The Kyrgyz Republic

Opportunities and challenges to agricultural growth

FAO INVESTMENT CENTRE

COUNTRY HIGHLIGHTS

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ACRONYMS

AISP	Agricultural Investment and Services Project
ALP	Agricultural Labor Productivity
CEEC	Central and Eastern European Countries
CIS	Commonwealth of Independent States
EBRD	European Bank for Reconstruction and Development
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
FMD	Foot-and-Mouth Disease
FSU	Former Soviet Union
GAO	Gross Agricultural Output
GDP	Gross Domestic Product
IFI	International Financial Institution
IMF	International Monetary Fund
IRP	Irrigation Rehabilitation Project
KAMIS	Kyrgyz Republic Agricultural Market Information System
KGS	Kyrgyzstani som
LARC	Legal Assistance to Rural Citizens
MSFF	Micro and Small Enterprise Finance Facility
OECD	Organization for Economic Co-operation and Development
OIP-1	First On-Farm Irrigation Project
OIP-2	Second On-Farm Irrigation Project
RADS	Rural Advisory and Development Services
R&D	Research and Development
TFP	Total Factor Productivity
USAID	United States Agency for International Development
USD	United States Dollars
VAT	Value Added Tax
WTO	World Trade Organization
WUAs	Water Users Associations

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The main authors of this report are Johan Swinnen, Professor of Development Economics; Kristine Van Herck and Astrid Sneyers, Research Assistants – all from the Catholic University of Leuven (Katholieke Universiteit Leuven), Belgium. Azamat Akeneev, Agricultural Economist, Business Development and Investment Council, Bishkek, also contributed to the report. The authors would like to convey their sincere thanks to the following people for their constructive guidance: Talay Asylbekov, Banker, EBRD; Eugenia Serova, Senior Advisor to the Director; Emmanuel Hidier, Senior Economist; Michael Marx, Senior Rural Finance Officer; David Lugg, Senior Agronomist; and Kunduz Masylkanova, Economist – all from FAO's Investment Centre Division. Sarina Abdysheva, Investment Officer, Sub-Regional Office for Central Asia, FAO, and Dinara Rakhmanova, Assistant Representative for the Kyrgyz Republic, FAO, provided useful comments. The authors are also grateful for the suggestions made by the participants of the Forum, during which an earlier version of the report was presented and discussed.

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EXECUTIVE SUMMARY

Agriculture is one of Kyrgyzstan's most important economic sectors, contributing to approximately 22% of the gross domestic product and employing about 35% of the country's workforce. After the break-up of the Soviet Union in 1991, the Kyrgyz Republic implemented a number of rapid market oriented reforms and was the first CIS country to join the WTO, under remarkably low protection levels. Successful land-reform policies converted the agricultural sector into an engine for growth during the late 1990s, leading to robust economic expansion. However, despite this promising start, growth in agriculture, as well as in overall economy, stagnated in more recent years. A large share of the population still depends on farming for social security reasons rather than as a business activity. Overall, productivity is low and farmers are not integrated in modern supply chains.

The objective of this paper is to provide an overview of the agricultural and agribusiness sector in the country in a comparative framework, to identify policy bottlenecks, define priority areas for public investment and interventions of IFIs, donors, and development agencies (including the EBRD) and provide policy recommendations to improve the attractiveness of the agricultural sector for investors. It was prepared as a background paper for the Banks' contribution to the Kyrgyz Agriculture Investment Forum organized by the Kyrgyz government on 28 and 29 September 2011 in Bishkek.

Output and productivity

Agriculture remains a very important economic sector in the Kyrgyz Republic.

Although the share of the agricultural sector in total GDP and employment has decreased over the past decade, agriculture still represents a high share in total GDP (22%) and employment (35%). In fact, the Kyrgyz Republic has the highest share of the agricultural sector in total GDP in the region. The food processing industry represents 7.5% of GDP.

Most of the agricultural production is concentrated in small individual farms. Since 1991, there has been a dramatic individualization of land tenure and farm production as a consequence of the process of land and farm reform. In 2007, the individual sector produced 97% of the agricultural output and its

share in arable land use was 73% (compared to respectively 44% and 3% in 1991). There were 106 state farms, 1,448 collective farms, 313,061 peasant farms and 726, 632 household farms.

Gross agricultural output strongly recovered after the initial decline in the first years of transition.

In the first years of transition gross agricultural output strongly decreased in Kyrgyzstan, as it has been the case in all CIS countries. In the country, agricultural output started to increase again in 1995 and, by the beginning of the 2000s, agricultural output exceeded the pre-reform level. By 2009, agricultural output was 18% above its pre reform level.

Productivity increased strongly in the late 1990s, but productivity growth has slowed in the 2000s.

Rapidly after transition, agricultural yields in Kyrgyzstan strongly increased. Driven by the strong increase in land and animal productivity, Total Factor Productivity (TFP), the most comprehensive productivity measure, started to increase already in the first years after transition. Compared to its neighbors, the Kyrgyz Republic managed to do much better as a consequence of the fact that it was among the first countries in the region to start the land reform process, which rapidly led to privatization and individualization of the agricultural sector. Kyrgyz agriculture benefited from shifting from corporate farms to family farms as it is characterized by a relative labor-intensive production structure. The increase in agricultural yields was the main driver behind the increase in TFP in the period 1995-2000.

From 2000 onwards, agricultural yields stagnated (and even slightly declined), which resulted in a stagnation of TFP from 2000 to 2005. Since 2005, agricultural employment has started to decline, which was the main driver behind an increase in agricultural labor productivity and a consequent (small) increase in TFP.

Economic growth was strong in the early 2000s, but recently several crises reduced growth in agriculture and in the entire economy.

In the 2000-2005 period, GDP increased strongly, while unemployment and poverty decreased. However, crisis periods and political instability interrupted this. In 2005, the first crisis hit the region when the president and its government were overthrown during the Tulip Revolution. This resulted in political instability, which had a negative impact on the growth in the overall economy including in the agricultural sector. In 2008, crisis periods hit the region again when the effects of increasing food prices and

the world-wide financial crisis became clear. The economic crisis constrained economic growth in Kyrgyzstan because of reduced inflow of remittances from the large population of Kyrgyz workers who migrated to the resource-rich neighboring countries to work. In 2010, a third shock hit the country when anti-government political demonstrations eventually led to the overthrow of the government. In the south, the political and social tensions translated in inter-ethnic clashes. These conflicts largely affected all economic activities, including in the agricultural sector.

Constraints for growth

An increase in economic growth is central to enhance agricultural productivity. Tackling the political unrest and ethnic violence (as in April-June 2010) is important as they are a constraint for economic growth and have reversed part of the growth which had taken place in the mid-2000s. A stable political and economic environment is also necessary to attract foreign capital in the agricultural and food processing sector.

The level of human capital in the agricultural sector is low. Although there is a favorable age structure in the agricultural sector, the level of human capital in the agricultural sector is low and many of those employed in agriculture do not have adequate skills. In general, Kyrgyz farmers are young, especially compared to the age structure in Western Europe and in Central and Eastern Europe. Barely 5% of the farmers are older than 60 years and approximately 40% of the population is younger than 30 years.

However, despite the favorable age structure, the level of education in the agricultural sector is lower than in other sectors. While in 2009, only 5% of the agricultural workforce had a higher education level than secondary education, almost 30% of the workforce active in other sectors had a higher education level. In addition, there is a mismatch between education and employment: only 7% of those employed in agriculture have a degree in agriculture, while 45% have a degree in fields completely unrelated to agriculture, such as education (33%) or medicine (12%). This may be due to a lack of alternative employment and the absence of the appropriate social assistance programs. Therefore, young unemployed households are not likely to leave the agricultural sector and stop their subsistence farming activities.

A key constraint for growth in rural areas is poor rural infrastructure.

Transport infrastructure. The Kyrgyz Republic is a mountainous country and, in combination with the poor state of the road and railway infrastructure, transport from the producer to the consumer is usually relative expensive and time-consuming. As a result, the country's logistical performances rank among the poorest in the world. The poor railway infrastructure in Kyrgyzstan and its neighboring countries is also an important challenge for international transport as it hampers trade expansion. In addition, trade expansion is hampered by administrative barriers and issues related to customs and border crossing which translate into large informal payments.

Storage infrastructure. Storage capacity is inadequate in the country, which has an important negative effect of the quantity and the quality of Kyrgyz agricultural produce. It is estimated that approximately 15% of the produce is spoiled before it reaches the market to due to inadequate storage. The need for better equipped storage facilities is confirmed by recent anecdotal evidence from Kyrgyz entrepreneurs who indicate that they are in general reluctant to store their products in existing facilities because of frequent electricity outages and outdated infrastructure. Recently, different projects financed by the World Bank (such as, for example, the "Agribusiness and Market Project") are investing in the rehabilitation of storage facilities.

Irrigation infrastructure. In general, the country is well-endowed with water resources for irrigation: the glaciers allow irrigating agricultural land without any significant energy cost. However, since the collapse of the Soviet Union, water management institutions have weakened and infrastructure maintenance has in many places come to a standstill. Recently, there have been substantial investments in the irrigation sector financed by the World Bank, the Asian Development Bank, USAID and the government. However, despite these substantial efforts, it is estimated that still respectively 56% and 79% of the existing off-farm and on-farm irrigation and drainage systems need rehabilitation. Overall the poor maintenance of irrigation infrastructure has led to environmental problems such as land salinization and waterlogging, which have a negative impact on agricultural productivity.

Difficulties faced by farm support services for small and medium-sized farms.

There have been efforts to adapt farm support services to the needs of small and medium-sized farms, but overall participation rate is relatively low and financial self-sufficiency of the extension provision is questionable.

The Kyrgyz Republic has rapidly processed the reform process after transition. As a result of the process of privatization and individualization, the farm structure shifted from a sector dominated by large scale cooperative farms to a sector dominated by a million small or medium-sized producers. However, in general, this shift has been only partially accompanied by reform or upgrading of farm support services and infrastructure for new farm structures, which have fundamentally different needs.

The existing extension services in the country are largely donor financed. Extension services (including to small household and peasant farmers) are provided through the Rural Advisory and Development Services (RADS), which received technical assistance and financial support under the "Agricultural Support Services Project" and later under the "Agricultural Investments and Services Project", both financed by the World Bank.

According to the impact assessment of the "Agricultural Support Services Project", the results are mixed. There has been a substantial increase in the number of farmers participating in the extension services, but overall only a small percentage of the Kyrgyz farm population received extension services in 2006. Moreover, in 2007, when donor financing declined, there was also a large drop in the extension services provided, which raises questions on the self-sufficiency of the system. Important to note is the prominent role that mass-media (radio, newspapers and television) play in providing extension services.

Low investment in the agricultural sector constrains growth for all stakeholders in the supply chain.

There has been a substantial increase in the amount of credit (by banks and microfinance organizations) directed to the agricultural sector. While in 2004, commercial banks only provided KGS 113 million to agricultural enterprises, this increased in 2010 to KGS 3,350 million. Similar figures hold for credit provided by non-financial institutions (micro-finance): it increased from KGS 348 million in 2004 to KGS 5,000 million in 2010. However, the amount of credit provided remains low compared to its share in GDP or employment. The most common type of credit in the agricultural sector is credit provided by non-financial institutions (61% of all credit directed to the agricultural sector).

Working capital credit provision takes place through the microfinance institutions, supplier credit or interlinked contracting. Processing companies face substantial credit constraints themselves which limit their ability to overcome farmers' credit constraints and engage in interlinked contracts. Although there are some examples of successful contracting, there are frequent contract breaches by both parties.

Credit for large investments, such as farm machinery, is usually provided by financial institutions. The availability of long-term lending is limited, which is reflected in high interest rate spreads. The low level of access to credit for investments leads to a lack of farm machinery, although this is also partly due to the farm structure of the country (with lots of smallholders).

Only few farmers are integrated in modern supply chains.

In general, Kyrgyz farmers are not integrated in modern supply chains and the majority of the food products are distributed through open markets or bazaars (usually unprocessed). The instable macro-economic and political climate, the poor judicial system and the lack of FDI are constraints for the integration in modern supply chains. Some may also point to the farm structure (dominance of small farmers) as the main constraint for the development of modern supply chains since modern retailers may prefer to contract exclusively with larger farmers. However, in case that small farmers dominate the sector and represent the majority of the potential supply base, processing companies and retailers exactly need to integrate these small farmers in the supply chain in order to have sufficient supplies.

FDI in the Kyrgyz economy is low compared to the other CIS countries.

Overall, FDI in the Kyrgyz economy is low compared to the other CIS countries. Also, in the agri-food industry, foreign investments are limited. Since 2007, there has been a substantial increase in the inflow of foreign capital in the agri-food industry. However, in 2011, the inflow of foreign capital started to decreased as a result of social tensions and political instability in the country.

In the past, FDI has played an important role in the development of modern supply chains in other countries in the region. While the conditions to start up a new business are relatively favorable in Kyrgyzstan, companies face important constraints when actually engaging in business activities, especially with respect to paying taxes, trading across borders and enforcing contracts. Other constraints for foreign investors are the volatility of the political

system, uncertainty on the economic environment and the lack of physical infrastructure.

There are serious concerns for food safety and quality. Poor animal health and the lack of an effective veterinary service are the most important factors limiting the development of the livestock sector. Poor animal health not only negatively affects animal productivity, but also poses serious public health risks and limits the country's export potential. In addition, the lack of internationally recognized testing facilities is an important constraint for the country's export potential as it prevents Kyrgyz farmers and food processors to establish direct business relationships with potential foreign partners at the end of the supply chain.

There are also serious concerns with respect to food quality. Poor quality of raw material (agricultural products) poses problems for further processing, limiting the export potential and integration in modern supply chains.

In order to improve food safety and quality, the World Bank implemented the "Agricultural Investment and Services Project" which is especially targeted to improving the situation in the livestock sector. It aims to promote the use of vaccines, improve the coverage and quality of the existing advisory services and strengthen the services provided by private veterinarians.

Policy recommendations

An agricultural development strategy in Kyrgyzstan can only be successful if it is a part of a broader development and (rural) social policy strategy.

First, a key element to enhance agricultural productivity is an increase in economic growth. Growth of the non-agricultural economy will pull surplus labor out of the agricultural sector, an evolution which is necessary to increase agricultural productivity and consequently increase agricultural incomes. Political instability, anti-government protests and ethnic violence (as in April-June 2010) are constraints for economic growth and have reversed a part of the growth which had taken place in the mid-2000s.

Overall the authorities have acted rapidly to address the consequences of the June events: social spending was stepped up, emergence aid to the affected households was provided and essential infrastructures, such as energy connections, were rehabilitated. Nonetheless, it is clear that social tensions persist and governance security arrangements continue to be inadequate. A

comprehensive program of reconciliation needs to be pursued with a focus on market recovery in the south (e.g. repair of destructed infrastructure), peace and tolerance building (e.g. respecting human rights for all ethnic groups), youth inclusion and building confidence in security and justice (e.g. by tackling corruption).

Second, it is crucial to invest in rural education and agricultural extension services (including those targeting small household and peasant farms). Investment in (rural) education and extension services would contribute to several objectives, consistent with the overall objective of rural development, such as improvement of the productivity of existing enterprises, the development of new enterprises, and a shift of underemployed farm labor to other activities, thereby increasing labor productivity of the remaining farms. In order to increase the coverage of the extenstion services, policy makers could further explore the role the mass media can play in the existing advisory and extension services.

Third, a successful agricultural development strategy also needs to be integrated with a regional development strategy. Crucial elements are improved infrastructure and a good investment climate. Investments in rural infrastructure such as irrigation, electricity supply and road infrastructure are needed as they will help smaller farmers to integrate in modern supply chains by lowering their transport costs (e.g. by better road infrastructure) or improving the quality of their produce (e.g. constant electricity supply allows better cooling conditions). In addition, improvements in the road infrastructure will improve access to urban areas and thereby attract more off-farm employment. Investments are crucial for improving the competitiveness of the agricultural sector and the entire food-chain, but may have important spillover effects in terms of quality upgrading and guaranteeing food safety. The existing investment climate is performing relatively well in terms of setting-up a new business, but is performing much worse in terms of the ease of doing business (e.g. taxation irregularities, substantial administrative barriers when crossing borders, corruption and problems with contract enforcement). In combination with economic and political instability, these are major constraints for foreign and domestic investments.

Further, stimulating cooperation between small farmers can help them to overcome some of ‘the constraints they are currently facing. For example, access to machinery can be improved by making use of machinery pools.

Finally, although there have been recently some efforts to improve the situation, improvements of both public and private veterinary

services are needed since poor animal health negatively affects agricultural productivity and even threatens public health (e.g. persistence of dangerous animal diseases such as brucellosis).

Priority interventions for EBRD

The Bank has already invested in the country's agribusiness sector, but would like to explore further investment opportunities in this important sector of Kyrgyzstan's economy.

It is important to emphasize that, in the light of these recommendations, the creation of a stable political and economic environment will be an absolute necessity as it will be crucial to provide confidence to private investors to enhance sustainable long-term investments. However, there are still some specific areas in which the EBRD can play an important role in stimulating the growth and performance of the Kyrgyz agri-food system. With respect to this, we can distinguish between areas for policy dialogue with the government and directions for EBRD projects.

Areas for policy dialogue with the government. A key area of attention for the EBRD is the development of the private sector. Building a sustainable private sector which can contribute to growth remains a challenge. While it is relatively easy to start up a business in the country, there are still important constraints afterwards, when actually doing business, such as taxation irregularities, contract enforcement, but also uncertainty created by political instability. Improving the business environment is crucial to stimulate investment. Through policy dialogue with the authorities as well as civil society, the EBRD can assist in creating an attractive investment climate, which is necessary to provide confidence to private investors and enhance sustainable, long-term investments. Creating macroeconomic and political stability, improving the court systems, improving corporate governance of enterprises, improving tendering and licensing procedures, tackling corruption, enforcing existing regulations and increasing the availability of financing to private businesses are key elements in the development of the country's private sector.

Kyrgyzstan's logistical performance ranks among the poorest in the world, which hampers agricultural productivity and the development of modern supply chains. Improvements in Kyrgyz road, rail and electricity infrastructure are crucial. Improving rural infrastructure can make an important contribution to regional development. By improving access to urban areas, off-farm employment and foreign

investment are attracted. Better incomes and new jobs can help to reduce poverty considerably, especially in structurally weak regions.

Directions for EBRD projects. Improving access to finance at all levels of the agri-food supply systems is important. The EBRD has a large and very successful expertise in working with international investors and local companies. This makes the EBRD very well positioned to help the country in this area. One area is the introduction of innovative/alternative financing schemes, such as alternative collateral schemes. Providing funding for technical assistance and training for banks offering leasing is another way to meet the growing demand for credit. Further, providing assistance to processing companies, retailers and traders to develop innovative contract mechanisms will improve farmers' access to capital, inputs and information.

An important constraint for future investments by the EBRD in the Kyrgyz agribusiness industry (loans and equity) is the identification of suitable partners. An commonly used strategy of the EBRD in other countries of the region is to finance investments by foreign companies or joint-ventures between a local and a foreign partner. However, there is only limited interest of foreign companies in the Kyrgyz economy because of the instable political and macro-economic climate (see also "Areas for policy dialogue with the government"). Moreover, an assessment to identify suitable local partners for the EBRD by FAO in nine subsectors (beer, oilseeds, cotton, tomato paste, milk and cheese, leather, meat processing, animal feed and sugar) has shown that most of the existing local processing companies are too small, which makes it difficult to justify stand-alone transactions. In addition, the management staff often lacks the appropriate knowledge and know-how required to engage in an EBRD project such that the assistance of a foreign company is strongly recommended. Currently, in Kyrgyzstan, the EBRD has an equity share in a dairy processing company and has provided a loan to a food retailer.

The agricultural sector has a major gap in appropriate technical and management skills, which constrains the implementation of improved quality and productivity practices. Offering assistance in the establishment of private-public partnerships for the development of well-targeted R&D, extension services and agricultural training will improve the technical and management skills of those active in the agricultural sector.

Chapter 1– Context

Agriculture is one of Kyrgyzstan's most important economic sectors, contributing to approximately 22% of the gross domestic product and employing 35% of the country's workforce. After the break-up of the Soviet Union in 1991, the Kyrgyz Republic implemented a number of rapid market oriented reforms and was the first CIS country to join the WTO, under remarkably low protection levels. Successful land-reform policies converted the agricultural sector into an engine for growth during the late 1990s, leading to robust economic expansion.

However, despite this promising start, growth in agriculture, as well as in the overall economy stagnated and a large share of the population still depends on farming as a social security net rather than as a business activity. Overall, productivity is low and farmers are not integrated in modern supply chains.

An important driver behind the shortfalls in the macro-economic trends and agricultural development has been political instability. Since the Tulip revolution in 2005, the country was thrown in a state of political turmoil which in 2010 resulted in large scale protests. In addition, in 2010, there were also violent clashes between two ethnic groups (Kyrgyz and Uzbeks), which led to the death of 300 persons, the internal displacement of 400,000 persons (at the peak of the crisis) and tense relations between Kyrgyzstan and Uzbekistan. This illustrates that one of the most important factors for the development of the agricultural sector as well as the overall economy is political stability.

Furthermore, investment in the agri-food industry can be a driver behind growth in the agricultural sector, which can be an engine for growth in the overall economy. The European Bank for Reconstruction and Development (EBRD) has already invested in the country's agribusiness sector, but would like to explore further investment opportunities in this important sector of Kyrgyzstan's economy.

The objective of this background paper is to

- provide an overview of the agricultural and agribusiness sector in the Kyrgyz Republic in a comparative framework;
- define priority areas for public investment and interventions of IFIs, donors, and development agencies (including EBRD);
- define policy bottlenecks and provide policy recommendations to improve the attractiveness of the agricultural sector for investors.

This policy note was prepared as a background paper for the Bank's contribution to the Kyrgyz Agriculture Investment Forum ("the "Forum") organized by the Kyrgyz Government on 28 and 29 September 2011 in Bishkek. The objective of the Forum was to promote investments in agriculture and rural development. It brought together participants from both the public and private sectors, in particular potential investors, who discussed modalities to increase investments in Kyrgyzstan's agriculture sector from a policy point of view, as well as concrete investment proposals.

Chapter 2 – Comparative analysis

In order to interpret the agricultural and rural developments in Kyrgyzstan, it is important to consider them in the perspective of the entire economy and in a comparative international perspective. Therefore we compare several structural and performance indicators of the Kyrgyz economy and agricultural sector with benchmarks in the CIS region.[1]

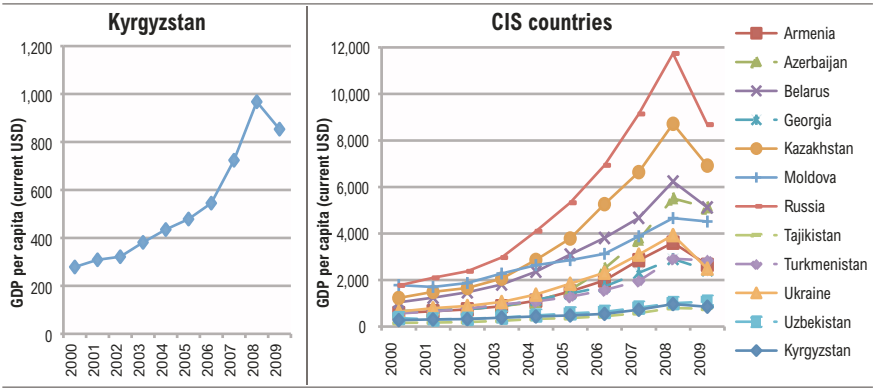
Overall economic performance

Gross Domestic Product. Over the period 2000-2008, Gross Domestic Product (GDP) largely increased in the country, following a similar trend as in the neighboring countries. However, in contrast to the European CIS and the Caucasian countries, GDP per capita growth was slower and started at a lower level: while in 2000, GDP per capita in the Kyrgyz Republic grew from USD279 in 2000 to USD853 in 2009 (22% per year), it increased its neighboring country, Kazakhstan, from USD1.231 in 2000 to USD6.922 in 2009 (51% per year) (Figure 1).

In 2003 and 2004, there was strong economic growth and real GDP increased by approximately 7% per year, but in 2005, the first crisis hit the region when the president and its government were overthrown during the Tulip Revolution. This resulted in political instability, which had a negative impact on the growth in the overall economy including in the agricultural sector. However, already rapidly afterwards the economy recovered and in 2007 and 2008, real GDP growth was on average 8,5% (Table 1).

1 We will compare to other CIS countries in the region, including the European CIS (Russia, Belarus, Ukraine and Moldova), Transcaucasia (Azerbaijan, Armenia and Georgia) and the other Central Asian countries (Kazakhstan, Uzbekistan, Turkmenistan and Tajikistan).

Figure 1:
Gross Domestic Product (GDP) per capita (current USD; 2000-2009)



Source: EBRD Macroeconomic indicators

Table 1:
Real GDP growth (%, 2000-2010)

	2003	2004	2005	2006	2007	2008	2009	2010
Kyrgyzstan	7.0	7.0	-0.2	3.1	8.5	8.4	2.3	-3.5
Central Asia								
Kazakhstan	9.3	9.6	9.7	10.7	8.9	3.2	1.2	6.0
Tajikistan	10.2	10.6	6.7	7.0	7.8	7.9	3.4	5.5
Turkmenistan	17.1	14.7	13.0	11.4	11.6	10.5	6.1	11.0
Uzbekistan	4.2	7.7	7.0	7.3	9.5	9.0	8.1	8.2
Caucasus								
Armenia	14.0	10.5	13.9	13.2	13.7	6.9	-14.2	4.0
Azerbaijan	11.2	10.2	24.3	30.5	23.4	10.8	9.3	9.0
Georgia	11.1	5.9	9.6	9.4	12.4	2.1	-4.5	2.0
Europe								
Belarus	7.0	11.4	9.4	9.9	8.2	10.0	0.2	6.6
Moldova	6.6	7.4	7.5	4.8	3.0	7.8	-6.5	
Russia	7.4	7.2	6.4	8.2	8.5	5.2	-7.9	4.4
Ukraine	9.6	12.1	2.7	7.3	7.9	2.1	-15.1	4.0

Source: EBRD Macroeconomic indicators

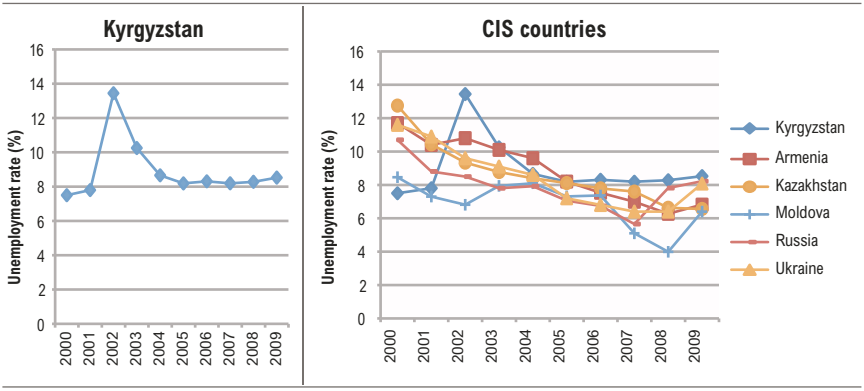
In 2008, crises periods hit the region again when the effects of increasing food prices and the world-wide financial crisis became clear. Economic crisis has constrained economic growth in the neighboring, resource-rich countries (such as Russia), where many of inhabitants of the poorer countries in the region (such as the Kyrgyz Republic) migrated to work (Swinnen and Van Herck, 2009). As a result of the economic crisis in 2009, remittances substantially declined and real GDP growth was only 2,3% *(see Chapter 2, Poverty).*

In 2010, a third shock hit the region when anti-government political demonstrations took place against the president and its government. Protests were fuelled by the popular belief that corruption and misuse of public assets had increased since the political turmoil in 2005. Protests eventually led to the overthrow of the president and the government. In the south (Fergana Valley), the political and social tensions escalated into violent inter-ethnic clashes. In the civil conflict 300 persons were killed, 2.500 injured and at the peak 400.000 were internally displaced. In addition, large scale destruction of public and private property occurred and real GDP declined by 3,5% (World Bank, 2011b).

Unemployment. Over the past years, the official unemployment rate remained constant and currently approximately 8% of the Kyrgyz population is unemployed, which is similar to other countries in the region (Figure 2).[2] However, it is important to note that one should be careful when interpreting these statistics as the official unemployment rate may be underestimated due to hidden unemployment (Russia and Kazakhstan) or over-employment in other sectors, for example in the agricultural sector.
In the resource-rich CIS countries, unemployment has largely decreased in the 2000s due to strong economic growth, which attracted many migrant workers from the neighboring poorer countries (including the Kyrgyz Republic). However, in 2009, this decreasing trend was reversed as a result of the economic and financial crisis.

2 Note that we only include a selected number of countries, since there are no data for some countries (Turkmenistan) or data are unreliable (Tajikistan, Uzbekistan and Belarus).

Figure 2:
Unemployment in selected CIS countries (%)



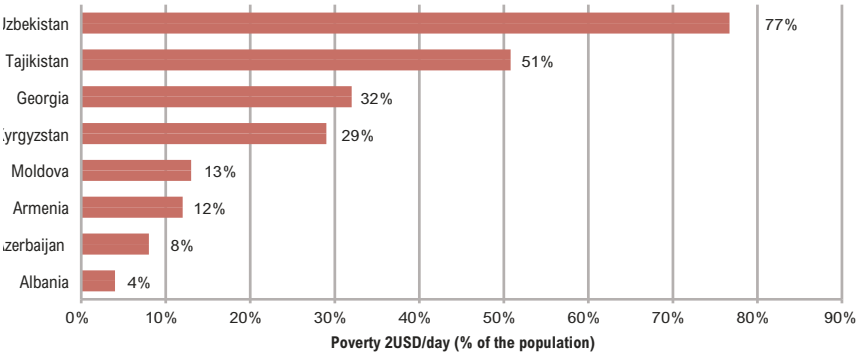
Source: EBRD Macroeconomic Indicators

Poverty

Overall, poverty is high in Kyrgyzstan, where approximately 29% of the population has an income lower than USD2 per day. Also in several other CIS countries a large share of the population is still poor. For example, in Uzbekistan 77% of the population has an income lower than USD2 per day and also in Tajikistan (51%) and Georgia (32%) a large share of the population is living below the poverty line (Figure 3).

Despite these high poverty rates, most countries in the region (including the Kyrgyz Republic) have experienced an impressive decline in poverty over the past decade. For example in Kyrgyzstan, aggregate poverty fell from 40% in 2006 to 32% in 2009 while extreme poverty declined from 9% to 3% over the same period (World Bank, 2011b) (Table 2).

Figure 3:
Poverty in the selected CIS countries (% of the population with an income of less than USD2 per day)



Source: World development indicators (note that we used data from the latest year before 2008 for which data were available to be able a cross-country comparison since do not have post-crisis data for all countries)

However, there are large disparities within countries and especially in the rural areas in the country, as in most other countries in the region, there is a disproportionate share of poor households (Macours and Swinnen, 2008). In the Kyrgyz Republic, where approximately 64% of the population is living in rural areas, rural poverty (48% of the population in 2006) was substantially higher than urban poverty (27%). However, both numbers have decreased in the recent years and in 2008, respectively 37% (rural) and 23% (urban) of the population was poor.

Table 2:
Poverty trends in Kyrgyzstan (%, 2006-2009)

	National		Urban		Rural	
Year	Incidence (% of population)	Change (%)	Incidence (% of urban population)	Change (%)	Incidence (% of rural population)	Change (%)
All Poor						
2006	39.9	-	26.7	-	47.7	-
2007	35.0	-4.9	23.2	-3.5	41.7	-6.0
2008	31.7	-3.3	22.6	-0.6	36.8	-4.9
2009	31.7	0.0	21.9	-0.7	37.1	0.3
2010	33.7	2.0	23.6	1.7	39.5	2.4
Extremely Poor						
2006	9.1	-	5.5	-	11.3	-
2007	6.6	-2.5	3.2	-2.3	8.5	-2.8
2008	6.1	-0.5	3.2	0.0	7.7	-0.8
2009	3.1	-3.0	2.7	-0.5	3.3	-4.4
2010	5.3	2.2	4.2	1.5	6.0	2.7

Source: Living Standards (Level) of the Population in the Kyrgyz Republic, 2005-2009, National Statistical Committee of the Kyrgyz Republic, Bishek, 2010 and 2011 obtained from World Bank (2011b).

An important driver behind the decline in poverty rates in recent years has been economic growth in the neighboring, resource-rich countries in the region, where many of them migrated to work (Swinnen and Van Herck, 2009).[3] Over the years, remittances increased substantially (Table 3). In the Kyrgyz Republic, remittances increased from 78 million USD (or 4% of GDP) in 2003 to 1232 million USD (or 24% of GDP) in 2008.

When in 2008 and 2009, economic growth slowed down, real GDP decreased in most countries in the region, which resulted in an increase in unemployment rates, especially in the resource-rich countries (Figure 2). The increase in unemployment in the richer countries did not only have implications for the domestic population, but also for the many migrants from the poorer countries in the region, including Kyrgyzstan. As a result of the economic crisis in 2009, remittances substantially declined in all countries, but seem to be on the rise again in 2010 (Table 3).

Table 3:
Workers remittances (USD million)

	2003	2004	2005	2006	2007	2008	2009	2010e
The Kyrgyz Republic	78	189	322	481	715	1232	992	1037
Central Asia								
Kazakhstan	147	166	178	187	223	192	124	131
Tajikistan	146	252	467	1019	1691	2544	1748	2065
Turkmenistan	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Uzbekistan	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Caucasus								
Armenia	162	435	498	658	846	1062	769	824
Azerbaijan	171	228	693	813	1287	1554	1274	1472
Georgia	235	303	346	485	695	732	714	824
Europe								
Belarus	222	257	255	340	354	448	358	387
Moldova	487	705	920	1182	1498	1897	1211	1316
Russia	1453	2495	3012	3344	4713	6033	5359	5590
Ukraine	330	411	595	829	4503	5769	5073	5289

Source: World Bank

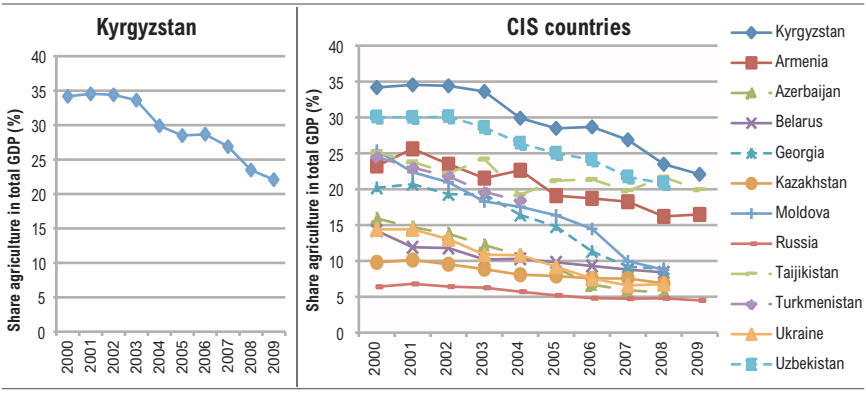
3 For workers from most countries in Transcaucasia and Central Asia, such as Armenia, Azerbaijan, Georgia, the Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan, the major destinations to find employment are Russia and Kazakhstan, whereas workers from Moldova mainly leave for the European Union.

Reinforced by the consequences of the civil conflict in the southern part of the country, the decline in economic growth is reflected in the poverty statistics: while both rural and urban poverty have been declining in the period 2006-2009, there was a turning point in 2010 and poverty increased to respectively 34% (all poor) and 5% (extremely poor). In the rural areas, the increase of the incidence of poverty was found to be larger than in the urban areas (Table 2).

Importance of the agricultural & food industry in the economy

Share of agriculture in total GDP. Over the past decade, the share of the agricultural sector in total GDP has decreased substantially in Kyrgyzstan and since 2000 the share of agriculture in total GDP declined from 34% to 22% in 2009 (Figure 4). Also in the other CIS countries the share of agriculture in total GDP largely declined in the past decade. For example, in Moldova, it was still 25% in 2000, while in 2008 it has declined to less than 9%.
Nevertheless, there is still a huge gap between the share of agriculture in GDP in Kyrgyzstan and the share of agriculture in GDP in Russia (five times higher in Kyrgyzstan) or Kazakhstan (three times higher in Kyrgyzstan). In fact, the share of agriculture in GDP in the country is the highest in the region.

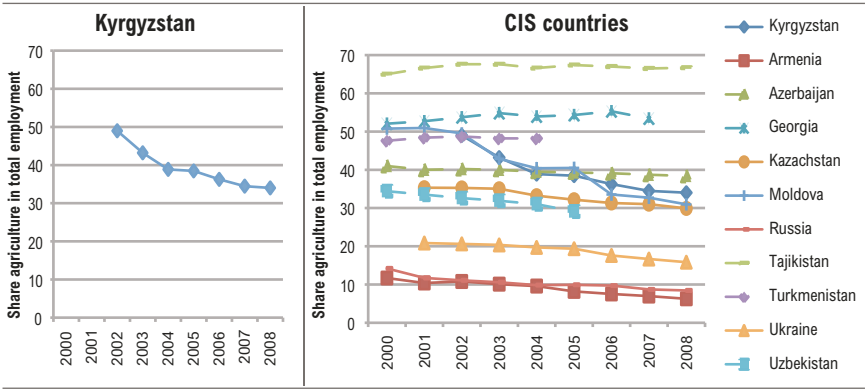
Figure 4:
Share agriculture in total GDP (%)



Source: EBRD Macroeconomic Indicators

Share of agriculture in total employment. In the beginning of the 2000s, the share of agriculture in total employment was huge and approximately one out two individuals were employed in agriculture (Figure 5). However, over the past decade, the share of agriculture in total employment declined rapidly and currently 35% of the population is working in agriculture. If this trend continues the agricultural population will be halved by 2020.

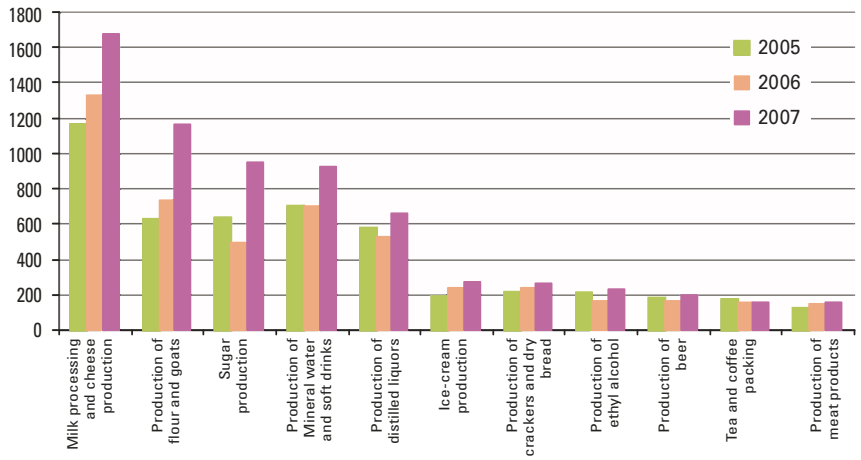
Figure 5:
Share of agricultural employment in total employment (%)



Source: ILO

Importance of the agro-processing industry. The agro-processing industry in the country, accounts for approximately 7,5% of the total GDP. The most important food processing industry by turnover is the dairy industry, with a stable growth in 2005-2007. Flour and sugar producers are the second and third most important food processing industries by turnover. Meat and vegetables processing companies have the lowest turnover (Figure 6).

Figure 6:
Leading food processing sub sectors by turnover (million KGS)



Source: Serova et al. (2009)

In general, processing companies use old machinery, poor or unattractive packaging and labeling and the management lacks marketing skills. Competition is mainly on price rather than on quality and the sector is generating insufficient profits to finance new investments. Furthermore, the collapse of the Former Soviet Union led to the breakdown of the system of vertical integration and coordination between processors and farmers in production chains, lowering contract enforceability ***(see Chapter 3, Integration in modern supply chains)*** (Marx and Hollinger, 2006).

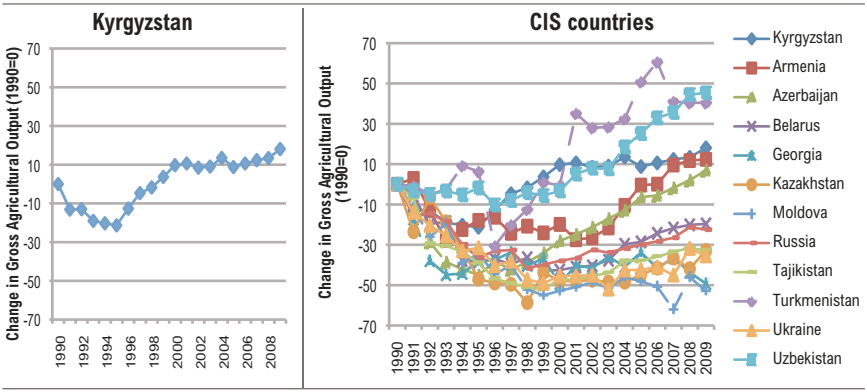
In order to support the Kyrgyz agro-processing industry and enhance the development of modern supply chains, World Bank implemented in 2005 the "Agribusiness and Marketing Project" in Kyrgyzstan. The objective of this project is to enforce supply chain linkages with the aim of increasing value added at the farm gate. In order to do so the project consists of two components: first, there is a "Market Development Component", which aims to strengthen linkages between processors, traders and agricultural producers through the development of the "Agribusiness Competitiveness Center" that monitors markets (for the major commodities) and identifies trade and administrative barriers. Second, there is an "Access to Credit Component". This includes a credit line to participating financial institutions for the financing of 81 agri-business companies (for a total of USD 5,5 million) and the provision of technical assistance and training to loan officials of commercial banks (e.g. on the development of innovative contract mechanisms in the supply chain).

Agricultural output

In the first years of transition Gross Agricultural Output (GAO) strongly decreased in Kyrgyzstan, as it has been the case in all CIS countries (Figure 7). However, in the country, the decline in agricultural output was limited, whereas in the middle income countries, such as Ukraine, Russia and Kazakhstan, agricultural output declined by more than 40%.

Figure 7:

Evolution of gross agricultural output (% change)



Source: National Statistics and FAOstat 2011

Despite differences in the magnitude of the decline of GAO between the CIS countries, there were also differences in the time until recovery and speed of it. In the Kyrgyz Republic, GAO started to increase again in 1995 and by the beginning of the 2000s GAO exceeded the pre-reform level. By 2009, GAO was 18% above its pre-reform level. In fact, we can distinguish three distinct growth patterns over the period 1991-2009:

- Strong decrease of GAO between 1991 and 1995: In the first years after the collapse of the FSU, GAO declined on average by 2% per year as the consequence of liberalization and the break-down of existing supply chains for outputs and inputs.
- Strong increase of GAO between 1995 and 2000: In this period, privatization and individualization of the agricultural sector have been important drivers behind the rapid growth in GAO (on average 6% per year).
- Stagnation of GAO from 2000 onwards: From 2000 onwards, GAO growth stagnated at approximately 0,9% per year.

Also in Uzbekistan, Turkmenistan and two Caucasian countries (Armenia and Azerbaijan), GAO increased rapidly after an initial decline in output to its pre-reform level.

In Russia, Ukraine and Kazakhstan GAO continuously declined until the late 1990s. Since 1999 GAO started to recover. Despite this increase in output, recovery in GAO in these countries lagged behind the recovery in the poorer countries in region and output is still below the pre-reform level. In Kazakhstan, for example, GAO in 2009 was only at 67% of the pre-reform level.

There are differences between commodities (Tables 4 and 5). While in the Kyrgyz Republic wheat production remained relative constant, milk production steadily increased over the past two decades (on average increase 5% per year). This evolution reflects a shift towards a more labor-intensive production structure (driven by the individualization of the farm sector and the rapid growth in importance of family farms) and is similar to the situation in the Caucasian countries (Armenia, Azerbaijan and Georgia) where there was also a strong increase in dairy production.[4] In Russia, Ukraine and Kazakhstan, we observe a different pattern. In these countries, there was a strong increase in wheat production, while dairy production only slowly recovered from the substantial decline in the years after transition[5].

4 Note that also for other labor-intensive productions (such as the production of fruits and vegetables) we observe a strong increase in the production. This illustrates the important role initial resource endowments at the start of the reform play in explaining the development of farm structures and the evolution of agricultural production and productivity. If labor-land ratios are high (as it was the case in the Kyrgyz Republic), i.e. if agricultural production processes are relatively labor intensive, the benefits of shifting to family farms (from corporate farms) are larger, while the costs of breaking up the large scale state farms are lower (Macours and Swinnen, 2002).

5 However it is important to note that his evolution does not necessary indicates that there are constraints for meat and milk production in the region, but mainly reflects a shift towards the comparative advantage of the region. In the early 1970s, the Soviet government began to expand its livestock sector using large budget subsidies to producers and consumers. When in the 1990s, subsidies were eliminated and the CIS countries were integrated into the world markets, it became clear that these countries were not cost-competitive in livestock production, and that, in particular, Russia had a comparative disadvantage in the livestock sector (Liefert, 2002; Liefert et al. 2010).

Table 4:
Milk production (three-year average in million tons)

	1992-1994	1995-1997	1998-2000	2001-2003	2004-2006	2007-2009
Kyrgyzstan	0.93	0.89	1.05	1.17	1.19	1.28
Central Asia						
Kazakhstan	5.38	3.86	3.54	4.12	4.74	5.19
Tajikistan	0.49	0.26	0.29	0.42	0.52	0.61
Turkmenistan	0.63	0.75	0.88	1.39	1.49	1.33
Uzbekistan	3.69	3.48	3.56	3.80	4.56	5.43
Caucasus						
Armenia	0.40	0.43	0.45	0.49	0.59	0.65
Azerbaijan	0.81	0.85	0.99	1.12	1.26	1.40
Georgia	0.40	0.54	0.64	0.74	0.73	0.62
Europe						
Belarus	5.66	5.04	4.82	4.76	5.57	6.24
Moldova	1.01	0.75	0.59	0.59	0.64	0.57
Russia	45.31	36.42	32.61	33.26	31.59	32.36
Ukraine	18.54	15.62	13.26	13.74	13.57	11.88

Source: FAOstat 2011

Table 5:
Wheat production (three-year average in million tons)

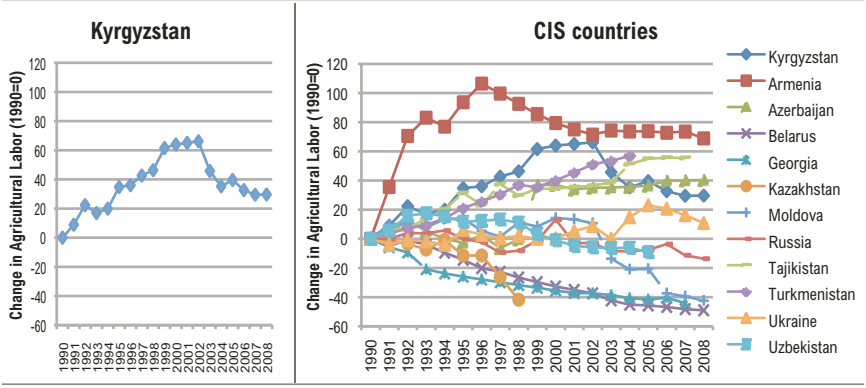
	1992-1994	1995-1997	1998-2000	2001-2003	2004-2006	2007-2009
Kyrgyzstan	0.71	0.95	1.12	1.12	0.93	0.84
Central Asia						
Kazakhstan	12.97	7.71	8.35	12.31	11.53	15.35
Tajikistan	0.16	0.29	0.39	0.53	0.63	0.66
Turkmenistan	0.52	0.62	1.48	2.19	2.90	1.80
Uzbekistan	1.07	2.72	3.56	4.70	5.84	6.33
Caucasus						
Armenia	0.17	0.18	0.22	0.25	0.24	0.24
Azerbaijan	0.84	0.77	0.93	1.57	1.52	1.68
Georgia	0.13	0.16	0.15	0.24	0.15	0.07
Europe						
Belarus	0.30	0.59	0.82	0.89	1.12	1.81
Moldova	0.99	1.14	0.83	0.80	0.87	0.81
Russia	40.61	36.43	30.82	43.90	46.01	58.29
Ukraine	18.40	16.07	12.91	15.17	16.72	20.24

Source: FAOstat 2011

Producers

Agricultural employment. In the early years of transition, agricultural employment rapidly increased as a consequence of the individualization of the sector and by the beginning of the 2000s, agricultural employment was more than 60% higher than the pre-reform level. Since the country at the time of its transition was characterized by high poverty numbers and the absence of a well-functioning social safety net, the agricultural sector is said to have provided a buffer role during this period, both in terms of labor allocation and in terms of food security (Seeth et al., 1998). From 2002 onwards, the economic climate started to improve and agricultural employment started to decrease (Figure 8).

Figure 8:
Evolution in agricultural employment



Source: National statistics, ILO, Asian Development Bank

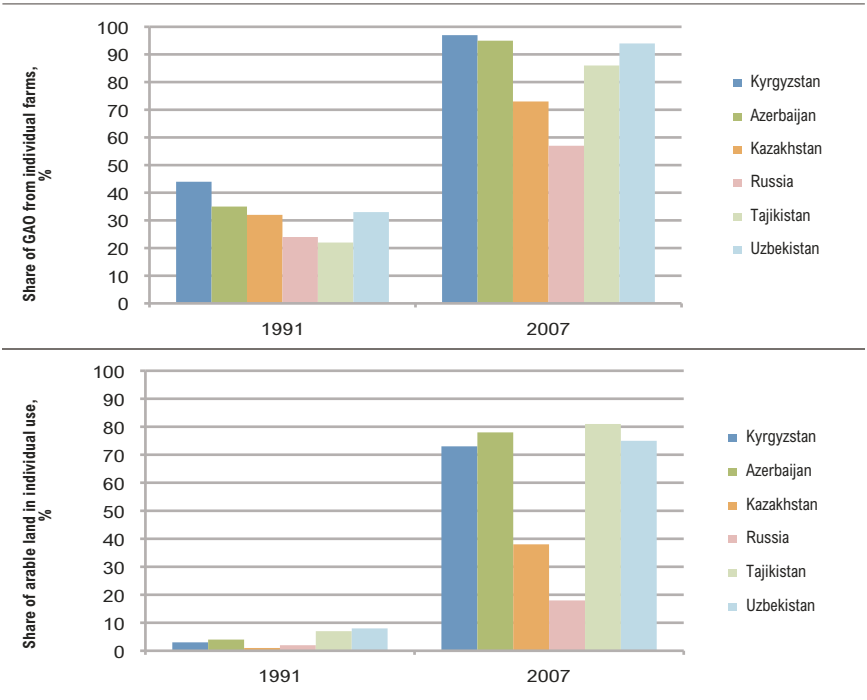
This is very similar to the situation in Armenia and Azerbaijan where agricultural employment also strongly increased in the first decade of transition and afterwards declined. In other CIS countries, such as Belarus, Georgia and Kazakhstan, agricultural employment started to decline immediately after the start of the reforms and continued to decline afterwards.

Farm structure. During the period of the centrally planned economy, almost the entire agricultural production came from either state or collective agricultural enterprises. Since 1991, there has been a dramatic individualization of land tenure and farm production as a consequence of the process of land and farm reform.
In 1991 the individual sector in Kyrgyzstan, consisting of hundreds of thousands of small household plots, contributed to 44% of GAO on just 3% of arable land. By 2007, the share of the individual sector

in GAO was 97%, while the share of the individual sector in arable land had increased to 73% (Figure 9) (Lerman and Sedik, 2009b). There were approximately 106 state farms, 1,448 collective farms, 313,061 peasant farms and 726,632 household farms in 2006 (National Statistics Committee).

The share of GAO per share of arable land is larger for household and peasant (individual) farms compared to enterprises. Individual farms achieve higher levels of land productivity than agricultural enterprises (Lerman and Sedik, 2009b). The individualization of agriculture has thus contributed to significant recovery of agricultural production in Central Asia in the second half of the 1990s after the steep decline in GAO that characterized the early years of transition (1990-1994) (Lerman and Sedik, 2009b).

Figure 9:
Importance of individual farming (in GAO and in land use; %)



Source: Lerman and Sedik (2009a)

The shift of land holdings from enterprises to individual farms has been sharper in livestock than in crop production. Currently, livestock production is almost exclusively concentrated in individual

farms while agricultural enterprises, with less than 20% of their output in livestock products (averages for 1998-2007), specialize in field crops (Lerman and Sedik, 2009a).

Input use

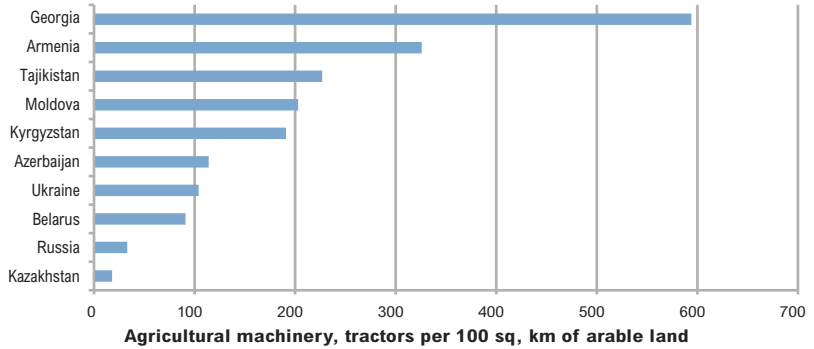
The collapse of the Former Soviet Union led to the disappearance of all supply chains, including these for agricultural inputs. As a consequence, the use of agricultural inputs declined dramatically.

Immediately after the collapse of the Former Soviet Union and during the initial stages of land reform, the most powerful machinery was sold abroad because it was considered unsuitable for the new small-scale household and peasant farms. For example, the number of tractors decreased after transition and by 2004, there were 12% less tractors than before the reforms in Kyrgyzstan (Swinnen et al., 2010). However, the large machinery was not replaced with smaller machines, leading to a severe deficit in agricultural machinery (Guadagni and Fileccia, 2009).

In fact, the Kyrgyz Republic has fewer tractors per ha than most other countries in the region with a comparable farm structure (Figure 10). In 2007, there were 191 tractors per 100 square kilometer (km), while in Armenia and Georgia this was respectively 326 and 594. Only in Azerbaijan, the number of tractors per squared km was lower than in Kyrgyzstan. In addition, most of the Kyrgyz machinery is outdated and not adapted to the current farm structure: only 9 per cent of the tractors and 14 percent of the combine harvesters had been replaced since 1990 (Guadagni and Fileccia, 2009).

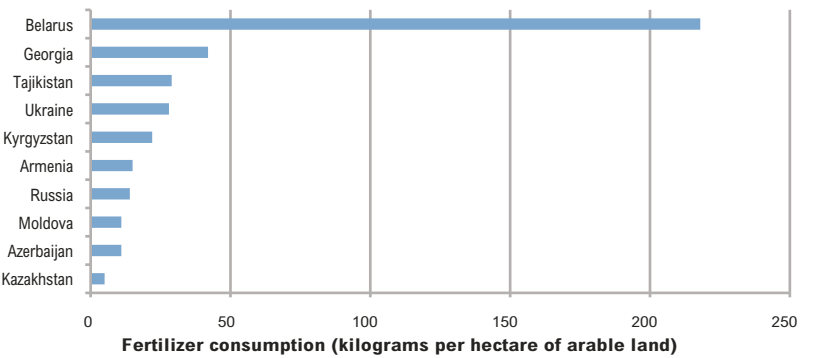
Furthermore, there has also been a sharp reduction in the use of fertilizer. In the past decade, fertilizer use recovered, but it is still low compared to several of the CIS countries, although substantial differences in soil fertility make it difficult to compare (Figure 11).

Figure 10:
Agricultural machinery (tractors per 100 sq. km of arable land; 2007)



Source: World Development Indicators
For comparative purposes, data of 2007 are being used.

Figure 11:
Fertilizer use (kg per ha of arable land; 2007)



Source: World Development Indicators
For comparative purposes, data of 2007 are being used.

The majority (95%) of the fertilizers is imported from Uzbekistan and Kazakhstan and therefore the closure of the Uzbek and Kazakh borders in April 2010 is expected to have a negative impact on the use. In addition, the company that supplied most of the fertilizer, OshKrastek, needed to cease its activities after the June events in the South for legally related issues. The company left a substantial void in the fertilizer importation and distribution network (Dhur et al., 2010).

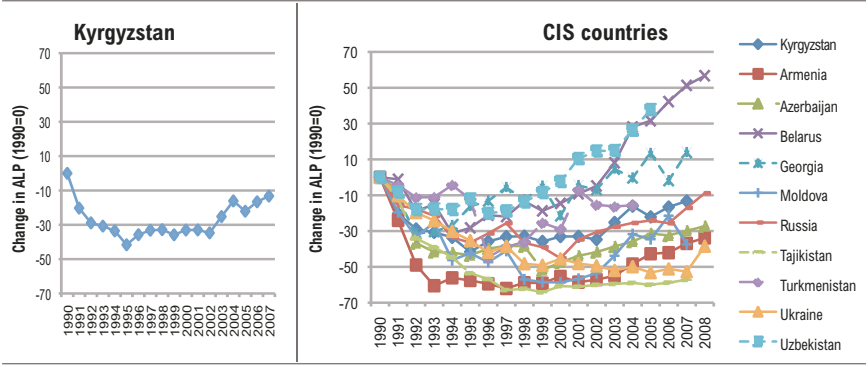
Agricultural productivity

In order to analyze agricultural productivity in the Kyrgyz Republic, we consider three different measures of productivity, namely agricultural labor productivity, land/animal productivity for 3 different commodities (wheat, cow milk and cotton) and total factor productivity.

Agricultural Labor Productivity. Figure 12 illustrates the evolution of Agricultural Labor Productivity (ALP), measured as output per farm worker. As in the case of output, we can distinguish three distinct periods:

- Strong decrease in ALP in the period 1990 to 1995: In this period, ALP strongly decreased as a result of the combination of a decrease of agricultural output and an increase of agricultural employment. After five years of transition, ALP was only 58% of the pre-reform level which corresponds to an average decrease of 8,3% per year.
- Stagnation of ALP in the period 1996 to 2001: In this period of individualization of the agricultural sector, the combination of an increase in agricultural output and a further increase of agricultural employment led to a stagnation of ALP.
- Increase in ALP from 2002 onwards: When in 2002, agricultural employment started to decrease, ALP steadily increased by on average 4,3% per year.

Figure 12:
Evolution of Agricultural Labor Productivity (ALP) (% change)



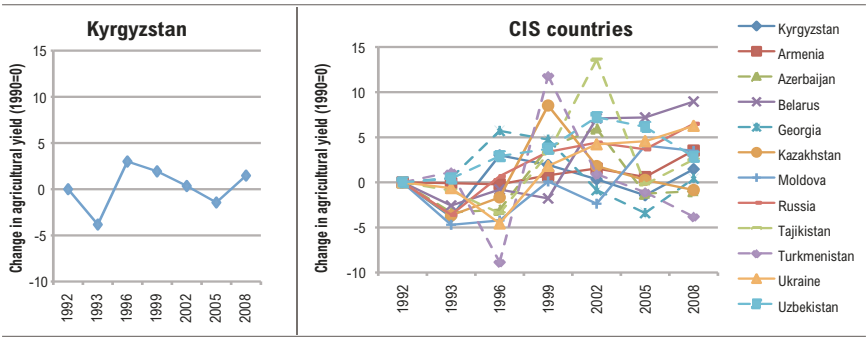
Source: National statistics, ILO, Asian Development Bank

Overall, in all CIS countries ALP strongly declined in the first years of transition. However, the fact whether there has been recovery and the timing and speed of the recovery process strongly differs

between countries. For example a similar evolution in ALP can be found in Armenia and Azerbaijan, which also have a similar pattern in the evolution of agricultural output and employment as Kyrgyzstan. However, in both countries the decline in ALP has been stronger than in Kyrgyzstan. Also in some of the other CIS countries, such as Ukraine, ALP strongly declined.

Agricultural land/ animal productivity. Rapidly after transition, agricultural yields in the Kyrgyz Republic increased (Figure 13). However after 2000, yields stagnated, while in other countries in the region yields continued to increase.

Figure 13:
Agricultural yield index

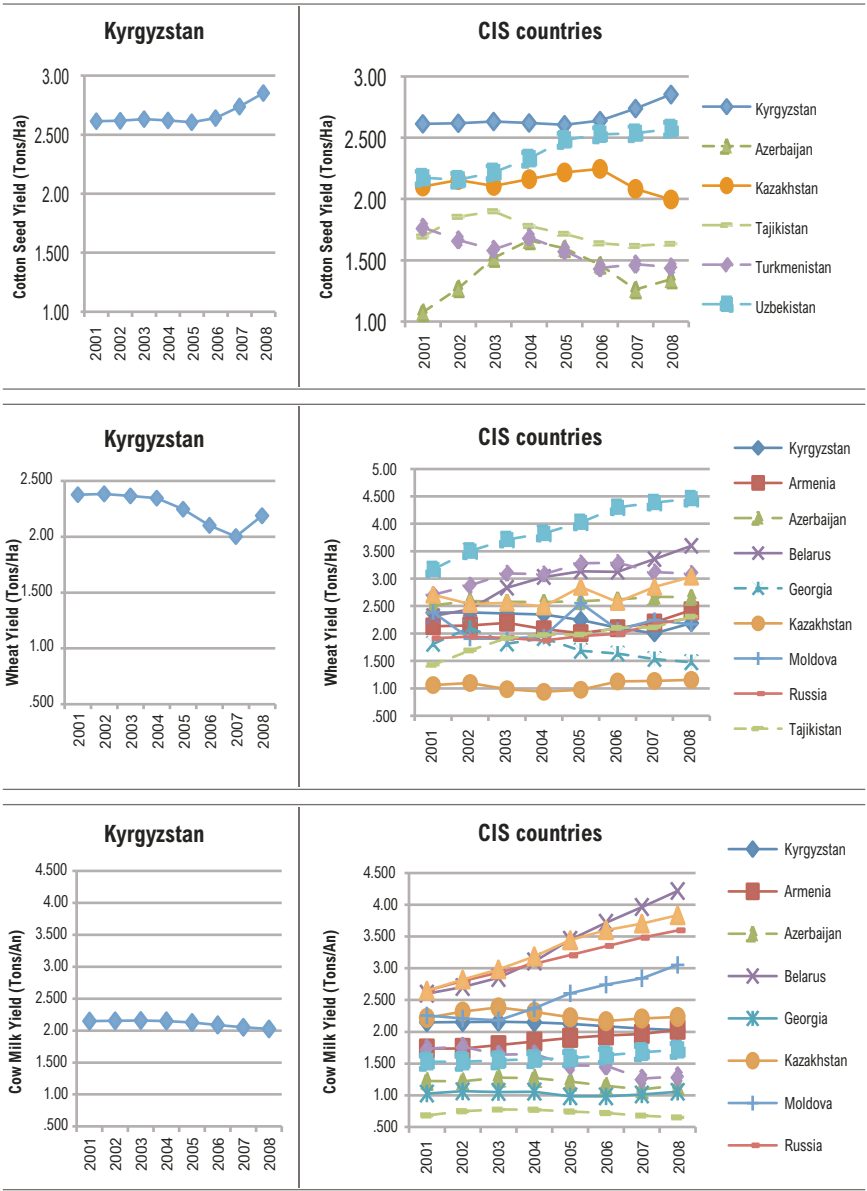


Note: This index is based on the evolution of agricultural yields relative to 1992. The yields are calculated as a 3 year moving average of wheat, cotton and dairy yields.
Source: FAOstat 2011

There are large differences between commodities (Figure 14)[6]. In general, labor intensive crop yields went up due to farm restructuring (Serova et al., 2009). However, at the same time farm fragmentation leads to a serious disadvantage in accessing modern machinery and technologies compared to other CIS countries like Kazakhstan where farms are less fragmented. This had especially negative implications for those producing field crops. In addition, since 2001 wheat yields have been decreasing due to deterioration of the seed production, irrigation systems and difficulties in the procurement of imported mineral fertilizers (Serova et al., 2009). Cotton yields on the other hand increased in 2007 and are high compared to the other cotton producing CIS countries.

6 In order to avoid substantial year-to-year variation, we opted to present yield data for the individual commodities as a three-year moving average, which will capture the long-term evolution.

Figure 14:
Wheat, cotton and milk yield (Tons/Ha for wheat and cotton seed)

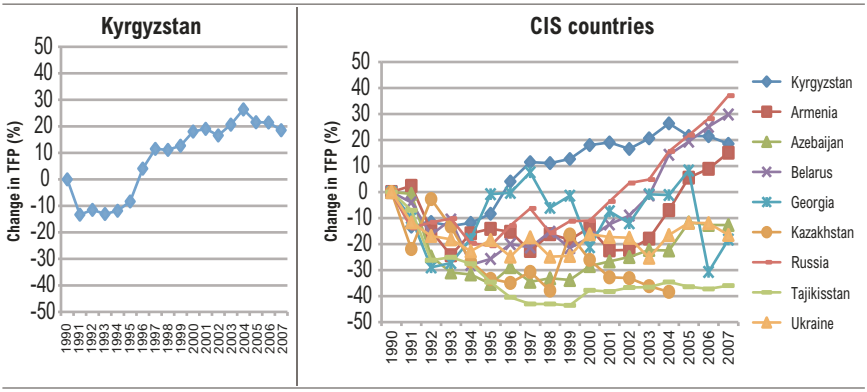


Source: FAOstat 2011

Cow milk yields have been decreasing since 2004 due to insufficient feeding (Serova et al., 2009). However, compared to some other labor intensive CIS countries, milk yields are relatively high.

Total factor productivity. The most comprehensive measure of productivity is Total Factor Productivity (TFP). Only a few studies have measured TFP in transition countries.[7]. For this report we have drawn on Swinnen et al. (2011) and because of data constraints we only extended the TFP calculations up to 2007 (Figure 15). Figure 16 combines the three productivity measures: ALP, yield (GAO/hectare) and TFP.

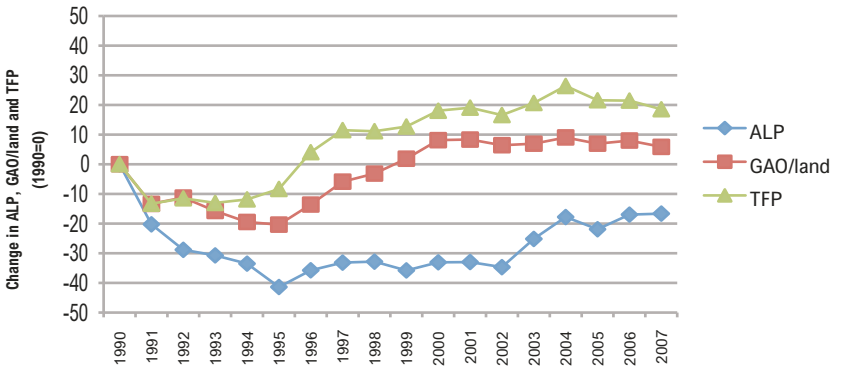
Figure 15:
Evolution of Total Factor Productivity (TFP) (% change)



Source: Own calculations

7 Studies measuring TFP in the FSU or CEEC include Macours and Swinnen, 2000b; Lerman et al., 2004; Swinnen and Vranken, 2010; Swinnen et al. 2010, 2011.

Figure 16:
Agricultural labor productivity, yield and total factor productivity in The Kyrgyz Republic



Note: ALP calculated as in section 2.7, yield is gross agricultural output per hectare (based on FAOstat) and TFP calculated as described higher.
Source: Own calculations

Similar to the evolution of ALP and yields, we can distinguish three distinct periods in the evolution of TFP over the period 1990-2007:

- Initial decrease and stagnation of TFP in the beginning of the 1990s: After the collapse of the FSU, agricultural yields (GAO/land) and ALP declined because of a combination of a decrease in output and an increase in employment.
- Increase in the mid-1990s until the beginning of the 2000s: Already in the mid-1990s, TFP in Kyrgyzstan started to increase, driven by the strong increase in land and animal productivity. Between 1995 and 2000, TFP increased by approximately 5,3% in the Kyrgyz Republic. This is in contrast with the situation in most other countries in the region, where TFP continued to decline or stagnated at a level well-below the pre-reform level. The reason why the Kyrgyz Republic managed to do much better than its neighbors has to do with the way it implemented reforms after transition.

The Kyrgyz Republic was among the first countries in the region to start the land reform process, which rapidly led to privatization and individualization of the agricultural sector.[8] Since Kyrgyz agriculture was characterized by a relative labor-intensive production structure (Figure 17), the benefits of shifting to family farms (from corporate farms) are larger, while the costs are lower and this for several reasons.

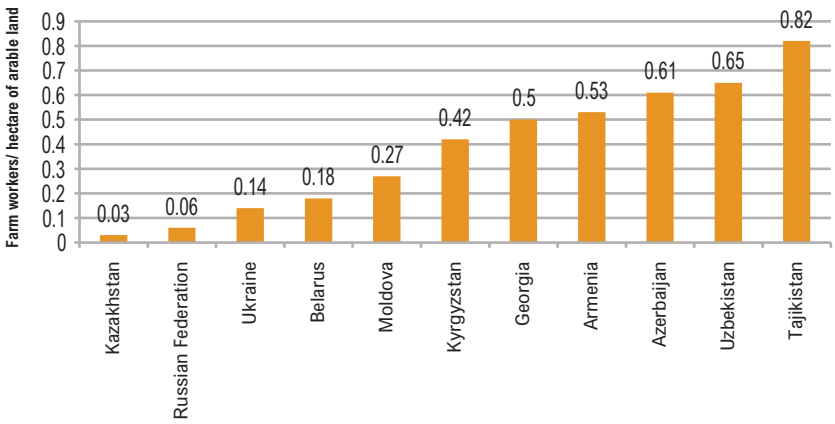
First, the returns to incentives that boost effort are larger in labor intensive agricultural systems. Because of the sequential and biological nature and spatial dimensions, effort in agricultural production is difficult to measure and particularly corporate farms are coping with labor supervision problems. Since farm individualization boosts labor effort, the productivity gains of breaking up the large-scale agricultural production units into individual farms are larger when pre-reform land-labor ratios are lower.

Second, scale economies vary by commodity and diseconomies of scale in production are typically characterized by high labor intensity (Mathijs and Swinnen, 1998). For example, grain production (less labor-intensive sector) tends to have more economies of scale because it is more suitable for mechanization than, e.g. dairy or vegetable production (more labor-intensive sector). Therefore, the losses in scale economies and disruption costs are lower in labor-intensive systems. On the other hand, in land- and capital intensive systems, households were often lacking the financial means and inputs to farm more efficiently so that households were less inclined to start farming on their own.

Therefore, breaking up the large scale agricultural production units results in less productivity losses –or might even result in productivity gains- for labor intensive systems, while the opposite holds for land- and capital intensive systems where the share of corporate farms is higher. In the Kyrgyz Republic, this is reflected in a substantial increase in land productivity in the mid-1990s, which has been the main driver behind the increase in TFP.

8 Land reform was initiated in the period 1991-1993, when land rights were distributed as shares to rural residents. The share mechanism facilitated the augmentation of household plots and the emergence of peasant farm. In 1994 the land reform process accelerated and there was a mass distribution of transferable land rights (with a target covering 75% of all arable land), this resulted in a sweeping individualization of farming, especially after recognition of private ownership in 1998 (previously land shares were 99 year lease contracts between the rural residents and the state). Note that land reform covered only arable land and pastures remained owned by the state.

Figure 17:
Labor intensity in different CIS countries at the start of the reform



Source: Swinnen et al. (2011)

- Stagnation of TFP growth from 2000 onwards: Although between 2002 and 2004 TFP has grown 4,9%, overall TFP growth was limited in the period 2000 and 2007 (on average 0,1% per year). This is the result of stagnating land productivity between 2000 and 2006 (on average 0,4% decrease in agricultural land productivity per year). However, in the period 2002-2004, there was a small increase in TFP, mainly driven by the increase in ALP. In this period, ALP increased as the result of an increase in the outflow of agricultural employment.

Trade and foreign direct investment

Trade. Trade of agri-food products is mainly taking place between Kyrgyzstan and the other CIS countries. Official trade statistics show that Kyrgyzstan is a net importer of agri-food products (Table 7). However, a large share of the trade is unregistered, especially between Kazakhstan and the Kyrgyz Republic, which makes these data incomplete.[9]

9 For example, Almaty dairies buy year-round milk from Kyrgyz middlemen. The Kyrgyz Republic's veterinary services department issues export permits for around 50.000 litres of milk per day and estimates that there is approximately another 50.000 litres per day that illegally exported to Kazakhstan (Van Engelen, 2011).

Table 7:
Trade of agri-food products (in million USD)

	2007	2008	2009	2010
Export	201.2	218.6	188.2	165.1
Import	376.5	538.7	506.6	426.2
Trade balance	-175.3	-320.1	-318.4	-261.1

Note: Import and export data of 2010 are based on the first 9 months of 2010.
Source: Azamat A. (2011)

Total export volume of livestock, crops and food and processing industry products has declined from 201,1 million USD in 2007 to 165,1 million USD in 2010. The share of livestock, crops and food and processing industry products in total exports has declined from 17,7% in 2007 to 13,1% in 2009, but increased again up to 14,4% in 2010 (Table 8).

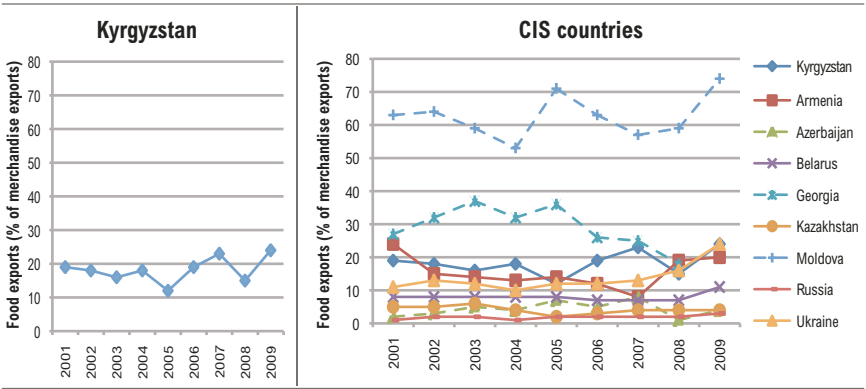
Table 8:
Export of agri-food products (in million USD)

	2007	2008	2009	2010
Livestock production	19.8	21.2	12.9	7.6
Crop production	97.3	105.2	96.2	83.8
Food and processing industry produces	84	92.2	79.1	73.7
Total	**201.2**	**218.6**	**188.2**	**165.1**
Share in total export volume (%)	**17.7**	**13.5**	**13.1**	**14.4**

Note: Export data of 2010 are based on the first 9 months of 2010.
Source: Azamat A. (2011)

Among the CIS countries, the contribution of agri-food trade to the economy varies from being the largest source of foreign exchange, in the case of Moldova, to being almost negligible, in the case of Russia (Figure 18).

Figure 18:
Food exports (% of merchandise exports)



Source: World Bank Development Indicators (2011)

In 2012, the country plans to join the Customs Union with Belarus, Russia and Kazakhstan. Accessing the Customs Union would lead to freer trade with the other partners of the Union, including Russia and Kazakhstan, Kyrgyzstan's main trading partners for agricultural products. Other potential benefits mentioned are the preservation of petroleum import supplies from other members of the Customs Union and increased attractiveness for Foreign Direct Investments (FDI) from these countries because of the lower labour costs in the Kyrgyz Republic (IMF, 2011). However, there are also some negative aspects since membership of Kyrgyzstan to the Customs Union could complicate the country's ties with other WTO members because of incompatible trade regulations and higher tariffs between the Customs Union and other WTO countries (Nichol, 2011). In case the Kyrgyz Republic would adopt higher tariffs (as in the Customs Union), it would need to offer a compensatory adjustment to WTO members so that the regime would not be more unfavorable than the status quo (typically by reducing particular tariff lines) (IMF, 2011). Further, the Kyrgyz Republic is expected to lose income from re-exports as its import tariffs will be at the same level as the Customs Union. Currently, the country is re-exporting mostly Chinese goods, which are under a preferential trade agreement exported to the other CIS countries. Table 9 provides an overview of the existing tariffs in the Kyrgyz Republic and the Customs Union.

Table 9:
Tariffs in Kyrgyzstan and the Customs Union in 2011 (%)

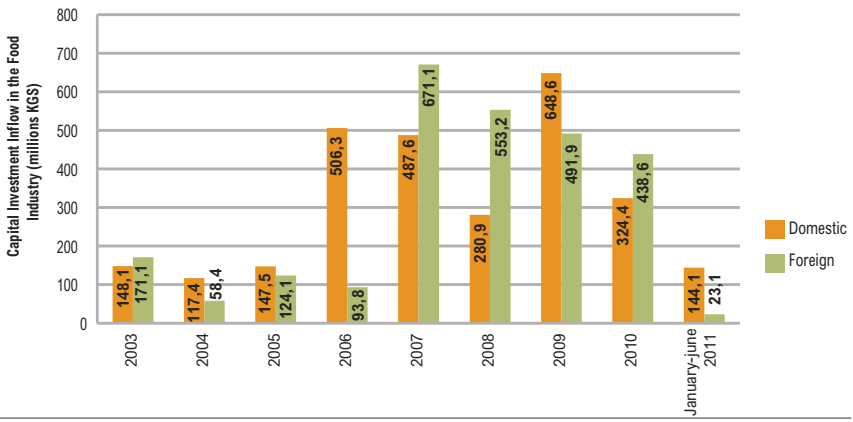
	Kyrgyzstan	Customs Union
Agricultural products	7.9	10.8
Industrial products	4.3	10.8
Overall	5.1	10.8

Source: IMF (2009)

Foreign Direct Investment. Investments in the agri-food industry in the more economic advanced transition countries, such as the new member states of the EU, have been one of the, if not the, main engine behind productivity growth, quality improvements and enhanced competitiveness through the introduction of vertical coordination mechanisms in the supply chain. A substantial part of these changes in the agricultural supply chain have been triggered by FDI in the agro-processing industry, but horizontal spillovers have been arisen as domestic companies rapidly started copying these management innovations (Dries and Swinnen, 2004). Besides horizontal spillover effects, vertical coordination also has important vertical spillover effects as it increases productivity and quality in the food supply chain (see for example Gow et al., 2000; Dries et al., 2009; Van Herck, et al. 2011). Overall, FDI in Kyrgyz economy is low compared to the other CIS countries. While in 2010, FDI per capita was in most CIS countries well above 1.000 USD per capita (with a maximum in Kazakhstan of 5.000 USD per capita), FDI per capita in Kyrgyzstan is among the lowest in the region with only 183 USD per capita.

In general, FDI in the agricultural sector is relatively limited, while FDI in the food industry (manufacturing sector) is more important. Data show that since 2007, there has been a substantial increase in the inflow of foreign capital in the agri-food industry and in 2007, 2008 and 2010, foreign investments even exceeded domestic capital investments. However, in 2011, there was a significant drop in the inflow of foreign capital (Figure 19).

Figure 19:
Capital Investment Inflow in the Food Industry (million KGS*)



Note: 1 million KGS = 6.900 USD
Source: National Statistics

Furthermore, there is anecdotal evidence of successful investments by the Turkish Efes and Coca-Cola (joint-venture - invested in 1996 in bottling and distribution plant), the Russian dairy company Wimm Bill Dann (invested in 2000 in dairy production factory in Bishek) and the German Reemtsma (joint-venture – invested in cigarette manufacturing company).

The Kyrgyz Republic may provide opportunities for foreign investors. For example, companies registered in the country can be 100% foreign owned and there are equal legal rights for both local and foreign investors (however foreigners cannot own agricultural land). In addition, there is a favorable fiscal climate (profit and income tax is 10% and VAT is 12%).

Summary

After the break-up of the Soviet Union in 1991, Kyrgyzstan was one of the first countries to implement a number of market oriented reforms and it was the first CIS country to join the WTO under remarkably low protection levels. Successful land-reform policies converted the agricultural sector into an engine for growth during the late 1990s, leading to robust economic expansion and substantial increases in agricultural productivity.

However, despite this promising start, growth in agriculture, as well as in overall economy stagnated in the past decade. Agriculture still

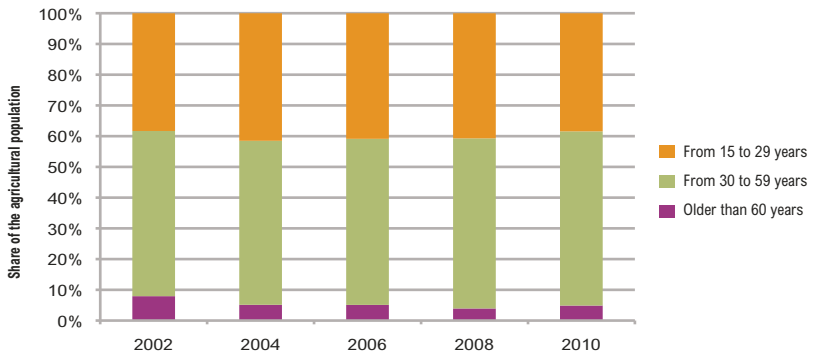
represents a high share in total GDP (22%) and employment (35%) and also in terms of growth of the overall economy and agricultural performance the country is still lagging behind several other CIS countries in the region. Finally, there is only modest growth of modern agri-food chains, both at the consumer and producer level and currently they only represent a negligible share of the agricultural production.

Chapter 3 – Challenges and opportunities

Human capital in the agricultural sector

In general, Kyrgyz farmers are young, especially compared to the age structure in Western Europe and in Central and Eastern Europe. Barely 5% of the farmers are older than 60 years and approximately 40% of the population is younger than 30 years (Figure 20).

Figure 20:
Age structure of those employed in agriculture in the Kyrgyz Republic (%)

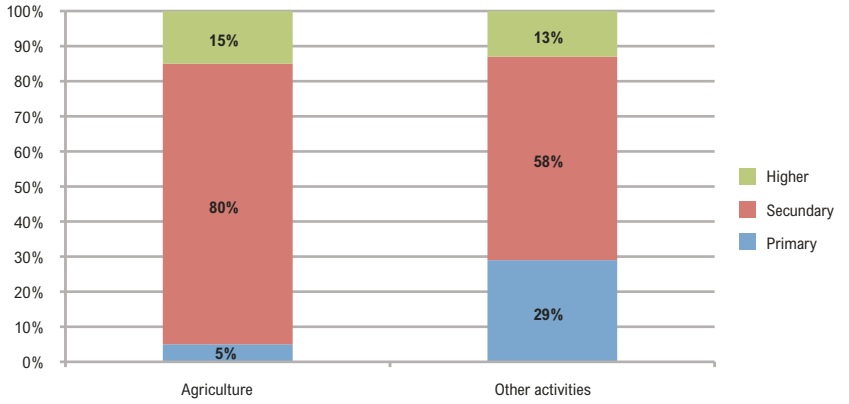


Source: Census 2009

To some extent this reflects the general age structure in the country: more than one third of the population is younger than 15 years and the average age in the Kyrgyz Republic is 27 years (national statistics). However, it may also be an indicator for hidden (youth) unemployment since young people may engage in household farming activities when there are no other employment alternatives.

This is partially confirmed by our data on the level and the type of education in the agricultural sector. In general, the level of education in the agricultural sector is lower than in other activities (Figure 21). While in 2009, only 5% of the agricultural workforce had a higher education level than secondary education, almost 30% of the workforce active in other sectors had a higher education level.

Figure 21:
Level of education of those employed in agriculture in the Kyrgyz Republic (%)

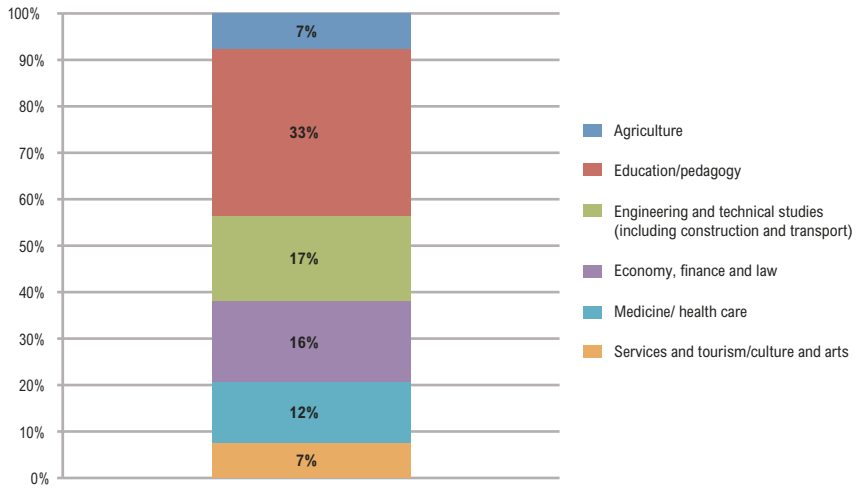


Source: Census 2009

However, even more important is the type of education that those employed in the agricultural sector have. Overall, only 7% of those employed in agriculture, who received professional education, have chosen agriculture as their field of study (Figure 22). The majority of those employed in agriculture have a degree in education (33%), engineering and technical studies (17%) and economy (16%).

This mismatch between education and employment may be an indication that there are only limited employment opportunities in alternative sectors. Unemployed individuals start working in agriculture due to a lack of alternative employment and the absence of the appropriate social assistance programs. In general, these individuals will not be motivated and do not have the appropriate skills, which constraints productivity growth.

Figure 22:
Type of education of those employed in agriculture in the Kyrgyz Republic (%)



Source: Census 2009

Between 2000 and 2008, the Kyrgyz Republic spent annually between 1% and 1,5% of GDP on social assistance. In the other CIS countries, spending on social assistance is also low ranging between 0,5% in Tajikistan and 2% in Ukraine, which is still lower than in the OECD countries where social spending on average augments to 2,5% of GDP (World Bank 2009).

Besides the total spending, also the coverage and the targeting accuracy are low in the country. The coverage rate - the share of households in the poorest quintile of the population reached by social assistance programs – is 31% and varies between 0% and 80% in the region. The targeting accuracy of social benefits - the share of benefits going to the poorest quintile of households - is also low (37% in Kyrgyzstan).

Infrastructure

A key constraint for growth in rural areas is the poor rural infrastructure, including the irrigation and transport infrastructure.

Irrigation. In general, the country is well-endowed with water resources for irrigation: the glaciers allow irrigating agricultural land without any significant energy cost (Serova et al., 2009). Nevertheless, since the collapse of the Soviet Union, water

management institutions have weakened and infrastructure maintenance has in many places come to a standstill (Bucknall et al., 2003). Many canals, gates and pumps are damaged or badly maintained, which resulted in land salinization and waterlogging. Bucknall et al. (2003) finds that approximately 12% of the irrigated area in the Kyrgyz Republic is salinized. In addition, there are very few investments in new techniques, which could have a substantial impact on yields, such as for example drip irrigation for apple production (Serova et al., 2009).
However, recently there have been substantial investments in the irrigation sector financed by the World Bank, the Asian Development Bank, USAID and the government, such as for example, under the On-Farm Irrigation Project (OIP-1) and latter under the Second On-Farm Irrigation Project (OIP-2) by World Bank. A core activity of the OIP-1 was strengthening services (training and support) to about 450 water users associations (WUAs), which are the main institutions responsible for on-farm irrigation operation and maintenance. Financed by the government, WUA Support Units were set up at the national, provincial and district levels to assist WUAs in the formation, registration and implementation stages of their development. Credits for rehabilitation were granted to WUAs only after they had passed a series of milestones designed to strengthen their administrative and institutional capacities. Support to the WUAs (both for physical infrastructure and training) continues under Project II.

As a result of the rehabilitation projects financed by World Bank, the Asian Development Bank, USAID and the government, an area of 336.300 ha of off-farm irrigation and drainage systems and 223.651 ha of all on-farm systems has been rehabilitated (Ministry of Agriculture and State Committee for Water Resources and Land Improvement, 2010) (Table 10). However, despite these efforts, it is estimated that still respectively 56% and 79% of the off-farm and on-farm irrigation and drainage system needs rehabilitation.

Table 10:
Summary of areas rehabilitated up to 2010

Project	Implementation Period	Off-Farm Systems (ha)	Independent/On-Farm Systems (ha)
Irrigation Rehabilitation Project (IRP)	1998-2006	251,300	-
Chui Area Agricultural Development Project	2000-2009	-	51,215
First On-Farm Irrigation Project (OIP-1)	2003-2008	-	121,436
Water Management Irrigation Project (WMIP)	2006-2011	85,000	-
Second On-Farm Irrigation Project (OIP-2)	2007-2013	-	51,000
USAID WUA Support Project	2004-2010	-	42,000 partially
Total irrigated I&D systems/area rehabilitated		**336,300**	**223,651**
Total number of I&D systems/ irrigated area in Kyrgyzstan		765,000	1,043,050
Estimated I&D systems/area remaining to be rehabilitated		**428,700**	**819,399**
Percentage of total		**56%**	**79%**

Source: Ministry of Agriculture and State Committee for Water Resources and Land Improvement (2010)

Transport infrastructure. The Kyrgyz Republic is a mountainous country and in combination with the poor state of the road and railway infrastructure, transport from the producer to the consumer is usually relative expensive and time-consuming (Osmonalieva, 2008). Transport between the Northern and Southern part of the country is limited to very small mountain roads and internationally Kyrgyzstan is cut off from China by high mountain ranges. Security concerns in Afghanistan present a transit barrier to the South and in the West the border with Uzbekistan has been closed since the June 2010 events (World Bank, 2011a). As a result, Kyrgyzstan's logistical performance ranks among the poorest in the world. In 2009, the country ranked 156th out of 183 on the "Doing Business trading across borders" indicator as in addition to its extremely disadvantageous geography, there are also substantial administrative requirements, for example in terms of the number of documents required to export products (World Bank, 2011a). Also the neighboring countries (on which the landlocked Kyrgyz Republic depends for its exports) rank poor on this indicator: Uzbekistan ranks 169th out of 183 and Kazakhstan is even doing worse with its 181st rank.

Roads are the mean main of transport, accounting for approximately 94% of freight-transport in 2008 (World Bank, 2011a). Most transport is done by trucks, buses and vans, which generally have not the

appropriate cooling equipment which is needed for highly perishable goods such as meat, dairy products and fruit and vegetables, such that there can be important losses in quantity and quality of the production (Osmonalieva, 2008).

In addition, the country is landlocked and therefore depends strongly on the infrastructure of its neighboring countries (e.g. Kazakhstan in the North). The poor railway infrastructure in Kyrgyzstan and its neighboring countries is an important challenge for international transport since the sector is confronted with high costs, inefficient rail services and issues related to customs and border crossing (e.g. corruption and substantial administrative constraints) (World Bank, 2011a). For example, Kyrgyzstan's main rail artery between Osh and Bishkek (which also connects the Fergana valley to Russia) winds through Uzbekistan, then Tajikistan, then Uzbekistan again and finally Kazakhstan (Megoran, 2002).

In 2008, the Agribusiness Center in the Kyrgyz Republic conducted a monitoring study that documented all administrative barriers and informal payments along the Kyrgyz corridor for a 19-ton refrigerated truck of blackberries from the rural Markaz District in the Batken region to Russia via Osh, Bishkek, Almaty and Astana[10]:

- Before leaving: The trucker needs to have the official shipment documents, which have an official cost of USD 150, but the local customs office asked for USD 700 (including informal payments to the financial police, the local government, etc.).
- Domestic transport: Along the way from Osh to Bishkek, the trucker made USD 161 informal payments.
- Foreign transit: When transiting Kazakhstan and Russia, the trucker paid respectively USD 750 and USD 295 additional informal payments (for example for passport registration, load registration, certificate registration, etc.). In addition, in the absence of a guarantee against the value of the load, convoying is usually required for customs transit in Kazakhstan and Russia. According to existing regulations, customs convoying rates in Kazakhstan range FROM USD 14 for less than 50 kilometers to USD 900 for more than 2.000 kilometers; in Russia the fees range from USD 60 for less than 50 kilometers to USD 30 per 100 kilometers beyond 200, with a minimum of USD 180.

Although this route is the best road corridor for trade with Russia, administrative barriers translate into large informal payments that deter trade expansion.

10 These are costs on top of the regular charges for road transport which are on the route between Bishkek and Almaty equal to USD 40 per tonne (or USD 760 for a truck with a load of 19 tonnes) (Robinson, 2008).

Storage infrastructure. Inadequate storage capacity in the Kyrgyz Republic has an important negative effect on the quantity and the quality of Kyrgyz agricultural produce (World Bank, 2011a). The Swiss group, Helvetas, estimates that at least 15% of the crop production is spoiled before reaching market due to inadequate storage (Roseman, 2011).

Despite that there are no data available on the demand for or the actual use of the existing storage capacity, there is some anecdotal evidence that there is a need for more well-equipped storage facilities (based on interviews with Kyrgyz entrepreneurs by World Bank (2011a)). World Bank (2011a) finds that entrepreneurs are in general reluctant to store their products in the existing facilities in the country because of frequent electricity outages[11] and outdated infrastructure. Therefore, traders often look for storage capacity in Kazakhstan, where they face stiff competition with Kazakh traders. Table 11 gives an overview of the existing (cold) storage capacity in the Kyrgyz Republic.

11 In 2009, the value in the overall economy lost due to electricity outages was 10,5% (World Bank Indicators), which is substantially more than in Uzbekistan (5,4%), Kazakhstan (3,7%) and the Caucasian countries (1,8%), but lower than in Tajikistan (15,1%). In 2011, USAID stated that the electricity sector in the Kyrgyz Republic is "unreliable" as there were 12.578 unplanned power outages per year (or 34 per day). Overall, transmission and distribution networks have been strongly deteriorated and most hydroplants and CHP plants are outdated and poor-functioning. For example, JSC Severelectro stated that 50% of its 10 kV to 0,4 kV distribution lines and transformators are unsatisfactory or not working (USAID, 2011). However, recently there has been some investments in the energy sector (in 2010 the first generator of the Karambata 2 hyrdro-electric plant became operative) and more are expected to come with the implementation of the "Power Sector Improvement Project" financed by the Asian Development Bank, which also focuses on rehabilitation of the existing network and distribution infrastructure, and planned investments co-financed by the Russian government and private sector (mainly in the construction of new hydro-plants and the rehabilitation of existing plants, such as Karambata 1).

Table 11:
Storage capacity, leading cities and their hinterlands (2008)

Location	Number of warehouses	Total storage capacity (in m^2)	Total cold storage capacity (in tons)
Kyrgyzstan	2,053	340,428	3,848
Osh	209	31,306	51
Aravanski	-	0	0
Kara-Suu	7	510	0
Uzgen	1	220	0
Batken	29	1,579	7
Bishkek	884	248,870	3,631
Kara-Balta	10	2,475	0
Kant	4	400	0
Tokmok	0	0	0

Source: World Bank (2011a) based on Statistical Agency, Kyrgyz Republic.

Several projects by World Bank have invested in the rehabilitation of the existing storage capacity. For example, investments in storage capacity were financed by the "Agribusiness and Marketing Project" and also by the "Agribusiness Investments and Services Project" (the latter financed more specifically investments in refrigerators for warehouses). In addition, there were also plans by the Asian Development Bank to invest in the rehabilitation of storage and cooling facilities under the "Southern Agricultural Area Development Project", but this project was already cancelled in the second year after it was launched.

Integration in modern supply chains

Over the past two decades the transformation of food production and distribution systems has emerged as an issue of global importance. Changing lifestyles, demographics and rising incomes as well as education levels have brought an increase in consumer demands for quality, safety and variety as well as value. The retailer sector passes on new product specifications to their suppliers, whether these are manufacturers or agricultural producers. In this perspective the emergence of modern supply chains have had a significant impact on the agricultural producers as shown by the experience of the Central and Eastern European Countries (CEEC) and the more advanced CIS countries (Swinnen and Van Herck, 2011).

Experience of the CEEC and more advanced CIS countries. In the Central and Eastern European Countries (CEEC) and more recently also in the most advanced CIS (Russia and Ukraine), the food supply chain underwent dramatic changes as it changed into an increasingly modern

and international industry. Liberalization of the industry and the inflow of FDI in the agri-food industry have been a driver behind the emergence of modern retail formats, which induced major changes in the product procurement systems of the sector.

In general, procurement system modernization includes two important elements (Reardon and Berdegué, 2002): (1) a shift from no standards or public standards to private standards for quality and safety; (2) a shift from spot markets relations in traditional wholesale markets to vertical coordination mechanisms.

First, especially in the first stage of its development modern retailers focus on urban, high-income consumers, which demand higher quality products. In addition, the modern retail industry is dominated by multinational companies, which have activities all over the world and these retailing companies have begun to set standards for food quality and safety in the sector wherever they are doing business (Dolan and Humphrey, 2000; Henson et al., 2000).

Second, there has been a shift from spot market transactions to vertical coordination mechanisms since this provided a manner for processing companies and retailers to address the lack of quality supplies. A strategy to address these problems typically involved some form of vertical coordination. Successful vertical contracting has taken many forms, but has typically included immediate payment for delivered product and farm assistance programs. Farm assistance has taken many forms including input supply programs, trade credit, extension and management advisory services, etc. Enforcement of advance payments is done by effectively interlinking output and input markets. Overall, these interlinked contracts had a positive impact on productivity and farm growth (Dries and Swinnen, 2004; Gorton and White, 2007; Van Herck, et al. 2011).

Current situation in The Kyrgyz Republic. In general, Kyrgyz farmers are not integrated in modern supply chains and the majority of the food products are distributed through open markets or bazaars (usually unprocessed).[12]
Overall, there is only little FDI in the agri-food industry ***(see Chapter 2, Trade and foreign direct investment)*** and domestic processing

12 However, while open markets or bazaars remain the most popular place to do shopping, their number is decreasing and between 2006 and 2009, the number of bazaars has decreased from 406 to 364 (Richard Chancellor, 2011). Especially in Bishkek, supermarkets emerged, including chain stores such as the Russian Narodny and Stikichny and the Turkish Ramstore. There are no precise data on the importance of modern retailers in total food sales, but overall it is assumed that the importance of supermarkets is marginal compared to more economic advanced CIS countries.

companies face substantial credit constraints themselves which limit their ability to overcome farmers' credit constraints and engage in interlinked contracts (Serova et al., 2009). For example, in the dairy sector, processing companies have started investing in milk collection and cooling stations to purchase milk from rural households. However, even in the most advanced ones such as Dairy Springs, which purchase milk from a zone of 70 kilometers from the factory, have only cooling tanks in 5% of its 56 milk collection centers. The lack of good quality raw material has a negative impact on the quality of processed food products and the integration of Kyrgyz processing companies in modern supply chains.
In case there are contracts, these are frequent contract breaches by both parties. Light (2007) interviewed vegetable drying and pickling companies, which report frequent contract breaches by farmers, who if the price obtained from a third-party is higher, side-sell (a part of) their production and do not fulfill the contract. However, also the processing companies confessed that they breach contracts and buy their products on the spot market if prices are lower than those determined in the contract. In addition, both parties report that the current legal system is too unreliable and costly to enforce contracts.

Nevertheless, there are examples of successful contracting. For example, a case study by Marx and Hollinger (2006) provides evidence of some small vegetable processing companies that offered some farmers contracts which include the provision of financial support and delivery of all required inputs (seeds, fertilizer, chemicals, tractor use and transport) against their promise to sell a certain proportion of the total harvest.

There are also programs implemented by international organizations that aim to strengthen linkages between the different stakeholders in the supply chain (processors, traders, agricultural producers). An example of such a program is the "Agribusiness and Marketing Project" implemented by World Bank in 2005 (see also section 2.3). Part of this project will be focused on the development of innovative contract mechanisms in the Kyrgyz food supply chain and the provision of finance for agri-business companies.

Constraints for the integration in modern supply chains. Some may point to the farm structure as an important constraint for the development of modern supply chains since modern retailers may prefer to contract exclusively with larger and wealthier farmers. However, in the case that small farmers dominate and represent the majority of the potential supply base, processing companies and retailers exactly need to integrate these small farmers in the supply chain in order to have sufficient supplies. This is, for example, the case in the dairy sector in

Poland and Romania, and in many other sectors in Eastern European countries (World Bank, 2007).

Others may argue that the poor judicial system hinders the development of modern supply chains. Although, this is of course an important constraint, Klein (1996) shows that contracts can be established such that there is "self-enforcing range", which measures the extent to which the market conditions can change without that one of parties will breach the contract. Gow and Swinnen (2001) discuss the development of self-enforcing contracts in the transition region and the role of these contracts in substituting for absent or failing public institutions.

In the past, FDI have played a crucial role in the development of such contract innovations and the integration of farmers in modern supply chains in other countries in the region (e.g. Dries et al., 2009). Attracting FDI and knowledge could therefore be a step in the direction of more integration in modern supply chains and boost improvements in agricultural productivity and the production of high value products.

Although, the conditions to start up a business are relatively favorable in Kyrgyzstan, compared to its neighboring countries, the overall level of FDI in the country is low *(see Chapter 2, Trade and foreign direct investment)* (second column of Table 12). An important reason for this can be the problems that companies face when actually doing business in Kyrgyzstan as the ease of doing business is an indicator for which the country has a lower rank (first column of Table 12). Especially with respect to paying taxes, trading across borders, enforcing contracts and closing a business, there are still serious constraints for business activities in Kyrgyzstan (Table 13).

Table 12:
Ease of doing business and starting up a business in 2011

	Ease of doing business rank	Starting a business rank
Georgia	12	8
Kyrgyzstan	44	14
Armenia	48	22
Azerbaijan	54	15
Kazakhstan	59	47
Belarus	68	7
Moldova	90	94
Russia	123	108
Tajikistan	139	136
Ukraine	145	118
Uzbekistan	150	106

Source: World Bank: Ease of doing business indicators (2011)

Table 13:
Ease of doing business and starting up a business in 2011

	Kyrgyzstan	Ukraine	Moldova	Georgia
Dealing with Construction Permits	43	179	159	7
Registering Property	17	164	18	2
Getting Credit	15	32	89	15
Protecting Investors	12	109	109	20
Paying Taxes	150	181	106	61
Trading Across Borders	156	139	141	35
Enforcing Contracts	54	43	20	41
Closing a Business	138	150	92	105

Source: World Bank: Ease of doing business indicators (2011)

According to Kudina and Jakubiak (2008)[13], impediments for FDI in Kyrgyzstan are more important than in some other CIS countries. The most important constraints for foreign investors are volatility of the political system, uncertainty about the economic environment and lack of physical infrastructure (Table 14).

Table 14:
Assessments of constraints faced by foreign investors

	Kyrgyzstan	Ukraine	Moldova	Georgia
Volatility of the political environment	4.5	3.4	3.3	2.8
Uncertain economic environment	4.4	3.3	3.4	2.9
Lack of physical infrastructure	3.9	2.5	2.8	2.9
Ambiguity of the legal system	3.5	3.9	3.5	2.7
Corruption	3.1	4.0	3.9	2.1
Bureaucracy	3.1	3.9	3.9	2.0
Backward technology	3.1	2.4	2.9	2.4
Lack of business skills	3.1	2.4	2.6	2.7
Finding a suitable partner	2.3	2.5	2.9	2.8
No clear ownership rights	1.7	3.2	2.9	2.4

Note: A higher number indicates that a given impediment is more important. Numbers are simple averages.
Source: Kudina and Jakubiak (2008)

13 Although these data have been published in 2008, we believe that they are still valid, especially in the light of the events of April-June 2010.

Several countries in the region have already tried to attract FDI by lowering the corporate tax.[14] In principle, this should boost both domestic and foreign investment, but the impact of such a fiscal measure is limited as long as the country does not first tackle its institutional problems since they have a more important impact on investments than fiscal measures.

Food safety and quality standards

Food safety. An important constraint for food safety is poor animal health in the livestock industry. According to a stakeholder survey in the Kyrgyz livestock sector by World Bank (2007), poor animal health and the lack of an effective veterinary service are the most important factors limiting the development of the livestock sector. Diseases and parasites do not only have a negative impact on animal productivity, but also poses serious public health risks. For example, brucellosis is an animal disease which affects both cattle and humans. The number of human cases has increased from 1.219 cases in 1999 to 2.522 cases in 2003 or 50 cases per 100.000 people. Considering that Tajikistan had 13,6 cases, Kazakhstan 13,3 cases, Uzbekistan 1,7 cases and Russia 0,27 cases, this show the seriousness of the situation in the Kyrgyz Republic (World Bank, 2007).

The problems with the animal health situation in the country do not only originate from a lack of well-equipped laboratories and capital to finance the purchases of vaccines, but also from a completely changed structure of the livestock sector without adequate changes in public veterinary services, which are still targeted towards large-scale livestock production. This resulted in poor communication and information provision (World Bank, 2007).

In addition, vaccination coverage of the livestock production and availability of quality veterinary drugs has decreased dramatically. The number of diseases for which the public veterinary services have an intensive control campaign has been reduced from 15 to 5 (brucellosis, foot and mouth disease, anthrax and rabies). In 2005, the vaccines against these diseases were distributed for free and only 50-60% of livestock was vaccinated.

In 2008, World Bank implemented the "Agricultural Investment and Services Project (AISP)" which draws upon the recommendations formulated in the 2007 World Bank study that has been cited higher. One of the objectives of this project is to strengthen the livestock

14 In Tajikistan the government cut the corporate tax rate from 25% to 15%, the Russian government reduced it from 24% to 20% and also in Uzbekistan and Ukraine tax rates are reduced (Brownbridge and Canagarajah, 2009).

sector by two main channels: (i) improving pasture management[15] and (ii) promoting the provision of certain livestock and veterinary services. The latter includes the promotion of vaccines (mainly focused on Brucellosis) and pre/post-slaughter inspection. In addition, the existing advisory service system will be strengthened and will focus on improving the managerial capacities of farmers (e.g. information provision and training on adequate animal nutrition). In terms of public, veterinary services, the project aims to strengthen the activities of the State Veterinary Department and the private sector is expected to be enforced by the provision of small set-up grants for private veterinarians and technical assistance in the reform of the curriculum of private veterinarians.

Animal health problems do not only have a negative impact on livestock productivity but also limit the country's export potential. It is expected that the Kyrgyz Republic will experience problems in exporting to its main trading partners under the existing free-trade agreements for meat and unprocessed meat products to Russia (due to the prevalence of anthrax), Ukraine (due to the prevalence of FMD, anthrax and brucellosis), Belarus and other CIS countries (Serova, et al., 2009).

Also with respect to other food products, such as food and vegetables, the lack of internationally recognized local testing facilities is a major constraint for the Kyrgyz export potential as it prevents the Kyrgyz farmers and processing companies from establishing direct business relationships with potential foreign partners at the end of the supply chain, including with for example European supermarket chains (Racine, 2011).

Food quality. In addition to animal health, there are also serious concerns with respect to food quality. For example, in general the quality of wheat produced is relatively low and blending of wheat with high quality imported wheat from Kazakhstan in order to achieve the quality of wheat needed for bread production is

15 In the past years, pasture conditions have deteriorated significantly, with village and close-in (winter) pastures being severely overused and degraded, while the more remote summer pastures are underutilized. As a result pasture productivity has declined, particularly that of winter pastures, and pasture use has become environmentally and socially sustainable. Within the AISP, the objective is to assist in the creation of a legal and institutional framework for more sustainable pasture management and to assist with the establishment of local management committees, which would be responsible for setting up "Pastures Users Unions" (similar to the "Water Users Associations" established during the reforms of the irrigation sector). Further, donors would also provide grants (partially co-financed) for the rehabilitation of the pasture infrastructure.

a common practice in the grain processing industry (Serova et al., 2009). Also for sensitive products, such as the milk, there are serious quality concerns. These problems are due to poorly controlled animal diseases (see higher), poor hygiene when milking (hand milking) and storing the milk (no or little milk refrigeration). The poor quality of the raw material poses significant problems in product procurement of processing companies such that also the processed food products are of low quality, which limits the export potential and integration in modern supply chains.

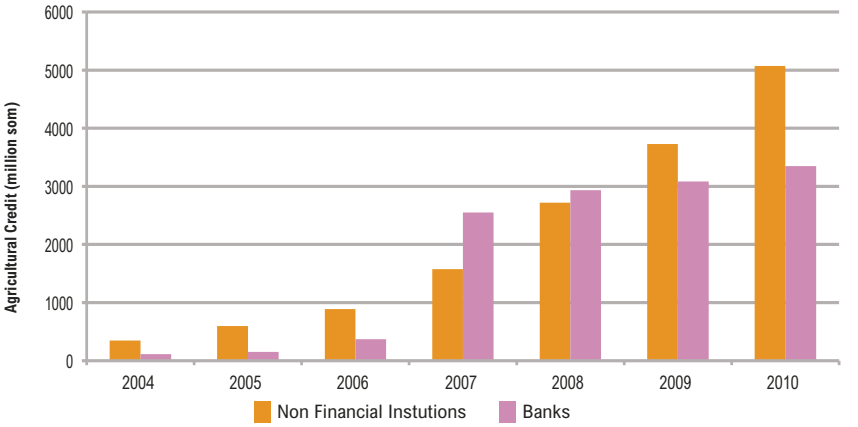
Access to credit

An important constraint for growth for all stakeholders in the supply chain is the low level of investment in the sector. This is closely related to poor access to credit, both for working capital and for investments.

In general, credit for the agricultural sector is provided by financial institutions (mainly banks) and non-banking, financial institutions, which are specialized microfinance organizations that can provide credits but unlike banks cannot take deposits and provide other banking services.

Overall, there has been a substantial increase in the amount of credit (by banks and microfinance organizations) that is directed to the agricultural sector. While in 2004 commercial banks only provided 113 million soms to agricultural enterprises, this increased in 2010 to 3350 million soms (or an increase of 476% per year). There was also an increase in credit provided by non-financial institutions from 348 million soms in 2004 to more than 5000 million soms in 2010 (or an increase of 226% per year) (Figure 23).

Figure 23:
Evolution of credit debts of banks and non-financial credit institutions



Source: The Bulletin of National Bank of the Kyrgyz Republic (2011).

The most common type of credit in the agricultural sector is credit provided by non-financial institutions (on average 61% of all credit in the agricultural sector). This may reflect important constraints for producers to get access to bank loans, although since 2007 agricultural credit provided by banks substantially increased and the share of agricultural credit in total increased from 2-3% in 2004-2005 to 12-13% in 2007-2009.

However, despite this recent improvement in credit access, there are still some constraints and the share of agricultural credit in total credit remains low compared to its share in GDP or employment. This constrains investments which are necessary for improvements in productivity and quality in the agricultural sector.

Credit for working capital (for seeds and chemicals). In general, short term loans for working capital are handled through channels that do not involve bank borrowing. Part of the credit provision for working capital takes place through the microfinance institutions, which provide a substantial amount of the credit to the agricultural sector. The leading institutions providing micro credits are Aiyl Bank (covering 10-15 percent of farmer's requests for micro credit), Agakhan Foundation and dozens of others. The interest rates of those credits are high varying from 18 up to 59 percent, with an average of 39 percent (FAO, 2010; national consultant). Loans from

these institutions are usually very small (up to 110 USD) (national consultant).
Following the April and June events there was a temporary suspension of credit for a short period, when bank and microfinance institution branches were closed and there was a moratorium on registration of collateral. Aiyl Bank, however, reports that the interruption was short and did not significantly affect disbursements (FAO, 2010).

As an emergency assistance following the civil disturbances, the Russian Rosselhoz Bank has agreed to provide a USD 30 million credit line, at an interest rate of 1 percent, to two Kyrgyz banks – RSK and Aiyl – which in turn will lend in Kyrgyzstan at interest rates ranging from 9 to 18 percent to support farmers and agriculture processors that were affected during the events (FAO, 2010).

However, there are also several other mechanisms (Lerman and Sedik, 2009a). First, there is supplier credit. Second, short-term financing can be raised through interlinked contracting.

There are some companies that offer interlinked contracts ***(see Chapter 3, Integration in modern supply chains).*** However, overall these contracts are no frequently used since most domestic processing companies are themselves credit constraints. In other more economic advanced CIS countries, FDI companies have played a leading role in the development of innovative contract mechanisms. However, in Kyrgyzstan there are only limited foreign investments in the entire industry and in particular in food-processing.

Credit for investments (for farm machinery). Credit for (large) investments, such as farm machinery, is provided by financial institutions, although usually farmers try to finance these investments from their own savings (Lerman and Sedik, 2009a). Therefore the share of agriculture in the overall lending portfolio in commercial banks is well below its contribution to GDP.

In general the financial system in the Kyrgyz Republic is found to be weak (Light, 2007; Marx and Hollinger, 2006). The availability of long-term lending is limited: only 4 per cent of total deposits have maturity periods of longer than one year and there is limited access to outside capital markets (Marx and Hollinger, 2006). Limited availability of agricultural credit is reflected in high interest rate spreads (lending minus deposit rates) (on average 18% over the period 2006-2009). As a result, in 2007/2008 only 8 to 11 per cent of lending for agriculture was for more than one year (Marx and Hollinger, 2006).

The low level of access to credit for investments is reflected in a lack of farm machinery *(see Chapter 2, Input use)*. Partially, this is caused by the production structure in the country (farm sector dominated by smallholders). However, about 70% of the land is used by commercial farms with a size larger than 5 hectares (average farm size of 28 hectares) (Marx and Hollinger, 2006). This may reduce demand for combine harvesters, which can only be used for harvesting grains, but not for small tractors, which are in general more versatile and can be used for example for soil preparation, but also for the distribution of chemicals or transport.

In other countries, leasing is often used for financing of movable assets, such as machinery, equipment and vehicles (Marx and Hollinger, 2006).[16] Most machinery manufacturers offer a range of supporting finance schemes through associated or subsidiary finance associations. However, these instruments are still rarely used in Kyrgyzstan, where from 2005 to 2008 only 238 leases were provided for a total of USD 3,8 million (compared to for example Uzbekistan where there were 21.000 leases for a total of USD 625 million).

Several factors have constrained the development of lease contracts (Marx and Hollinger, 2006): (i) taxation on leasing contracts, making leasing contracts less attractive compared to traditional loans; (ii) lack of long-term resources that are crucial for leasing development; (iii) leasers asks their lessees to pay substantial cash down-payments (up to 50% of the lease amount) or additional collateral; (iv) the limited secondary market for specialized equipment, making it difficult for leasers to sell their assets.

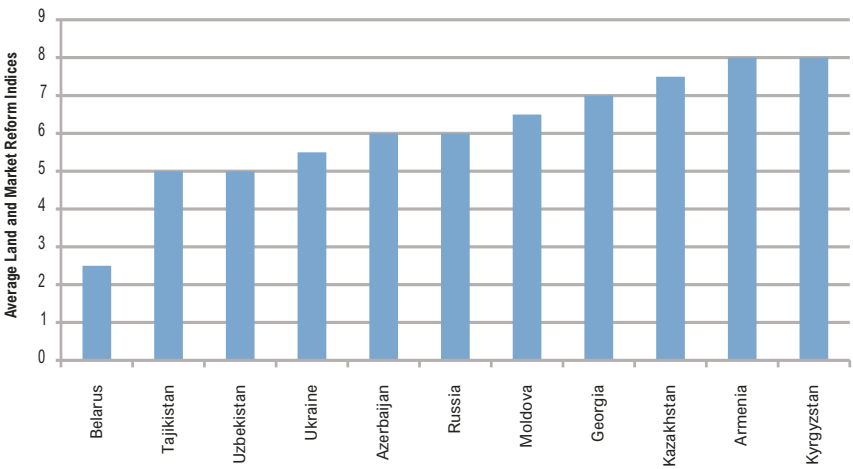
It is important to note that in addition to increased access to working capital, interlinked contracting can also have positive effects on farm investments, both directly and indirectly. Directly, because interlinked contracts may also include farm assistance programs that enable farmers to make investments in fixed assets, such as for example the provision of specific assets (e.g. bulk cooler) or bank loan guarantees. Indirectly, because interlinked contracts are found to have a positive impact on productivity and farm growth and hence on farm investment (Dries and Swinnen, 2004, 2010; Van Herck et al., 2011).

16 The leaser remains the legal owner of the asset, while allowing the lessee to use it for an agreed period at an agreed rate. At the end of the period, the equipment is transferred to the lessee, sold to a third party, written-off or rented to another lessee.

Agricultural reform

After transition, the Kyrgyz Republic has rapidly processed in the agricultural reform process and according to the World Bank indicator for progress in agricultural reforms after transition, Kyrgyzstan is one of the most advanced CIS countries in the reform process (Figure 24).

Figure 24:
Agricultural Reform Index (2005)



Source: World Bank

After privatization and individualization of the sector the majority of the agricultural production was produced by almost a million small and medium-sized producers, whereas in the Soviet system, agricultural production was concentrated in a few hundred large-scale agricultural enterprises. However, in general, this shift has been only partially accompanied by reform or upgrading of farm support services and infrastructure for new farm structures, which have fundamentally different needs (Lerman and Sedik, 2009a).

The existing extension services in the Kyrgyz Republic are largely donor financed (Van Wageningen, 2005; World Bank, 2011c). Extension services (including for small household and peasant farmers) are provided through the "Rural Advisory and Development Services (RADS)", which received technical assistance and financial support under the "Agricultural Support Services Project" and later under the "Agricultural Investments and Services Project", both financed by World Bank.

According to the impact assessment of the "Agricultural Support Services Project", the first results are mixed. Table 15 shows that there has been a substantial increase in the number of farmers participating in the extension services: while in 1999 there were 58.000 farmers advised by RADS extension workers, this number increased to 187.000 in 2006. Further there has also been an increase in the number of participants in training courses and the number of demonstration conducted. However, despite these promising results, this means that in 2006 (the best-performing year), respectively only 37% of all family farms were directly advised by the RADS extension workers and 15% of all family farms were participating in a training course.[17] Moreover, in 2007, when donor financing declined, there was also a large drop in the extension services provided, which raises questions on the self-sufficiency of the system. Important to note is the role that mass-media play in providing extension services: 25% of the members of RADS indicate that newspapers are their main source of information (World Bank, 2011c) and also Van Wageningen et al. (2005) underlines the importance of the mass-media as a source of information for Kyrgyz farmers.

Table 15:
Evolution of the services provided by RADS

	Number of farmers directly advised by RADS (in 000's)	Number of participants in training courses (in 000's)	Number of demonstrations conducted
1999	58	19	1,800
2000	73	41	5,500
2001	67	48	11,400
2002	111	87	14,800
2003	137	85	7,900
2004	154	63	9,400
2005	184	79	10,200
2006	187	75	11,100
2007	99	35	3,900

Source: World Bank (2011c)

17 Also with respect to other channels through which extension services are offered to the rural population, we find a relative low participation rate them. For example, 2007 survey evidence described in Akramov and Omuraliev (2009) indicates that only 10% of the farmers was aware of the "Kyrgyz Republic Agricultural Market Information System (KAMIS)" and 2% used it and similar results hold for the "Legal Assistance to Rural Citizens (LARC)" project which was known by 7% of the farmers and used by 3% of them. For participation in the RADS, they find somewhat lower participation rates than World Bank (2011): 16% of the farmers use the RADS extension services, but more even more importantly only 20% of the farmers is found to be aware of the existence and the activities provided under RADS.

Chapter 4 – Conclusions and recommendations

General policy recommendations

An "agricultural development strategy" in the Kyrgyz Republic can only be successful if it is part of a broader development and (rural) social policy strategy.

First, a key element to enhance agricultural productivity is an increase in economic growth. Growth of the non-agricultural economy will pull surplus labor out of the agricultural sector, an evolution which is necessary to increase agricultural productivity and consequently increase agricultural incomes.

Anti-government protests and ethnic violence (as in April-June 2010) are an important constraint for economic growth and have reversed a part of the growth which has taken place in the mid-2000s. The disruption in economic activity, destruction of business assets, disruption of trade with neighboring countries and loss of life have had a strong negative impact on all economic activity, including the agricultural sector (World Bank, 2011a).

Overall the authorities have acted rapidly to address the consequences of the June events: social spending was stepped up, emergence aid to the affected households was provided and essential infrastructure, such as energy connections was rehabilitated. Nonetheless, it is clear that social tensions persist and governance security arrangements continue to be inadequate. A comprehensive program of reconciliation needs to be pursued with a focus on market recovery in the south (e.g. repair of destructed infrastructure), peace and tolerance building (e.g. respecting human rights for all ethnic groups), youth inclusion and building confidence in security and justice (e.g. by tackling corruption) (World Bank, 2011a).

The creation of a stable political and economic climate is also a necessary condition to attract foreign capital in the agricultural and food processing sector since political and economic instability is mentioned to be one of the most important existing constraints for foreign investment.

Second, it is crucial to invest in rural education and agricultural extension services (also targeting small household and peasant farms). Investment in (rural) education and extension services would contribute to several objectives, consistent with the overall objective

of rural development, such as the improvement of the productivity of existing enterprises, the growth of new enterprises, and a shift of underemployed farm labor to other activities, thereby increasing labor productivity of the remaining farms. Investments to improve rural education could also reduce the incentives for young people to leave the rural areas.

Third, a successful agricultural development strategy also needs to be integrated with a regional development strategy. Crucial elements are a good investment climate and improved infrastructure. Infrastructural development is important for a number of factors (see below), including attracting of investments. The creation of non-farm employment is crucial to create alternative employment for agricultural labor.

Priority areas for public intervention

Stimulate a favorable investment climate. Improving the current political and macro-economic instability and continuing institutional reforms will be conducive to (both foreign and domestic) investments in the agri-food industry and the retail sector. In fact, improving the political, institutional and regulatory climate in a country is found to be more effective than offering fiscal stimuli in attracting investments, which will only put more pressure on the already limited government budget.
Investments are crucial in themselves for improving the competitiveness of the agricultural sector and the entire food chain in Kyrgyzstan. However, they create major spillover effects on farms' competitiveness by being engines of supply chain development, quality upgrading, guaranteeing food safety, and by transferring knowledge, technology, capital and inputs to the farm production sector via interlinked contracting programs and vertical coordination.

Promote investment in rural infrastructure. Investments in public goods, such as irrigation, but also road infrastructure and electricity supply are crucial to guarantee viability in the rural livelihoods. Investments in rural infrastructure have two important effects on the agricultural sector.
First, they connect farmers to markets by reducing the transport costs. This will help to integrate smaller farmers in modern supply chains. The investments in the rural infrastructure also overcome farmers' problems to deliver the quality demanded by modern supply chain. For example, in Azerbaijan, regular electricity interruptions constrain the production of food products that need to be cooled (World Bank, 2007).

Second, investments in rural infrastructure improve the access of rural laborers to urban areas and attract more off-farm employment, including foreign investors. Hereby investments efficiently reduce over-employment in the agricultural sector and stimulate pro-poor economic growth.

Better targeting of public R&D and extension services. Although there have been effort to strengthen the capacity of the government to provide advisory and extension services specifically targeted to small farmers, there are still important weaknesses in the coverage of the existing advisory and extension services and better targeted interventions are crucial to increase the productivity in the sector.

However, it is important to put the need for extension and education in a proper perspective. The small household or peasant farmers are not illiterate peasants. Some have a university degree in other field than agriculture, but are active in the agricultural sector due to a lack of employment alternatives. Others have been working for many years on a large farm as a tractor driver or milking-machine operator. However, they often lack specific agronomical skills (e.g. on seed selection, pesticide and fertilizer application, etc.) and managerial capacity. Extension can help to improve their performance, raise their profitability and in this way, be conductive to greater commercialization.

Strengthen veterinary services. Poor animal health has not only a negative impact on animal productivity, but may also pose serious risks for human health (e.g. rapid increase in the incidence of brucellosis in animals). In addition, the presence of these diseases are also expected to limited possible export opportunities (e.g. to Russia and Kazakhstan) (Serova, et al. 2009). Therefore, substantial improvements of both public and private veterinary services are needed (possibly through public-private partnerships). Improvements include: better implementation of disease detection, control, prevention, containment and eradication measures in a uniform and effective way and better knowledge and skills of the appropriate techniques and drugs (World Bank, 2007). Recently, World Bank implemented the "Agricultural Investment and Services Project", which will explicitly target most of these objectives. Despite these efforts, there is still scope for future improvements. For example, there are still no internationally recognized testing facilities for food safety standards in the country, which is an important constraint for Kyrgyzstan's export potential and the integration of farmers in modern supply chains.

Stimulate cooperation in the agricultural sector. Cooperation between small farmers can help them to overcome some of

the constraints they are currently facing (e.g. lack of appropriate machinery and almost no private entrepreneurs offering mechanical field services) (Lerman and Sedik, 2009a).
Cooperation in machinery services is one of the major areas for cooperation between farmers in transition countries and in some other CIS countries cooperation in machinery use makes that actual access to machinery is much higher than suggested by machinery ownership. For example, in Armenia only 14% of the farmers own farm machinery, but machinery pools and service cooperatives ensure that 80% of the individual farmers have access to machinery and mechanical field services (Lerman and Mirzakhanian, 2001).

Priority interventions for EBRD

It is important to emphasize that in the light of these recommendations the creation of a political and economic stable environment will be an absolute necessity as it will be crucial to provide confidence to private investors to enhance sustainable long-term investments. However, there are still some specific areas in which EBRD can play an important role in stimulating the growth and performance of Kyrgyz's agri-food system. With respect to this, we can distinguish between areas for policy dialogue with the government and directions for EBRD projects.

Areas for policy dialogue with the government

- **Fostering the private sector**
  Building a sustainable private sector which can contribute to growth remains a challenge. Improving the business environment is crucial to stimulate investment. Creating macroeconomic and political stability, improve the court systems, improving corporate governance of enterprises, improving tendering and licensing procedures, tackling corruption and increasing the availability of financing to private businesses are key elements in the development of the country's private sector. Through policy dialogue with the authorities as well as civil society, EBRD can assist in creating an attractive investment climate, which is necessary to provide confidence to private investors and enhance sustainable, long-term investments.

- **Assist in the development of well-targeted agricultural extension and training activities**
  Currently, a large proportion of those active in the agricultural sector do not have the appropriate technical and management skills, which constrains the implementation of new quality

and productivity improving practices. Therefore investments in agricultural extension and training will be crucial to improve the human capital in the sector. Optimally, in an environment where vertical integration plays a more important role, agricultural extension and training activities should take into account the demands of investors in the downstream segments of the food chain in order to enhance the integration of farmers in modern supply chains. Under the FAO/EBRD cooperation, the EBRD has already implemented a series of capacity development activities in connection with its agribusiness investments, whereby training of supplying farmers was designed to reinforce backward linkages between producers and agro-processors. Similar activities could be envisaged in the Kyrgyz Republic.

- Supporting critical infrastructure
  Supporting critical infrastructure remains important as the infrastructure in Kyrgyzstan continues to deteriorate due to insufficient investment. Improving the state of the road and railway infrastructure is of specific importance, as the country'sthe logistical performances rank among the poorest in the world, which hampers the expansion of trade. Other important areas for investment are: generation and distribution of electricity and gas, urban and national transport systems, municipal waste, water and heating.

  Improving rural infrastructure can make an important contribution to regional development and the rural economy. By improving access to urban areas, off-farm employment and foreign investment are attracted. Better incomes and new jobs can help to reduce poverty considerably, especially in structurally weak regions.

Directions for EBRD projects. Improving access to finance at all levels of the agri-food supply systems is important. EBRD has a large and very successful expertise in working with international investors and local companies. This makes EBRD very well positioned to help the Kyrgyz Republic in this area.
An important constraint for future investments by EBRD (both loans and equity financing) is the identification of suitable local partners. In the past EBRD often financed an investment by foreign company or a joint-venture of a local and a foreign partner (e.g. investments in the food-processing industry by Danone and Carlsberg/BBH in the whole region or investments in the retail sector by Metro in Kazakhstan). However, there is only limited interest of foreign companies in the Kyrgyz economy because of the instable political and macro-economic climate (see also "Areas for policy dialogue

with the government"). Moreover, an assessment to identify suitable local partners for EBRD by FAO in nine subsectors (beer, oilseeds, cotton, tomato paste, milk and cheese, leather, meat processing, animal feed and sugar) has shown that several of the existing local processing companies are too small, which makes it difficult to justify a stand-alone transaction. In addition, the management staff often lacks the appropriate knowledge and know-how, which is required to engage in an EBRD project such that the assistance of a FDI company is strongly recommended. Currently, EBRD has an equity share in a dairy processing company and has provided a loan to a retailer and wholesaler in Kyrgyzstan. Despite these considerations, we have identified some areas where EBRD can play an important role in enhancing access to finance at the different stages of the supply chain.

- Access to credit trough banks and micro-finance institutions
  The access to micro-finance is relatively well-functioning in the Kyrgyz Republic and the agricultural sector gets most of its money through these micro-finance mechanisms. However, these are very small loans (approximately 100 USD) and more substantial access to credit could come through the supply chain or commercial banks.

  Currently, the access to credit for long term investment is limited and thus demand for loans by the agricultural sector is far from being met. Therefore, providing required loan capital to the commercial banks is important as commercial banks are short of term funds. The further injection of the Micro and Small Enterprise Finance Facility (MSFF) term funds could permit the banks to continue expanding their micro- and small-scale lending operations.

  Furthermore, assisting micro-finance institutions in the development of their financial skills and products and enhancing cooperation between commercial banks and micro-finance institutions will improve the coverage of this type of credit even further.

  Providing funding for technical assistance and training for banks offering leasing is another area for attention. In Kyrgyzstan, leasing is rarely used as a financing instrument. However, small and medium-sized businesses are growing and leasing can be used for financing of movable assets, such as machinery, equipment and vehicles (including to machinery cooperatives).

  Farmers can access credit successfully only when they have assets to offer as collateral. Therefore, development of innovative

credit mechanisms like introducing collateral-free lending or acceptance of alternative (personal) guarantees as collateral for small enterprise lending is another way of improving access to credit. For example, the use of negotiable warehouse receipts of crop inventories can serve as alternative loan collateral. The role of EBRD can be to develop such alternative collateral schemes, which will involve both the processing/wholesales sector and the financial sector.

- Assist processing companies/ retailers/ traders to develop innovative contract mechanisms that improve farmers' access to capital, inputs and information
  Farmers are found to be constrained in their access to adequate farm machinery (capital), (high quality) seeds and chemicals (inputs) and agricultural know-how (information). This results in an extreme low level of productivity and quality of the agricultural produce.

  Processing companies, retailers and traders could help farmers to overcome these constraints by offering them interlinked contracts, which generally include farm assistance programs such as the provision of (qualitative) inputs and extension services. These contracts can also more sophisticated which also include the involvement of a third partner (financial or microfinance institutions). EBRD can play an important role in establishing the link between these different plays and providing information and training on the development of innovative contract mechanisms based on the experience they have in the region.

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