farms and household farms. The last two categories of farmers were relatively new to the business of independent farming, and adapted to their new roles with some difficulty and mostly by trial and error.[416]

According to the World Bank, the livestock privatization process was also smooth and thorough and it helped avoid the dramatic decline in herd sizes that were seen in some of the Central Asian former Soviet Union countries.[417]

6.1 Land ownership

In Azerbaijani the ownership of land is managed under the Civil Code, the Land Code, the Law on Land Reform, the Law on Land Lease and the Law on the Land Market. The Land Code recognizes state, municipal, and private ownership of land in Azerbaijan. All types of ownership rights are equal. Only Azerbaijani citizens and Azerbaijani legal entities (including enterprises with foreign investment) may legally own land in the country. International organizations, foreign legal entities, and foreign citizens and states may lease land, although they may not own land and may not be granted a purchase option on a lease.

A temporary land use right is granted free of charge for up to 99 years and may be extended by the parties. Landowners have the right to transfer their land by sale, contribution to charter capital, mortgage, exchange, grant, or by other means, subject to certain restrictions established by law[418].

412 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report) pVI **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 2, 2012).

413 Ibid. p4

414 Ibid. p4

415 IFAD (2010)*Republic of Azerbaijan: Integrated Rural Development Project (IRDP)* Project Design report p2

416 World Bank (2005)- Azerbaijan Agricultural Markets Study (Final Report) p4

417 Ibid. p5

418 Baker & McEnzie (2011). *Doing Business in Azerbaijan 2011*. p42 **http://www.bakermckenzie.com/files/Publication/a89fc88b-ef63-491b-9614-f61a52f8470a/Presentation/PublicationAttachment/02795996-3f8e-4c37-ba53-01c91b122f55/bk_azerbaijan_dbi_jun11.pdf** (Reviewed December 23, 2011).

6.2 Land Usage

The table below gives a break-down of land-usage per crop.

Figure 87: Breakdown of land-usage by crop, thousand hectares (1990-2010)

Years	Cereals and dried pulses	Cotton	Potatoes	Vegetables	Water-melons and melons
1990	583.4	263.9	23.8	40.3	9.1
2000	648.2	101.2	52.5	56.8	26.8
2005	802.3	112.4	70.7	78.8	30.1
2006	784.7	102.8	66.8	80.2	28.8
2007	739.6	75.6	67.1	85.0	32.4
2008	897.0	48.5	68.9	83.2	31.7
2009	1125.5	21.1	65.6	80.9	31.1
2010	968.0	30.2	65.8	81.1	31.9

Source: AzStat (2012), *Agriculture, Forestry and Fishing; Sown area of agricultural crops 1985-2010;* http://www.azstat.org/statinfo/agriculture/en/index.shtml (Reviewed March 27,2012)

As one can see, in absolute terms the majority of cultivated land is used for the production of cereals and pulses. This has seen year-to-year variation but is about 50% higher in 2010 than it was in 2000. Below one can see the level of productivity in the particular sectors.

Figure 88: Output per hectare 1990-2010 major crop categories (ha)

Years	Cereals and dried pulses	Cotton	Potatoes	Vegetables	Water-melons and melons
1990	24.2	20.6	78	200	74
1995	15.1	13.0	97	157	73
2000	23.8	9.1	84	133	98
2005	26.5	17.5	149	140	121
2008	27.9	11.5	153	142	129
2009	26.6	15.5	149	140	132
2010	20.7	12.7	145	142	137

Source: AzStat (2012), *Agriculture, Yield of agricultural products 1985-2010;* http://www.azstat.org/statinfo/agriculture/en/index.shtml (Reviewed March 27,2012)

While land-use has gone up significantly, output per hectare has actually gone down in the last decade or so, in the production of cereals and pulses as well as in cotton. Output per hectare has stayed more or less stable in vegetables (though remains 30% lower than in 1990) and productivity has only gone up in vegetables and watermelons.

6.3 Irrigation and drainage

One of the major structural obstacles in improving Azerbaijan's agricultural sector is irrigation. Given the country's (semi-) arid climate, most agricultural land needs to be irrigated.

Most of the irrigation infrastructure in the country was developed in the last century. 582,000 hectares were irrigated in 1913 and that number jumped to 1.17 million hectares in 1975 following significant development after World War II.[419]

By the mid-1990s, Azerbaijan had a total of 1.45 million hectares of irrigated land which represented 45% of the country's potential. Only a very small proportion of these canals were made of concrete (3.6%) and efficiency was estimated at 40-50%. Most of that irrigation was superficial surface irrigation, mainly furrow and strip irrigation.[420]

Azerbaijan's actual irrigation potential is estimated at 3.2 million hectares.[421] According to the World Bank around 30% of the overall agricultural land, or 14.2 thousand sq km in Azerbaijan is actually irrigated. Assuming that most of that land is cultivated (rather than pasture), that would mean that around 80% of the cultivated land is irrigated.[422] This is not a significant reduction from 1990 irrigation levels.

However, practical irrigation coverage may be much lower than that. According to an IFAD report between 50-90% ofthe actual irrigation infrastructure is badly damaged depending on regions.[423] The drainage network, which covers 0.61 million hectares, is also in a bad state of disrepair and needs renovation in more than half of the area covered.

Moreover, it is estimated that nearly 44% of the irrigated area is affected by salinity which poses significant problems. The inefficient use of water and the heavy water losses in the current irrigation network represent major problems for water resources and soils[424]. Control of erosion is another major issue as, according to the Ecological Committee's data, this problem affects almost 43 percent of the country.[425]

Because of the current state of disrepair of the system, serious investment is needed and the estimated rehabilitation needs for on-farm irrigation and drainage are about USD 900 million according to the World Bank.[426]

6.4 Water management system

Put simply, the water management system consists of an overseeing body, the State and Amelioration Irrigation Committee (SAIC), and a wide range of WUAs which collect irrigation service fees from farmers. The SAIC is responsible for operation and maintenance of the off-farm, primary and secondary infrastructure of irrigation schemes, as well as the management of on-farm irrigation and drainage infrastructure.[427] Its responsibilities also include the collection of irrigation service fees from water users' associations (WUAs) who deal with individual farmers.

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419 FAO-Aquastat (2008) *Azerbaijan,* **http://www.fao.org/nr/water/aquastat/countries_regions/azerbaijan/index.stm** (Reviewed March 29, 2012).

420 IFAD (2010) *Republic of Azerbaijan: Country Strategic Opportunities* Programme p1-2.

421 FAO-Aquastat (2008) *Azerbaijan* **http://www.fao.org/nr/water/aquastat/countries_regions/azerbaijan/index.stm** (Reviewed March 29, 2012).

422 World Bank, DataBank, Database "World Development Indicators and Global Development Finance"; *Azerbaijan, Agricultural Production and Land Use 2000-2010;* **http://databank.worldbank.org/ddp/home.do?Step=1&id=4** (Reviewed April 4, 2012)

423 IFAD (2010) *Republic of Azerbaijan: Country Strategic Opportunities* Programme p1-2 **http://www.ifad.org/gbdocs/eb/99/e/EB-2010-99-R-9.pdf** (Reviewed May 2, 2012).

424 FAO/Auqastat (2008) *Azerbaijan* **http://www.fao.org/nr/water/aquastat/countries_regions/azerbaijan/index.stm** (Reviewed December 23, 2011).

425 FAO-Aquastat (2008) *Azerbaijan* **http://www.fao.org/nr/water/aquastat/countries_regions/azerbaijan/index.stm** (Reviewed March 29, 2012)

426 World Bank (2011) *Water User Association Development Support Project* (Report No: 58835-AZ) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/04/06/000333037_20110407000020/Rendered/PDF/588350PAD0P1071OFFICIAL0USE0ONLY191.pdf** (Reviewed May 2, 2012).

427 IFAD (2010) Republic of Azerbaijan: Country Strategic Opportunities Programme p5. **http://www.ifad.org/gbdocs/eb/99/e/EB-2010-99-R-9.pdf** (Reviewed May 2, 2012).

According to an *Action Against Hunger* report on irrigation, the state of irrigation in the country in the last decade was problematic and serious drawbacks were experienced with the system in place (despite legislative changes which had been made in 2004 and 2006, see below).[428] Of particular concern was the ability and capacity of state bodies and WUAs to manage the system efficiently and put forth investments to repair and maintain existing channels.

The reasons for the failure were simple. First, given the state of the irrigation system huge technical problems were experienced by WUAs in their efforts to deliver water to farmers. Since most of the farmers could not rely on the irrigation system and WUAs to get a constant supply of water to irrigate their crops, most of them refused or were unwilling to pay. This meant a shortage of income for both the WUAs and the SAIC.

Second, the entire system was also under-priced and WUAs were forced to charge farmers just 20-25% of the actual cost of water. After having covered administrative costs, including salaries, no money was left to re-inject in maintenance and repair of the channels. Farmers were then left to fend for themselves and organize in small groups to cover the lack of government investment and make the system work.[429]

6.4.1 World Bank Irrigation Distribution System and Management Improvement Project (IDSMIP)

The World Bank carried a project between 2003 and 2010 in order to support the Azerbaijani government's efforts to restructure the system. The development objective of the proposed Irrigation Distribution System and Management Improvement Project (IDSMIP) was to improve the effectiveness and financial viability of irrigation water distribution and management on 56,000 ha (or about 4% of the total irrigated land), through provision of support to Water Users Associations (WUA) and the State Amelioration and Irrigation Committee (SAIC).[430]

Under the Law on Limited Liability Enterprises of 1998, WUAs were first set up to be limited liability companies. They were not stakeholder-governed associations focused on management of irrigation systems but were private companies free to undertake any lawful commercial activity and distribute profits among shareholders.[431] The hired staff of the WUAs made the decisions and controlled the associations and involvement of members was non-existent.

One of the major objectives of the World Bank was to "convert WUAs into non-profit entities, independent from local government and focused only on governance, management and financing irrigation and drainage at the on-farm level".[432]

This goal was accomplished when the Law on Amelioration and Irrigation (LAI), adopted in 2004, changed the nature of the WUAs from limited liability companies to voluntary community associations responsible for on-farm irrigation systems. The companies were then able to set their own irrigation service fee to cover their management costs.

Moreover, during the course of the project the State Amelioration and Irrigation Committee (SAIC) was reformed into the Amelioration and Irrigation Open Joint Stock Company (AIOJSC) in 2006. The World Bank provided support to this entity and to register WUAs all across the country. By January 2010, 546 WUAs covering an area of 1,320,497 hectares had re-registered under the new law, with the help of the World Bank.

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428 Action Against Hunger (2007) Cross-Sector Market Assessment for Irrigation p61.

429 Action Against Hunger (2007)- Cross-Sector Market Assessment for Irrigation p61-62.

430 World Bank (2011) Irrigation Distribution System & Management Improvement Project Azerbaijan **http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=64624210&theSitePK=2748750&menuPK=2805043&Projectid=P008286** (Reviewed March 29, 2012).

431 World Bank (2011) *Water User Association Development Support Project* (Report No: 58835-AZ) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/04/06/000333037_20110407000020/Rendered/PDF/588350PAD0P1071OFFICIALOUSE0ONLY191.pdf** (Reviewed May 2, 2012).

432 World Bank (2011) *Implementation and Completion report (IDSMIP)* (Report No: ICR00001414) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/04/01/000333038_20110401003522/Rendered/INDEX/ICR14140P008281e0only1910BOX358324B.txt** (Reviewed May 2, 2012).

Overall, although restricted in scope the project's outcomes were deemed satisfactory.[433] The IDSMIP provided assistance to 22 WUAs in 11 regions. Compared to the bulk of non-rehabilitated associations, the 22 targeted WUAs saw an over 40% increase in the total amount of water supplied, better planning of water delivery, and reduced water losses. Over time and given the improvement of services delivered, farmers became more inclined to pay the required fees and the collection rates increased by 3 to 5 times. Over 2006-2009, it is estimated that the budget of rehabilitated WUAs increased by more than four times compared to other associations. This income increase enabled the rehabilitated WUAs to conduct most of the planned operation and maintenance of rehabilitated systems. [434]

At the request of the Azerbaijani government, the World Bank will implement a follow-up project to the IDSMIP, the Water Users Association Development Support Project (WUAP). The rationale of the project is to spread the benefits of the pilot projectto the rest of the associations in the country. The vision is that with long-term AIOJSC support and upgrading of the systems,

> WUAs gradually will become self-governing organizations, with capacity to take responsibility for on-farm Irrigation and drainage infrastructure, progressively more capable of levying WUA irrigation service fee that includes funding for WUA Management, Operations and Maintenance (MOM) as well as irrigation service fee (ISF) payment to the AIOJSC.[435]

6.4.2 Current investment and prospective

In recent years, the new government entity responsible for irrigation and drainage has made great efforts in improving the current system. For instance, investments increased from USD 6 million in 2000 to about USD 295 million in 2009.[436] The government also supported WUAs by covering 50% of their energy cost through Azerenergy.[437]

The impact of this increase has been partially off-set by steep increases in unit costs for repairs and operations and maintenance. During 2003-2009, 300% for steel, 70% for fuel 100% for cement, and 300% for labour.[438] Moreover, AIOJSC's current annual budget of USD 255 million is mainly allocated to staff costs, repairs of main irrigation infrastructure, and operation of pumping stations. Limited funds are allocated to on-farm irrigation rehabilitation, drainage, and related maintenance.[439]

Nonetheless, under the *State Program for Food Security* (2008), expenditures are projected to increase further, to about USD 850 million in 2013, primarily for upgrading the main system irrigation and drainage infrastructure.[440]

On the whole, several institutional and legislative changes were made in the past decade in order to improve the system. Given the preliminary results of the IDSMIP, the implementation of the new Water Users Association Development Support Project (WUAP) set to be completed by 2016 is promising. The challenge rests on ensuring that capacity building and support services' need of the AIOJSC and non-rehabilitated WUAs are sustained in the near future.

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433 World Bank (2011) *Implementation and Completion report (IDSMIP)* (Report No: ICR00001414) p13 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/04/01/000333038_20110401003522/Rendered/INDEX/ICR14140P008281e0only1910BOX358324B.txt**

434 World Bank (2011) *Implementation and Completion report (IDSMIP)* (Report No: ICR00001414) p13 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/04/01/000333038_20110401003522/Rendered/INDEX/ICR14140P008281e0only1910BOX358324B.txt**

435 Ibid. p2

436 World Bank (2011) *Water User Association Development Support Project* (Report No: 58835-AZ) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/04/06/000333037_20110407000020/Rendered/PDF/588350PAD0P1071OFFICIAL0USE0ONLY191.pdf** (Reviewed May 2, 2012)

437 Interview with Elmaddin Namazov, agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

438 Ibid. p2

439 Ibid. p2

440 Ibid. p1-2

However, there are clear challenges ahead. According to experts, the irrigation system is still in a terrible condition both in terms of physical infrastructure and management.[441] The system in place was built to serve collective farms covering 1000 hectares and not small one hectare farms. Evidence suggests that despite the presence of WUAs, farmers still struggle to get water in time and the absence of planning through water delivery schedules mean that farmers often fight over the scarce resource. Experts also voice their critics over the system of WUAs that has been created, some saying that it simply did not work and thatthe system at the moment is largely informal.[442]

On top of that, water losses still pose significant problems since field channels are not periodically cleaned and experts estimate that more than 50% of the water is lost and that only approximately 30% actually ends up being delivered to the farms.[443]

7 AGRICULTURAL SUPPORT SERVICES

7.1 Extension services

The shift in the nature of agriculture from large state and collective farms to a huge number of small landholders intensified the need for a proper network of extension services to be put in place. A majority of farmers following the transition lacked the information and technical knowledge to make private farming economically viable and productive, a necessity in order to rebuild agricultural productivity to levels they had once achieved.

The late 1990s saw the emergence of a private sector capacity in advisory services for farmers and agribusinesses in the form of local consultancy initiatives in Baku, Ganja, and other localities.[444] However, the initiatives in place at the time were insignificant in comparison to the needs of the newly created farming community totaling over 800,000 rural households.

Significant steps were taken by the World Bank as part of its Agricultural Development and Credit Project (ADCP) to establish a functioning network capable of providing farmers with extension services and the technical information they needed. As a pilot project, 5 rural advisory centers (RACs) had been established by the end of 2006 and the project was extended further into the second phase of the ADCP to include another 5 centers.[445]

As a result, all of the country is currently covered by these extension service centers. The services are mostly provided through village-based advisors, a total of 216, and they are generally well-known in their areas and farmers usually have positive feedbacks about the experience.[446] According to a World Bank report made public in 2012, farmers with access to advisory services are generally positive and a majority of respondents in the project final survey were either satisfied or highly satisfied with the services provided. Moreover, almost all beneficiaries reported some production increase with 55% of respondent indicating a 10-25% increase and roughly 3% of respondents one of more than 25%.[447]

However, some uncertainty remains with regards to the sustainability of the extension system, particularly of sustained government support to keep the system functional,

441 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

442 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

443 Interview with Elmaddin Namazov, agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

444 World Bank (2010) *Project Information Document: Azerbaijan Agricultural Development and Credit Project* (Report No. PID6889) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/09/17/000178830_98111703532477/Rendered/PDF/multi0page.pdf** (Reviewed May 2, 2012).

445 Interview with Rufiz Vakhid Chirag-Zade (April 18, 2012) World Bank Senior Operations Officer in Azerbaijan

446 Interview with Rufiz Vakhid Chirag-Zade (April 18, 2012) World Bank Senior Operations Officer in Azerbaijan

447 World Bank (2012) *Implementation Status and Results: Azerbaijan Agricultural Development and Credit Project-II* (Report No: ISR6067) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2012/03/01/C79074767A7A781C852579B4006D9D8C/1_0/Rendered/PDF/P0908870ISR0Di0012012013306318378l8.pdf** (Reviewed May 2, 2012).

> In terms of the sustainability of the extension system supported by the project [World Bank, ADCP], the government has established by Presidential decree a Working Group whose mandate is to propose further reforms in agricultural sector, including public extension system. The government has also developed a draft law which will govern the operations of the extension system. However, because there has been a delay in the decision making regarding the reforms of the extension system, this uncertainty has disrupted the funding of the extension services established under the project. It is, therefore, important to take a decision quickly to avoid long gap in funding of the extension services.[448]

According to Rufiz Vakhid Chirag-Zade, World Bank Senior Operations Officer in Azerbaijan, the major challenge is to ensure the sustainability of the RACs. According to him, last year the government supported 70% of the centers' operational costs through its contributions to World Bank project and currently the Bank is pushing for a new budget line in government funding to ensure the viability of the centers.[449]

In general and as most experts agree, the knowledge of farmers remains very low and there is a lack of extension services.[450] The farmer population needs to be educated in how to properly use the land, for instance on what kind of seeds or chemicals to use for different crops, otherwise productivity levels will remain low.

7.2 Veterinary services

The heir of the soviet state-controlled veterinary system in Azerbaijan is the State Veterinary Committee[451] (SVC), a department of the Agriculture Ministry. It is responsible for running the veterinary system. While the private sector has been increasingly contributing to the system, the state apparatus still dominates. Locally, the SVC has 65 branches in all but one of the country's 66 municipalities.[452] Every region has a key veterinarian and local veterinarians are also posted in villages.

The state veterinary apparatus allows for information to be collected and reported to the veterinary department of the Ministry. The Azerbaijani state supports the free vaccination of animals in all areas against diseases such as brucellosis, mad cow disease and FMD, and also ensures that quarantine measures are performed when necessary.[453]

For instance, the state veterinarians analyze blood samples from every animal in the case of brucellosis. The disease is especially problematic in some areas where IDP families are settled and who are not registered with the local authorities. According to Subhan Valiyev, animal technician at the Agrarian University in Ganja, this can pose problems for local veterinarians collecting blood samples since they are unaware of the presence of these individuals and their animals which are not registered.[454]

Since 1999, as a part of Agricultural Development and Credit Project (ADCP), the World Bank collaborated with the Ministry of Agriculture to establish Veterinary Field Units (VFUs), which comprise SVC-contracted private veterinarians working in different areas of the country. At the outset, 25 VFUs were created in 5 pilot regions of the country.

The VFU project was deemed successful and served over 48,000 livestock owners, a 240% increase on the initial appraisal target of 20,000.[455] Moreover, the notable revenues generated by the VFUs in the first phase of the project (USD 122 thsd as of June 30, 2005) showed a demand for private veterinary services and a high level of satisfaction by the beneficiaries.[456] Overall, the total number of clients served increased and the average cost of

448 World Bank (2012) *Implementation Status and Results: Azerbaijan Agricultural Development and Credit Project-II* (Report No: ISR6067) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2012/03/01/C79074767A7A781C852579B4006D9D8C/1_0/Rendered/PDF/P0908870ISR0Di00120120133063183781 8.pdf** (Reviewed May 2, 2012).

449 Interview with Rufiz Vakhid Chirag-Zade (April 18, 2012) World Bank Senior Operations Officer in Azerbaijan

450 Interview with Amin Babayev, Head of the soil analysis department, Azerbaijan State Agrarian University

451 **http://www.vet.gov.az/?lang=2&id=1** (Reviewed April 18 2012)

452 **http://www.vet.gov.az/?id=2&sub_id=85&lang=2** (Reviewed April 19 2012)

453 Interview with Elmaddin Namazov, Agricultural expert Ganja Agribusiness Association GABA, lecturer at the Agrarian University (soil specialist)

454 Interview with Subhan Valiyev, Animal technician at the Agrarian University in Ganja

455 World Bank (2008)- Project Performance Assessment Report: Agricultural Development and Credit Project (Report No: 44831) p10

456 World Bank (2005)- Implementation Completion Report: Agricultural Development and Credit Project (Report No: 35935) p9

veterinary services per client saw a tremendous drop (from over USD 100 in 2001 to less than USD 20 in 2004).[457]

Building on the success of its pilot project, the second phase of the ADCP program expanded the network of private vets to 160 VFUs, therefore covering all of the country's districts.

As a result, the current system combines both the public and private sector: the central and local state veterinary apparatus and the 160 private veterinarians in VFUs.

Overall, the veterinary system is deemed functional. However, although the sector has strengthened its capacities in recent years there are clear opportunities for improvements.

First, although the state carries free vaccinations campaigns, the cost for treatment is the sole responsibility of farmers and some might refrain from treating animals because it is simply too expensive. Second, despite the extensive network in place, experts mention that the existing system cannot cover all the demand and some areas suffer from a lack of personnel, though all animals cannot be treated in time.[458] Third, there appears to be a need to strengthen communication channels between farmers and veterinarians since at the moment coordination between both groups is difficult.[459] The use of ICTs such as an SMS service or emails could enhance the efficiency of the system since it would prevent farmers from having to travel to regional centers in order to get animals properly treated. This is a process which implies additional travel costs for farmers and which affects disproportionally regions where the road network is in a bad state of disrepair.

Another issue of concern is the role of the private sector. According to the World Bank the network of private veterinarians works very well but it is difficult for the private sector to compete with the state veterinary services. There is a list of diseases in the state law on veterinary services which are strictly under state control and private veterinarians cannot be contracted to work on these diseases.[460] Therefore, private veterinarians only provide fee-based services, such as artificial insemination, and have to inform state veterinarians if diseases are reported.[461] Easing this restriction on the private sector is a priority of the World Bank who wants to change the current situation and allow private veterinarians to be contracted by the state.[462]

However, the private sector, in its current state, might not be able to cope with such responsibilities. Experts interviewed have stressed that given the weakness of the private sector, and without the necessary facilities in place, such a transfer of responsibilities might not be an optimal solution just yet.[463] According to experts, the private veterinary sector is further weakened by a lack of human resources since it is difficult to attract and train new veterinarians.[464]

A range of structural problems also hamper the efficiency of the system as a whole: the facilities in the country are inadequate, the absence of transport infrastructure in some parts of the country influences the ability of veterinarians to make the check-up required, the funding of the system is inadequate, and no risk assessment is carried out by the state veterinary department.[465]

7.3 Farm Machinery

For the most part, Azerbaijan farm machinery consisted of equipment inherited from the Soviet period. That farm machinery decayed following the transition period due to a lack of maintenance or spare parts and most agricultural operations face considerable challenges as a result.

457 World Bank (2005)- Implementation Completion Report: Agricultural Development and Credit Project (Report No: 35935) p32

458 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

459 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

460 Law on the Veterinary system of the Azerbaijan Republic. Chapter V. Non-State Veterinary Services. **http://www.vet.gov.az/?id=3&xtip=1&lang=2** (Reviewed April 19 2012)

461 Interview with Nizami Ibrahimli, Lecturer at the Agrarian University, soil specialist

462 Interview with Rufiz Vakhid Chirag-Zade (April 18th, 2012), World Bank Senior Operations Officer for Azerbaijan

463 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

464 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

465 Interview with Rufiz Vakhid Chirag-Zade (April 18th, 2012), World Bank Senior Operations Officer for Azerbaijan

Figure 89: The stock of farm machinery in Azerbaijan 1990-2010[466]

Years	Tractors	Ploughs	Cultivators	Seeding machine
1990	40,883	13,318	7,278	8,998
1995	33,174	8,770	4,512	6,702
1996	32,855	8,601	4,633	6,532
1999	29,500	6,477	4,180	4,897
2007	21,071	4,322	1,034	1,927
2008	21,592	4,457	1,034	1,967
2009	21,542	4,450	987	1,965
2010	21,258	4,409	939	1,844

Source: AzStat (2012), *Agriculture, forestry, fishing; Stock of main agricultural equipment* http://www.azstat.org/statinfo/agriculture/en/index.shtml (Reviewed March 27, 2012)

The most obvious problem is simply one of scale. As one can see, the stock of farm machinery in Azerbaijan declined significantly between 1990 and 2010. Consequently, access to farm machinery is restricted and individuals who do not have tractors or equipment either rent it from 'Aqrolizinq', the state-owned service provider, or other farmers willing to rent their own machinery. Apart from the state-owned company, there is also a tractor factory in Ganja that produces Belarus tractors.

Aqrolizinq is a state-owned Open Joint Stock Company created in 2004 and provides agricultural machinery and equipment, spare parts, seeds, fertilizers, and pesticides. Aqrolizinq draws a significant proportion of its budget from state funds. For instance, 221 million AZN (USD 280 million) was allocated from state budget and other sources to the company for the period 2005-2009. Since farm machinery services are heavily subsidized by the state, prices are significantly cheaper in Azerbaijan than in Georgia and Armenia (see Agricultural Support Services in comparative section).

The company covers all regions of Azerbaijan and maintenance services are provided through 7 regional "Aqroservis" branches (Shaki, Yevlakh, Jalilabad, Goranboy, Imishli, Tartar, Slayan). The Company also executes fee-based agricultural operation such as planting, sowing, harvesting and grass cutting.

Aqrolizinq has had a significant impact in terms of farm machinery brought to Azerbaijan. Before its creation and between 1998 and 2004, 798 agricultural techniques, 233 grain harvester combines, 212 tractors and other agricultural techniques were brought to the Republic. However, between 2005-2009, the number of farm machinery equipment purchased increased drastically: 900 harvesting machines, 2494 tractors, 140 excavators, and 5717 agricultural techniques (plough, cultivators, grass-mowing machines, grass and straw bailing machines, harrows, drills, sprayers, trailers,etc.).

Aqrolizinq also imports Japanese tractors under a grant by the Japanese government which covers 50% of the cost. Farmers can also buy other tractors through the company which imports and then sell them to farmers through small interest loans, around 10%, that can be repaid over a 5-7 years period.[467] The cost for the cheapest tractors available is around AZN 25,000 (USD 31,794) and that can go up to AZN 80-100,000 (USD 102-127 thsd). In general, the prices for tractors have gone down in recent years since a lot of products are available on the market, for instance from China and Turkey.[468] Generally, only larger commercial farmers are able to purchase tractors since the cost is highly prohibitive.

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467 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

468 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

Despite the new provisions brought in and made available through Aqrolizinq, the stock of farm machinery keeps decreasing, mostly because thousands of old Soviet tractors are past their lifespan and becoming obsolete.[469]

Usually and although farmers complain about the fees, the company is considered beneficial since it fills an important gap in the sector. However, it is very difficult to assess the impact of the company on the sector since "no assessment is available about the quality of the service provided such as timeliness of the services and compliance with the technical standards that affect the productivity and profitability of crop production."[470]

In addition, several issues have been reported by IFAD which relate to the general lack of capacities of Aqrolizinq,

> The ability of the farmer to control the quality of services is little since: i) most of the operations are time-bound; ii) the operator is under pressure because the demand on the services is high in any particular time slice, and more importantly iii) most of the farmers - and probably the equipment operators –lack knowledge about the technical standards.[471]

Azerbaijani farmers unable to afford the services of Aqrolizinq have little other option but to rely on other farmers who act as individual service providers. Consequently, it is acknowledged this group plays an important role in meeting farm machinery demand by providing cheaper services. The issue is that the quality of the services offered is questionable and an IFAD report highlights this fact:

> During fieldwork, it was frequently observed that both the soil tillage and planting are poorly performed in the Project area. It must be underlined that despite any higher costs for equipment rented from Agrolizing, the price differentials are overlooked at harvest when the activities are strictly time-bound and individual combine-harvester ownership is rare. The rare privately owned ones are unreliable due to old age and lack of maintenance. [472]

7.4 Agricultural inputs

Access to quality inputs such as seeds, fertilizer and pesticides in a timely fashion is extremely crucial for agricultural productivity. In Soviet times, most agricultural inputs were heavily subsidized by the state and once the system collapsed, the supply of inputs was severely disrupted.

Today, agricultural inputs are known to be scarce and/or of poor quality in Azerbaijan. For those who are content with the state subsidies, not being able to use quality inputs does not pose a problem, but for farmers willing to improve their income and become more productive, it is a serious difficulty.

The reasons why the use of certified seeds and seedlings, inorganic fertilizer and pesticides is problematic can be broken down into four issues:

- lack of incentives to increase productivity (area-based subsidies)
- knowledge gap on the farmers' side
- affordability
- accessibility[473]

A project design report by IFAD regarding the implementation of their Integrated Rural Development Project (IRDP) provides an insightful look at agricultural input use and access in the country.[474] The project, with a budget of USD 103.5 million and a timeline of 2011-2019, targets the four contiguous rayons (administrative districts) of

469 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

470 IFAD (2010) *Republic of Azerbaijan: Integrated Rural Development Project (IRDP)* Project Design report p14. **http://www.ifad.org/operations/projects/design/102/azerbaijan.pdf** (Reviewed May 2, 2012).

471 Ibid. p14

472 Ibid. p14

473 IFAD (2010) *Republic of Azerbaijan: Integrated Rural Development Project (IRDP)* Project Design report p12 **http://www.ifad.org/operations/projects/design/102/azerbaijan.pdf** (Reviewed May 2, 2012).

474 IFAD (2010) *Republic of Azerbaijan: Integrated Rural Development Project (IRDP)* Project Design report p. 12 **http://www.ifad.org/operations/projects/design/102/azerbaijan.pdf** (Reviewed May 2, 2012).

Agdash, Yevlakh, Sheki and Oghuz.[475] The report provides a thorough examination of the situation in these rayons, and, they say, this is representative of the situation the country is facing in general.

7.4.1 Seeds

The IFAD report highlights that Azerbaijan is currently facing an overall seed supply problem. Given the primitive nature of farming in most parts of the country, there exists a lack of demand for quality seed.

According to Nizami Ibrahimli, soil specialist and lecturer at Azerbaijan State Agricultural University, the quality of seeds used is problematic and farmers have little chances to know the quality of the seeds they actually purchase.[476]

Therefore, despite the presence of farmers specialized in seed production, private seed producing companies, Aqrolizinq, small input dealers, and individuals in the villages who sell uncertified seeds, most farmers tend to either buy from neighbors or relatives or use what they have set aside from their annual produce as "seed".[477]

Moreover, the seed market is relatively new and underdeveloped since demand is not there. Seed producing farmers represent a fairly new initiative in the area and are mostly engaged in wheat and barley seed production[478], two of Azerbaijan's main commodities. The same goes for seed companies which have generally been operating on the market for the last 2-3 years.[479] These companies are also mostly engaged in the wheat and barley sectors and their reach on the market appears to be low as less that than 10% of the farmers in the IFAD project area are buying seeds from these companies[480].

There exists a state subsidy for seed production and in 2009 it stood at USD 0.09/kg of seed produced. However, in order for seed companies to collect the subsidy, they have to prove/document that the buyer actually planted the seed. When companies fail to provide proof they are not paid and it has proven to be a significant problem for the subsidy program.

7.4.2 Fertilizers

The use of chemical fertilizers seems particularly restricted. In the areas covered by IFAD, the reasons for the low use of fertilizer point to the prohibitive cost, lack of know-how on the farmers' side, and accessibility/availability constraints.

First, cost is seen by farmers as prohibitive. The current subsidy program of the government does include fertilizer subsidies to encourage fertilizer application to crops: the Government covers 50% of the total cost of fertilizer. However and according to IFAD, "another part of the subsidy program that provides subsidies for area planted does not encourage productivity increase. Therefore, farmers prefer not to bother with fertilizer application. Some articulate their doubts about the quality of the fertilizers and lack of enforcement of quality control regulations."[481]

Second, due to the lack of information the application rate, time and method as well as the type of chemical fertilizers used are usually wrong. This also applies for manure and it was reported that in the project area that the amount applied is much less than recommended. This is basically due to "the inadequate feeding of the livestock when in the barns where the amount of manure produced is closely linked to the amount and type of feed provided to the animals, and/or grazing-land based production where most of the manure is left on the grazing land."[482]

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475 IFAD (2010) *Integrated Rural Development Project (IDRP)* **http://operations.ifad.org/web/ifad/operations/country/project/tags/azerbaijan/1561/project%20overview** (Reviewed March 30, 2012).

476 Interview with Nizami Ibrahimli, Lecturer at the Agrarian University, soil specialist

477 IFAD (2010) *Republic of Azerbaijan: Integrated Rural Development Project (IRDP)* Project Design report p13 **http://www.ifad.org/operations/projects/design/102/azerbaijan.pdf** (Reviewed May 2, 2012).

478 Ibid. p13

479 Ibid. p13

480 Ibid. p13

481 Ibid. p13

482 Ibid. p13

Third, the availability and access to fertilizers seem problematic. Chemical fertilizers are available in Azerbaijan and marketed mostly by private fertilizer dealers and Aqrolizinq. The fact that private dealers are mostly located in rayon centers and in large towns seems to be at the source of the problem. On the one hand, the suppliers are discouraged from going to some villages because of remoteness, poor quality roads and the limited number of clients. On the other hand, transport costs are prohibitive for small farmers to travel to the cities and buy the products, especially since they only purchase small amounts of fertilizers.[483]

7.4.3 Pesticides

Pesticide use is also quite limited in Azerbaijan and the constraints which apply to fertilizers apply to pesticides as well. Most of the market is supplied by pesticide dealers and Aqrolizinq and pesticides are sold in small shops in district centers of towns. According to IFAD, "there appears to be no strict control or monitoring on marketing and that some of the environmentally hazardous and banned (obsolete pesticides) or expired pesticides are still being used in crop production, including DDT."[484]

8 FINANCE

Following the collapse of the Soviet Union, the transformation of the socialist banking system proved to be difficult and was "marked by a colossal crash of credibility and confidence towards the sector".[485] Several events added to the challenge and complicated the consolidation and restructuring process during the first decade that followed. The World Bank usually refers to three distinct elements:

First, the collapse of the numerous and sizable pyramid schemes in 1994 had the effect of reducing the population's trust towards commercial banks.

Second, the Russian financial crisis of 1998 made lending activities even more difficult for banks which at the timehad no rural branches.

Third, projects to boostrural finance did not produce satisfactory results. For instance, "TACIS's effort to recycle funds raised by the sale of emergency food through hurriedly established credit unions did not sustain itself, and the majority of the credit unions established did not survive".[486]

As a result, the agricultural sector faced a lack of access to credit. A World Bank assessment released in the late 1990s offers a general overview of the bleak picture of the Azerbaijani financial sector nearly a decade after independence,

> Presently, the emerging private farms and other rural enterprises lack access to credit. The state-owned Agro-Industrial Bank (Agroprombank) is being restructured and is unlikely to be a significant provider of rural financial services in the near term. The commercial banking sector is also unlikely to play a major role in rural finance, as they lack liquidity due to the inability to inspire confidence from the would-be depositors. Even if the commercial banks had the resources to lend, it is doubtful that they would move aggressively into rural areas. The traditional technologies they employ, and their high cost structures are ill-suited to agricultural lending directed to thousands of new smallholder farmers and small rural entrepreneurs. The commercial banks also perceive agriculture as high risk, high cost and low-return, particularly relative to returns to urban-based trade financing.[487]

483 Ibid. p14

484 Ibid. p15

485 World Bank (2005) *Implementation Completion Report: Agricultural Development and Credit Project* (Report No: 35935) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/06/21/000160016_20060621111204/Rendered/PDF/35935.pdf** (Reviewed May 2, 2012).

486 World Bank (2005) *Implementation Completion Report: Agricultural Development and Credit Project* (Report No: 35935) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2006/06/21/000160016_20060621111204/Rendered/PDF/35935.pdf** (Reviewed May 2, 2012).

487 World Bank (2009) *Project Info Document (PID) Azerbaijan Agricultural Development and Credit Project (*Report No: PID6889) p2 **http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1999/09/17/000178830_98111703532477/Rendered/PDF/multi0page.pdf** (Review May 2, 2012).

In order toincrease rural finance, the World Bank started to implement the first phase of its Agriculture Development and Credit Project (ADCP). Although the project got off to a slow start and was marred by problems, 30 Credit Unions (CUs) and 1,498 informal borrower groups (BGs) were established by 2006 as a result of the first two phases.[488]

Agricultural lending quickly took pace, repayment rates followed suit and the outreach of both CUs and BGs was enhanced. The ADCP allowed for roughly AZN 75 million (USD 95.4 million) to be provided to both CUs and BGs and up to 24,500 members of these institutions received 52,800 loans with an average size of AZN 2450 (USD 3,116) for CUs and AZN 650 (USD 827) for BGs.[489] The project met the target of over 95% financial recovery rate despite the fact that some credit unions suffered weaknesses in governance and repayments.[490]

On top of that, the ADCP project facilitated financial services to 119 medium agribusinesses for USD 18 million, enhancedbanks' skills in appraising agriculture-related investment loans, and 74 grants for introducing and transferring improved technologies were awarded (for production, storage, grading, packaging, labeling, small-scale processing and canning of different high-value products).[491]

The figure 90 below provides a sample of some of Azerbaijan's main institutions actively involved in the micro-finance sector and the loan products they offer. As one can see, interest rates for either banks or MFIs are extremely high and can even go beyond 40%.

Figure 90 Finance institutions, loan products and interest rates (Dec. 31, 2011) (amounts for micro-loans 100$- 20,000$)

ORGANIZATION	CUMULATIVE LOANS DISBURSED(FOR MICROCREDITS)	ACTIVE BORROWERS	LOAN PRODUCTS & INTEREST RATE
ACCESSBANK	$1 044 791 090	79 979	Micro ($100-$20,000): 2,25-2,75% monthly; Small ($20,000-$100,000): 1,83%-2,25% monthly
BANK RESPUBLIKA	$64 415 081	4 773	Micro 0.6%-3% monthly MSE 0.6%-2,5% monthly 3) SME 0.6%-2.3% 4) Big 0,.6%-2.3%
TEXNIKA BANK	$57 886 179	9 646	mortgage, agriculture credits, microcredits, auto credits, business credits, investment project 0,6-3% monthly
KREDAQRO,NBCO	$218 595 679	19 416	Agricultural loans 24% Trade and business loans 25-28% Consumer loans 30-36% leasing 25% Express loans 36%

488 World Bank (2008) *Project Performance Assessment Report: Farm Privatization Project/ Agriculture Development and Credit Project* (Report No. 44831) p13 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2008/08/20/000333038_20080820011126/Rendered/PDF/448310PPAR0P0410Box334040B01PUBLIC1.pdf** (Reviewed May 2, 2012).

489 World Bank (2012) *Implementation Status and Results: Azerbaijan Agricultural Development and Credit Project-II* (Report No: ISR6067) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2012/03/01/C79074767A7A781C852579B4006D9D8C/1_0/Rendered/PDF/P0908870ISR0Di00120120133063183781 8.pdf** (Reviewed May 2, 2012).

490 World Bank (2012) *Implementation Status and Results: Azerbaijan Agricultural Development and Credit Project-II* (Report No: ISR6067) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2012/03/01/C79074767A7A781C852579B4006D9D8C/1_0/Rendered/PDF/P0908870ISR0Di00120120133063183781 8.pdf** (Reviewed May 2, 2012).

491 World Bank (2012) *Implementation Status and Results: Azerbaijan Agricultural Development and Credit Project-II* (Report No: ISR6067) p2 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2012/03/01/C79074767A7A781C852579B4006D9D8C/1_0/Rendered/PDF/P0908870ISR0Di00120120133063183781 8.pdf** (Reviewed May 2, 2012).

ORGANIZATION	CUMULATIVE LOANS DISBURSED(FOR MICROCREDITS)	ACTIVE BORROWERS	LOAN PRODUCTS & INTEREST RATE
FINCA AZERBAIJAN, NBCO	$178 408 276	119 829	Solidarity Credit Group Loans: 36% - 39% p.a. declining; Rural Loans: 42-43 % p.a. declining; Agriculture Loan Product (Individual Farmer and Commercial Farmer) - 40.8-45.6 % p.a.
AGRARCREDIT, NBCO	$68 800 000	3 196	1. Rural Lending program Production and processing areas as well as credit unions and group of borrowers–24%; Procurement of agricultural products, trade and other fields – 27%; 2.North-East Development Project - 15% 3.National Fund For Entrepreneurship Support - 7% 4, North-West Rural Development Project - 15%
VISION FUND AZERCREDIT, NBCO	$68 234 075	47 232	Micro loans for working capital and fixed assets - 3-3.5% monthly declining, micro loans for agriculture - 2.5- 3.5% monthly declining rates
VIATOR MICROCREDIT AZERBAIJAN, NBCO	$59 758 681	15 876	2.75% monthly(Ganja, Shemkir, Gazakh branches),3% monthly (Sheki, Dalimammadli)

Source: Azerbaijan Micro-Finance Association (AMFA) (2011), *Micro-Finance Matrix 2011* http://amfa.az/sehife.php?lang=eng&page=0300 (Reviewed December 31, 2011)

According to Rufiz Vakhid Chirag-Zade, World Bank Senior Operations Officer for Azerbaijan, it is much easier for farmers to access to credit, especially short-term financing, and there has been a significant increase in the volume of short-term loans.[492] Also, the picture regarding commercial banks is now very different and they have developed a network in rural areas.

On the whole, the sector is currently occupied by commercial banks, CUs and BGs created under the World Bank ADCP project, micro-finance organizations (MFIs) and the Azerbaijani state which subsidizes loans at lower interest rates (6%).

Despite improvements, access to long-term financing is restricted and still very rare. In general there is access to funding but the agricultural sector is still considered to be risky and the country is faced by many problems of the CIS countries such as a lack of non-physical collateral assets on the farmers' side.On the whole banks have been very conservative in their approach towards agricultural lending.

However, there is more to the issue than just gaps on the financial institutions' side. According to Anar Gurbanov of the International Bank of Azerbaijan, there is also a knowledge gap to be filled on the farmers' side,"farmers need to be educated so that they understand what credit is and how the financial system work".[493] Only then wouldl they be able to take on the responsibilities associated with taking on loans.

Overall and according to the World Bank, the sector is still underdeveloped and the volume of loans being disbursed remains relatively small,

> […]Though credit financing for agriculture has been increasing steady, the volumes remain comparatively small, and the sector continues to be under-financed. Demand for the financing remains very high, especially for the long-term funding. In addition, the menu of financial products is limited to simple working capital and investment loans. Structured products, including transaction finance and use of non-physical asset-based collateral, are almost non-existent, which limits the opportunities for the sector to access the needed loan products. Agricultural insurance which would improve access to finance for the sector is almost nonexistent too.[494]

492 Interview with Rufiz Vakhid Chirag-Zade (April 18th, 2012), World Bank Senior Operations Officer for Azerbaijan

493 Interview with Anar Gurbanov, Credit specialist for the International Bank of Azerbaijan

494 World Bank (2011) *Third Agricultural and Credit Project: Project Information Document (PID) Concept Stage* (Report No.: PIDC10) p1-2 **http://**

9 GOVERNMENT SPENDING AND THE STRUCTURE OF GOVERNMENT INTERVENTION

Azerbaijan's main objective is to become a sustainable middle-income country by the end of the oil boom. According to the World Bank, in order for Azerbaijan to attain a per capita income of about AZN 5,000 (USD 5,828) (in 2007 manats) by 2025, its non-oil economy needs to grow at an average rate of 6.5 percent in 2008-25.[495]

The major challenge is that the country's economy is still heavily reliant on the oil boom that started in the 1990s in terms of gross domestic product and exports. In its diversification efforts, the Azerbaijani government considers agriculture extremely important for growth, poverty reduction, employment and security.[496]

9.1 Government strategy

Starting with the land reform process of the late 1990s, the primary goal of the agricultural strategy has been to make the transition to a market-based and more productive sector. Two major objectives underpinned this strategy:

1. Privatizing and distributing to individual rural families the lands of the former collective farms

2. Establishing and building the various agricultural services (for instance, agricultural extension, credit, and irrigation) needed for the new farmers to restore agricultural productivity and enhance their incomes.[497]

To date, the government has prioritized a diversification strategy using revenues from the oil boom to finance infrastructure projects and subsidise or provide rural inputs and support services. Through the Agricultural Development and Credit Project (ADCP) of the World Bank, Azerbaijan has supported farmers with extension, business advisory and rural credit services, as well as increasing its agricultural policy capacity.[498]

A range of presidential and ministerial decrees as well as state programs include measures that relates to agriculture. The main state programs offer generally vague propositions that cover most of the agricultural spectrum in terms of activities, although the focus is usually put on facilitating the supply of inputs through state subsidies and access for farmers to extension services. The most significant are summarized in more details below.

The main priority of the State Program on Reliable Provision of the Population with Food in the Azerbaijan Republic for 2008-2015 is to improve the agricultural infrastructure, ensure macroeconomic stability and a stable environment for farmers, and secure the country's food self-sufficiency.[499]

The State Program on Poverty Reduction and Sustainable Development for 2008-2015[500] and the State Program

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www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2011/09/27/D00B9EDB27DE72CF85257918003E7311/1_0Rendered/PDF/P1228120PID0Print0092720110131712252672 7.pdf (Reviewed May 1, 2012).

495 World Bank (2009) *Azerbaijan: Country Economic Memorandum/ A new silk road-export led diversification* (Report No. 44365-AZ)p16 **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/01/07/000333037_20100107230943/Rendered/PDF/443650ESW0AZ0P1IC0Disclosed01161101.pdf** (Reviewed May 2, 2012).

496 World Bank (2011) *Promoting Azerbaijan's Agricultural Productivity 1997-2010* (IEG Working Paper 2011/03) pxi **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/04/000333037_20111104011657/Rendered/PDF/653560NWP0Box30anWorkingPaper201103.pdf** (Reviewed May 2, 2012).

497 Ibid. p9

498 World Bank (2005) *Azerbaijan Agricultural Markets Study* (Final Report) pvii **http://siteresources.worldbank.org/AZERBAIJANEXTN/Resources/AZ_Ag_Mktg_Study_Final_Report.pdf** (Reviewed May 1, 2012).

499 FAO/Ministry of Agriculture of Azerbaijan (First Draft 2009)- FAO National Medium-Term Priority Framework in the Republic of Azerbaijan 2010-2012 p5 **ftp://ftp.fao.org/TC/TCA/NMTPF/Country%20NMTPF/Azerbaijan/Status/Draft_NMTPF__26_11_09.pdf** (Reviewed May 2, 2012).

500 Presidential Decree #3043 (2008) *State Program on Poverty Reduction and Sustainable Development for 2008-2015* p13-14 **http://**

on the Socio-economic Development of Regions of the Republic of Azerbaijan for 2009-2013[501] also address agricultureBoth documents focus on the maintenance of government subsidies of all sorts, the provision of extension services, market support, access to credit, veterinary and food safety.

However, it is extremely difficult to get precisions about the Ministry of Agriculture's budget and how money is spent, and the same situation applies for other State Programs. As a result, while it is possible to gain insights on a number of specific programs, it is not possible to get a comprehensive picture of the spending priorities of the government.

For instance, a very limited amount of information is posted on the Ministry of Agriculture website and the information available mostly focus on providing a detailed account of how much money has been spent on subsidies. To date, a detailed agricultural budget broken down in separate line items is yet to be made public.

An assessment produced by the Open Society Institute (OSI) offers a glimpse of a the difficulties in trying to assess the efficiency of government spending and interventions in the agricultural sector,

> […] the competent official bodies so far haven't publicized any comprehensive report on major areas of expenditures; the assessment of the efficiency of expenditures, i.e. how safely is the population provided with food on the basis of the government contractual food, is another issue to be made public.…Sparse statements by the authorities from the Ministry of Agriculture appear to focus on the amounts spent on subsidies granted to farmers and agrarian manufacturers. In the meantime, still the assessment of the Ministry of Agriculture concerning the efficiency of budgetary spending on separate items of agricultural output is not known (to the public). …The Ministry also fails to report official data about its activities to the public. The organizational chart of the Ministry includes the State Agency for Agricultural Loans and two Services (State Veterinary Service and State Phytosanitary Inspection Service). Only one of them, namely the State Phytosanitary Inspection Service, has got a functioning website. However, the corresponding source provides only fragmented information about the activities of the Service.[502]

9.2 State subsidies

One area where information does seem to be publically available is on the level of state subsidies. Overall subsidies have been high in recent years and used as the main tool of the Azerbaijani government to stimulate growth. The main government support mechanisms have covered a range of sectors, from inputs to tax exemptions and subsidized loans:

I. 50% subsidies on fertilizer, pesticides, oil and fuel (diesel)
II. Exemption from taxes except for land taxes (land tax is rather symbolic and fluctuates from approximately AZN 7 to 40 (USD 9 to 51) per year according to land quality (6 different types of land)[503]
III. Seed production subsidies (mainly for wheat), and an additional AZN 40 (USD 51) per hectare for those sowing wheat
IV. Discount leasing of agricultural equipment and the provision of farm services at lower fees (and selling of inputs) by a state-owned company, Aqrolizinq, established in 2004
V. Heavy subsidies in irrigation, with farmers paying less than 10 percent of total costs of water supply[504]
VI. A subsidized agricultural lending system, the State Entrepreneurship Support Fund, which has charged interest rates starting at 6%

Through information made public by the Ministry of Agriculture, it is possible to assess the extent of subsidies since 2007.

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www.cled.az/pdf/others/Azerbaijan%20Poverty%20Program%20for%202008-2015.pdf (Reviewed May 2, 2012).

501 Approved by Decree (2009) *State Program on the Socio-economic Development of Regions of the Republic of Azerbaijan for 2009-2013,* p39-41 **http://www.cled.az/pdf/others/Azerbaijan%20Regional%20Development%20Programe%20for%202009-2013.pdf** (Reviewed May 2, 2012).

502 Javid Khalilov (2011) *Azerbaijan's Food Safety in Danger* , Open Society Institute Assistance Foundation, p1 **http://www.osi.az/index.php?option=com_content&task=view&id=2228&Itemid=474** (Reviewed April 30, 2012).

503 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

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Figure 91: State subsidies for agricultural producers in 2007-2010 (mln. manat)

Years	2007	2008	2009	2010
Fuel and machine oil (mln. manat)	42.2	53.8	59.8	55.5
Wheat and paddy sowing (mln. manat)	20.2	29.6	22.9	23.5
1st and 2nd-reproduction seed sale	0.9	3.8	4.6	6.0
Fertilizer sale	2.4	6.7	6.5	24.5

Source: Ministry of Agriculture of the Azerbaijan Republic (2012), *Agriculture in Azerbaijan*, http://www.agro.gov.az/index.php?cat=20&id=67&ses=d4b79 (Reviewed April 25, 2012)

Most seed production subsidies have targeted the wheat sector. Currently there are 683 private seed-farms in Azerbaijan, of which 597 accounts for wheat seed production. For instance, 'Aqrolizinq' sells wheat seeds with a 50% discount to state and private seed-production farms, which are engaged in production of high reproduction seeds and are certified by the Ministry of Agriculture.

Furthermore, 'Aqrolizinq', the state input supplier offers fertilizer to farmers with a discount between 50-70%.

On top of the subsidies for inputs, the subsidized loans are also large.

Figure 92: State Entrepreneurship Support Fund: lending 2005-2010 (thousand manat)

Years	Agriculture products processing		Agriculture crop production		Total	
	Number of entrepreneurship organizations	Credit amount	Number of entrepreneurship organizations	Credit amount	Number of entrepreneurship organisations	Credit amount
2005	43	7.1	1,763	13.0	1,806	20.0
2006	54	12.6	1,256	25.5	1,310	36.1
2007	29	13.9	572	24.1	601	38.1
2008	25	8.4	544	28.8	569	37.2
2009	19	19.6	1,935	22.6	1,958	42.2
2010	12	6.3	1,193	48.8	1,205	55.1

Source: Ministry of Agriculture of the Azerbaijan Republic (2012), *Agriculture in Azerbaijan*, http://www.agro.gov.az/index.php?cat=20&id=67&ses=d4b79 (Reviewed April 25, 2012)

A subsidized agricultural lending system, the State Entrepreneurship Support Fund, has been offering loans to entrepreneurs at significantly lower interest rates than commercial banks, even as low as 6%. These loans are carried out in compliance with the State Program on reliable food provision for 2008-2015[505] and the State Program on socio-economic development of the regions for 2009-2013[506]. The fundoffers funding for activities such as cattle-breeding, dairy, food processing, juice processing, and cold storage.[507]

505 Web-site of the Ministry of Economic Development of the Azerbaijan Republic. **http://www.economy.gov.az**

506 Web-site of the Ministry of Economic Development of the Azerbaijan Republic: **http://www.economy.gov.az**

507 Interview with John O'Connell (April 20, 2012) Head of Agriculture Component, USAID Azerbaijan

38 financial institutions are currently working with this fund such as credit unions, MFIs, and commercial banks.[508] However, access to the cheapest loan products is restrictedand seems to target larger commercial farmers capable of investing in their production and able to get a significant return on that investment.

Overall, it is estimated that a maximum of only 3-4% of farmers can actually benefit from the program by complying with the requirements.[509] For instance, entrepreneurs willing to qualify need to be registered in the tax system, have official documents regarding the land (whether is it registered as property or leased), be recommended by three individuals, and provide sufficient collateral.[510] Borrowers also need to have a good reputation and a credit history.

On the whole, the subsidy programseems to have created market distortions in favour of wheat production and away from fruits and vegetables, where Azerbaijan probably has a bigger comparative advantage. It has also made it difficult for private service providers to establish themselves, as there is little chance to compete with Aqrolizinq who not only rent and lease farm machinery but supplies inputs as well.

Last but not least, the overall subsidy program has been a serious impediment in accession negotiations with the WTO.

According to a World Bank report of 2011,

> the 2008 government policy has limited discussion on strategy and is mostly a largely directive and —supply side set of proposed actions without prioritization and little connectivity between actions. Further, the policy sees subsidies on wheat production, fertilizer and other inputs as primary tools to stimulate productivity. In the early 2000s the cost of these subsidies was about 15 times the total agricultural foreign aid to Azerbaijan, possibly taking both attention and funding away from key needs such as building agricultural support services and rehabilitating irrigation, and reducing incentives for diversification of crops in favor of the low comparative advantage cereals. The overall level of agricultural subsidization—an aggregate measure of support of 15 percent—was also over the 10 percent limit allowed by the World trade Organization, thwarting Azerbaijan's attempt to become a member.[511]

508 Interview with Anar Babayev, Chairman of Amin Credit Union

509 Interview with Anar Babayev, Chairman of Amin Credit Union

510 Interview with Anar Babayev, Chairman of Amin Credit Union

511 World Bank (2011) *Promoting Azerbaijan's Agricultural Productivity 1997-2010* (IEG Working Paper 2011/03). pxii **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2011/11/04/000333037_20111104011657/Rendered/PDF/653560NWP0Box30anWorkingPaper201103.pdf** (Reviewed May 2, 2012).

9.3 International projects

A range of international donors have been active in Azerbaijan. The World Bank, IFAD, the FAO, the European Union, USAID and the Swiss Development Agency have been major players, to name a few.

The World Bank has carried out projects to improve the irrigation network and road infrastructure. It has implemented the Rehabilitation and Completion of Irrigation and Drainage Infrastructure Project from 2000 to 2007 (around USD 47 million)[512], and the Irrigation Distribution System and Management Improvement Project (IDSMIP) from 2003 to 2010 (USD 39 million).[513] The goal of the latter was to improve the effectiveness and financial viability of the State Amelioration and Irrigation Committee (later replaced by the AIOJSC) and WUAs on 56,000 ha. It provided financial assistance, goods and trainings to these organizations and carried out a survey about the overall irrigation network in nine project rayons.[514]

As a follow-up project, the World Bank is currently implementing the Water Users Development Support Project (WUAP) to "improve the effectiveness and financial viability of on-farm irrigation water distribution and management in the project area."[515] The project, with a total cost of USD 114 million, includes two major components: institutional strengthening and capacity building of the Amelioration and Irrigation Open Joint Stock Company (AIOJSC) and WUAs, and on-farm irrigation and drainage rehabilitation for 85,000 ha managed by 34 WUAs.[516]

Three consecutive projects have been carried out by the World Bank to support efforts of the Azerbaijani government to bring its road infrastructure up to par: the first Highway Project that started in 2001 and provided USD 40 million, the second phase of the project which was approved in 2006 and received additional financing in 2008 and 2009 made available a total of USD 675 million, and the recent Third Highway Project that was approved in 2010 for the amount of USD 242 million.[517]

Additionally, the World Bank has invested in the three consecutive phases of its Agriculture Development and Credit Project (ADCP). In its initial phase (1999-2006), the project included three main directions and provided nearly USD 34 million. First, the bank supported the state privatization process with real estate registration efforts. Second, it increased the provision of rural finance credits and provided deposit services to rural households, enterprises and farms. Third, the project included the provision of information and advisory services to farmers.[518]

The second phase of the project (2006-2012), USD 58 million, aimed to further increase rural productivity by enhancing the access to agricultural support services including financial, advisory and veterinary services.[519] At the outset of these two ADCP phases, 10 rural advisory centers (RACs) and 160 veterinary field units (VFUs) were created. The bank is currently in the concept stage to develop the third phase of the ADCP which is set to cover food safety and animal health, agri-food value chain development and support services, and access to credit.[520]

IFAD has been active in Azerbaijan since 1997. It has implemented 5 projects and programs for overall joint

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512 World Bank (2003), *Rehabilitation & Completion of Irrigation & Drainage Infrastructure Project* **http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=301914&menuPK=301948&Projectid=P008284** (Reviewed 25 May 2012)

513 World Bank (2011), *Irrigation Distribution System and Management Improvement Project* **http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=301914&menuPK=301948&Projectid=P008286** (Reviewed 25 May 2012)

514 World Bank (2003), *Irrigation Distribution System & Management Improvement Project* **http://web.worldbank.org/external/projects/main?pagePK=64312881&piPK=64302848&theSitePK=40941&Projectid=P008286** (Reviewed 25 May 2012)

515 World Bank (2011), *Water Users Association Development Support Project* **http://web.worldbank.org/external/projects/main?pagePK=64312881&piPK=64302848&theSitePK=40941&Projectid=P107617** (Reviewed 25 May 2012)

516 Ibid.

517 World Bank- *Azerbaijan Highway Program* **http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/AZERBAIJANEXTN/0,,contentMDK:22739570~pagePK:141137~piPK:141127~theSitePK:301914,00.html** (Reviewed April 25, 2012).

518 World Bank (1999), *Agriculture Development and Credit Project* **http://web.worldbank.org/external/projects/main?pagePK=64312881&piPK=64302848&theSitePK=40941&Projectid=P035813** (Reviewed 25 May 2012)

519 World Bank (2010), Agriculture Development and Credit Project- II **http://web.worldbank.org/external/projects/main?pagePK=64312881&piPK=64302848&theSitePK=40941&Projectid=P090887** (Reviewed 25 May 2012)

520 World Bank (2011), *Project Information Document (PID) Concept Stage: Third Agriculture Development and Credit Project* **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/ECA/2011/09/27D00B9EDB27DE72CF85257918003E7311/1_0/Rendered/PDF/P1228120PID0Print0092720110131712252672 7.pdf** (Reviewed 25 May 2012)

investments of USD 192.5 million.[521] The organization's main goals have been to enhance natural resource management for improved food security and improve access of poor rural people to profitable markets and value chains.[522] The organization is currently implementing the Rural Development Project for the North-West until 2014 (USD 32.2 million) and the Integrated Rural Development Project running until 2019 (USD 19.4 million).[523]

The former includes the rehabilitation of irrigation infrastructure, the introduction of participatory irrigation management practices, the delivery of advisory and support services, the establishment of a sustainable micro-finance system, and to enhance the capabilities of local communities.[524] Technical assistance is provided to ensure these goals are met. The latter's main goal is to reduce rural poverty and enhance income opportunities in the four rayons of Agdash, Yevlakh, Sheki and Oghuz.[525] Activities include introducing better farm management practices, providing access to credit, and enhancing the skills of rural households to use available natural resources effectively and efficiently.[526]

The FAO is carrying out a number of projects in Azerbaijan for a total budget of USD 26 million as of January 2012. Activities essentially target crop and livestock production, food security, and the sustainable management and use of resources. [527] As part of its regional efforts, the UN body is also working on the control and prevention of Avian Influenza and Swine Fever.[528]

The European Union has also invested in activities targeting the agricultural sector. Under commitments made in its ENPI action plan for 2008, initiatives were launched in 2011 under the Twinning Facility program to support the State Veterinary Service prepare for the identification of animals and the registration of holdings, and to strengthen vocational education in the field of agriculture.[529] The overall goals of the identification program were to increase food security for consumers, facilitate trade, strengthen the skills/knowledge of the veterinary service, improve animal health and gradually help Azerbaijan to converge with EU food security principles.[530] As part of the project, training sessions have been held for over 200 veterinarians to meet the European Union animal identification requirement.[531] Furthermore, under the ENPI Annual Action Programme for 2009, EUR 14 million was allocated to support agriculture and rural development programs.[532]

Over the years, USAID has also financed numerous projects that provided technical assistance to farmers and agribusinesses, improved access to agricultural inputs, and strengthened the financial sector and rural finance. To name a few, the Farmer to Farmer Agribusiness Management Program (1996-1998), the Participatory Agricultural Project (2000-2003) for USD 2.4 million, Azerbaijan's Rural Credit Project for USD 5.9 million (2000-2005), and the

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521 IFAD, *IFAD in Azerbaijan* **http://operations.ifad.org/web/ifad/operations/country/home/tags/azerbaijan** (Reviewed 25 May 2012)

522 Ibid.

523 Ibid.

524 IFAD, *Rural Development Project for the North-West* **http://operations.ifad.org/web/ifad/operations/country/project/tags/azerbaijan/1398/project%20overview** (Reviewed 25 May 2012)

525 IFAD, *Integrated Rural Development Project* **http://operations.ifad.org/web/ifad/operations/country/project/tags/azerbaijan/1561/project%20overview** (Reviewed 25 May 2012)

526 Ibid.

527 FAO, *FAO Technical Cooperation Department Field Programme Activities* **https://extranet.fao.org/fpmis/FPMISReportServlet.jsp?APD=&countryId=AZ&div=&fundG=&type=countryprofileopen&lng=EN&qlfrs=&UF=N&typeUF=&colorder=2345&pwb=&sorttype=1** (Reviewed 25 May 2012)

528 As part of the Emergency Prevention System for Transboundary Animal and Plant Pests and Diseases (EMPRES) Animal Health Component. For more information, please consult: FAO, *Azerbaijan* **http://www.fao.org/countries/55528/en/aze/** (Reviewed 25 May 2012)

529 List of projects available at: Delegation of the European Union to Azerbaijan, *Overview: List of Projects* **http://eeas.europa.eu/delegations/azerbaijan/projects/overview/projects_en.htm** (Reviewed 25 May 2012)

530 European Commission-EuropeAid, *Food Security: Support to the State Veterinary Service in Azerbaijan* **http://ec.europa.eu/europeaid/documents/case-studies/azerbaijan_food_veterinary_en.pdf** (Reviewed 25 May 2012)

531 Ibid.

532 List of projects available at: Delegation of the European Union to Azerbaijan, *Overview: List of Projects* **http://eeas.europa.eu/delegations/azerbaijan/projects/overview/projects_en.htm** (Reviewed 25 May 2012)

Agro-Input Market Development project for USD 3.1 million (2002-2005).[533] USAID is currently investing in the agricultural sector as part of its Competitiveness and Trade project (ACT) to improve targeted value chains and as part of its Development and Credit Authority (DCA) to improve access to finance for small and medium-sized enterprises, including in the agriculture sector.[534]

The Swiss Development and Cooperation Agency (SDC) is funding a project, SMART farmers (2010-2012), in the districts of Barda, Tartar and Agdam. The project is implemented by Oxfam Great Britain and local and international contractors. The goal is to reduce poverty by providing a sustainable income and employment opportunities to small landholders and IDPs working in the agriculture sector, especially the onion and strawberry value chains.[535] The project works directly with 1,500 small landholders, 200 women in IDP settlements, and around 750 IDP waged workers.[536] Activities include the establishment and the provision of support to producer organizations, and the creation of linkages between producer organizations, processor/storage, input dealers and input shop owners.[537]

The second project currently funded by SDC, FARMS (2011-2013), aims to facilitate access to animal resources and markets in the districts of Agcabadi and Beylaqan. The project is implemented by HEKS-EPER and local sub-contracting partners. The overall goal of the project is to contribute to poverty reduction by providing sustainable and increased incomes to farmers involved in animal husbandry.[538] The project promotes the establishment of a network of veterinarians and tries to improve their capacities. It also facilitates access to quality drugs, improves the storage/sale/recycling of medicine, provides assistance to feed distributors, facilitate access to fodder and minerals, and support the vet network capacities in the field of artificial insemination.[539]

533 USAID Azerbaijan, *USAID/Azerbaijan- Our Programs: Past Projects* **http://azerbaijan.usaid.gov/node/86** (Reviewed 25 May 2012)

534 USAID Azerbaijan, *USAID/Azerbaijan- Our Programs: Economic Growth* **http://azerbaijan.usaid.gov/node/8** (Reviewed 25 May 2012)

535 Swiss Cooperation Office in the South Caucasus, *Stimulating Markets for Farmers in the Districts of Barda, Tartar and Agdam (Project SMART farmers),* Project Factsheet available at **http://www.swiss-cooperation.admin.ch/southerncaucasus/en/Home/DEVELOPMENT_COOPERATION/Economic_Development_and_Employment_Azerbaijan** (Reviewed 24 May 2012)

536 Ibid.

537 Ibid.

538 Swiss Cooperation Office in the South Caucasus, *Facilitating Access to Animal Resources and Markets in Agcabadi and Beylaqan Districts of Azerbaijan (FARMS),* Project Factsheet available at **http://www.swiss-cooperation.admin.ch/southerncaucasus/en/Home/DEVELOPMENT_COOPERATION/Economic_Development_and_Employment_Azerbaijan** (Reviewed 24 May 2012)

539 Ibid.

10 EDUCATION AND SKILL SETS

Overall, the collapse of the Soviet Union and the difficult transition period had a negative effect on education and the quality of graduates produced. The quality of education deteriorated in the transition period and a lack of investment in past decades translated into a less qualified labor.

In Soviet times, it is usually reported that each faculty of Azerbaijan's State Agricultural University, seven in total, each produced up to 250 graduates a year for a total of 1750 yearly.[540] The collapse of the collective farm system had a drastic effect on the demand for newly trained agricultural experts of different fields since it constituted for the most part the only source of employment. And the absence of large commercial farms following the transition further deepened the lack of demand. As a result, the number of graduates in the sector reduced constantly from 2000-2010.

At present, Azerbaijan's State Agricultural University forms graduates for the agricultural sector. According to information made public by the institution, 2937 bachelor students, 120 master students, and 10 PhD students are currently attending the University.[541] The University comprises an extensive list of departments and offers trainings in most agricultural sectors.[542]

In recent years, the University has gone through several reforms and usually these changes are considered to be positive; for example the rector was replaced, the University has implemented a number of exchange programs, and has joined the Bologna Process and is in the course of implementing the necessary changes to make the education provided more compatible and comparable to European higher education standards, for instance by reforming its programs (modules).[543]

According to University lecturers and head of departments, the number of students is also increasing for several reasons. First, the University has taken concrete measure to attract students, not only by implementing reforms but also by conducting student fairs involving a lot of enterprises for graduates and facilitating the job selection process and stimulate students.[544] The University has also received increased investments, for instance the veterinary faculty now has several well-equipped modern laboratories, a surgery room for animals and other labs.[545] Second, growth in the agricultural sector and demand for skilled labor is creating incentives for students to enroll. According to experts, there is a tendency at the moment for large commercial farmers to invest in the graduates they need; for instance veterinarians and agronomists in their 2nd and 3rd year.[546]

However, despite these improvements there are still clear opportunities for improvement. The Agrarian University would clearly benefit for further investments which would allow to improve the material provided to students, such as laboratory equipment, and the facilities in general.

Apart from the Agrarian University, Vocational Education and Training lyceums and schools (VET) also offer classes in agriculture and agro-processing. According to information made public by the Ministry of Education, students can choose from a list of over 30 professions.[547] However, in practice only a very limited number of institutions seem to offer programs directly focused on agriculture. The list of lyceums and schools publicly available on the Ministry's website shows that most institutions, when they do offer agriculture-related programs, include for the most part programs intended for future tractor drivers or farm machinery technicians and mechanics.[548]

Vocational education appears to be a last resort for students unable to enroll in Universities and it is generally

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540 Interview with Subhan Valiyev, Animal technician at Azerbaijan State Agrarian University

541 Azerbaijan State Agricultural University, Statistics **http://www.adau.edu.az/view.php?lang=en&menu=21** (Reviewed April 30, 2012)

542 Azerbaijan State Agricultural University, Chairs [Departments] **http://www.adau.edu.az/view.php?lang=en&menu=35** (Reviewed April 30, 2012).

543 Interview with Nizami Ibrahimli, Soil science specialist, lecturer at Azerbaijan State Agrarian University

544 Interview with Nizami Ibrahimli, Soil science specialist, lecturer at Azerbaijan State Agrarian University

545 Interview with Subhan Valiyev, Animal technician at Azerbaijan State Agrarian University

546 Interview with Elmaddin Namazov, agricultural expert at Ganja Agribusiness Association GABA, lecturer at Azerbaijan State Agrarian University

547 Ministry of Education of Azerbaijan, Classification of specialty and specialization in the vocational education (Approved by the Order 96 of Cabinet of Ministries of the Republic of Azerbaijan on June 17, 2002) **http://www.edu.gov.az/view.php?lang=en&menu=107&id=2419** (Reviewed April 30, 2012)

548 Ministry of Education of Azerbaijan, Vocational Education Institutions **http://www.edu.gov.az/view.php?lang=en&menu=236** (Reviewed April 30, 2012)

accepted that the VET system is only marginal in producing the skilled workforce necessary to supply the agricultural sector. Adopting western practices and turning the system around is considered by experts as a way forward to train students to work on farms.[549]

Overall, the Azerbaijani education still system suffers from "corruption, under-investment (for instance a decrease in public spending from 4% to below 3% of GDP between 2000 and 2006), and a serious mismatch between the training of graduates and the skills demanded by the economy".[550]

According to experts, education is a severe problem affecting Azerbaijan's agriculture, not only the quality of education provided but the numbers of people trained either by the State Agrarian University or in VET institutions. In general, there is a lack of human resources in the agricultural sector; not enough agronomists, veterinarians and animal technicians.[551] The lack of agronomists, for instance, makes it difficult for lager commercial farms to recruit personnel. The increasing number of students in the Agrarian University in the last three years has yet to be produce results in the sector since most of these students have not yet graduated. Furthermore, there appears to be a tremendous lack of trained VET professionals in areas such as cold storage, manufacturing and packaging.[552]

11 COOPERATION AND SOCIAL CAPITAL

The structure of farming itself in Azerbaijan is in essence very similar to neighboring countries like Georgia and Armenia and consists mostly of small land holders. More than 95 percent of agrarian products in Azerbaijan are produced by small household farms.

The small size of land holding is a definite impediment in increasing the productivity and efficiency of the system as a whole since unit cost for anything produced runs very high. For instance, the poor state of road infrastructure in the country entails expensive cost for farmers in bringing products to market, such as maintenance and repair of cars and fuel and diesel, and also makes it economically difficult for small farmers to travel to regional centers and acquire different inputs such as fertilizer, pesticide or feed. These difficulties also act as prohibitive factors which prevent farmers to invest in their production, thus keeping productivity levels low.

Land consolidation is usually considered to be a solution to that problem, but facilitating the process is difficult since most land owners tend to hold on to their land plots because it can be seen as a liability, especially in poor rural areas.

Another avenue is for farmer to organize through cooperative or other sorts of groupings. To organize in such ways offers several benefits. Organizing significantly trims down the travelling costs mentioned above, can facilitate access to rental services such as farm machinery (for instance pay for fuel cost for bringing tractors to the farms) and can also ease the process of bringing goods to markets by allowing farmers to consolidate their products.

Cooperatives can also offer different advantage to farmers, for instance to help manage local resources and avoid a 'tragedy of the commons scenario'. Farmers can collaborate not only in maintaining irrigation systems but also in ensuring that proper animal monitoring is taking place and that grazing pastures are use in a sustainable way.

Through cooperatives, education, trainings or other knowledge sharing activities could take place consequently bridging the 'knowledge gap'. Cooperatives, particularly if they are organized along sectoral lines (like bee-keeping associations and cattle herding association etc) can become organized structures through which experiences and expertise is shared.

549 Interview with Dr. Amin Babayev, Head of the soil analysis department, Azerbaijan State Agrarian University

550 World Bank (2009) *Azerbaijan: Country Economic Memorandum/ A new silk road-export led diversification* (Report No. 44365-AZ) pxxix **http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/01/07/000333037_20100107230943/Rendered/PDF/443650ESW0AZ0P1IC0Disclosed01161101.pdf** (Reviewed May 1, 2012).

551 Interview with Amin Babayev, Head of the soil analysis department, Azerbaijan State Agrarian University

552 Interview with John O'Connell (April 20, 2012) Head of Agriculture Component, USAID Azerbaijan

Cooperatives have long been present in Azerbaijan. A total of 179 agricultural cooperatives were established in compliance with the Law about "Cooperatives" adopted in 1996, which was later repealed (see below). The size of these cooperatives averaged 40-150 hectares.

The presence of cooperatives at the moment is marginal but farmer associations were present and registered at the Ministry of Justice as Ltds.[553] Most of these associations were in operation from 1996-2000 and even some until 2004. According to experts, there used to be a lot of these associations but most of them closed since having an official status was not necessarily beneficial for farmers because of the bureaucratic procedures entailed and taxes that applied.[554]

A new law about "Agricultural cooperatives" is now being discussed in the National Assembly (Milli Majlis), although it is not yet adopted.

The development of cooperatives is a significant part of the Government of Azerbaijan's strategy for agricultural development. According to that new law on agricultural cooperatives, the establishment of such cooperatives will be done voluntarily. Agricultural cooperatives would be established in three forms: producer cooperatives, marketing cooperatives, and credit cooperatives. Agricultural production cooperatives and leasing cooperatives are considered as commercial organizations; however, consumer and mixed cooperatives are non-commercial entities.

The Azerbaijan state would support agro cooperatives by applying tax, customs and insurance deductions, and also through subsidies and low rate loans.

According to experts, to're-collectivize' the system in such a way is considered as a possible way forward to make a switch from subsistence to commercial farming.[555] However, several problems affect efforts to do so.

Most farmers in the country are disorganized. Whether it is because farmers are reminiscing about the past Soviet experience and are concerned about free-riding concerns or simply a question of culture, farmers have refrained from organizing and cooperating through farmer associations or cooperatives to any significant degree. For instance, the number of cooperatives in the country has witnessed a constant decline in the past decade; from 250 registered cooperatives in 2000 to only 73 as of 2010.[556]

Moreover, the registration process appears to be extremely difficult for cooperatives and a significant number of applicants are rejected.[557] For instance, only one group managed to be registered under USAID efforts, not even a formal cooperative.[558] According to their experience, it seems such efforts are being discouraged by the government.

The case of the Ganja Agribusiness Association (GABA) is also illustrative of the problems one might encounter when trying to push for the creation of cooperatives. The organization ran a project to create farmers' cooperatives but according to its chairman, Dr. Vugar Babyev, these organizations were not successful and collapsed once the 4 years project ended.[559] According to him, people simply did not want to cooperate and leadership qualities that could bind these individuals together are lacking.[560] On top of that, stereotypes that associate these new ventures as *kolkhozes* are hard to overcome. Experts usually agree that a lot has to be done to educate farmers about the possible benefit of cooperation.[561]

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553 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

554 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

555 Interview with John O'Connell (April 20, 2012) Head of Agriculture Component, USAID Azerbaijan

556 The State Statistical Committee of the republic of Azerbaijan– AzStat (2012) *Number of Agricultural Enterprises, Service Organizations and Private Ownership 2000-2010* **http://www.azstat.org/statinfo/agriculture/en/index.shtml** (Reviewed April 26, 2012)

557 Interview with John O'Connell (April 20, 2012) Head of Agriculture Component, USAID Azerbaijan.

558 Interview with John O'Connell (April 20, 2012) Head of Agriculture Component, USAID Azerbaijan.

559 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

560 Interview with Vugar Babayev, Chairman of Ganja Agribusiness Association GABA

561 Interview with Habib Abbasov, Editor of GABA ecological agriculture journal

ANNEX 1

USD Annual Average exchange rates

	GEL	AZN	AMD
1996	1.2633		
1997	1.2979		
1998	1.3843		
1999	2.0109		535.06
2000	1.9759		539.52
2001	2.0723		555.08
2002	2.1945		573.35
2003	2.1459		578.76
2004	1.9168		533.45
2005	1.8126	0.9459	457.69
2006	1.7766	0.8927	416.04
2007	1.6706	0.8580	342.08
2008	1.4903	0.8216	305.97
2009	1.6705	0.8038	363.28
2010	1.7823	0.8026	373.6605
2011	1.6865	0.7897	372.5009
2012	1.6544	0.7863	389.3279

Sources: 1. National Bank of Georgia (2012) Statistical Data, http://www.nbg.gov.ge/index.php?m=306&lng=eng (Reviewed May 10, 2012)
2. Central Bank of the Republic of Azerbaijan (2012) Official average exchange rates of Manat http://www.cbar.az/assets/1781/Manatin_xarici_valyutalara_qarshi_resmi_orta_mezennesi.pdf (Reviewed May 10, 2012)
3. Central Bank of Armenia (2012) Dram exchange rate http://www.cba.am/storage/e

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