

**Food Security in Central Asia:
Economic Opportunities, Policy Constraints, and Future Challenges***

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Introduction

A decade has passed since Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan became independent, and they continue to be plagued with poverty, malnutrition, and food insecurity (Green and Bauer, 1998). In their efforts to improve the welfare of their populations, the Central Asian countries are faced with unique economic opportunities. Identifying and taking advantage of such opportunities require a thorough understanding of the consequences of alternative policy paths that these countries may take in the next 10-15 years. Therefore, research based information is essential in designing and implementing policies and programs to achieve better economic growth and to reduce poverty and food insecurity. In the wake of increased globalization and related opportunities and constraints, the Central Asian countries must prepare themselves to meet the economic challenges of the future. This paper presents an overview of food security, a key welfare indicator, in Central Asia. It identifies economic opportunities that are likely to use resources more efficiently and policy constraints that these countries face due to poor design and implementation of economic reforms. The paper also identifies future challenges to promote food security and reduce poverty in the region.

Research on food security, poverty, and agricultural diversification is almost negligible in the Central Asian region. Part of the reason for this limited research is the unavailability of data for rigorous policy analysis. Few countries have nationally represented data on food consumption, which could be used for construction of food security and poverty scenarios. In this paper, the datasets that are available in the public domain are used to generate an overview of food security and poverty situations in two Central Asian countries—Kazakhstan and Kyrgyzstan. Although the countries of the region have specific economic challenges, the problems they face in addressing food security, poverty, and natural resource degradation and their causal factors remain similar amongst the countries of this region. Using the case studies of Kazakhstan and Kyrgyzstan, the paper attempts to develop generalizable issues, challenges, and constraints that the Central Asian countries face in their efforts to reduce food insecurity and poverty.

This paper is organized as follows. First, it argues that self-sufficiency food policies have not reduced food insecurity in Central Asia, but has lead to a decline in production of comparative advantage crops. Reviewing the current food security situation within these countries makes this argument. Then, the future prospect of food security is discussed. After gaining a better understanding of the past, present, and future food security situation in Central Asia, economic opportunities that can enhance future food security are discussed. Such opportunities include macroeconomic stability, global and regional trade, agricultural diversification, market privatization, private investment, and employment opportunities. Finally, policy and institutional constraints related to the design and implementation of economic and market reform such as democratic institutions, data availability, capacity levels, state-owned enterprises, tax policy, food safety regulation, food self-sufficiency policy, and investment constraints are reviewed.

Central Asia's Food Security Situation

Past and Current Food Security

Before independence, the Central Asian Republics were economically interdependent on each other and on the Soviet Union. The production of food and agricultural commodities were mainly organized through a central planning process, which supported the input supply and the output disposal systems. In terms of foodgrains, certain countries were net exporters (i.e., Kazakhstan) and certain countries were net importers (i.e., Tajikistan). Following independence and the dissolution of their existing trading arrangements, the Central Asian countries faced a choice between self-sufficiency in food production and food security through a combination of own production and regional trade. With interregional trade collapsing, each country chose to produce only the amount of grain needed by its population. For countries that were previously net importers, that has meant increased domestic grain production accompanied by increased market prices and farming of foodgrains in marginal lands. For countries that were previously net exporters, that has meant reductions in foodgrain production and net decreases in prices and national export revenues from food production activities.

Table 1: Average annual consumption of basic food products per capita in Kazakhstan (kilograms)

| | 1990 | 1995 | 1996 | 1997 | 1990-1997* Difference |
|--|--------|-------|-------|-------|--------------------------|
| Meat and meat products | 73 | 52 | 50 | 50 | -31.5% |
| Fish and fish products | 10.3 | 4.8 | 4.6 | 3.5 | -66.0% |
| Milk and dairy products | 311 | 229 | 211 | 196 | -37.0% |
| Eggs (pieces) | 225 | 97 | 70 | 69 | -69.3% |
| Vegetable oil | 11.2 | 7.6 | 7.4 | 6.5 | -42.0% |
| Vegetables and melons | 76 | 56 | 52 | 55 | -27.6% |
| Potatoes | 86 | 70 | 67 | 68 | -20.9% |
| Sugar | 38.0 | 18.5 | 17.6 | 17.1 | -55.0% |
| Fruits and berries (excluding processing for wine) | 23 | 11 | 10 | 9 | -60.9% |
| Cereal products | 148 | 185 | 185 | 200 | +35.1% |
| Total* | 1001.5 | 730.9 | 674.6 | 674.1 | -32.7% |

Baydildina et al., 2000.

* Calculated by author

In this section, we reviewed the consumption-based measures of food security and poverty in two Central Asian countries—Kazakhstan and Kyrgyzstan. Although the data relates to Kazakhstan and Kyrgyzstan, the data are broadly representative of all countries in this region. Table 1 shows the average annual consumption of basic food goods in Kazakhstan during 1990-1997 (Baydildina et al., 2000). From 1990 to 1995, the average annual consumption of basic food products fell 27 percent. It declined another 7.7 percent from 1995 to 1996. The average annual consumption of all basic food products declined, except for cereal products, which increased by 35.1 percent. However, there was a slight increase in the average annual consumption of vegetables and melon from 1996 to 1997.

From 1990 to 1997, the demand for the use of cereals in total consumption for Central Asia declined (Pandya-lorch and Rosegrant, 2000). Although total foodgrain consumption declined, human consumption of foodgrain in Kazakhstan increased from 148 kilograms in 1990 to 200 kilograms in 1997, while human per capita foodgrain consumption in Kyrgyzstan did not fluctuate much between 1985 and 1994 (Baydildina et al., 2000; Babu and Reidhead, 2000). The majority of this decline was in the consumption of feed for livestock. In 1990, the demand for cereals as feed was 27.5 million tons, but in 1997, this demand was only 18.9 million tons. Although demand for human consumption has not declined, food insecurity is likely to worsen when livestock production does not satisfy the expected future increase in the demand for meat and meat products (Baydildina et al, 2000).

In addition to the fall of foodgrains used as cereals, the food self-sufficiency policy and economic conditions have led to a 30 percent reduction in livestock production between 1992 and 1997 in Kazakhstan (Pandya-Lorch and Rosegrant, 2000). From 1992-1996, FAO calculated that the percent change in the decline in cattle and sheep for Kazakhstan as 25 percent and 44.7 percent, respectively (Suleimenov and Oram, 2000). Along with the supply of meat declining, the demand for meat and meat products declined from 2.23 million tons to 1.75 million tons during this period. However, the rising population and increasing urbanization is expected to increase the demand for meat and meat products in the future (Pandya-Lorch and Rosegrant, 2000).

Even with the rise in cereal production and consumption, food security through calorie intake has not been achieved for all in Central Asia. Table 2 presents selected indicators of food and nutrition security in 1996 for Kazakhstan. In 1996, the average per capita calorie intake was 3,097 calories per day, with 20.5 percent of the total population falling below the World Health Organization's (WHO) recommended intake of 2,200 calories per day. For the poorest expenditure quartile, 70.1 percent of the population was unable to consume the energy required for a typical day. In 1996, 4.0 percent of the Kazakhstan population fell below the recommended daily allowance (RDA) for protein per day. For iron, the portion below the RDA was 4.0 percent, while vitamin A inadequacy was 10.9 percent. However, these shortfalls are much higher for people in the poorest expenditure decile. Twenty-two percent, 20.6 percent, and 36.7 percent of the population in the poorest expenditure decile were inadequate in protein, iron, and vitamin A, respectively.

In addition to differences between expenditure deciles, differences arise between urban and rural settings. Estimates derived from the Kazakhstan Living Standard Measurement Survey (LSMS) data illustrated that rural households suffer from higher inadequacies in calories, protein, iron, and vitamin A than urban households (Table 3). Approximately 18 percent, 3 percent, 2 percent, and 8 percent of urban households did not satisfied the RDA requirements for calories, protein, iron, and vitamin A, respectively, while 23.3 percent, 6.0 percent 6.3 percent, and 14.6 percent of the rural population suffer from inadequacy in these nutrition measures, respectively.

Table 2: Estimates of food and nutrition insecurity by expenditure class in Kazakhstan, 1996

| | Expenditure decile | | | | | | | | | | All |
|--|--------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | I | II | III | IV | V | VI | VII | VIII | IX | X | |
| Mean calorie intake (kcal/person/day) | 1895 | 2417 | 2877 | 2982 | 3206 | 3249 | 3412 | 3487 | 3781 | 3678 | 3097 |
| <i>Calorie inadequacy (% below 2,200 kcal/day)</i> | 70.1 | 43.8 | 21.7 | 19.0 | 12.4 | 9.4 | 6.6 | 8.7 | 5.8 | 7.4 | 20.5 |
| Mean protein intake (grams/person/day) | 68 | 92 | 106 | 110 | 121 | 126 | 135 | 130 | 142 | 142 | 117 |
| <i>Protein inadequacy (% below 45 g/day)</i> | 22.0 | 4.9 | 4.2 | 3.5 | 0 | 1.4 | 0.7 | 2.1 | 0 | 1.4 | 4.0 |
| Mean iron intake (mg/person/day) | 17 | 22 | 24 | 28 | 28 | 29 | 32 | 34 | 40 | 43 | 30 |
| <i>Iron inadequacy (% below 10 mg/day)</i> | 20.6 | 5.7 | 5.6 | 1.5 | 2.1 | 2.1 | 1.0 | 0 | 0.5 | 0.5 | 4.0 |
| Mean vitamin A intake (iu/person/day) | 1989 | 2503 | 2571 | 3066 | 3208 | 3835 | 3936 | 4294 | 4768 | 4609 | 3476 |
| <i>Vitamin A inadequacy (% below 1,000 iu/day)</i> | 36.7 | 25.8 | 13.2 | 10.2 | 3.9 | 4.7 | 3.9 | 1.6 | 2.4 | 6.3 | 10.9 |

Source: Babu, Reidhead, and Rhoe, 2001 (based on Kazakhstan 1996, Government Statistical Committee (GOSKOMSTAT), Government of Kazakhstan)

Table 3: Estimates of food and nutrition insecurity in rural and urban Kazakhstan, 1996

| | Location | | |
|--|-------------|-------------|-------------|
| | Rural | Urban | All |
| Mean calorie intake (kcal/person/day) | 3063 | 3120 | 3098 |
| <i>Calorie inadequacy (% below 2,200 kcal/day)</i> | 23.3 | 18.7 | 20.5 |
| Mean protein intake (grams/person/day) | 118 | 117 | 117 |
| <i>Protein inadequacy (% below 45 g/day)</i> | 6.0 | 2.8 | 4.0 |
| Mean iron intake (mg/person/day) | 30 | 29 | 30 |
| <i>Iron inadequacy (% below 10 mg/day)</i> | 6.3 | 2.1 | 4.0 |
| Mean vitamin A intake (iu/person/day) | 3229 | 3653 | 3476 |
| <i>Vitamin A inadequacy (% below 1,000 iu/day)</i> | 14.6 | 8.2 | 10.9 |

Source: Babu, Reidhead, and Rhoe, 2001 (based on Kazakhstan 1996, Government Statistical Committee (GOSKOMSTAT), Government of Kazakhstan)

In comparison, the food insecurity is much higher in Kyrgyzstan than in Kazakhstan. This difference may be the result of changing cereal production patterns. Although the food security situation in Kyrgyzstan is worse than in Kazakhstan, there were signs of improvement. In 1993, the percent of the total population not consuming the recommended quantity of calories was 59 percent, but by 1997, the calorie inadequacy population dropped to 40 percent. However, the poorest quartile suffered the most with 74 percent calorie inadequacy in 1997. There has also been an improvement for almost all quartile groups in protein, iron and vitamin A (Table 4).

Table 4: Estimates of food and nutrition insecurity in Kyrgyzstan, 1993 and 1997

| | Expenditure quartile | | | | |
|--|----------------------|--------------|--------------|--------------|--------------|
| | I | II | III | IV | All |
| 1993 | | | | | |
| Calorie intake (kcal/person/day) | 1,125 | 2,072 | 2,650 | 3,046 | 2,092 |
| <i>Calorie inadequacy (% below 2,200 kcal/day)</i> | 84 | 61 | 45 | 32 | 59 |
| Protein intake (grams/person/day) | 36 | 62 | 77 | 91 | 63 |
| <i>Protein inadequacy (% below 45 g/day)</i> | 71 | 39 | 28 | 29 | 43 |
| Iron intake (mg/person/day) | 12 | 23 | 27 | 37 | 24 |
| <i>Iron inadequacy (% below 10 mg/day)</i> | 67 | 37 | 27 | 16 | 38 |
| Vitamin A intake (IU/person/day) | 846 | 1,515 | 1,865 | 2,399 | 1,697 |
| <i>Vitamin A inadequacy (% below 1,000 IU/day)</i> | 75 | 52 | 43 | 33 | 50 |
| 1997 | | | | | |
| Calorie intake (kcal/person/day) | 1,398 | 1,934 | 2,464 | 3,026 | 2,160 |
| <i>Calorie inadequacy (% below 2,200 kcal/day)</i> | 74 | 45 | 22 | 10 | 40 |
| Protein intake (grams/person/day) | 55 | 69 | 87 | 104 | 77 |
| <i>Protein inadequacy (% below 45 g/day)</i> | 50 | 37 | 22 | 13 | 32 |
| Iron intake (mg/person/day) | 10 | 14 | 21 | 29 | 19 |
| <i>Iron inadequacy (% below 10 mg/day)</i> | 68 | 50 | 31 | 12 | 405 |
| Vitamin A intake (IU/person/day) | 2,215 | 2,504 | 3,139 | 3,930 | 2,848 |
| <i>Vitamin A inadequacy (% below 1,000 IU/day)</i> | 39 | 28 | 21 | 10 | 26 |

Source: Babu and Reidhead, 2000 (based on Kyrgyzstan 1993 and 1997 LSMS data, National Statistical Committee (NATSKOMSTAT), Government of Kyrgyzstan)

Increasing levels of poverty is a major cause of food insecurity in Central Asia. In addition to calculating the inadequacies in calories, protein, vitamin A, and iron in Kazakhstan and Kyrgyzstan, the poverty line, head count ratio, aggregate income gap index, and weighted short-fall index were calculated and the determinants of poverty were analyzed. Using the cost of calorie method (only food items included) Kazakhstan food poverty line in 1996 was 54.3 tenge or US\$0.79¹ per day. Poverty measures derived on the basis of this poverty line indicate that 16 percent of the sample households are poor by head count (H); the aggregate income gap (G) is 4911.98 tenge per day; and

¹ \$1 = 69 tenge (ADB, 1996)

the weighted shortfall index (P) is 0.01935856 (Table 5). The poverty line using the cost-of-basic-needs method (food plus non-food items) is 112.19 tenge or US\$1.63 per day in 1996. These measures of poverty will then increase to 18.5 percent, 9811.32 tenge per day, and 0.0442 respectively (Table 6). Including non-food expenditures into the poverty line calculation slightly increases the head count ratio, but more than doubles the weighted shortfall index, which gives a better understanding of the severity of the poverty in Kazakhstan.

Table 5: Summary statistics and food poverty measures in Kazakhstan when Z = 54.3, 1996

| Variable | Value |
|---|--|
| Poverty line (Z): “cost of the minimum” | 54.3 tenge/person/day |
| Poverty measures | |
| Headcount (H) | 0.16 |
| Aggregate income gap (G) | -4911.98 Tenge/day (for 318 ‘poor’ households) |
| Weighted shortfall index (P) | 0.01935856 |

Source: Babu, Reidhead, and Rhoe, 2001 (based on Kazakhstan 1996, Government Statistical Committee (GOSKOMSTAT), Government of Kazakhstan)

Table 6: Summary statistics and total poverty measures in Kazakhstan when Z = 112.19, 1996

| Variable | Value |
|------------------------------|--|
| Poverty measures | |
| Headcount (H) | 0.185 |
| Aggregate income gap (G) | -9811.32 Tenge/day (for 366 ‘poor’ households) |
| Weighted shortfall index (P) | .0442 |

Source: Babu, Reidhead, and Rhoe, 2001 (based on Kazakhstan 1996, Government Statistical Committee (GOSKOMSTAT), Government of Kazakhstan)

Between 1996 and 1999, Kyrgyzstan’s food poverty level has increased from 51.9% to 64.1% of the population being poor according to the head count ratio. There was a drastic increase in the head count ratio for the urban sector from 1997 to 1998, which may be the result of the Russian financial crisis. In addition to the head count ratio increasing, the poverty gap has had a positive trend since 1997 (Table 7). The number of people not able to obtain Kyrgyzstan’s total poverty line of 7340 Soms per year has been increasing since 1996. The largest increase occurred between 1997 and 1998, which could also be the result of the Russian financial crisis. Comparing the two poverty lines shows that the poverty gap is much less under the total poverty line than the food poverty line.

Table 7: National poverty levels - head count ratio and poverty gap for Kyrgyzstan’s food poverty line Z=3849 Soms per year

| Variable | 1996 | 1997 | 1998 | 1999 |
|------------------|------|------|------|------|
| Head Count Ratio | | | | |
| Rural | 58.9 | 64.5 | 71.3 | 69.7 |
| Urban | 37.1 | 28.5 | 50.7 | 49.0 |
| Total | 51.9 | 51.0 | 63.6 | 64.1 |
| Poverty Gap | 20.0 | 18.0 | 24.7 | 25.0 |

Value of Tenge is for 1999; Source: World Bank 2001c

Table 8: National poverty levels - head count ratio and poverty gap for Kyrgyzstan's food poverty line Z=7340 Soms per year

| Variable | 1996 | 1997 | 1998 | 1999 |
|------------------|------|------|------|------|
| Head Count Ratio | | | | |
| Rural | 23.3 | 20.7 | 25.8 | 25.6 |
| Urban | 10.3 | 4.9 | 18.3 | 17.1 |
| Total | 19.1 | 14.8 | 23.0 | 23.3 |
| Poverty Gap | 6.0 | 4.0 | 6.0 | 7.1 |

Value of Tenge is for 1999

Source: World Bank 2001c

The determinants of poverty have been analyzed by classifying households as poor or non-poor according to the two poverty lines derived earlier. The results are given in tables 9 and 10, respectively. The estimated logit model using both poverty line values shows that livestock value and land-holding size have a significant negative relationship with a household's poverty level for both measurements. However, age of household head and education level of households are negatively significant for the food poverty line but not for the total poverty line, while the constant is negatively significant for the total poverty line and not for the food poverty line. A significant positive relationship exists between household poverty level, household size and family support.

Table 9 Logit parameters of the probability of being poor in Kazakhstan (Z =54.3)

| Variable | Parameter value | Odds ratio |
|--------------------------|---------------------|------------|
| Constant | -0.731 | .482 |
| Livestock value | -0.08 ^a | .992 |
| Land holding size | -0.035 ^a | .965 |
| Household size | 0.313 ^a | 1.368 |
| Dependency ratio | 0.129 | 1.138 |
| Source of income | -2.739 | .065 |
| Age of household head | -0.012 ^b | .988 |
| Infrastructure | -0.004 | .996 |
| Education/training level | -0.094 ^a | .911 |
| Family support | 0.470 ^a | 1.600 |

^a Statistically significance at 1% level

^b Statistically significance at 5% level

Source: Babu, Reidhead, and Rhoe, 2001 (based on Kazakhstan 1996, Government Statistical Committee (GOSKOMSTAT), Government of Kazakhstan)

Table 10 Logit parameters of the probability of being poor in Kazakhstan (Z=112.19)

| Variable | Parameter Value | Odds ratio |
|--------------------------|---------------------|------------|
| Constant | -1.576 ^a | 0.207 |
| Livestock value | -0.004 ^a | 0.996 |
| Land holding size | -0.023 ^b | 0.978 |
| Household size | 0.250 ^a | 1.284 |
| Dependency ratio | 0.336 | 1.400 |
| Source of Income | -2.683 | 0.068 |
| Age of household head | -0.005 | 0.995 |
| Infrastructure | -0.001 | 0.999 |
| Education/training level | -0.041 | 0.960 |
| Family support | 0.591 ^a | 1.850 |

^a Statistically Significance at 1% level

^b Statistically significance at 5% level

Source: Babu, Reidhead, and Rhoe, 2001 (based on Kazakhstan 1996, Government Statistical Committee (GOSKOMSTAT), Government of Kazakhstan)

Future Food Security

Although food security during the first decade of independence was not achieved, what is the likely prospect of achieving food security by the year 2020? Key factors that lead to changes in food security are population growth, economic growth, food production, and food demand. It is projected* that the population of each Central Asian country to increase (Table 11). In addition to population increasing, the demand of both cereal and meat products are expected to rise by 3.37 million tons (31.58 percent change) and 0.91 million tons (46.7 percent change), respectively by the year 2020 (Table 12). With both increases in population and food demand, is their sufficient food supply within the Central Asian countries to satisfy the demand? It is projected that the per capita food availability will increase 6.1 percent as a whole for Central Asia from 2,685 calories per day in 1995 to 2,850 calories per day in 2020. In spite of the negative economic growth during the 1990s, all of the Central Asian countries are expected to have a 3 percent economic growth at least up to the year 2020 (Pandya-Lorch, 2000). Even with positive economic growth expected, the Central Asian countries will need to import some cereals and double their imports in meats in order to meet the food demand (Pandya-Lorch, 2000), which may not meet the quantity and quality of food needed for food security due to low purchasing power. However, there are economic opportunities that can help improve the food security situation.

* The projections were calculated using the International Model for Policy Analysis of Commodities and Trade (IMPACT), which was developed by researchers at the International Food Policy Research Institute. The projected figures are for the period 1995 to 2020 as reported in Pandya-Lorch (2000).

Table 11: Medium-variant population projections for Central Asia, 1995-2020

| Country | 1995 | 2020 | Change 1995-2020 |
|--------------|----------|------|---------------------|
| | millions | | |
| Kazakhstan | 16.8 | 18.7 | 1.9 |
| Kyrgyzstan | 4.5 | 5.3 | 0.8 |
| Tajikistan | 5.8 | 8.5 | 2.7 |
| Turkmenistan | 4.1 | 5.7 | 1.6 |
| Uzbekistan | 22.8 | 32.3 | 9.5 |

UNDP (1996)

Table 12: Demand and Imports of cereals and meat

| Central Asia | 1995 | 2020 | Change 1995-2020 |
|---|-------|-------|---------------------|
| Cereal Demand (millions of tons) | 18.06 | 24.01 | 5.95 |
| Meat Demand (millions of tons) | 1.95 | 2.86 | 0.91 |
| Per Capita Cereal Demand (kilograms) | 335 | 345 | 10.0 |
| Per Capita Meat Demand (kilograms) | 36 | 41 | 5 |
| Per Capita Calorie Availability (calories per day) | 2,685 | 2,850 | 165 |
| Imported Cereals (millions of tons) | -0.51 | -0.76 | .25 |
| Imported Meat (millions of tons) | -0.16 | -0.38 | 0.22 |

Source: Pandya-Lorch, 2000

Economic Opportunities

Macroeconomic Stability

Central Asia's food insecurity is an indirect result of the fall in national output and high inflation rates during the 1990s (Babu and Reidhead, 2000). For example, the gross domestic product (GDP) growth rate annually fell 7.3 in Kyrgyzstan, 6.9 percent in Kazakhstan, 1.9 percent in Uzbekistan, 16.4 percent in Tajikistan, and 9.6 percent in Turkmenistan over the first half of the decade (World Bank, 1999). The second half of the decade promised improvement with Turkmenistan having 7 percent and 16 percent economic growth in 1998 and 1999, respectively; Tajikistan experiencing 5 percent growth in 2000; and Uzbekistan experiencing 4.4% economic growth in 1999 (Asian Development Bank, 2001f; Asian Development Bank, 2001c; Asian Development Bank, 2001e). However, Kazakhstan and Kyrgyzstan experienced a fall in economic growth in 1998 as a result of the 1998 Russian economic crisis. Kazakhstan's GDP faltered in 1998, but then it expanded by 2.7

percent in 1999 and 9.6 percent in 2000, while Kyrgyzstan's economic growth expanded by 1.5 percent in 1999 and 5 percent in 2000 (Asian Development Bank, 2001d)

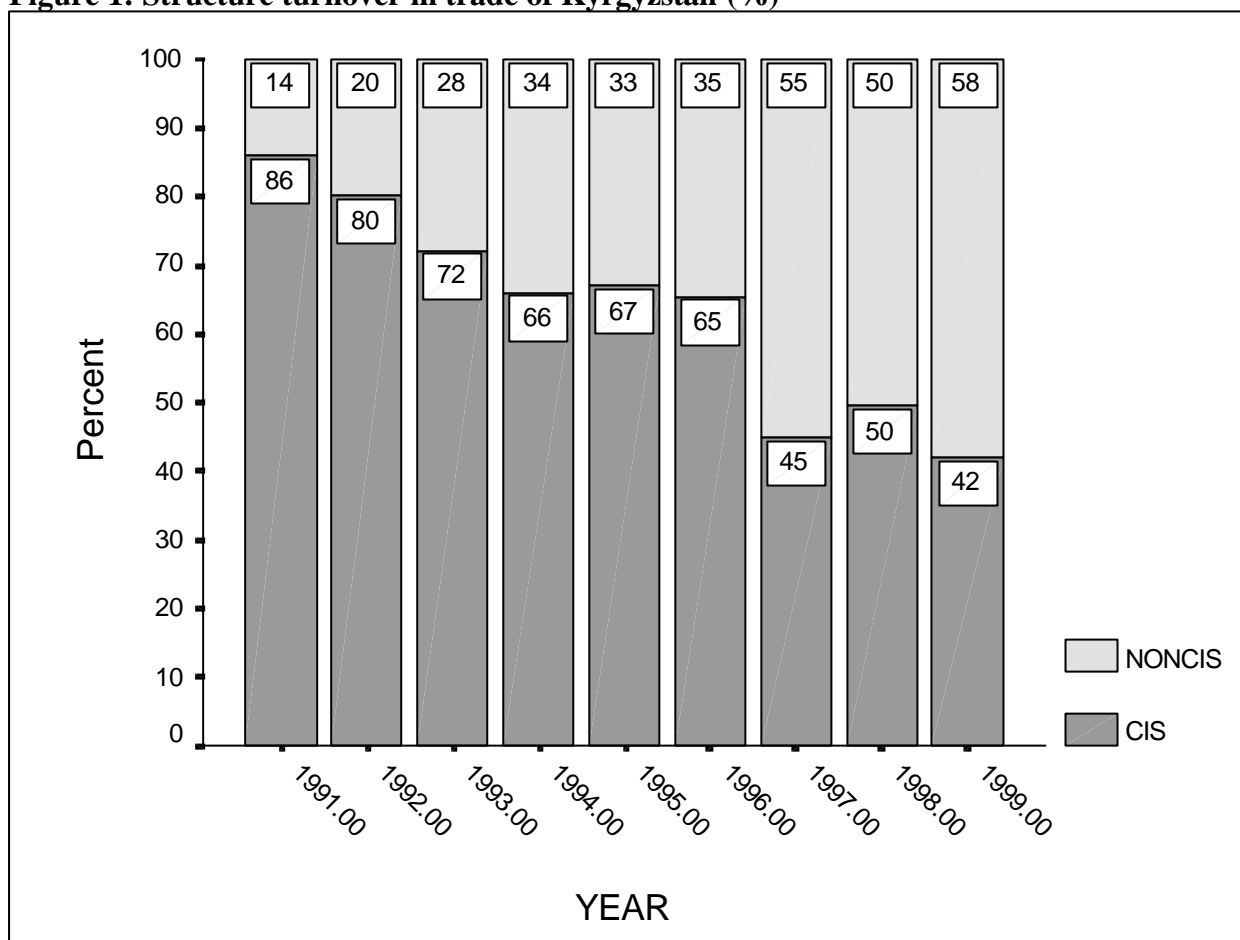
In the beginning of the 1990s, the inflation rate for all of these countries were high, however, each country has begun to stabilize its economy and lower inflation rates are beginning to appear in three countries. Kyrgyzstan's inflation rate fell from 35.9 percent in 1999 to 18.7 percent in 2000, Kazakhstan's inflation rate fell 8 percent from 17.8 percent in 1999 to 9.8 percent in 2000, and Turkmenistan has sustained a relatively low inflation rate of 11 percent since 1998 (Asian Development Bank, 2001a; Asian Development Bank, 2001d; Asian Development Bank f, 2001). However, Uzbekistan's inflation rate rose from 29.1 percent in 1999 to 50 percent in 2000 as a result of increases in wages and fuel prices, and Tajikistan has been experiencing inflation rates in the mid-20 percent range (Asian Development Bank, 2001c; Asian Development Bank, 2001e).

Macroeconomic stability is essential for food security for three main reasons. First, declining GDP results in rising unemployment, and ultimately, labor productivity falls, which leads to human and natural resources being wasted. Second, Central Asia's medium to high inflation lowers the purchasing power of the population; therefore, the population is unable to purchase necessary agricultural inputs or adequate food to ensure their food security. Third, macroeconomic stability provides opportunities for domestic and foreign investment in diversifying Central Asia's agricultural products; which will efficiently use human and natural resources and increase employment and income.

Regional and International Trade

With the independence of the Soviet Republics, came the breakup of interregional trade. This collapse in trade forced Central Asian countries to adopt a food self-sufficiency policy, which resulted in less trade, especially in food products of the country's comparative advantage. The break-up of regional and global trade has affected each country in similar ways, but differences do arise. Kyrgyzstan's economy for example, relies heavily on the agriculture sector and the food processing industry. It produces cotton, tobacco, oils, tomatoes, cabbage, onion, table grapes, and wine grapes. The farmers also raise sheep and large horned cattle. In response to the formal and informal trade restrictions of the Former Soviet Republics, Kyrgyzstan has shifted from exporting to Commonwealth of Independent States (CIS) to non-(CIS) countries (Figure 1). Furthermore, as a recent member of the WTO, it will also be liberalizing all foreign trade activities and adopting international standards (Kyrgyzstan Development Gateway, 2000). However, Kyrgyzstan has experienced 3 problems since it acceded to the WTO before the rest of the region. First, Kyrgyzstan has been facing an influx of cheap and illegal textile and clothing imports. Second, the country's exported goods have been discriminated against with tariff and non-tariff barriers. Third, some CIS countries have had their value added tax doubled, which reduces Kyrgyzstan's trade with these countries (International Trade Center, 2001). In addition to problems generated by the accession into the WTO, Kyrgyzstan's shuttle-traders, who are essential to Kyrgyzstan's economy, are facing difficulties due to the absence of laws regulating their activities and pressures from customs officials (Kyzy, 2001).

Figure 1: Structure turnover in trade of Kyrgyzstan (%)



Source: Kyrgyzstan Development Framework, 2000

Kazakhstan has also been working to liberalize its foreign trade. As of 1999, Kazakhstan has

- Abolished quotas on goods exported;
- Reduced the list of products subjected to licensing;
- Abolished export duties on all goods except wheat, oil, gas, and non-ferrous metals;
- Abolished practices of granting customs and taxation benefits;
- Abolished the institution of social exporters;
- Established free trade zones;
- Elaborated the pattern of preferences for developed and developing countries;
- Prevented imports of substandard goods; and
- Introduced a system of independent reshipping expertise of import contracts (Analysis and Strategic Research Center, 1999).

In spite of these changes, Kazakhstan has experienced a decline in wheat exports as the result of changing export patterns. Prior to independence, Kazakhstan was one of the main exporters of cereals to the other republics, now that the other countries have adopted a food self-sufficiency policy Kazakhstan has reduced the amount of wheat it produces in order to grow other crops to meet their food needs. This reduction in the production of foodgrains has dramatically affected Kazakhstan's exports. In the early years of independence, Kazakhstan reached its highest export

level for the decade. Then exports fell 50 percent after 1993. Exports rose briefly, but the drought of 1998/99, low investment in scientific research and human capacity, and the degradation of natural resources impeded the supply of foodgrains for exportation (Meng, Longmire, and Moldashev, 2000). Although Russia and other former republics continue to be primary export markets for Kazakhstan, there is a need to target other export markets to ensure efficient use of resources.

The Central Asian countries have initiated some targeting of export markets. In the mid-1990s, these countries joined Azerbaijan, Afghanistan, Pakistan, Iran, and Turkey to form the Economic Cooperation Organization. This cooperation has specifically strengthened cooperation in transportation, supply lines, commerce, and power engineering, but has not strengthened the cooperation in agriculture to its most productive level (Elebaev, 2000).

In 1996, Belarus, Kazakhstan, Kyrgyzstan, and Russia (BKCR) entered into a customs union. Tajikistan joined this customs union in 1999 (Asian Development Bank, 2000f). Although a customs union was established, it is not a full customs union because there are differences in duties among products, and at this time, there is not a common external tariff (Michalopoulos, 1999). Since Kyrgyzstan has acceded to the WTO two major problems have arisen within the customs union. First, Kazakhstan and Russia are accusing Kyrgyzstan of violating components of the customs union, and second, Kyrgyzstan may need to leave the customs union if the expected external tariff of the customs union is not lowered (Michalopoulos, 1999). Thus, there is an apparent conflict between the regional trade and international trade agreements, which needs to be resolved.

In 1998, the Central Asia Union became the Central Asia Economic Union. Its current membership includes Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan. The goal of this treaty is for goods, services, capital, and workers to move freely among these countries. In order to accomplish this goal, this treaty assists with coordinating transportation and communication networks; unifying antitrust regulations, investment policies, and tariff policies; simplifying customs regulations; and establishing joint ventures and banking institution networks. This agreement has provided the opportunity for several regional projects such as the production of spare agricultural machinery parts in Kazakhstan and the financing of grain exports from Kazakhstan to Kyrgyzstan and Uzbekistan. However, the non-convertibility of Uzbekistan's currency and different political and economic policies among the countries have constrained the process (RFMOA, 2001).

In 1998, the Agreement on the Common Agrarian Market was established amongst Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Armenia, Belarus, Georgia, Moldova, Russian Federation, and Ukraine. This agreement allows for the free flow of food produce, foodstuffs, scientific and technical goods, technology, means of production, and services for the agricultural sector. Its goal is to coordinate pricing policies, rules and standards, market information systems, and antitrust policies among these countries. Although the agreement has been approved, its success depends on elimination of political and economic impediments in coordinating trade policies; sufficient funds; and commitments made at WTO negotiations.

In addition to these two regional agreements, all five Central Asian countries have been granted Most Favored Nation (MFN) status from a number of OECD countries. However, MFN from the United States is conditioned on adherence to the Jackson-Vanik amendment to the 1974 Trade Act, which states that MFN status can be granted annually and on the condition that the demanding

country demonstrates that this clause would not contribute to limit emigration to the West (Gafurov et al., 2001). In addition to MFN status, Kazakhstan has a Bilateral Trade Agreement (1993) with the United States. This treaty improves market access, provides non-discriminatory treatment for U.S. goods and services in Kazakhstan and for Kazakhstani products in the United States, and provides strong intellectual property rights protection (Trade Compliance Center). This bilateral trade agreement could be a model adopted by other Central Asian countries. The first step in establishing a bilateral trade agreement is to recognize the benefits that bilateral trade will bring to both parties. The second step is to negotiate the terms of the agreement. The third step is to gain approval of the agreement from necessary government authorities. The fourth step is to implement the agreement, and the last step is to monitor the impact of the bilateral trade agreement. In 1997, a law on state support for direct investment was established stating that equipment, raw materials, and other imported goods that are used for investment in infrastructure, agriculture, or tourism as well as in the construction of Kazakhstan's new capital may qualify for complete or partial exemption of taxes (Trade Compliance Center, 1998). In addition to Kazakhstan's bilateral trade agreement with the United States, table 13 shows all current enforced bilateral trade agreements between CIS countries (RFMOA, 2001).

Table 13 : Bilateral FTAs between CIS countries

| | Armenia | Azerbaijan | Belarus | Georgia | Kaz | Kyz | Moldova | Russia | Taj | Tur | Ukraine | Uz |
|-----------------------|---------|------------|---------|---------|-----|-----|---------|--------|-----|-----|---------|----|
| Kazakhstan (Kaz) | | | | | | x | x | x | x | | x | |
| Kyrgyz Republic (Kyz) | x | | | | x | | x | x | | | x | x |
| Tajikistan (Taj) | x | | | | x | | | x | | | | |
| Turkmenistan (Tur) | | | | x | | | x | x | | | x | |
| Uzbekistan (Uzb) | | | | x | | x | x | x | | | | |

Source: Ministry of Agriculture of the Russian Federation (RFMOA) (Available answers to questions during WTO accession negotiations)

Another rally to form economic cooperation was at the inaugural meeting of the Central Asia Regional Economic Cooperation Program in 2001. At this meeting, there was a move to facilitate trade between Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, and Xinjiang Uygur Autonomous Region, China by simplifying customs procedures and joint infrastructure (Asian Development Bank, 2001b). Lastly, the Eurasian Economic Community (EEC), which consists of Belarus, Russia, Kazakhstan, Kyrgyzstan, and Tajikistan, was established on October 2000. The EEC wants to harmonize labor, customs, and tax and trade policies (Zhalimbetova, 2001). It is important to understand the impact of these agreements on the trade flow and incomes of the participating countries. Such information does not exist currently and it should be generated through future research studies.

Although regional and international trade has begun to grow in Central Asia more regional trade needs to occur amongst the Central Asian Republics and the international community to ensure food security. Regional and international trade allows excess foodgrains to be exported, which will increase foreign exchange, which could be used to import nutrient-rich foods that are demanded by the society. Secondly, reinitiating some of the initial interregional trade will allow countries to grow comparative advantage crops as well as diversify their agricultural production; therefore, resources will be used more efficiently, and the result will be higher incomes. Higher incomes

permit people to purchase necessary foods or agricultural inputs that will improve food security. Furthermore, efficient use of natural resources results in higher crop productivity. Third, a large portion of the population in Central Asia works in agriculture. For example, 40 percent of Uzbekistan's population and 42 percent of Tajikistan's population perform agricultural work (Tashmatov et al, 2000). Furthermore, 25-30 percent of Uzbekistan's GDP is derived from the agricultural sector and 55 percent of its foreign currency is collected through agricultural exports (Tashmatov et al, 2000) and in 1999, about 45 percent of Kyrgyzstan's GDP, 50 percent of the labor force, and 22 percent of exports (including agribusiness) are from the agricultural sector (World Bank, 2000). Exportation of processed food products will not only increase foreign reserves, which can be used to offset imports, but it is also a productive method for increasing the incomes of the rural population. One pathway to expand food trade outside of the region is by joining the WTO.

Market Reforms

These five countries have followed different approaches to the privatization of their markets. Kazakhstan and Kyrgyzstan has made great progress although much more work is still needed, while Tajikistan, Turkmenistan, and Uzbekistan have been slow in transforming their markets. Slow internal market reform has ultimately restricted the liberalization of Tajikistan, Turkmenistan, and Uzbekistan's trade policies. However, even if semi-liberal trade policies are in place such as in Kazakhstan, weak internal market institutions have effected the integration of Kazakhstan into the world trading system (Michalopoulos, 1999). By continuing to privatize their markets, fuller integration into the global economy can be achieved (Shul'ga et al. 2001).

Several specific institutions and policy measures are needed to achieve better functioning of internal agricultural markets. First, government control over the procurement of agricultural commodities must be removed. Second, private producers of cash crops should be organized to form marketing associations in order to enable them to negotiate better prices for their producers. Third, development of post-harvest and processing co-operatives should be encourage through the use of institutional credit and agricultural diversification. Fourth, enabling better vertical market integration will reduce transaction costs for producers, which will help increase their incomes, keep prices of agricultural commodities low to local consumers, and make them competitive in regional and international markets.

Agricultural Diversification

Research-based information on the potential role and impact of agricultural diversification in Central Asia remains scant. Although great potential exists for agricultural diversification, the range of agricultural products produced in Central Asia are limited, especially since cropping patterns changed after the adoption of the food self-sufficiency policy. It is a good time for Central Asia to diversify their agricultural products because they are predominately an agricultural economy, agricultural commercialization is limited, agricultural markets are inefficient, and the environment is being degraded (Goletti, 1999). Agricultural diversification will improve food security in Central Asia through several different avenues. First, agricultural diversification will divert land and labor resources from the production of grain products, which have experienced lower real prices, to higher valued-added products such as animal and horticultural products (Goletti, 1999). This adjustment will at least maintain prices and income in rural areas. Second, with urbanization expected to rise in Central Asia, it is perceived that there will be a change in the demand of higher income elastic foods such as meat, fruits, and vegetables, agricultural diversification will assist in achieving equilibrium in supply and demand. Third, agricultural diversification could lead to rural industrialization through post-harvest activities such as storage,

transportation, processing, and marketing. Rural industrialization increases the amount of higher value products, but also provides employment opportunities and higher income in the rural areas. Fourth, with regional and global trade starting to grow, agricultural diversification is an opportunity to improve food security by increasing foreign exchange and producing comparative advantage goods. Diversifying agricultural products according to a country's comparative advantage will use its natural resources as well as other inputs such as labor efficiently. However, external markets will determine the tradability of goods; therefore, analyzing the tradability of agricultural products is essential to reap the benefits described above. In addition to all of the benefits previously mentioned, agricultural diversification will allow smooth transitions to occur when adjustments are needed.

However, agricultural diversification requires identifying and establishing assured markets for tradable agricultural commodities. With farmers not well organized, the scope for such market exploration is limited. Furthermore, an organized agro-processing sector is essential to exploit the opportunities of diversification, but well-functioning credit institutions are necessary for the development of small-scale private agro-processing units. These credit institutions along with institutional changes such as removal of barriers to entry of small-and medium-enterprises will assist in developing the private sector, which is essential in making agricultural diversification effective. Furthermore, adequate infrastructure and functioning rural institutions are also needed. Moreover, a stable macroeconomic environment is needed for domestic savings, foreign investment, and international institutions to invest in this process. Unless such policy and institutional constraints are removed, agricultural diversification will remain low in Central Asian countries.

Policies are essential in assisting Central Asia in achieving agricultural diversification. In general, agricultural diversification is a result of markets and technological conditions changing as economic development progresses; however, market development in Central Asia has stalled. Lack of markets inhibit smallholder farmers and rural enterprises in gaining access to technology, information, assets, input supplies, and output markets, which increases their transaction costs. Therefore, policies that reduce transaction cost associated with sectoral barriers, infrastructure, and institutions can promote agricultural diversification (Goletti, 1999). In addition, policy changes may minimize the costs and stresses associated with this transition.

Private Investment

The liberalization of markets and the available workforce provide an excellent opportunity for private domestic and foreign investments in Central Asia. Increasing private investment will stimulate the economy of these countries, which will help reduce the number of unemployed. Increased employment will increase income, which results in lower poverty levels, and therefore increase food security. To induce private investment, Kazakhstan has established a Bilateral Investment Treaty with the United States that eliminates double taxation. In addition to this treaty, an agreement through Overseas Private Investment Corporation (OPIC) was established, which provide loans, loan guarantees, and investment insurance to U.S. companies that invest in Kazakhstan (US-Kazakhstan Agreements). Private, foreign direct investment in Central Asia's food and agricultural sector will require an enabling environment for the investors, a stable political environment, transparency of licensing procedures, and organized efforts in order to increase its contribution to poverty reduction and food security.

Employment Opportunities

As a result of low economic growth and inflation in Central Asia, unemployment has risen drastically in each of these countries, especially in the urban sector, resulting in lower family incomes and therefore, higher levels of poverty. Tajikistan (3.1 percent), Uzbekistan (0.6 percent), and Kazakhstan (3.8 percent) all had low official unemployment rate in 2000, but the official unemployment rates did not include people who were unemployed in an inactive state-owned enterprise; who were forced to take mandatory, unpaid leave; or not registered as unemployed (Asian Development Bank, 2001e; Asian Development Bank, 2001c; Asian Development Bank, 2001d). The unofficial unemployment rate in Tajikistan was 30 percent in 1999 and 2000 (Asian Development Bank, 2001e). Turkmenistan does not specifically have an unemployment rate because all citizens are guaranteed employment; however, only 74.4 percent of working age people are working (Asian Development Bank, 2001f). Although Kyrgyzstan had an officially low unemployment rate of 2.9 percent in 1999, the unemployment rate in 2000 grew to 3.1 percent. Looking at the numbers, this increase seems minimal compared to the unofficial rates in other Central Asian countries, but these numbers do not show that underemployment has risen, which has resulted in real wages falling and therefore, poverty rising (Asian Development Bank, 2001a).

Although unemployment has risen in both rural and urban Central Asia, there are potential employment opportunities in the region. Domestically, market integration will eliminate inefficiencies, which will allow existing industries to expand and new non-farm industries such as agro-processing to begin. New industries will ultimately increase the number of jobs available, and therefore, lower unemployment.

Policy and Institutional Constraints

Central Asia can only take advantage of these economic opportunities if policy constraints are removed and appropriate institutions are developed.

Democratic Institutions

Although most countries in Central Asia have worked diligently to install democratic institutions, some practices of the institutions have limited the role of the legislator branches and free elections. Furthermore, the media has been censored (Kangas, 1999; United States of America, 2000). Therefore, democratic institutions need to be established that will guarantee the rights agreed upon when each Central Asian country joined the Organization for Security and Cooperation in Europe in 1992. This will require an elected legislative and judiciary branch to be implemented. Democratic institutions provide an outlet for ideas to be generated, which could alter existing policies resulting in enhanced food security in Central Asia.

Limited Data

Information regarding food security and poverty measures is limited in Central Asia. Living Standard Measurement Surveys have been conducted for Kazakhstan in 1996, Kyrgyzstan in 1993 and 1997, and Tajikistan in 1999 (World Bank, 2001a). However, missing information is common in these data sets. Limited data constrains the true comprehension of the poverty level in the region. Furthermore, inadequate research-based information makes it difficult to design appropriate policies. Establishing information systems in various sectors in order to monitor the economic development process can reduce this constraint.

Capacity of Policymakers, Policy Analysts, and Policy Researchers

Strengthening the knowledge of policymakers, policy analysts, and policy researchers in the monitoring and evaluation of development and environmental programs will bring to the forefront issues that need to be addressed to sustainably reduce food insecurity. Performing research conditioned on priorities determined by information generated through monitoring and evaluation activities will ensure that the needs of the Central Asian countries are met. The ADB has made its first steps to strengthen this capacity by implementing technical assistance projects for environmental assessment and monitoring in Tajikistan and Kyrgyzstan. (Asian Development Bank, 2000c; Asian Development Bank, 2000b). Furthermore, the World Bank has implemented a capacity strengthening technical assistance project for environmental management in Uzbekistan (World Bank, 2001b). In addition to monitoring and evaluation capacity strengthening, ADB has implemented technical assistance projects to strengthen Central Asia's capacity in analytical and research capabilities for structural reform (Uzbekistan) and planning and management of agricultural development (Kyrgyz Republic) (Asian Development Bank, 2000e; Asian Development Bank, 2000a). Strengthening the capacity in designing structural reform and agricultural development will not only stimulate the privatization of these areas, but the transformation will be more efficient. Although technical assistance projects have been implemented in various countries, more capacity strengthening in these areas is needed to enhance economic growth.

State-owned Enterprises

Reforming state-owned agricultural enterprises into private enterprises is a necessary ingredient in increasing food security in Central Asia. In the early 1990s, many reforms were implemented that began to privatize industries, but this process has stalled. If industries are privatized, there can be several positive impacts. First, private agro-industries along with open markets will force agro-industries to efficiently use human and natural resources. Efficient use of natural resources can reverse the decline in output associated with the improper use of land and limited inputs used. Second, private agro-industries will alter their production in order to compete within the borders as well as outside of its borders. Third, privatization will allow new industries such as agro-processing to start up. Starting a new set of agro-industries in Central Asia will increase employment, which will have a positive impact on food security. Furthermore, agro-processing will transform raw goods into finished products that can be traded at a higher value in the regional and international markets, which will increase foreign exchange.

Tax Policy

High import taxes and value-added taxes (VATs) hurt the food security of the Central Asian people. High import taxes raise the cost of needed agricultural inputs. Higher priced agricultural inputs reduce the consumption of these goods. Therefore, the results of these taxes have been lower yields of agricultural commodities. In addition to the high import taxes, the increase in the VAT on agricultural products from 10 percent to 16 percent in Kazakhstan may increase government revenues, if people are able to purchase the same quantity of agricultural products; however, low incomes and higher taxes may cause less food products to be purchased (Chursov, 2001). Lower purchasing levels will increase the level of food insecurity in the region.

Food Safety Regulations

With the opening of external markets, through the lowering of tariffs and removal of quotas, world food trade is \$400 to \$500 billion dollars a year (Prasidh, 1999). The Central Asian countries need to adopt food safety regulations in order for their agricultural goods to be traded in the regional and global markets. By implementing harmonized food safety regulations, Central Asia will meet the

needs of importing countries, and then producers, processors, and exporters of these goods will reduce their product and financial loss due to detention, rejection, or destruction of imported food goods (Hammer, 1999). Implementing harmonized food safety regulations and standards can stimulate food trade between Central Asia and the rest of the world. Several constraints impede not only the adoption but also the implementation of food safety regulations in Central Asia. First, the capacity of policymakers, analysts, scientists, inspectors, processors, and producers need to be strengthened. Policymakers need to have adequate training in order to design policies that meet the food safety needs of their own country and the international community. Even if appropriate, equivalent, harmonized food safety regulations are implemented in each Central Asian country, the food export industries may not have the necessary training to handle, process, package, and transport food to meet the requirements of the importing country. Furthermore, capacity within export control programs (inspection and laboratory services) needs to be strengthened (Hammer, 1999).

The second constraint is the lack of financial capacity to conduct training, to monitor and enforce food safety requirements, and to develop appropriate infrastructure (processing enterprises, storage, and transportation infrastructure). The third constraint is food safety's importance to the political agenda. With the demand for food falling as a result of low purchasing power as well as caloric and nutritional needs not being met, the governments of Central Asian countries may not have food safety as a top priority for its exports. The fourth constraint is the fragmentation between the different agencies that handle food safety issues. The fifth constraint is the inadequate post-harvest infrastructure (Prasidh, 1999), which is related to market reform issues mentioned earlier. All of these constraints require political will and better organizational capacity within the government mechanisms responsible for food safety regulations.

Food Self-sufficiency Policy

The food self-sufficiency policy has focused government attention on securing food security by growing its own food crops. This policy has diverted the government focus away from other means of enhancing food security such as trade. Trade can bring in needed foreign exchange, food products, and agricultural inputs and reduce inefficiency. To overcome this constraint, several steps are needed to increase the number of bilateral and multilaterally trade agreements between the countries of the region and the rest of the world. The first step is to establish regional trade agreements between the Central Asian countries regarding food commodities. Once these regional trade agreements are successfully implemented, then bilateral and multilateral agreements regarding non-food goods such as agricultural inputs can be agreed upon and implemented. Third, vertical integration of the markets should occur. For example, vertical integration in the production to exportation of wheat can reduce the transaction cost as well as the capital cost associated with the activities of processing, transportation, storage, and exportation in Kazakhstan. This integration may eliminate some of the difficulties these countries face in safely exporting goods as well as the ability to eliminate some of the waste incurred with storage and transportation. For vertical integration to occur both the public and private sector needs to participate. The public sector needs to facilitate the vertical integration through appropriate policies and institution. The private sector needs the initiative to implement the vertical integration. The development of private entrepreneurship is still at a rudimentary stage in Central Asian countries. Limited exposure and understanding of business practices, inadequate capital for initiating new businesses, and the lack of information on new business opportunities continues to constrain the development of private entrepreneurs in these countries. More research needs to be performed regarding what policies and institutions are needed for vertical integration to occur.

Investment Constraints

For private investment to be induced, trade barriers; quotas on foreign workers; and double taxation need to be eliminated. Foreign exchange and transparency in government activities need to be increased. Value-added tax rates need to be reduced and contract sanctity and transportation infrastructure need to be improved (Linn, 2001; US-Kazakhstan Agreements). More specifically, each country has its own barriers to foreign investment. In Kazakhstan, agricultural land, defense industry land, specially protected territories, forests and springs, communal use lands, and uninhabited areas are owned by the government and can only be leased by a foreign firm through a domestic partner for 99 years; however, domestic enterprises lack sufficient funds to participate in joint ventures. Furthermore, foreign firms must establish a contract with the government to sponsor community social programs. Moreover, foreign insurance companies have limited access to local markets. Finally, quotas on the number of foreign work permits that can be issued (Kazakhstan, 2001) also reduce opportunities for private investment.

Conclusion

Food security in Central Asia is being constrained for five major reasons. First, the food self-sufficiency approach to food security does not work; therefore, continuing the food self-sufficiency policy will result in further deterioration of the natural resource base and food insecurity. Second, closing of borders to trade has reduced foreign exchange and resulted in inefficient use of resources. Third, resource degradation is high due to poor allocation of land and lack of agricultural input use. Continued misuse of natural resources will reduce productivity and farm incomes and increase rural poverty. Fourth, non-farm activities have declined due to poor opportunities for marketing and trading and activities that add value to raw agricultural goods have been neglected, which increased rural unemployment. Fifth, increased poverty has led to an increase in food insecurity because low levels of incomes from decreased productivity of farms have contributed to lower welfare of the rural population

What needs to be done to achieve food security in Central Asia? First, food policies need to be changed. They must take into consideration the production capacity of natural resources, opportunity to trade inputs and outputs, and external and internal demand for food and agricultural commodities. An overall strategy for development of the food sector is still lacking in Central Asian countries. Second, market reforms are needed to develop local markets and to avoid distortions in commodity markets. Policies and institutions that reduce transaction costs for marketing food and agricultural commodities should be in place. These policies and institutions will increase farm income by reducing production costs and improve consumer welfare by reducing the price they pay for food. However, very limited information exists on the impact of market reforms on producer and consumer welfare. Third, agricultural diversification needs to occur. Increasing income and employment in rural areas depends crucially on the diversification in the agricultural sector to take advantage of potential tradable agricultural commodities. However, knowledge on the potentials for agricultural diversification and its impact on rural income does not exist in these countries. Fourth, post-harvest technology such as agro-processing needs to be developed. Value-addition is important for increasing rural incomes. In achieving this increase, the role of agro-processing cannot be overemphasized. Fifth, employment opportunities need to increase as well as income levels. Unless rural employment and incomes are increased, the pressure of the urban region will escalate. Rural-urban migration in search of jobs will increase the burden

of urban areas in meeting the basic needs of new immigrants. Increasing globalization will bring both opportunities and challenges.

The available information on the nature, conduct, and performance of the food and agricultural sectors provides some guidelines on what needs to be done to reform these sectors. However, how these reforms should be designed and implemented depend on the socio-political context of individual countries. Furthermore, information on the potential impact of policy and institutional reforms on the welfare of the population is severely lacking in all of these countries. Without such information, policies and programs will continue to be designed under the veil of ignorance. Preparing to harness these opportunities by mitigating the negative effects is essential for Central Asian countries. Finally, achieving food security is possible in Central Asia, but improvements are needed in human capacity and institutions in order to jump-start the economies towards sustained economic growth path.

References

Analysis and Strategic Research Center. (1999). Foreign economic activities of the Republic of Kazakhstan.

<www.president.kz/articles/economy/economy_container.asp?lng=en@art=vnesheconom> (accessed September 14, 2001).

Asian Development Bank (ADB). (2000a) Republic of Uzbekistan.

<<http://www.adb.org/Documents/Profiles/AOTA/35375012.ASP>> (Accessed September 10, 2001)

Asian Development Bank (ADB). (2000b). Kyrgyz Republic.

<<http://www.adb.org/Documents/Profiles/AOTA/32144012.ASP>> (Accessed September 10, 2001)

Asian Development Bank (ADB). (2000c). Tajikistan.

<<http://www.adb.org/Documents/Profiles/AOTA/33183012.ASP>> (Accessed September 10, 2001).

Asian Development Bank (ADB). (2000e). Kyrgyz Republic.

<<http://www.adb.org/Documents/Profiles/AOTA/30320012.ASP>> (Accessed September 10, 2001)

Asian Development Bank (ADB). (2000f). Tajikistan. Country Assistance Plan (2001-2003).

<<http://www.adb.org/Documents/CAPs/TAJ/default.asp?p=ctrytaj>> (accessed September 10, 2001).

Asian Development Bank (ADB). (2001a) Kyrgyzstan.

<www.adb.org/Countries/Highlights/KGZ.asp> (Accessed September 10, 2001).

Asian Development Bank (ADB). (2001b). "Central Asian Economies Seek To Re-Establish

Regional Links" <www.adb.org/Documents/News/2001/nr2001087.asp> (Accessed September 6, 2001).

Asian Development Bank (ADB). (2001c) Uzbekistan.

<www.adb.org/Countries/Highlights/UZB.asp> (Accessed September 10, 2001).

Asian Development Bank (ADB). (2001d). Kazakhstan.

<www.adb.org/Countries/Highlights/KAZ.asp> (Accessed September 10, 2001).

Asian Development Bank (ADB). (2001e). Tajikistan.

<www.adb.org/Countries/Highlights/TAJ.asp> (Accessed September 10, 2001).

Asian Development Bank (ADB). (2001f). Turkmenistan.

<www.adb.org/Countries/Highlights/TKM.asp> (Accessed September 10, 2001).

Babu, S. C. and W. Reidhead. (2000) "Poverty, food security, and nutrition in Central Asia: a case study of the Kyrgyz Republic." *Food Policy*. 25 (6): 647-660.

Babu, S.C., W. Reidhead, and V.Rhoe. Food Security, Poverty, And Agricultural Research In Central Asia -Case Study From Kazakhstan . Presented at the International Conference on Agricultural Science and Technology. Beijing, China. November 7-9, 2001.

Baydildina, A., A. Akshinbay, M. Bayetova, L. Mkrytichyan, A. Haliepesova, and D. Ataev. (2000). "Agricultural policy reforms and food security in Kazakhstan and Turkmenistan." *Food Policy*. 25 (6): 733-747.

Chursov, A. (2001). "Tax law changes prompt Almaty bakeries to consider increase in bread prices. Commercial News Update for July 2001.
<www.bisnis.doc.gov/bisnis/country/010802kaznewsjuly01.htm> Updated August 2, 2001 (accessed September 24, 2001).

United States of America. (2000). Congressional Record. No 140.
<www.csce.gov/crs_csce.cmf?crs_id=60> Updated October 30, 2000 (accessed: September 13, 2001).

Elebaev, N. (2000). "Central Asian states and the economic cooperation organization: present and future." *Central Asia and the Caucasus*. No. 2.

Government of Kazakhstan, (1995). Statistical yearbook of Kazakhstan 1994, Almaty: GOSKOMSTAT (in German).

Green, D. and A. Bauer (1998). The costs of transition in Central Asia. *Journal of Asian Economics*. 9 (2): 345~364.

Gafurov, Sh. R., B.Ergashev, S. Nikulin, M. Rakhmatov, R. Mamurov, N. Popadiuk, E. Trushin, and E. Makhmudov. *Import Substitution and Export Promotion Policies, Including the Issues of Strengthening the Balance of Payments*. <<http://www.cer.uz/Reports/9914/9914.htm>> Updated February 2001 (accessed September 10, 2001).

Goletti, F. 1999. Agricultural diversification and rural industrialization as a strategy for rural income growth and poverty reduction in Indochina and Myanmar. MSSD Discussion Paper No. 30. Washington DC: International Food Policy Research Institute.

Hammer, W. C. K. (1999). Food trade and implementation of the SPS and TBT Agreements: current status of food trade, including food quality and safety problems. Paper presented at the Conference on International Food Trade Beyond 2000: Science-Based Decisions, Harmonization, Equivalence and Mutual Recognition, October 11-15, 1999, Melbourne, Australia. FAO: Rome.

International Trade Centre. (2001). Action Plan for the Network in Kyrgyzstan.
<www.intracen.org/worldtradenet/docs/networking/kyrgyzstan_act_p.htm> Updated April 24, 2001 (accessed September 10, 2001).

Kangas, R. (1999). The importance of political and social stability for economic revival in Central Asia 2010: Prospects for Human Development. New York: Associated Print Productions, Inc.

Kyrgyzstan Development Gateway. (2000). The Kyrgyz Republic: A new perspective: The Comprehensive Development Framework Strategy 2001 to 2010,
<www.kyrgyzinvest.org/en/cdf/cdfd_cdfdocword.htm. Updated May 2001. (accessed July 11, 2001).

Kyzy, G.K. (2001). Kyrgyz shuttle-trade in crisis. *Central Asia-Caucasus Analyst*. <www.cacianalyst.org/August_1_2001/August_1_2001_Shuttle_Trade.htm> Updated August 2001 (accessed August 2001).

Meng, E., J. Longmire and A. Moldashev. (2000). Kazakhstan's wheat system: priorities, constraints, and future prospects. *Food Policy*. 25 (6): 701-717.

Michalopoulos, C. (1999). The integration of transition economies into the world trading system. Policy Research Working Paper No. 2182. World Bank: Washington DC. <[http://wbi0018.worldbank.org/research/workpapers.nsf/bd04ac9da150d30385256815005076ce/c575dcf6f65d76928525682d00625787/\\$FILE/wps2182.pdf](http://wbi0018.worldbank.org/research/workpapers.nsf/bd04ac9da150d30385256815005076ce/c575dcf6f65d76928525682d00625787/$FILE/wps2182.pdf)> (Accessed September 24, 2001).

Pandya-Lorch, R. (2000). Prospects for global food security: a Central Asian context. In *Food Policy Reforms in Central Asia: Setting the Priorities*, ed. S. Babu and A. Tashmatov. Washington, DC: International Food Policy Research Institute.

Pandya-Lorch, R. and M. Rosegrant. (2000). Prospects for food demand and supply in Central Asia. *Food Policy*. 25 (6): 637-646.

Prasidh, H. E. Cham. 1999. Food trade and implementation of the SPS and TBT agreements: challenges for developing countries in meeting the obligations of the SPS and TBT agreements and the Codex Alimentarius. Paper presented at the Conference on International Food Trade Beyond 2000: Science-Based Decisions, Harmonization, Equivalence and Mutual Recognition, October 11-15, 1999, Melbourne, Australia. Rome: FAO.

RFMOA (Ministry of Agriculture of the Russian Federation). 2001. Support to Improving Agricultural and Food Trade Among the NIS – FDNIS 9801 Regional Trade Agreements Among CIS Countries and WTO Accession. <http://www.aris.ru/WIN_E/TACIS/TACIS_2001//b/> (accessed: October 24, 2001).

Shul'ga, V., Y. Chaplygin, O. Rybkin, and S. Kazanskiy. 2001. "Strategic Targets and Stages of Economic Reform in the CIS Countries. *Central Asia and the Caucasus Journal of Social and Political Studies*. No. 4 (10).

Suleimenov, M. and P. Oram. (2000). Trends in feed, livestock production, and rangelands during the transition period in three Central Asian countries. *Food Policy*. 25 (6): 681-700.

Tashmatov, A., F. Aknazarov, A. Juraev, R. Khusanov, K. D. Kdyrkulov, K. Kalchayev, and B. Amirov. (2000). Food policy reforms for sustainable agricultural development in Uzbekistan, the Kyrgyz Republic, and Tajikistan. *Food Policy*, 25 (6): 719-732.

Trade Compliance Center. Kazakhstan Trade Relations Agreement: Agreement on Trade Relations Between the United States of America and the Republic of Kazakhstan. <http://199.88.185.106/tcc/data/commerce_html/TCC_2/KastahnAgreement.html> (accessed: October 2001).

Trade Compliance Center. 1998. Kazakhstan: National Trade Estimate Reports – 1998. <http://199.88.185.106/tcc/data/commerce_html/countries/Countries2/Kazakhstan/NationalTrade/1998/KeyEconomic.html> (accessed 10/2001).

UNDP (United Nations Development Program). 1996. World population prospects: The 1996 revision. New York: UN. Quoted in R. Pandya-Lorch, Prospects for global food security: a Central Asian context. In *Food Policy Reforms in Central Asia: Setting the Priorities*, ed. S. Babu and A. Tashmatov. Washington, DC: International Food Policy Research Institute, 2000.

US-Kazakhstan Agreements. <<http://www.bisnis.doc.gov/bisnis/COUNTRY/99kazapb.htm>> (accessed September 10, 2001)

World Bank. (1999). World development report 1999. New York: Oxford University Press.

World Bank. (2000). Country Brief – Kyrgyz Republic, <<http://wbln0018.worldbank.org/ECA/e.../5ab9eea2d2477e7c852567ef005b57c1?OpenDocumen>>. (Accessed July 11, 2001).

World Bank. (2001a). *Selecting an LSMS Data Set*. <<http://www.worldbank.org/lsm/guide/select.html>> Updated July 2001 (accessed October 4, 2001).

World Bank. (2001b). Environment Management Capacity Project. <<http://www4.worldbank.org/sprojects/Project.asp?pid=P073108>> Updated September 17, 2001 (accessed September 24, 2001).

World Bank (2001c). Kyrgyz Republic: Poverty in the 1990s in the Kyrgyz Republic. Report No. 21721-KG. Washington DC: World Bank.

Zhalimbetova, R. and G. Gleason. (2001). “Eurasian Economic Community(EEC) comes into being.” Central Asia-Caucasus Analyst: Biweekly Briefing. <www.cacianalyst.org/june_20_2001/EURASIAN_ECONOMIC_COMMUNITY.htm> Updated June 20, 2001 (accessed August 16, 2001).

