

## **AGRIBUSINESS SECTOR BACKGROUND BRIEF**

**Disclaimer:** This Background Brief was prepared by the Asia Policy Research Co. Ltd. It is based on secondary data, and has not been verified by country visits. It is intended to stimulate discussion at the Central Asia Regional Economic Cooperation Business Development Forum. It does not necessarily represent the views of the ADB, the EBRD, the Government of the People's Republic of China, or any of the CAREC member countries.

# **Agribusiness Sector Background Brief**

## **October 2006**

### **Executive Summary**

#### **Major Impediments to Agribusiness Development**

- Limitations on private ownership and access to land
- Insufficiency of existing infrastructure systems to support the agriculture sector. The irrigation systems and rural roads throughout the region are limited and in need of rehabilitation.
- Lack of agricultural credit, particularly for farms that could supply inputs to medium size foreign invested processing firms.
- Relatively high transport costs to key markets outside of the CAREC region due to several factors such as high tariffs, the number of borders necessary to cross, inefficient railway systems, and time consuming border procedures.
- The roles of public sector institutions are not aligned with the needs and realities of the modern global market-based agricultural economy.
- Major challenges faced by CAREC member countries in achieving international standards and acquiring certification for food safety and hygiene.

#### **Key Opportunities**

- The limitations on private ownership and access to land deter many investors from the region.
- The existing infrastructure systems are insufficient to support the agriculture sector. The irrigation systems and rural roads throughout the region are limited and in need of rehabilitation.
- A major impediment is the lack of agriculture credit, particularly for farms that could supply inputs to medium size foreign invested processing firms.
- Transport costs to key markets outside of the CAREC region are relatively high due to several factors such as high tariffs, the number of borders necessary to cross, inefficient railway systems, and time consuming border procedures.
- The roles of public sector institutions are not aligned with the needs and realities of the modern global market-based agricultural economy.
- CAREC member countries in general are facing major challenges in achieving international standards and acquiring certification for food safety and hygiene.

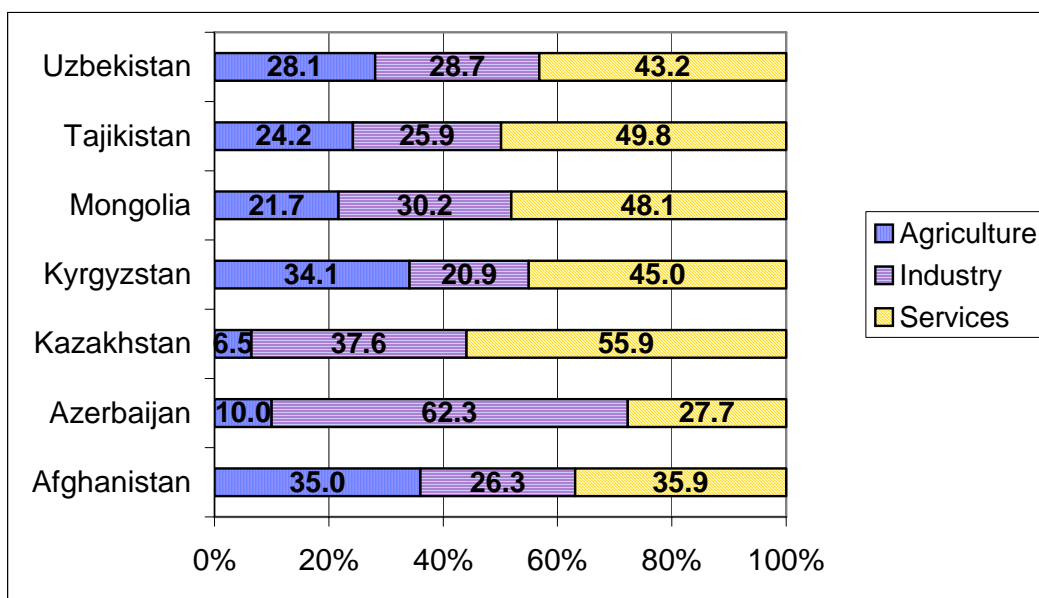
#### **Possible Recommendations**

- Land use rights need to be clarified and simplified in many CAREC countries.
- Government agricultural institutions must be strengthened and fully transformed from central planning and production roles to regulation and facilitation. Information access along the entire marketing chain should also be improved.
- Comprehensive strategies should be developed for attaining international food and hygiene standards in agro-processing industries, and these should clearly delineate the roles and responsibilities of government and private sector.

## I. SECTOR OVERVIEW

The Central Asian region is not all deserts and mountains. In fact, parts of the region contain highly fertile grounds suitable for growing cash crops and specialty crops. Agriculture comprises between 6.5 and 35 percent of the Central Asian economies' gross domestic products (GDPs) (see Figure 1). Primary industries, of which agriculture is the core, account for 21% of the GDP in China's Xinjiang Uygur Autonomous Region (see Figure 2).

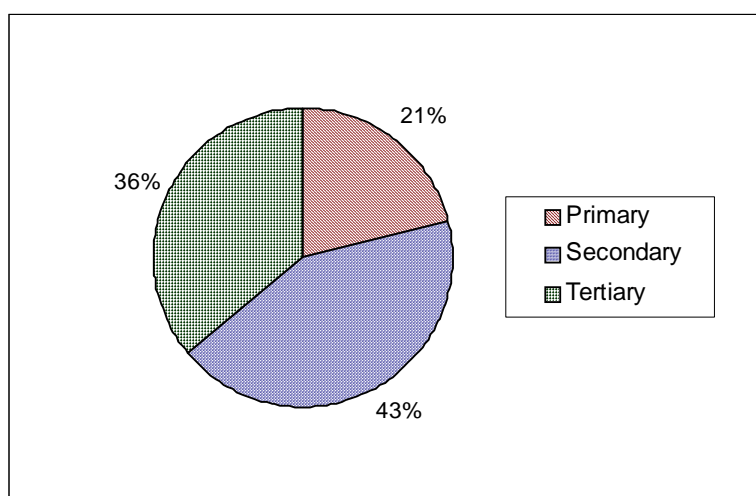
**Figure 1. GDP Composition by Sector in Central Asian Countries, 2005**



Note: Afghanistan data is for 2004.

Source: Based on data from ADB, *Key Indicators 2006* (Manila: ADB, 2006)

**Figure 2. GDP Composition of Xinjiang Uygur Province, 2000**



Note: Primary industries here refer to agriculture, forestry, fisheries, animal husbandry.

Source: Jin Fengjun and Qian Jinkai, *A Social and Economic Atlas of Western China* (China Intercontinental Press, 2003)

## **II. SECTOR FEATURES AND ENDOWMENTS**

### **Afghanistan**

About 12 percent of Afghanistan's total land area is arable, around two percent is covered by forest, 46 percent is pastureland, and the remainder is mountains or deserts. Arable land spans 7.9 million hectares, of which 2.7 million hectares are under irrigation. Pastureland covers 30 million hectares. Four-fifths of the Afghan population live in rural areas, and most are farmers or farm laborers.

Afghanistan was earlier divided into eleven agro-ecological or production zones excluding Herat, for which data was not available at the time when the division was done. Six zones are in the Hindu Kush Mountains, and the other five are in the desert and the plain regions. The different zones experience different temperatures, rainfall, length of growing season, and irrigation.

Since 1978, the irrigated area has declined by about 60 percent, and Afghanistan has fallen from near self-sufficiency in crops to become a net food importer of grains, fruits, and vegetables.<sup>1</sup> Wheat is the country's main crop, making up around 80% of grain production, but other important crops include rice, maize, barley, pulses, potatoes, onions, melons, watermelons, apricots, pomegranates, and grapes.

### **Azerbaijan**

After oil and gas, agriculture is Azerbaijan's most important sector. Most of the country's farming activity is centered in the fertile lowlands of central Azerbaijan, along the Kura and Araz rivers. Azerbaijan is divided into 59 agricultural regions extending across 10 geographic zones. Agriculture accounts for 10% of GDP, and 40% of the country's labor force is employed in the sector. Crops constitute over two-thirds of agricultural production, while livestock and related dairy products account for the rest. Azerbaijan produces a variety of agricultural items, such as cotton, fruits, tobacco, grain, rice, vegetables, tea, tobacco, livestock, and wine.

### **Kazakhstan**

Agriculture contributes 6.5 percent of Kazakhstan's GDP and employs 2.3 million people, or 22 percent of the economically active population. Kazakhstan has 21.5 million hectares of arable land, and 2.4 million hectares are irrigated. With its vast territory, Kazakhstan is one of the world's largest producers and exporters of grain. Wheat is grown mainly in the north-central region. Other key crops include barley, maize, rice, potatoes, sunflower, soybeans, tobacco, and flax. Cotton is the most important industrial crop, and it is grown mainly in the southern part of the country.

Due to its nomadic heritage and its expansive territory, Kazakhstan is also a significant producer of livestock. Kazakhstan has the most extensive permanent pasture per animal in the world. Sheep, horses, camels, cattle, chickens, pigs, and other animals are reared for meat, dairy products, and other byproducts.

### **Kyrgyz Republic**

Agriculture is still the foundation of the Kyrgyz economy. Over 1.1 million hectares of land are under cultivation for crops as of 2005, and over 920,000 people are engaged in agriculture. The main agricultural products are wheat, barley, onions, potatoes, cotton, and tobacco. Fruits and nuts are another specialty. Animal husbandry is also important due to the Kyrgyz Republic's nomadic heritage. Sheep, goats, and cattle are the main livestock reared, and from these, significant amounts of raw milk are produced.

---

<sup>1</sup> Food and Agriculture Organization, [http://www.fao.org/world/afghanistan/prof\\_ag\\_en.htm](http://www.fao.org/world/afghanistan/prof_ag_en.htm).

## **Mongolia**

Out of Mongolia's 157 million hectares of land, only 1.2 million is arable. Mongolia's agricultural sector is therefore based more on livestock than it is on crops. Livestock accounts for 80% of total agricultural products. Meat, cashmere, milk and other dairy products are the mainstays of the agricultural sector, but the country is also intensifying crop cultivation such as wheat and potatoes. Approximately half of Mongolia's working population is engaged in the agricultural sector.

## **Tajikistan**

Tajikistan has 930,000 hectares of arable land, equivalent to 8% of the total land. Sixty-eight percent of the arable land is irrigated. Tajikistan also has 3.3 million hectares of pastureland, which accounts for 23% of the total land. The agricultural sector accounts for about 60 percent of the country's employment. The main agricultural products are cotton, grain, silk, fruits, vegetables, and tobacco. Tajikistan was a major producer of fruits and vegetables for the former Soviet Union. The main fruits and vegetables grown nowadays in Tajikistan include melons, watermelons, apples, apricots, grapes, pears, onions, tomatoes, and lemons. It is estimated that there were over 30 canning plants in Tajikistan in 2004, and all of which were privately owned.

## **Uzbekistan**

Uzbekistan has 4.5 million hectares of arable land representing 12% of the total land use, and another 22.8 million hectares of pastureland accounting for 55% of the total land. Agriculture makes up 28% of the country's GDP and employs 3.1 million people. Uzbekistan's major agricultural crops are cotton and wheat, but these are still cultivated and sold under a government system. Aside from these crops and a few others, the agricultural sector is in private hands. In addition, the country produces rice, sugar beets, vegetable oils, raisins and other dried fruits, tinned fruits and vegetable juices, meat, dairy products, and tobacco. There are more than 400 enterprises engaged in the processing of fruit and vegetable products.

## **Xinjiang**

In Xinjiang Uygur Province, two main agricultural areas are located in the rim of the Tarim Basin and the northern slope of the Tianshan Mountains. Xinjiang has extensive grasslands that make it ideal for animal husbandry, particularly cattle and sheep.

Xinjiang is China's largest cotton producing area and accounts for one-third of the country's total cotton output. Xinjiang is also the largest sugar beet growing region in China, making up 33% of the national total, and it is a major melon producing area as well.

### **III. AGRICULTURE SECTOR PERFORMANCE**

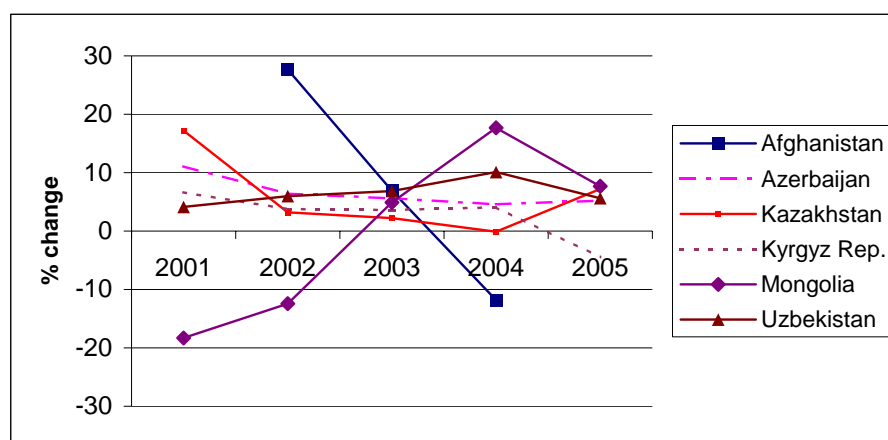
The agriculture sectors throughout Central Asia have experienced mixed performance records over the past five years (see Table 1 and Figure 3). Azerbaijan and Uzbekistan are the only two CAREC members (for which data are available) that experienced growth in the agriculture sector for the past five years, but growth has not been steady in those two countries.

**Table 1. Annual Growth or Decline in the Agriculture Sector (%), 2001-2005**

Country	2001	2002	2003	2004	2005
Afghanistan	n.a.	27.7	6.9	-11.8	n.a.
Azerbaijan	11.1	6.4	5.6	4.6	5.2
Kazakhstan	17.2	3.2	2.2	-0.1	7.2
Kyrgyz Republic	6.7	3.8	3.6	4.1	-4.5
Mongolia	-18.3	-12.4	4.9	17.7	7.7
Tajikistan	n.a.	n.a.	n.a.	n.a.	n.a.
Uzbekistan	4.1	6.0	6.8	10.1	5.6
Xinjiang Uygur	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006.

**Figure 1. Annual Growth or Decline in the Agriculture Sector (%)**



Source: Based on Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006.

## Afghanistan

Agricultural production in Afghanistan has been reduced to less than 50% of its pre-1980 levels because of war.<sup>2</sup> Production is also greatly affected by the natural cycle of droughts, which are common in Afghanistan and range from mild every two to three years to severe every 30 years. Recent production figures for major crops are presented in Table 2.

<sup>2</sup> "A Policy and Strategy Framework for the Rehabilitation and Development of Agriculture and Natural Resource Sector in Afghanistan," Kabul, January 2004.

**Table 2. Afghanistan Agriculture Production 2001-2005, Selected Items ('000 metric tons)**

Crop	2001	2002	2003	2004	2005
Wheat	n.a.	2,686	3,480	2,390	n.a.
Maize	n.a.	298	210	400	n.a.
Grapes	n.a.	365	558	n.a.	n.a.
Rice, paddy	n.a.	388	200	350	n.a.
Barley	n.a.	345	240	290	n.a.
Sugarcane	n.a.	38	83	60	n.a.

Source: Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006.

Afghanistan had approximately 34 million livestock, including poultry, as of 2003, and this level is 40% below the pre-1980 number of livestock.<sup>3</sup>

### Azerbaijan

Azerbaijan has shown steady progress in agricultural production for several commodities, as shown in Table 3. Potatoes and cotton are among the fastest growing crops in terms of production over the past five years, while the staple wheat has fluctuated year-by-year.

**Table 3. Azerbaijan Agricultural Production 2001-2005, Selected Items ('000 metric tons)**

Crop	2001	2002	2003	2004	2005
Wheat	1,529	1,732	1,547	1,614	1,566
Vegetables	916	975	1,046	1,076	1,127
Grapes	68	62	65	55	80
Fruits	498	517	572	425	626
Potatoes	606	695	769	930	1,083
Barley	337	304	334	361	379
Cotton	84	80	100	136	197
Maize	117	128	143	153	151
Tobacco	13	3	5	7	7
Tea	1	1	1	1	1

Source: Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006.

### Kazakhstan

Agricultural output in Kazakhstan declined sharply during the initial transition years of post-independence but began to recover by 1998. Crop production between 1998 and 2003 grew an average of 19.5% annually compared to livestock production's average of 3.4%. Wheat is Kazakhstan's major crop, but as seen in Table 4, production has tapered off since 2001. Despite the decline in metric tons of wheat, the share of wheat vis-à-vis all agricultural exports actually grew from 59.9% in 2001 to 71.3% in 2003.<sup>4</sup>

<sup>3</sup> "A Policy and Strategy Framework for the Rehabilitation and Development of Agriculture and Natural Resource Sector in Afghanistan," Kabul, January 2004.

<sup>4</sup> Food and Agriculture Organization, "Food and Agricultural Indicators: Kazakhstan," October 2005.

**Table 4. Kazakhstan Agricultural Production 2001-2005, Selected Items ('000 metric tons)**

<b>Crop</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Wheat	12,707	12,700	11,537	9,937	11,198
Barley	2,244	2,209	2,154	1,388	1,528
Potatoes	2,185	2,269	2,308	2,261	2,521
Vegetables	1,782	1,857	1,938	2,059	2,169
Sugar beet	282	372	424	398	311

Source: Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006.

Fresh cows' milk production grew from 3.7 million metric tons in 2000 to 4.3 million metric tons in 2003.<sup>5</sup>

### **Kyrgyz Republic**

The Kyrgyz Republic was one of the main suppliers of agricultural products to other Soviet republics, but following the collapse of the state distribution system, the Kyrgyz agricultural sector lost its traditional Russian markets. Agricultural production fell sharply between 1991 and 1995 – down to 75% of its former level – mainly due to land and price reforms. However, agriculture is the only major sector of the economy where the pre-reform level of production of 1990 has been surpassed.

Table 5 presents production statistics from the past five years of key agricultural commodities.

**Table 5. Kyrgyz Rep. Agricultural Production 2001-2005, Selected Items ('000 metric tons)**

<b>Commodity</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>
Milk	1,142	1,173	1,192	1,185	1,198
Wheat	1,190	1,163	1,014	998	950
Potatoes	1,168	1,244	1,308	1,363	1,141
Vegetables	815	456	678	742	737
Maize	443	374	399	453	437
Barley	140	149	198	233	214
Meat	200	200	194	188	188

Source: Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006.

### **Mongolia**

Despite Mongolia's extremely harsh climate, the agricultural sector still manages to produce a variety of meat, crops, and dairy products for domestic consumption and export. One-fourth of export sales are generated by the agricultural sector. Meat production, one of the country's key agricultural products, has declined by 50% since 2000 because of the severe winter that year which wiped out huge numbers of livestock. Mongolia is still trying to rebuild its stocks, and now has approximately 30 million heads of livestock. Mongolia's crop production, as shown in Table 6, is relatively small compared to that of its neighboring countries but it reflects the country's small population and rugged terrain and climate.

<sup>5</sup> Food and Agriculture Organization, "Food and Agricultural Indicators: Kazakhstan," October 2005.



**Table 6. Mongolia Agricultural Production 2001-2005, Selected Items ('000 metric tons)**

Commodity	2001	2002	2003	2004	2005
Meat	226	204	153	199	200
Milk (million liters)	290	276	292	329	403
Wheat	139	123	160	136	76
Potatoes	58	52	79	80	83
Vegetables & melons	45	40	60	49	64
Wool	20	17	15	15	17
Barley	2	2	3	2	1
Oats	1	0	1	1	1

Sources: Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006, and Mongolia's National Statistical Office and the Ministry of Food and Agriculture, <http://www.investmongolia.com/forum/t1.htm>.

On an annual basis, Mongolia produces approximately 8.4 millions of skins and hides, 17,000 metric tons of sheep wool, and 3,000 metric tons of cashmere.<sup>6</sup> Mongolia is the second biggest raw cashmere producer in the world after China and currently produces 21% of the world's cashmere.

### Tajikistan

The agricultural sector contributes 24% of GDP and accounts for 19% of export revenues. Cotton production grew each year between 2001 and 2004 until it declined in 2005. On the other hand, wheat production has decreased annually since 2002 (see Table 7). The best performing major crops over the past five years have been maize, potatoes, and barley.

**Table 7. Tajikistan Agricultural Production 2001-2005, Selected Items ('000 metric tons)**

Crop	2001	2002	2003	2004	2005
Cotton	453	516	537	557	448
Wheat	489	701	660	631	618
Potatoes	308	357	473	527	555
Cotton (lint)	123	143	161	179	151
Grapes	110	81	28	93	91
Maize	34	55	95	113	156
Rice	39	50	59	51	62
Barley	16	36	51	63	64

Source: Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006.

A few years ago, Tajik fruit and vegetable products were losing market share in Russia, but that share has been regained, reportedly due to Tajikistan's "ecologically clean product."

### Uzbekistan

Agriculture employs 3.1 million people out of a working population of 10 million. The sector is geared toward the production of two principal crops: cotton and wheat. These crops, together with other selected crops such as rice and sugar beets, are still grown under a state-order system. Uzbekistan is one of the world's top 20 vegetable oil producers, particularly cottonseed oil, and ranks among the five leading producers of tomato paste.

<sup>6</sup> <http://www.investmongolia.com/forum/t1.htm>.

Wheat production has increased 61% between 2001 and 2005, but other crops show much more modest growth over the same period (see Table 8). After a two-year decline, cotton production rose in 2004 to slightly surpass the 2001 level.

**Table 8. Uzbekistan Agricultural Production 2001-2005, Selected Items ('000 metric tons)**

Crop	2001	2002	2003	2004	2005
Wheat	3,690	4,967	5,437	5,378	5,928
Cotton	3,265	3,122	2,803	3,537	n.a.
Vegetables	2,778	2,936	3,301	3,336	3,518
Potatoes	744	777	834	896	924
Rice	83	175	334	181	166
Corn	141	147	146	156	164
Barley	134	221	155	108	110

Source: Asian Development Bank, *Key Indicators 2006*, Manila: ADB, 2006.

#### **IV. LEGAL AND REGULATORY ENVIRONMENT, GOVERNMENT POLICIES, AND STRATEGIES FOR AGRICULTURE**

The Central Asian countries have made progress with numerous legal reforms since the early 1990s, such as new commercial legislation and tax codes, but the legislative and regulatory frameworks in these countries are still evolving and prone to change in response to new circumstances and attempts to create more favorable business conditions. Despite the improved business environment, the implementation and enforcement of the legal and regulatory frameworks and the governing institutions upholding them have not always kept pace. Bureaucratic requirements for businesses have been reduced and continue to be addressed through regional trade facilitation programs, bilateral agreements, and unilateral simplification of procedures, but obstacles and delays are still common and increase transaction costs for firms. Gradual improvements are being made in areas such as investor protection, corporate governance standards, and in company, securities, and bankruptcy laws, but as a whole Central Asia does not measure up to the standards in the new members of the European Union or the Baltic States.

Xinjiang Uygur Province is also making adjustments in response to the new economic realities in the global marketplace. At the moment, its business legal and regulatory framework is not as ready for the requirements of international business as compared to China's eastern provinces, but the local economic policies and regulations are in line with national economic reforms such as Beijing's "Great Western Development Strategy" (2000), its "Go West" campaign, and other western development plans and policies.

Potential investors need to bear in mind that the business legal and regulatory frameworks in the CAREC region are rather young and have not fully broken away from the legacy of the past. Gaps exist in legislation, changes will occur in the legal and regulatory frameworks, gray areas persist in interpreting laws and regulations, and all of these are part of the region's re-emergence into the modern world economy. As with any transitional economy or region, the investment opportunities can be extremely rewarding, but they often come with some uncertainty about the legal underpinnings.

One of the key problems in much of the CAREC region is the implementation and enforcement of laws. The judicial systems in the region are not all independent from the executive branch, are often inconsistent in their application and interpretation of laws, and some need to operate in a transparent manner. An additional problem in certain countries is that laws and regulations are not openly published, and thus people and businesses are often not aware of their rights and responsibilities.

The legal status of land in Central Asia varies from country to country, but essentially foreign ownership of land is not permitted in the region. However, this does not present much of a problem for foreign agribusiness investors in practice because the countries have provisions for leases and land use rights.

Government policies in nearly all of the Central Asian countries involve diversifying their economies to make them less reliant upon one industry, such as oil or gas, and developing the agricultural sector is a key strategy in achieving this goal.

Afghanistan just replaced the 2004 “Policy and Strategy Framework For The Rehabilitation and Development of Agriculture and Natural Resource Sector of Afghanistan,” with the “Afghanistan Agriculture Master Plan.”<sup>7</sup> The Master Plan will invest US\$1,768.32 million over the next five years, not including funds required for irrigation. One objective of the Master Plan is to increase dried fruit and nut exports to US\$1 billion annually within ten years. As part of the strategy to replace poppy cultivation, the Master Plan encourages horticulture through an expansion of rural credit. The Plan also encourages private sector growth in agriculture through specific rules and regulations that will aid growth, especially in exports, along with institution building and investment in services for the private sector. In horticulture, seven products are emphasized over the next 10 years, and the Master Plan calls for US\$684.7 million of private investment and US\$900 million of public investment. For livestock, the Master Plan allocates nearly US\$96 million. The Plan also has investments for increasing cereals and food security.

Azerbaijan has focused on privatizing its agricultural sector. The 1996 Law on Land Reform has led to land being distributed to individuals. Private farming, especially in the areas of vegetables, fruits, and livestock production, is gradually gaining strength. Nearly all farms have been privatized.

The government of Kazakhstan is encouraging diversification of the country's economy to reduce its dependence on oil, and agricultural development is an important part of the strategy. Nearly all agricultural enterprises have been privatized (with the exception of agricultural research stations). As a result, the number of family farms has doubled since 1998 to 121,500, and arable land under their control has climbed from 19% to over 42%. Kazakhstan recently approved new laws to encourage agricultural growth and rural development, passing the land, forest and water codes, the microfinance law, and the law on credit partnership, among others.

The Kyrgyz government continues to reform the agricultural sector to increase the private sector's role. Land reform is still ongoing. The government is also focusing on investments to improve productivity in agriculture, rehabilitating and improving cost recovery for irrigation, providing credit, capacity building for agricultural institutions, and water management.

Tajikistan continues to restructure its agricultural sector to encourage value-added processing and packaging and to create more opportunities for suppliers. The government has acknowledged that the development of agribusiness is a top priority in its development plan and continues to support investors.

The Uzbekistan government has announced its intention to gradually eliminate the state procurement system and move production of wheat and cotton from collective farms to private farmers. To date, an overwhelming majority of cotton is still purchased by the government and then sold to the world market, though farmers sell a small amount through the new auction mechanism. The government also plans to eliminate the majority of unproductive collective farms by leasing out land to private farmers by the end of 2007.

---

<sup>7</sup> The Policy and Strategy Framework focused on institutional reform; natural resources use and management; production efficiency in animal husbandry, horticulture, small-scale production, and alternatives to poppy cultivation; support services to farmers; and sub-sector strategies on issues such as infrastructure, taxes, quality standards, and deregulation of commerce.

Xinjiang Uygur Autonomous Region is promoting foreign investment in agriculture through several incentives and favorable policies. Foreign invested enterprises can purchase state-owned land usage rights. Exemption from payment of the twenty-five percent of the land usage right purchasing cost can be granted if the management period is more than 20 years; 30% of the land usage right purchasing cost can be exempted if the management period is more than 30 years. Foreign investment in farming cultivation also receives agricultural tax exemption for five years.

According to state credit policies, foreign invested enterprises receive equal treatment as domestic enterprises from the Agricultural Bank XPCC Branch (in Xinjiang).

#### **IV. INFRASTRUCTURE DEVELOPMENT**

For the development of agriculture and agribusiness, the transportation infrastructure is very important, not least because agricultural products are perishable. The rural road network connecting villages to market centers is just as important as the major highways that connect major urban centers on a national and regional basis. The railways are also important for transporting produce and meat.

The rural road networks in much of Central Asia are limited, and those that do exist are in a state of deterioration. Xinjiang is the exception, with much of its road infrastructure coming very recently. For the newly independent republics, the emphasis on road construction in the post-independence era has been on developing highways to facilitate regional linkages of their markets.

Despite the attention to highway development, the roads in Central Asia are used comparatively little for long-distance transport compared to rails, and this is a result of several factors: the lack of direct road connections to state capitals, production centers, and key markets in Central Asia; differing regulations, policies, and standards; inefficient border controls; the deteriorating conditions of the road infrastructure; and the lack of finance to upgrade roads and further expand the networks.

Also critical to the agricultural sector is irrigation. Similar to the road infrastructure, the irrigation systems of the Central Asian countries suffered greatly from neglect and a lack of finance in the post-independence era. Some countries have lost over 30% of their irrigation system during the transitional period, while Afghanistan's irrigation system was decimated by decades of war. Tajikistan and Xinjiang are notable exceptions and possess good water infrastructure. Generally, though, there is a great need to rehabilitate local irrigation and drainage systems in Central Asia, and given limited budgets, priorities must be carefully set according to cost effectiveness.

Another important problem which needs to be solved is that water tariffs for irrigation do not cover current costs or capital costs. Tariffs are likely needed to be raised gradually over time to fully cover all costs involved, including maintenance and capital replacement. Increasing utility tariffs have proven highly unpopular in the region, and this would be a greater burden on the agricultural sector.

#### **V. IMPEDIMENTS TO INVESTMENTS AND CONDUCTING BUSINESS**

The CAREC member countries face several impediments to capturing more foreign investment in the agricultural sector. One of the major impediments in the region is the near prohibition of foreign ownership of land and complicated land use systems. As land is the core asset in nearly any agricultural investment, the limitations on ownership and access to land will deter many investors from the region. Furthermore, the legal frameworks, including the judiciary systems in many of the Central Asian countries, need to be fine tuned to evoke confidence in many foreign investors. Access to land use and rights need to be clarified and simplified in much of Central Asia.

A second constraint is the existing infrastructure system to support the agricultural sector. As discussed earlier, the irrigation systems throughout the region are not functioning optimally, and it

appears that a quick fix is not on the horizon unless significantly more donor contributions are dedicated to rehabilitating and expanding the irrigation systems. Rural roads are facing the same problems. Another concern related to infrastructure for agriculture is the shortage of proper storage facilities, particularly refrigerated facilities.

The lack of agricultural credit is a third major impediment. Agro-businesses that rely on inputs from small to medium producers are handicapped because of the near absence of micro-credit schemes and other finance programs that local suppliers in the region may need to scale up or to simply survive one year to the next.

Fourth, transport costs to key markets outside of the CAREC region are relatively high due to several factors such as high tariffs, the number of borders necessary to cross, inefficient railway systems, and time-consuming border procedures.

A fifth key constraint to greater investment in agriculture is public sector institutions. The role of public sector institutions needs to be realigned more closely to meet the needs and realities of the modern global market-based agricultural economy. This includes a reduction in state intervention in domestic agricultural markets, in particular government production planning, artificial price setting, and government purchasing schemes. Public agricultural institutions should be performing a facilitating role for the private sector by creating favorable conditions for farming and agro-business and providing necessary support services that may be considered "public goods," such as information provision on commodity prices and foreign marketing support.

These first five major impediments may seem relatively easier to overcome compared to the sixth, which will take significant time, capacity building, and investment. International trade of agricultural products requires certification of safety and quality. For World Trade Organization members, this entails abiding by the Sanitary and Phytosanitary (SPS) Agreement. CAREC member countries in general are facing major challenges in achieving international standards because of traditional farm practices, low domestic standards and even weaker enforcement, and insufficient laboratory testing capacities in the public and private sectors. Food and hygiene standards throughout the region need to be raised to meet internationally acceptable levels or else exporting food and other agricultural products will not be possible beyond the Commonwealth of Independent States. However, attaining international safety and quality will first require extensive efforts to create awareness and understanding of the issues, methods, and technology, and then significant investments to help the entire sector implement the new standards and testing capacities.

These and other country-specific impediments not mentioned here need to be addressed by the CAREC governments in order to increase the prospects for attracting foreign investment in the agricultural sector in the near and medium-terms. The pace at which reforms occur and the level of financial commitment that can be made immediately to human resources development and support infrastructure will determine how soon the impediments can be overcome to help maximize the investment opportunities in agriculture.

## **VI. INVESTMENT OPPORTUNITIES**

In addition to cultivating and rearing the competitive commodities in each CAREC member discussed in sections II and III, numerous investment opportunities exist in the agricultural sector across the region.

The farm sector throughout Central Asia suffers from an enormous lack of capital equipment. In Afghanistan, all harvesting is done by hand, while only half of the cultivation is done by tractor. Where machinery does exist in the region, it tends to be both old and inefficient, as well as poorly suited to the scale and character of today's private farms. Opportunities exist for machinery and equipment suppliers for cultivation, harvesting, storage, and processing (both plant and animal). A related opportunity is in leasing services for farm machinery and equipment.

Water shortages are a common occurrence in many parts of Central Asia, and therefore firms providing water conservation technology should eventually acquire a stronger foothold in the region.

Agro-processing activities of all sorts are key business opportunities in the CAREC region. There tends to be an overall shortage of modern processing plants in the region, and besides lacking modern technology, many of the existing processing plants are weak in management (particularly international food safety and hygiene standards) and have few international marketing networks.

Fertilizer production in some of the CAREC member countries is insufficient to meet demand, and thus opportunities can be found in setting up fertilizer factories. Xinjiang Uygur Autonomous Region is even promoting foreign investment in bio-pesticides and bio-fertilizer production at its Shihezi Economic & Technological Development Zone.

At the other end of the spectrum is the potential for organic agriculture production, particularly in Tajikistan, which already has very low use of pesticides and chemical fertilizers. The international market potential for organic products continues to grow, and with the variety of specialty farm items that can be produced in Central Asia, the region could become a significant supplier of organic crops.

Key opportunities are also present in the international marketing of agricultural goods from Central Asia. The current level of marketing skills in the region does not match the potential that agricultural goods from the region have in acquiring foreign market shares.

## **VII. RECOMMENDATIONS**

In order to facilitate foreign investment in the agricultural sector throughout the CAREC region, several measures are recommended.

First, land use rights need to be clarified and simplified in many of the CAREC countries. The legislation and regulations on land use for foreign investors need to be streamlined and the numerous instances of vague phrasing that leaves the law or regulation open to various interpretations by officials need to be addressed. Moreover, even if private ownership of land is not going to be granted, the governments should make land use rights as close to ownership as possible.

Second, government agricultural institutions must be strengthened and their transformation from central planning and production roles to regulation and facilitation should be completed. Ministries of agriculture and livestock should focus their efforts now on enabling the private sector to handle the production and processing of agricultural goods.

In their new roles as facilitators, government agricultural institutions should improve information access along the entire marketing chain, from aggregate production levels to exports, to real-time unit prices, and more.

A fourth recommendation entails developing comprehensive strategies for attaining international food and hygiene standards in agro-processing industries. Some countries are approaching the issue of standards on a piecemeal manner, but what is needed is a comprehensive strategy involving the government and private sector and a clear delineation of the roles and responsibilities of each.