I. EXECUTIVE SUMMARY

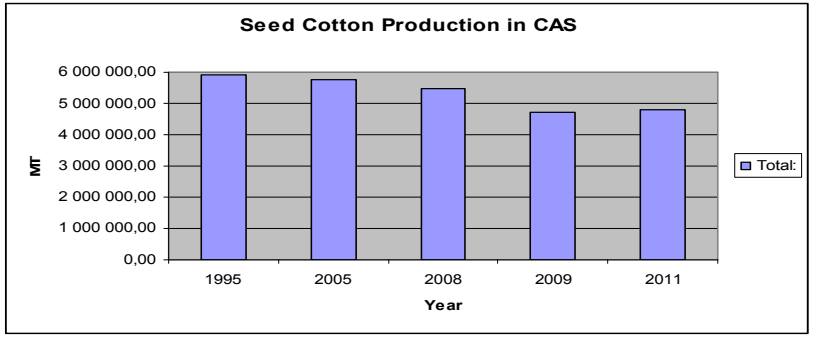
1. The role of cotton sector to the economies of Central Asian States (CAS).

It is well known fact that cotton sector has played historically important role for the economy of CAS. In the days of USSR when the base of today's CAS economy was laid out, these countries were determined as sole suppliers of the cotton and its by-products to the industry of Soviet Union. Subsequently the economies of the countries of the region were built to serve this goal.

In the mid-80s Uzbekistan alone produced around 6 mln tn of seed cotton (about 1,7mln tn cotton fiber) and it used almost all irrigated land of the country as well as most of the available water resources The same was the case for Tajikistan and Turkmenistan. All natural and human resources of the republics were exploited to meet these targets.

Since getting Independence the States reduced cotton production but still the sector played important role to the economies through 90s as one who provided jobs for rural population and source of foreign exchange revenue. By the mid-90s cotton sector's share in national GDP of Uzbekistan was 18% while in Gross Agricultural Output (GAO) was 55%. In Turkmenistan cotton sector accounted for over 24% of national GDP and 76% of GAO, in Tajikistan GDP share was 9% and GAO share accounted for 29%.

Figure 1



CAS were able to reform and modernize its economies during 2000-2010. Development of new industries and diversification of agriculture helped to reduce countries dependence on cotton in several aspects. One of the sensitive indicators is balance of payment and countries abilities to generate enough hard currencies revenue to meet its international commitments. If in case of Uzbekistan in 2005 the cotton share of the overall export was 20% by 2008 it stabilized around 9% and remain at this level at present.

Reducing dependence on cotton gives opportunity to steadily reform the sector and shift to its sustainable development. Uzbekistan keeps reducing the cotton share in GDP and GAO and re-allocating irrigated lands from cotton to horticulture or other alternative crops. Kyrgyzstan, Tajikistan and Turkmenistan are trying to stabilize cotton production and its share in GDP.

Table 1. Cotton share in GDP in Central Asia, %

Country	1995	2005	2007	2008	2009	2010	2011
Kazakstan	0,5	0,3	0,2	0,1	0,1	0,2	0,1
Kyrgyzstan	1,7	1,9	1,3	0,8	0,6	1,9	1,2
Tajikistan	9,7	7,5	5,9	2,9	3,3	6,8	4,7
Turkmenistan	24,8	4,8	3,9	2,2	1,8	5,6	2,5
Uzbekistan	18,2	10,0	8,6	5,7	5,8	10,9	4,8

Source: World Bank (WB)

Kazakhstan shall be studied separately from other countries of the region. The reason for this is cotton sector has never played and is not playing so important role for national economy. The leading industry is oil and gas which creates major stakes of national GDP and generates countries revenue.

Therefore the Government stimulates cotton planting in the south region only where historically cotton production was dominant. The Government aims to promote job creation and social stability in the south of the country rather than target cotton as one of the main sources of foreign exchange.

In 1995 cotton sector accounted for 0,5% of national GDP, in mid 2000s it was 0,3% of GDP and 4,9% of GAO while in 2010 cotton share in GDP was 0,2% and GAO-4,4%.

2. Evolution of land allocation to the cotton sector in CAS.

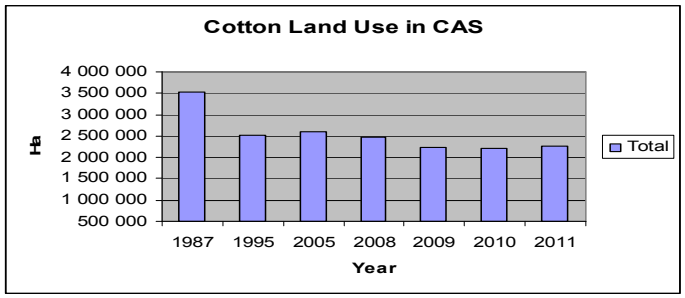
As noted in the previous section there is firm correlation between irrigated land used for cotton and the stages of reform being implemented by CAS.

At the first stage once countries of the region got Independence the land allocation for cotton was reduced by 1,0mln Ha and the most part of reduction fell for Uzbekistan.

During 1995-2005 when cotton still played the substantial role for the economies the land allocation in the region stood at the more less flat level averaging of 2,5 mln Ha.

The next phase of reduction commenced in 2008 with total size of allocated land reduced to 2,2-2,3mln Ha in 2009-2011 and our forecast is that this trend will continue.

Figure 2



Source: FAOSTAT & ICAC

One of the reasons for this trend was studied in the previous section while others like international market fundamentals (supply, demand, price), limited land resources to increase cultivated areas and economic efficiency of the competing crops to be considered in the following sections.

The only fact where the one shall pay attention in this section is steady decrease of the cotton cultivated areas and firm increase of the agricultural lands being re-allocated to alternative crops.

Commencing the mid of 90s the three major cotton producers (Uzbekistan, Turkmenistan and Tajikistan) keep reducing cotton cultivated lands in a range 3-12% compared to 1995 level during 1995-2006 and in a range 9-24% compared to 1995 during 2009-2011.

Table 2. Change in land use for Cotton, % compared to 1995 level

	Country	1995	2000	2006	2009	2010	2011
Area (Ha)	Kazakhstan	0	41	83	28	25	43
	Kyrgyzstan	0	2	38	-49	-20	12
	Tajikistan	0	-12	-5	-37	-40	-24
	Turkmenistan	0	-5	-1	0	-9	-9
	Uzbekistan	0	-3	-3	-12	-11	-12
	Total	0	-3	0	-11	-13	-11

Source: FAOSTAT

On the contrary the lands re-allocated to competing crops have been growing gradually over the same period of time.

Table 3. Land allocated for Wheat, Ha

	Country	1995	2000	2006	2009	2010	2 011
Area(Ha)	Kazakhstan	11 290 800	10 050 100	11 861 200	14 329 400	13 138 000	13 694 000
	Kyrgyzstan	363 900	443 688	406 260	402 002	375 238	372 967
	Tajikistan	191 400	343 102	320 700	358 766	342 566	311 179
	Turkmenistan	437 000	700 000	925 000	860 000	850 000	870 744
	Uzbekistan	1 164 400	1 355 800	1 448 490	1 422 000	1 466 000	1 336 000
	Total	15 284 710	14 921 690	17 405 650	19 947 168	18 525 804	18 816 890

Source: FAOSTAT

Table 4. Change in land use for Fruit Fresh Nes, % compared to 1995 level

	Country	1995	2000	2006	2009	2010	2 011
Area (Ha)	Kazakhstan	0	800	1 100	740	780	826
	Kyrgyzstan	0	31	54	131	69	69
	Tajikistan	0	5	-13	-6	-4	0
	Uzbekistan	0	43	286	114	123	130
	Total (except Turkmenistan)	0	33	90	32	35	39

Source: FAOSTAT

Limited agricultural lands and other natural resources in CAS are natural constrains to increase basis for the agricultural as a whole and cotton sector particularly.

3. Correlation between cotton international prices and further sector development.

Another factor which heavily influences prospects and prevents of further cotton sector growth in terms of increase land size and crop is international prices. As for every crop the end economic result (net margin to be received by the farmers) depends on international price for the certain commodities. For cotton this argument has more sense mainly due to the following two factors:

A) Similarly to every commodity cotton international prices being formed under two fundamentals: supply and demand. If you analyze both fundamentals through 2000-2010 we can state that yes, international cotton price formed in accordance to the established theory.

In 2001 world production was 21,6mln tn of cotton fiber while consumption 20,6 and average price dropped till 41,80 c/lb. In 2007 world production stood at 26,07mln tn of cotton fiber while consumption reached 26,68mln tn and average price climbed up to 72,9 c/lb. In 2010 the world had production 22,24mln tn and consumption 25,52 subsequently average prices increased again up to 77.54 c/lb.

But commencing with 2010 that theory has not been working within usual pattern. The main driving force behind this move is World Ending Stock and China ending Stock which comprises the biggest stake of the World Ending Stocks. Despite huge imbalance between world production and consumption during 2010-2013 the international prices are still relatively high and haven't collapsed as they normally would.

In 2000-2010 China Ending Stock fluctuated in a range 2,09-3,9 mln tn, while in 2011 it sharply increased to 6,18 mln tn and projected to reach 10,77 mln tn in 2013. What forced to change the China stock policy is not clear and probably the topic of the other study. What important is by building the reserves China forcing two main fundamentals (supply and demand) out of game as majority of produced balance (the portion of production which is not covered by consumption) goes to China Stock.

According to ICAC projection for the next 5 years (the maximum timeframe ICAC forecasted) China shall maintain its reserves at such high level and there is no any indication from China authorities in terms what they plan to do with national reserves. As one can imagine this factor makes the international cotton price highly volatile

due to the fact that any even minor manipulation with the Stock or sudden termination of import of cotton by China may force the international prices to collapse for a long time.

Such an outlook doesn't add confidence to the cotton sector of CAS as even 10% decrease in international price will halve the net margins which are not so robust in absolute terms.

B) International prices for cotton are being formed far away from CAS and the countries have almost no influence to the price establishing process.

In addition to this, the process is also questionable as pool of traders assess the value of cotton without visual checking condition of the goods.

In contrast, the prices for vegetables and fruits are more regional ones as the main destinations are Russia and Kazakhstan and they being established on the spot basis in more competing environments as bigger number of traders and other participants of the market are involved.

4. Evaluating economic efficiency: Cotton vs Competing Crops.

Cotton has remained a fairly costly crop to produce when compared with other agricultural crops. At the same time the economic margin which farmers can get from cotton has been steadily decreasing relative to those from competing crops.

For example in Tajikistan where production cost of cotton and other commodities being formed under market oriented principals today the total cost of seed cotton production is 738$/Ha while expected total revenue is 1080$/Ha and gross margin at 342$/Ha level. The same calculation for other crops brings the following gross margin: winter wheat-1734$/Ha; tomato-2501$/Ha and stone-fruits- 2786$/Ha.

These numbers give us Internal Rate of Return (IRR) for cotton as 31,7%, while IRR for winter wheat-78%, stone-fruits-67,3% and tomato-55,2%.

Table 5. Economic efficiency of different crops in Tajikistan

Indicator	Cotton	Winter Wheat	Tomato	Stone-Fruits
Total Revenue, $/Ha	1 080,0	2 223,0	4 530,0	4 140,0
Total Cost, $/Ha	738,0	483,0	2 029,0	1 354,0
Gross Margin, $/Ha	342,0	1 734,0	2 501,0	2 786,0
IRR	**31,7%**	**78%**	**55,2%**	**67,3%**

Source: WB

Next analyzing country is Kyrgyzstan, where we are taking more theoretical prices (co-called border prices) provided that all obstacles to sell the final product and get needed inputs eliminated.

The gross margins per different crops are as follows: cotton-690$/Ha; winter wheat-972$/Ha; tomato- 2051$/Ha and maize for grain- 1470$/Ha.

Table 6. Economic efficiency of different crops in Kyrgyzstan

Indicator	Cotton	Winter Wheat	Tomato	MaizeforGrain
Total Revenue, $/Ha	1 440,0	1 678,0	4 500,0	2 290,0
Total Cost, $/Ha	750,0	706,0	2 449,0	820,0
Gross Margin, $/Ha	690,0	972,0	2 051,0	1 470,0
IRR	**48%**	**58%**	**45,6%**	**64,3%**

Source: WB

In Kyrgyzstan case IRR for tomato is less than IRR for cotton. According to the available data this caused by the high production cost while in other countries of the region like Turkmenistan or Uzbekistan total production cost of tomato is 4-5 times less. If we apply the same average level of cost for tomato production in Kyrgyzstan the IRR would be much improved.

In Uzbekistan, the biggest cotton producer of the region, the gross margin numbers are as follows: cotton- 893$/Ha; winter wheat-1408$/Ha; tomato-2739$/Ha and stone-fruits- 4512$/Ha.

Table 7. Economic efficiency of different crops in Uzbekistan

Indicator	Cotton	Winter Wheat	Tomato	Stone-Fruits
Total Revenue, $/Ha	1 463	1 814	3 276,0	5 368,0
Total Cost, $/Ha	570	406	537,0	856,0
Gross Margin, $/Ha	893	1 408	2 739,0	4 512,0
IRR	**61,1%**	**77%**	**83,6%**	**84,1%**

Source: WB

To evaluate efficiency of production cotton versus competing crops in CAS we will look at IRR for different commodities. This analysis will have economic sense rather than practical one as any farmer would be interested in real or cash margin.

Table 8. IRR evaluation for different crops in CAS, %

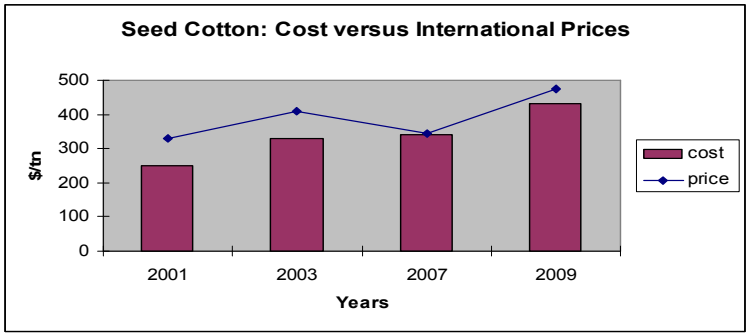
Country	Cotton	Winter Wheat	Tomato	Stone-Fruits	Maize for Grain
Kazakhstan	60,0%	54,6%	12,7%		64,2%
Kyrgyzstan	48,0%	58,0%	45,6%		64,3%
Tajikistan	31,7%	78,0%	55,2%	67,3%	
Turkmenistan	58,7%	59,3%	86,4%		
Uzbekistan	61,1%	77,0%	83,6%	84,1%	
Average for CAS:	**51,9%**	**65,3%**	**56,7%**	**75,7%**	**64,25%**

In addition we have to remind that cotton prices are more vulnerable in comparison to the other commodities (was discussed in the previous Section) and any down trend fluctuation may cause the worsening of IRR. The current rate of IRR came out of relatively high current level of international prices which are now at 93c/lb or 2050,2 $/tn of cotton fiber but how long the good prices will sustain is a big question for the moment.

In contrast the prices for vegetables and fruits are less sensitive and currently not at the peak. Therefore we can consider their IRR (analyzed above) as more sustainable against market factors.

In this section it is also worth analyzing the relation between production cost and international prices over the certain time frame to see the evolution of economic

margin for cotton business. As we don't have historical data for the cost of cotton production in CAS we would deal with figures of ICAC.



According to ICAC the world average production cost for 1tn of seed cotton increased by almost 58% in 10 years from 250$/tn in 2000 up to 430$/tn in 2009. Within the same period of time international prices for seed cotton (adjusted for Ex-work basis) fluctuated in a range 329,92$/tn in 2000 up to 473,60$/tn in 2009,.

If we take a look into potential margin, it has been having a tendency to keep shrinking.

Table 9. Estimated margin for Seed cotton, $/tn

	2000	2003	2006	2009
Seed cotton production cost, $/tn	250,0	330,0	340,0	430,0
International price for cotton fiber, c/lb	57,2	68,3	59,15	77,54
International price for cotton fiber, $/tn	1 261,03	1 505,0	1 304,0	1 710,0
International price for Cotton Fiber, $/tn (adjusted to Ex-Work)	1 031,0	1 275,0	1 074,0	1 480,0
Price for Seed Cotton, $/tn	329,92	408,0	343,68	473,60
Margin for Seed Cotton, $/tn	**79,92**	**78,0**	**3,68**	**43,6**

Source: ICAC

5. Another pros and cons: Cotton vs Competing Crops.

In the previous Sections we analyzed impact of, in our view, the most important factors to the future development of the cotton sector in CAS. These factors have direct impact while the factors which we intend to consider in this Section have indirect impact but still worth considering:

A) Forecast for increased demand for food and rising commodity price:

- According to OECD recent study over the next decade the world shall expect growing food demand as a result of increasing population and incomes, particularly in developing countries, higher meat consumption and the development of biofuels.

The growth of food demand will stimulate rise commodity prices and it in its turn will translate into increased agricultural production which is expected to expand over the coming decade, albeit at a slower rate than the previous one, down from 1.5% to 1.2% per annum, while cropland area is expected to remain relatively constant.

If CAS will follow the trend forecasted by OECD, they will have to keep going with arable land re-allocation policy, increase production of food stuff and benefit from higher prices for "food stuff" commodities.

B) Infrastructure related to the export of cotton from CAS:

- CAS are located too far from key international cotton markets. Thus to get there they have to develop and maintain export related infrastructure. To analyze this point we would take a look into export infrastructure of Uzbekistan which is the biggest exporter of the region and so far has been able to create the most efficient chain to bring its cotton to the international market.

To provide services at international standards the country over the last decade built 22 Specialized Cotton Terminals across the country or on average 2 terminals per each region. There are no doubts these terminals are worth having as customers can get all needed services related to export of cotton from the country at one place but the point is that the expenditure associated with terminals infrastructure creation and their maintenance are not accounted for the cost of cotton production. To the best of our knowledge the terminals are on the balance sheets of Foreign Trade Companies and the latterare covering maintenance cost of terminals at the expense of their revenue.

- Next stage in the chain, and which accounted for the biggest portion of expenses, is inland transport cost. Because the region isolated location to get nearby sea port, which is as far as over 4 000km, the goods shall transit territory of several countries. Of course there is closer port- Karachi in Pakistan- but to get there one has to cross the territory of Afghanistan which in our view not an option for the next 2-3 decades.

Next nearby port was Bandar-Abbas/Iran and during 2000s the infrastructure to handle cotton in the port was built and it became the main hub for cotton from CAS. Unfortunately nowadays due to known fact this routing is not used any more and how soon the situation will change is not clear. As of today the bulk of cotton export from the region headed to Ukrainian port of Ilichevsk and as one can imagine the transport cost is rising.

To calculate the export price in the formula we are using 155$/tn discount (for Uzbek cotton) for inland transportation from Ex-works till the transit port. It shall be noted that this discount include 25-30$/tn port expenses related to FOB terms therefore net inland transport cost shall be 125-130$/tn.

10 years ago exporters felt themselves comfortable with this level of discount as real inland transport cost was below 100$/tn even till Baltic ports, which are the farthest

ports used for export of cotton from CAS. Today real inland transport cost till Ilichevsk is 115$/tn and it keeps on growing.

Unfortunately in comparison to trucks, which is the primarily mean of transport for vegetables and fruits, the cotton export being done by rail way and the latter one is not as competitive as trucks. Almost around the globe the Rail Way infrastructures belong to the States and have monopoly status. Therefore market factors are not affected cost structure of the rail way companies and analysis of the last 10 years proved that tariffs of rail way transportation have always been rising and is expected to continue to grow.

C) Future of trade by horticulture between CAS and Russia:

According to the recent WB survey Russia accounts for 80% of all horticulture export from Uzbekistan but Uzbek import only accounts for 3-4% of all fruits and vegetables imports to Russia. Horticulture export earning of Uzbekistan has surged in recent years from USD 373 mln in 2006 to USD 1,16 bln in 2010. These figures clear show that there is "big room" for further development of the sector and trade of the fruits and vegetables between CAS and Russia.

It is true that Russia along with Belorussia and Kazakhstan has formed Customs Union. The new regional body will establish its own rules and regulation but it shall be taking into consideration that out of 5 CASs, Kazakhstan already member of the Union, Kyrgyzstan and Tajikistan received official invitation there and now considering the timeframe for joining the Union. Bearing in mind both countries' dependence on Russia, it is very difficult to forecast that they will be left out of the Union. Regarding Uzbekistan, it recently signed the Memorandum committing to join Free Zone Trade Agreement among CIS countries.

Regarding possible effect of Russia recent join WTO on horticulture trade we shall note that Kyrgyzstan and Tajikistan are already members of WTO and thus committed to bring their standards to the requirements of WTO. Regarding Kazakhstan and Uzbekistan, the both countries are in the negotiation process and still have to gradually adopt their regulation with line of WTO ones. Also bearing in mind weak development of Russian standards in agriculture, the Russia agreed with WTO to some timeframe concession allowing the Russia and of course its CAS partners to bring the regulation and practical requirements in line with WTO.

Also according to the recent WB study the fruits and vegetables crops grown in Uzbekistan use less water compared to other crops, including cotton, while generating greater revenue per hectare and per cubic meter of water used. Workers in rural areas are likely to benefit when farmers switch from cotton to fruits and vegetables since horticultural crops require more hired labor than do cotton.

II. Conclusions:

1. These days the cotton sector still plays important role but not to the extent it used to be for national GDP and balance of payment of the Central Asian States (CAS).

2. Kazakhstan (in terms of cotton sector) shall be treated separately from other countries of the region. The reason for this is cotton sector has never played and is not playing so important role for national economy. The Government stimulates cotton planting in the south region only where historically cotton production was in dominance. The Government aims to promote job creation and social stability on the south of the country rather than consider cotton as one of the main source of foreign exchange.

3. The process of reduction of agricultural land allocated to cotton and its stabilization has been going on in the region.

4. Limited agricultural lands and irrigated water will become main constrains to increase basis for the cotton sector further development and growth in CAS.

5. The cotton has remained fairly costly (production) crop in comparison with other agricultural crops. At the same time the net economic margin which farmers can get from cotton has been steadily decreasing and less in comparison with the margin from other competing crops.

III. Recommendations:

Medium Term:

1. To keep stimulating the national governments policy to further re-allocate agricultural lands from cotton to other competing crops till the level which will guarantee sustainable development of the sector. In case of Kazakhstan to stimulate new land allocation to the same sustainable level.

2. To assure sustainable development of the sector means the production which provides enough raw materials for local textile industry and balanced presence on international market. For example in case of Uzbekistan, it is believed, to stabilize production at the level of 800-850Ktn whereas 300-400Ktn for local textile industry and the balance for export.

3. To establish gradual reduction of the local governments role in production (subsidies and input supply) and sales of the cotton. The final aim for the local governments is Ad-Hoc intervention during the crisis like severe shortages of the input or sharp decline international prices and demand.

4. Taking into account isolated location of CAS from the key international cotton markets and costly maintenance of the export related infrastructure it is worth considering the option to reduce cotton export and instead to develop regional trade (including Russia) by other agricultural crops and food stuff. This way will bring extra margin for the farmers, require less working capital and faster return of the farmers investments.

Short Term:

5. To introduce promptly usage of bio-cotton (other name Genetically Modified) seed varieties. For CAS region the seeds varieties shall be developed which mature the crop in 90-100 days and more resistant to limited water supply. Current commercially used varieties provide maturity of the crop in 120-150 days.

To draft and adopt on the national level the Laws “On Seed and Seed’s Breeding” and “Development and Commercialization of Bio-Cotton Seed Varieties”.