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A comparative study on cotton production in Kazakhstan and Uzbekistan

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Abstract

The aim of this paper is to evaluate the cotton production sectors in Kazakhstan and Uzbekistan and to develop potential avenues for improvement. To that end, a broad comparison of the cotton growing sectors in these two Central Asian republics is presented, followed by specific recommendations for the cotton sectors of both countries that cater to their respective challenges.

The broad conclusion that can be drawn here is that Uzbek farmers and stakeholders can learn much from the Kazakh experience. In terms of natural and historical conditions for cotton growing, there are many similarities between the two states. However, since the dissolution of the Soviet Union, the two countries have followed different trajectories with respect to market reforms, with high levels of government control over the cotton sector prevailing in Uzbekistan while Kazakhstan experienced a gradual relaxation of government control (Baffes 2007; Shtaltovna 2012).

Comparing these divergent experiences, the following recommendations for improving the performance of the cotton sector in both countries emerge from the analysis: professionalisation of farmers should be encouraged; farmers associations that represent farmers' interests should replace state organisations; communication between farmers and the state should be improved; cotton monocultures should gradually be transitioned to diversified cropping systems; and on-site capacity for cotton processing should be supported. Building on these recommendations, the following sub-goals are tailored to the Uzbek case in particular: achieving minimum intervention of the state in farmers' transactions; increasing the farm-gate price for cotton; making the tax system simpler and more transparent for farmers; improving agricultural service provision; training agricultural producers to be entrepreneurs; facilitating contract-based relations between farmers and agricultural service organisations; improving channels for agricultural producers to share knowledge or establishing new ones; and creating conditions in which heterogeneous models of cotton growing can coexist.

An entrance to the village where cotton is grown. Uzbekistan.

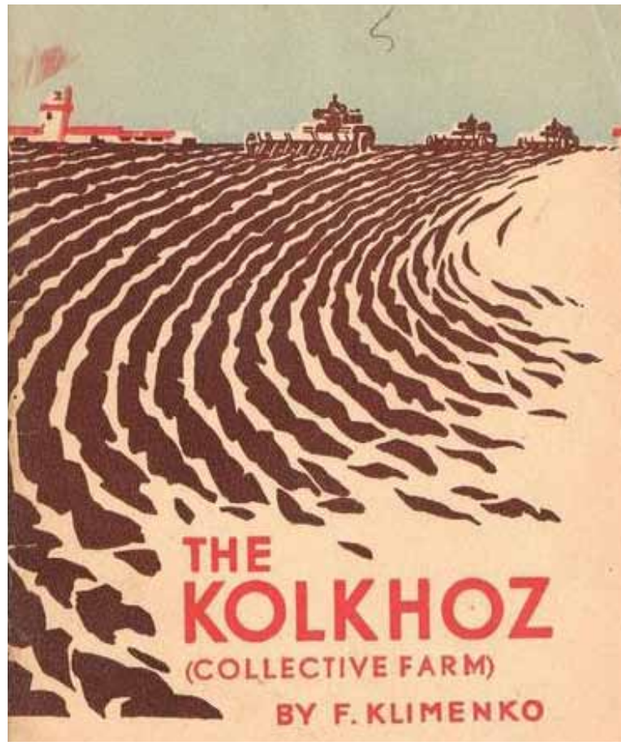
Photo: Anastasiya Shtaltovna

1 Introduction

In this paper, we investigate the cotton sectors in Southern Kazakhstan and Uzbekistan. The South Kazakhstan oblast has a population of 2,733,279 (KazStat 2014) on a territory of 117,300 km^2, while Uzbekistan has a population of 29.7 million people on a land area of 447,400 km^2. Central Asia in general is one of the three dominant cotton exporting regions – the others being the USA and Francophone Africa – and accounts for more than two-thirds of the global cotton trade (Baffes 2007: 33; Pomfret 2007; Pomfret 2008; Wehrheim and Martius 2008).

Based on historical evidence, cotton has been cultivated in Central Asia since the 5th or 6th centuries (Atashev 1972; Rudenko 2008), with its success due to good agricultural knowledge of the population and the favourable climatic conditions along the rivers. Central Asia's potential as a cotton producing region captured the attention of Tsarist Russia as early as the mid-19th century, with the textile industry seeking to benefit from this neighbouring region (Varenzov 2011; Rudenko 2008; Lasareva 2008). At that time, 80% of cotton was being produced in the USA; by 1863, the civil war in the USA had caused a fourfold increase in the price of cotton (Lasareva 2008), creating an incentive to develop irrigation systems in Central Asia, which were to become a central component of cotton growing system (Rudenko 2008: 39; Atashev 1972). Indeed, cotton growing and the development of irrigation systems for the "thirsty steppes"[1] in Southern Kazakhstan and Uzbekistan have historically been closely linked. Aside from this, there were favourable natural conditions, particularly the arid climate around the Aral Sea basin, as well as the predominant cultivation techniques in the region. These factors allowed Russia to more readily consolidate Central Asia as a provider of cotton, leading to more independence for Russia's textile industry (Rudenko 2008).

Throughout the Soviet period, interest in cotton remained high. In 1920s, Lenin allocated a significant amount for irrigation development in Southern Kazakhstan, initiating a "major" infrastructure project of its time. This was followed by a five-year plan for the reconstruction of the water systems for all cotton growing areas in Central Asia (Lasareva 2008). Southern Kazakhstan became a focal point for cotton production in the Soviet Union from November 1, 1924 onward, when a major seed development farm called 'Pakhta-Aral'[2] was established there (Pohl 2007). Its goal was to develop elite cotton seeds and supply them to cotton growing areas in Central Asia and the Caucasus. The Soviet era brought about major achievements in cotton growing and irrigation, including the development of numerous cotton varieties, opening of new lands for cultivation, and mechanisation of the cotton harvest and the result growth of urban areas in Southern Kazakhstan.



The Kolkhoz by F. Klimenko is part of a series of pamphlets published for the Soviet pavillion at the 1939 world's fair in New York.

After the dissolution of the Soviet Union, both Kazakhstan and Uzbekistan inherited all of the components of this cotton system, including the irrigation infrastructure, cotton

1 This is a literal translation of the common Russian expression "голодная степь".

2 Pakhta-Aral (Kazakh) - translates to "cotton island".

seed development institutes, experimental kolkhozes[3] and farming stations, and much of the human resources trained in the Soviet period (Dobrota 2012a). On this basis, both countries were in a strong position to continue cotton growing and have largely done so, albeit with greatly differing levels of success. Nevertheless, Kazakhstan and Uzbekistan face many challenges with regard to cotton production:

- expertise dying out (or out-migrating),
- worn out technical infrastructure, including irrigation and drainage systems in Kazakhstan[4],
- degrading quality of lands,
- price and quality competitiveness,
- lack of product diversification,
- poor marketing and packaging of agricultural products,
- low quality of products,
- bureaucracy and corruption in state institutions,
- limited institutional capacity in the agricultural sciences (Baffes 2007: 54; Veldwisch 2010, 2008; Hornidge et al. 2011),
- outdated agricultural machinery,
- underdeveloped skills in private decision-making on the farm level (due to the overbearing command-administrative system).

3 Kolkhoz (Rus.) – the large collective farm

4 Interview with Anselm K., head of the state South-Kazakh hydrogeological reclamation expedition, December 2013.

In Uzbekistan cotton growth depends on irrigation from the Amu Darya and Syr Darya rivers and in Kazakhstan only on the water from Syr Darya (OECD 2013: 76). And unsurprisingly, limited water availability remains the largest challenge for cotton growing in all of the Central Asian republics. Because cotton is irrigated in all countries where it is grown worldwide (USDA 2010), maintenance of irrigation and drainage is critical for competitiveness. In Kazakhstan, as much as in Uzbekistan, the funds allocated by the state for this purpose are chronically insufficient (interview with the local expert on cotton production, Shymkent, December, 2013). With water becoming increasingly scarce, control of natural resources has begun to create political tension in the region (for example, between Tajikistan and Turkmenistan, and between Uzbekistan and Kazakhstan over the Dostyk channel) (Kandiyoti 2007a: 5; Pomfret 2007b; Dobrota 2012b).

Despite a shared history and a similar set of challenges related to cotton growing, Kazakhstan's and Uzbekistan's cotton sectors differ immensely. The main difference is the importance of cotton production relative to the overall economy. Cotton occupies around half of Uzbekistan's total cropland (USDA 2013) and is the country's most important export product, estimated by the World Bank as amounting to 18% of GDP (World Bank 2011). Furthermore, Uzbekistan is one of the world's major cotton exporters, responsible for 11% of global exports (FAO 2014; Djanibekov et al. 2013; Rudenko et al. 2012), making it of immediate strategic importance to the national economy (Wehrheim et al. 2008). In 2010, there were 80,714 farmers on a land area of 5,306,400 ha, of which 41,745 farmers were cultivating cotton and wheat on 3,791,400 ha under the state procurement system (the state plan on cotton and wheat production) (MAWR 2010). In contrast, Kazakhstan benefits from more lucrative sectors such as oil and gas (Kandiyoti 2007b: 252). Only 140,000 ha (on average) are allocated to cotton cultivation in Kazakhstan annually (USDA 2010; Dobrota 2012c). Cotton, being grown in just five districts of the Southern Kazakhstan oblast, is perhaps more accurately characterized as a regionally important project rather than a crop of strategic national importance. Unsurprisingly, state attention devoted to cotton production varies greatly between the two countries. One consequence of this is that two entirely different approaches to cotton growing have been adopted; while in Uzbekistan, a state procurement system in Uzbekistan predominates, Kazakhstan has been able to afford more liberal policies, which will be illustrated below in detail.

Cotton collection after harvest. Uzbekistan.
Photo: Kirsten Kienzler

Because cotton production is so deeply embedded in the state apparatus, the assessment below of Uzbekistan necessarily focuses on the state planned sphere of agricultural production. The material presented below will nevertheless illustrate that this 'formal' agricultural sphere highly depends on 'informal' practices. In addition, other agricultural production (e.g. of rice, vegetables and fruit) largely takes place outside the state planned agriculture and is marketed in the 'formal' as well as 'informal' economies (Hornidge et al. 2013a; van Assche et al. 2013; Trevisani 2010; Veldwisch 2008, 2010). Yet, as both the 'formal' and the 'informal' are so tightly interwoven in the case of Uzbekistan, we decided against that the distinction of formal/informal does not fit empirically nor does it add to the analysis[5].

The two countries are characterized by differences in government involvement, land ownership, agricultural service provision, labour and processing and market infrastructure, each of which is dealt with individually in the remainder of this section.

5 This is in line with other scholars findings, which highly criticise the formal/informal distinction as a conceptual tool based on empirical realities and systems of social ordering that can be found in some societies of the global North; yet when applying it to other empirical contexts, caution is required (see Hodgson 2006; Mielke et al. 2011).

Government Involvement

Since independence in 1991, Uzbekistan's agricultural sector has undergone a partial transition from a planned economy to a market economy with the marked exception of cotton and wheat. Area and production-based yield quotas for state-ordered crops predominate, and according to the production contract, farmers are obliged to sell to the state at fixed prices. While agricultural norms mostly succeed in regulating cropping patterns and agricultural practices, norm compliance is also monitored and enforced (Hornidge et al. 2013a; Trevisani 2010).

In Kazakhstan, by contrast, the transition from a planned economy to a market economy has more comprehensively been carried out, with government influence in agriculture decreasing to a minimum over the past twenty years. The decision-making rights over land use, the agricultural production process and the post-harvest manufacturing and marketing of the produce now lie primarily with the farmers themselves, resulting in decentralised production and marketing approaches.

Land Ownership

In Uzbekistan farmers receive land to grow crops under the state procurement system, which is limited to cotton and wheat. Land

Museum of cotton history. Southern Kazakhstan.
Photo: Anastasiya Shtaltovna

can be leased for up to 50 years, but tenure remains uncertain since the land can be revoked by the government as it was in case of the farm consolidation program (Djanibekov et al 2012). Under this system, three categories of farmers exist in the Uzbek agricultural system, depending on their respective forms of production: (1) state-ordered production, which includes the production of cotton and wheat under the state procurement programme, (2) commercial production, which involves rice production, horticulture, and, to a lesser extent, the production of fodder and animal husbandry, and (3) household (subsistence) production (dekhan farms).

In Kazakhstan, in comparison, cotton production patterns are based on privately organised production for the market. Land is leased through secure, long-term agreements for 50 years, giving the government less control than in Uzbekistan. The plot sizes for cotton growing are around 15 ha, compared to 50 ha in Uzbekistan (see figure 2).

Agricultural Service Provision

In Uzbekistan, larger agricultural service providers (i.e. Machine Tractor Parks, Fertilizer Companies, Fuel Supply) are under-reformed Soviet semi-state and/or state organisations which perform (and are perceived locally as performing) a function of control rather than that of service provision. Only a few smaller private service providers (e.g. Bio-Labs) exist that are market-oriented (Shtaltovna 2012). Furthermore, farmer access to cash is highly restricted. Cotton production and marketing are managed through bank account transfers between state, agricultural service providers and farmers, with little possibility for farmers to access their accounts to take out cash.

In Kazakhstan, agricultural inputs for cotton production are available from private agricultural service organisations or the market, and cash flow is neither restricted nor a sticking point in service provision.

Labour

Uzbekistan has always been a labour surplus country in contrast to Kazakhstan, with its smaller population. People who are currently involved in the agricultural sector in Uzbekistan often lack an agricultural background and also have little in the way of entrepreneurial skills. Labour for the cotton harvest in Uzbekistan is mobilised by state organisations throughout the entire country during the harvest on a 'voluntary' basis (this will be characterised below), whereas in Kazakhstan, cotton harvesting is driven by financial transactions, with paid labour migrants coming in from neighbouring countries, including Uzbekistan.

Processing and Market Infrastructure

In Uzbekistan, there is a single state cotton company that purchases the cotton harvest from the farmers but no attempt is made to allow farmers to benefit from post-harvesting and manufacturing (vertical integration). Even if state control over cotton and wheat production were loosened and farmers became the main decision-makers regarding land and production practices, this dependency would persist for post-harvest processing. In contrast to this, twenty-two cotton gins with the various ownership types exist in Kazakhstan, providing farmers with different options.

Based on the analysis of the cotton sector in the two countries, we elaborate recommendations at the end of this study aimed at improving the performance of cotton production in both countries. In short, the recommendations include the following points: (a) in both countries, substantial measures for the professionalisation of farmers should be adopted, including the encouragement of independent farmers' associations, which could also facilitate communication between farmers and the state; (b) where still practiced, cotton monoculture should be replaced with more diverse crop production; and (c) local processing of cotton should be encouraged. Our specific recommendations for Uzbekistan include the following goals: achieving a minimum intervention of the state into farmers' affairs; increasing the farm-gate price for cotton; making the tax system simpler and more transparent for farmers; improving agricultural service provision; training agricultural producers to be entrepreneurs; facilitating contract-based relations between farmers and agricultural service organisations; improving existing, or establishing new, knowledge channels for agricultural producers; and creating conditions in which heterogeneous models of cotton growing can coexist.

2 Methodology

Empirically, this study is based on field research conducted in Uzbekistan between 2008 and 2013 for a total of 13 months and an additional one month of intensive fieldwork conducted in November and December 2013 in Southern Kazakhstan and several parts of Uzbekistan (Tashkent, Jizhak, Gulistan, and Khorezm). The fieldwork involved mainly ethnographic research of agricultural service organisations (e.g. machine-tractor parks, the Fertiliser Company and bio-labs) and institutions in Khorezm province of Uzbekistan, and on the cotton growing sector in Southern Kazakhstan. The research methods in both countries included farmer surveys, embedded internships in agricultural service organisations (in Khorezm, Uzbekistan), semi-structured interviews with decision makers and experts in agriculture at different levels, semi-structured interviews with staff of agricultural service providers, a joint workshop with Uzbek and Kazakh cotton farmers, and analysis of secondary data, such as relevant laws, administrative regulations, scientific literature and media.

3 Rural transformation in Kazakhstan and Uzbekistan

Agriculture, especially animal husbandry, historically has been the backbone of ***Kazakhstan's*** economy. The Kazakhs were nomads, and the production of wool and other livestock products remained important at the time of independence. After the 1860s, when Central Asia was incorporated into the Russian Empire, cotton became the key crop in the irrigated regions of the Syr-Darya Valley in Southern Kazakhstan (OECD 2013: 69-71; Pomfret 2008: 297). The soil quality, warm weather and abundant sunlight, frost-free periods and the availability of irrigated lands allowed growing middle-fiber quality cotton varieties (Umbetayev et al. 2012; Bishimbayeva et al. 2005). Southern Kazakhstan became a part of the Central Asian cotton economy, although Kazakhstan eventually became a much smaller cotton producer than its Central Asian neighbours, Uzbekistan and Tajikistan (Pomfret 2013:2). Although less important in terms of total acreage, rice and cotton were significant crops in the south and cotton was Kazakhstan's third largest export to non-Soviet markets after mineral fertilisers and coal (ibid). Research on the historical genesis of cotton growing in Kazakhstan proves that the southern region was, and is now still, the most important for cotton growing in Kazakhstan[6].

Photo: XXXX.

6 Interview with Lazareva A., former director of the Cotton museum, Maktaaral district, December 2013.

Moreover, this part of Kazakhstan is the northern-most cotton-growing area in the world (Dosybieva 2007: 132). The above mentioned seed development farm - 'Pakhta-Aral' - no longer exists, but other institutions remain that were created alongside the kolkhozes such as a cotton experimentation station, the well-known cotton gin 'Makhta' as well as community infrastructure like technical and professional colleges, schools, the village of Illich, villages of the Makhtaral village administration, and hospitals (Lasareva 2008).

Until the end of the 1990s, the Kazakh government was busy with investments in the oil sector. Therefore, agriculture and the cotton sector were not a focus of government activity. During that period, support for agricultural development in Southern Kazakhstan came from international organisations like the UNDP, GTZ, USAID[7] and other donors in the context of market reforms, a process which had taken place in other former Soviet republics as well. NGOs were established who implemented those programmes and developed ideas for agriculture and the rural livelihoods. These organisations devoted attention to the rural development sector at a time when the government demonstrated little interest.

From the end of the 1990s, oil money began being directed toward agricultural development, including the cotton sector. For example, on July 21, 2007, a law regarding "The development of the cotton branch" (No. 298-3) was passed. Under this law, the legal organisation and economic basis for the development of the cotton branch was defined. Additionally, the law regulated manufacture, processing, storage and sale (Azhimetova 2012). In 2008, the 'cotton cluster' concept was introduced in the region as a way of extending the production cycle from the collection of cotton to the final production of textile goods (Dosybieva 2007). This attempt to achieve vertical integration and move from cotton production to manufacturing has never existed in Uzbekistan until very recently (Interviews 2013).

7 UNDP is United Nations Development Programme; GTZ – Gesellschaft für technische Zusammenarbeit (now it is called GIZ – Gesellschaft für internazionale Zusammenarbeit); USAID – United Stated Agency for International Development.

Figure 1: Production cooperative in Turkistan, Southern Kazakhstan

In addition to the vast majority of small-scale cotton farmers, there are a few cooperatives in Southern Kazakhstan. In 1991, after the end of the kolkhoz system, an ambitious engineer named Azimov Khabibulla bought the property (including the buildings) of an old kolkhoz and founded the farm "Turan". The farm provides all services that used to be provided by the kolkhoz, i.e. a machine-tractor park, a bio-lab, a cotton gin, cotton cleaning, initial processing, cotton seed oil production, and fertilisers. In addition, they have started applying drip irrigation to cotton growing. As part of a strategy to diversify farm activities, they sell their own drip irrigation systems, render services to other farmers outside the cooperatives, carry out initial processing of cotton and produce mattresses for the local market. Comprising 1,145 ha, the cooperative unites 132 farmers as stakeholders. The cooperative provides all required services to every member farm. After cotton is harvested, the farmer is obligated to deliver his cotton to the cooperative. Each farmer's varied contributions to the cooperative are taken into account and profits distributed accordingly. For example, if one owns a tractor and ploughs the land for others within the cooperative, this extra work on farm will be added to his final salary. Furthermore, the cooperative provides a safety net. If a farmer is unable to work for any reason, his land will be taken care of by other farmers and he will still receive a share of the profits. The fact that many of the people are not farmers is taken into consideration. "It is hard for a farmer to do everything by oneself [pay for all these services]; one is focused on his problems and doesn't see other ways of doing things. It is easier together. Every person in our farm is doing his/her job" (Interview with the director of the production cooperative, Azimov Khabibulla, December 2013).

Khabibulla plans to purchase foreign equipment for more complex cotton processing and production of bed linen. He also he plans to build a plastic production factory and construct a local market, as well as establish a consumer cooperative comprising 5 villages.

Kazakhstan's raw cotton output averaged 85,000 tons after independence in the early 1990s. In 2004, it was estimated to have reached almost 150,000 tons, a considerable increase in just a decade. This growth only continued, and by the year 2012, about 379,000 tons of cotton were produced (to compare, in 2011 – 336,000 tons with a yield of 2.16 tons/ha; in 2010 – 239,800 tons with a yield of 1.79 tons/ha) (The Agency of Statistics of the Republic of Kazakhstan 2013).

Small individual farms prevail in the south of Kazakhstan. In 2002, the number of individual farms increased significantly and in 2003, Kazakhstan introduced private land ownership by means of adoption of the Land Code (OECD 2013: 91; 108; Pomfret 2008: 243; Baffes 2007: 48). Family farms, which account for 70% of land in Southern and South-eastern Kazakhstan, produce 95% of the cotton that is grown in the Mahtaaralsky, Ordabasinsky, Shardarinksy, Saryagashsky and Turkestan regions (Pomfret 2013:4). The average farm size in Southern Kazakhstan is 15 ha, with the exception of a few cooperatives of approximately 600 ha (The Agency of Statistics of the Republic of Kazakhstan 2013; OECD 2013:95). The story of one of these cooperatives is presented in Figure 1.

After independence, Russia did not continue purchasing Kazakh cotton as it had during the Soviet period. In comparison to other world producers of cotton, Kazakhstan is a minor cotton exporter. Presently, 5% of cotton is processed in Kazakhstan and 95% of it is exported to China, commonly under the label 'Uzbek cotton' (Kym et al. 2008).

It continues to be debated by Kazakh policy-makers, cotton exporters and producers whether Kazakhstan should continue cotton growing and increase its scale or not. The proponents of cotton growing, amongst them local businessmen, claim that a full cycle in the cotton industry (including textile and clothing industries) at the location of cotton growing would strengthen economic growth and employment in Southern Kazakhstan (Baffes 2007: 49; Dosybieva 2005; Interview with K. Anselm, December 2013). Moreover, cotton can still absorb labour, as there is no other industry in the southern districts. As a consequence, cotton growing plays a strong social role apart from its economic importance in Southern Kazakhstan. Given the fact that cotton growing is water and labour intensive and its price always fluctuates, the government suggests reducing the area under cotton cultivation for the period of 2013-2016 in order to reduce risks and improve the quality of soil by means of crop rotation. The government suggests that land should instead be allocated to melons, watermelons, maize, alfalfa, vegetables and fruit trees, which can bring more profit to farmers than cotton (Kovaleva 2012a). The national priority thus is to transition out of cotton production into more profitable crops that can be grown well in those areas (ibid).

Cotton growing in ***Uzbekistan*** draws substantial government attention, resulting in the government asserting more control over cotton agriculture and being reluctant to reform the command structure inherited from the Soviet period. Uzbekistan has gone through 60 years of Soviet collectivised and planned agriculture and 23 years of post-Soviet agriculture[8]. The latter period inclu-

8 We would like to acknowledge that this section as well as other sections on Uzbekistan is based on the first author's dissertation: Shtaltovna, A. 2013. 'Servicing Transformation Agricultural Service Organisations and Agrarian Change in Post-Soviet Uzbekistan'. ZEF, University of Bonn, Germany, LIT Verlag, pp. 1-220.

COTTON FIELD AT THE END OF THE SEASON. UZBEKISTAN.

Photo: Anastasiya Shtaltovna

Fense decoration with cotton flowers. Southern Kazakhstan.

Photo: Anastasiya Shtaltovna

ded three major reforms, in which aspects of the Soviet and post-Soviet systems were intermixed; indeed, Soviet history and institutions continue to shape the social, political and economic landscapes of Uzbekistan (Trevisani 2009; Shtaltovna et al. 2012; Hornidge et al. 2013a; Hornidge et al. 2011). To ensure food security, rural employment and profits from cotton production, the government maintains strict control over agricultural production (Hornidge et al. 2013a; Khamzina et al. 2014; Khan 2005; Wehrheim 2008). Cotton - as in Soviet times - remains the 'white gold' of Uzbekistan. During the Soviet era, Uzbekistan produced two-thirds of world cotton (Rumer 1989). Since the country gained independence, cotton has remained the most important source of foreign exchange for the national economy (Bremer Cotton Report 2008), although the contribution of agriculture to the GDP has declined overall (from 37% in 1991 to around 18% in 2013) (Rudenko et al. 2008; Lerman 2008).

Since 1991, Uzbekistan has experienced a series of agricultural reforms beginning with the division of the former kolkhozes and sovkhozes into shirkats (joint stock companies or, literally, cooperatives) between 1991 and 1998 (Veldwisch 2008; Veldwisch 2010). Between 1998 and 2003, shirkats were then completely dismantled, 'privatised' and subdivided into small, individual farms under a state plan for cotton and wheat (Lerman 2008; Trevisani 2008, 2010). This process of land de-collectivization fundamentally modified social relationships within the agricultural production system as well as relations between the increasingly diverse group of agricultural actors and the state. In November/December 2008 (within less than a month) farmland under the cotton and wheat state plan was re-consolidated, merging several individual farm enterprises (10-25 ha each) into bigger farms (75-150 ha). The decision about whether a farmer was allowed to remain a farmer or became landless depended on his or her performance with regard to the production of state-ordered crops in the previous years (Eichholz et al. 2012; Djanibekov et al. 2012). Similar adjustments were made at the end of 2009, although to a lesser degree. The pattern of reforms that took place in Uzbekistan during the previous 20 years include both gradual and such large-scale state-led reform (Spoor 2012).

Veldwisch (2008) distinguishes between three categories of farmers in Khorezm province based on the agricultural forms of production they engage in: (1) state-ordered production, which includes the production of cotton and wheat, (2) commercial production, which involves rice production, horticulture, poultry production and to a lesser extent the production of vegetables and fodder, and animal husbandry, and (3) household (subsistence) production (dekhan farms). Dekhans grow fruits and vegetables in their gardens, and wheat and rice on their small plots of land. This kind of production primarily aims at home consumption and includes barter arrangements as well as petty trade at local markets. They are independent from the state plan (Veldwisch 2008; Trevisani 2009; Shtaltovna et al. 2012).

2004 was a turning point in the agrarian reform in Uzbekistan, when a small number of large, powerful and autonomous sovkhozes and kolkhozes were reorganised into a large number of small, vulnerable, under-financed farms (Shtaltovna et al. 2012). This has led to one of the major obstacles faced today in agricultural development: the minimal agricultural background of many farmers. They were qualified in other professions such as medicine, teaching or financial administration, for example, and switched to farming without additional training (Kazbekov and Qureshi 2011; Shtaltovna 2012). Furthermore, those who had better connections at the time of reform (i.e. the brother of the local governor, etc.) received more desirable land, regardless of ability and capacity to steward the land. Due to Soviet path dependency, not all farmers have learnt how to work independently, how to make decisions without orders from above, how to be profitable or how to manage their own expenses. Taken together, Uzbek farmers' lack of agricultural and entrepreneurial skills represent serious hurdles.

Despite legislation aimed at adapting land tenure systems and farm organisation to new realities, all land remains property of the state (Trevisani 2010; Lerman 2008). Farmers receive land under a lease agreement from the government (usually in contracts of up to 50 years) on the condition that they grow crops under the state procurement system. However, whether the farmer can have the land for 50 years is not certain since the land lease contracts can be terminated by the government (e.g. for failure to meet cotton targets or implement agreed cropping plans, for the degradation of soils, or for leaving arable land idle) (Djanibekov et al 2012). This land tenure uncertainty is reflected in the limited number of farmers investing into new machinery or land improvement (ibid). The system of land allocation, which is based on cronyism and still favours well-connected farmers who can evade the state controlled system (as mentioned above), further weakens the basis of the cotton economy (Kandiyoti 2002).

Cotton and wheat farmers are subjected to the state quota system, in which farmers have to fulfil the production goals assigned by the government for wheat and cotton. To that end, farmers sign a contract with the cotton factory to deliver pre-determined amounts of cotton. For crops grown under this state procurement system, farmers and service providers alike are still dependent on government loans (at 3% interest) to buy inputs. In addition to keeping cotton and grain production under control, the central government also sets artificially low prices for their purchase of cotton and then sells it abroad at world market prices (Luong 2002). Although farms labelled as 'private' have been established, this cannot be considered a meaningful distinction as long as land is tied to production targets for cotton and wheat, and in the absence of private land ownership (Trevisani 2007; Veldwisch 2008; Hornidge et al. 2013a).

The present system of governance, established during Soviet times, with highly centralised state power, strong vertical hierarchies and top-down rule, heavily relies on the use of state control,[9] planning and intervention in many sectors of the economy, particularly in the cotton sector. While in Soviet times the communist ideology supported the state's call to join in the cotton harvest, today this missing ideological embedding is compensated for only by the exercising of state control (Shtaltovna 2012). To ensure

9 *State and government* are used interchangeably in this paper. We draw on definitions of state and government, as defined by *Hyden, G., Court, J. et al. 2004. State* refers to all institutions (government organisations) that comprise the public sector with responsibility for implementing policies. *Government* refers to elected or appointed officials serving in core institutions at the national, provincial, country, city, and local level. State thus means any government organization acting in the name of the state's strategic interest in cotton and wheat. Based on this, there is a subtle difference on some occasions.

Cotton plant with flower and unripe capsules. Uzbekistan.

Photo: Anastasiya Shtaltovna

the fulfilment of the state goals, the government relies on its regional and local state organisations, such as departments of state administration, police, prosecutors' office, and tax inspectorate. The employees of the above-mentioned state organisations used to work in the kolkhozes and sovkhozes during Soviet times and thus came of age in the knowledge system and management practices of the former agricultural system. In addition to their official functions, they have to make sure that farmers and agricultural service providers follow state orders under the state procurement system (Ilkhamov 2000; Markowitz 2008). This assignment is arguably more important than their official functions. To fulfil the state's goal of control, a Soviet communication system called selector[10] has been adapted, allowing for the rapid exchange of information and monitoring throughout the state. The selector brings together relevant representatives of the cotton monitoring campaign regardless of their geographical and bureaucratic location. Selector meetings are organised by the state government under the aegis of the Prime Minister and the heads of the regional administrations. They are assembled to report on the proceedings of the cotton campaign, i.e. for reporting on financial issues of service delivery or supervising farmers' fields. The Uzbek state not only maintains strong control over monitoring representatives, but also over agricultural service providers directly as a way of regulating agriculture cycles and utilising the knowledge of former Soviet kolkhoz leaders. In particular, the state mobilises the leaders of agricultural service providers, who are the same leaders as in Soviet times, using the old Soviet principles (Shtaltovna 2012; see more in the next section).

While Uzbekistan is the biggest cotton-producer in Central Asia and the third biggest exporter in the world, the arid environment demands higher inputs of irrigation water than in most other cotton-producing areas in the world (Rudenko et al. 2008: 199). This water is taken from the main rivers of the region, resulting in, amongst other things, the almost complete disappearance of the Aral Sea - one of the biggest ecological disasters of our time (Christmann et al. 2009: 51). Irrigation practices are subject to state-ordered irrigation norms that dictate amounts and application techniques. These norms are monitored throughout the season and, if farmers do not apply them, they may encounter difficulties with state representatives (Oberkircher 2011). Water footprint analyses have shown that the biggest losses of irrigation water happen at the field level through leeching or otherwise deficient irrigation infrastructure, leading to 2-3 times the necessary withdrawal of water from the Amu Darya River (Rudenko et al. 2012: 207). In order to secure the natural resource base in a country like Uzbekistan, decreasing water losses and increasing water use efficiency is crucial (Rudenko et al. 2012: 207).

To summarise, a challenge to the process of agrarian change is the dominance of the state in agriculture, which practically owns all land and determines what is produced in the country, thus creating a high degree of uncertainty among farmers (as private actors) and agricultural service providers, substantially limiting their ability to manoeuvre and proceed with long term plans to develop their land and agricultural businesses (Hornidge et al. 2012: 4). In Kazakhstan, by contrast, the transition from a planned economy to a market economy has largely taken place, with government influence in agriculture decreasing to a minimum over the past twenty years. The decision-making rights over land use, the agricultural production process and the post-harvest manufacturing and marketing of the produce now lie primarily with the farmers themselves, resulting in decentralised production and marketing approaches.

In the following sections we will look in depth at how cotton is grown in Uzbekistan and Kazakhstan.

10 Selector (Russian) - A system for swift communication between phones in different locations and a central one, moderated by the Prime Minister.

4 Inputs in agriculture

Credit schemes for cotton growing: a broad menu of support in Kazakhstan vs the set menu in Uzbekistan

Kazakhstan

Agriculture was declared a priority development area for the government of Kazakhstan for the decade leading up to 2020, with the Ministry of Agriculture focusing on eight subsectors (namely fruit and vegetables, grain, meat, milk, oil crops, poultry, sugar, and wool), which have priority over other products such as honey or cotton (Pomfret 2013: 5). The stated aim of this program is the creation of conditions for improving the competitiveness of farmers. Needless to say, the programme 'Agribusiness-2020' developed in this context envisages diversification of cotton farms and subsidised bank loans for farmers to help achieve this. Despite cotton not being a priority crop, the government allocates support for cotton growers as part of agricultural development in order to achieve a balanced rate of development in the cotton sector (Pomfret 2013:2; Umbetayev 2012). Amongst other supportive measures, a Resolution of the regional state administration called 'Prognosis of socio-economic development of the Southern Kazakhstan oblast for 2013-2017' proposes the following measures for the cotton sector:

1. Subsidies for lubricants, fuel and fertilisers;
2. Support to cotton seed development farms;
3. Subsidies for using drip irrigation (216 USD/ha[11]);
4. Subsidised loans (4% annual);
5. Subsidy for the land under cotton (118.8 USD/ha);
6. Diversification of cotton growing in Southern Kazakhstan (state subsidies to the farmers in Southern Kazakhstan who plan to grow fruits and vegetables, as well as for animal husbandry).

(Source: Resolution of the regional akimat[12] of the South Kazakh oblast № 252 25.07.2014r; Interview with farmers from

11 1 USD was equal to 185.19 Kazakh tenge in November 2013. Source: http://www.oanda.com/currency/historical-rates/

12 Akimat (kazakh) - state administration

Initial processing of cotton. Southern Kazakhstan.

Photo: Anastasiya Shtaltovna

Turkestan and Maktaaral districts, Kazakhstan, December 2013)

Subsidised loans with a base interest rate of 2% per annum are allocated by the national fund of Kazakhstan for administration by micro-credit agents. For example, in 2012, USD 10,800,000 was allocated at this subsidised rate. The micro-credit organisation 'Yrys', which was established by the local state administration, provides these loans to farmers at 4% interest per annum (Kovaleva 2012b). The conditions to receive a loan are kept simple. Scaled to the size of a loan, an interested farmer only needs comparably valuable collateral, such as a farm house or car/machinery[13] (Interview with a farmer 2013, Turkestan district, Kazakhstan). This entails considerable risk for the farmer and thus can make the loans appear unattractive.

The only other state service available to farmers is the ability to lease agricultural machinery, but prices for this service remain high (Interviews with farmers from Turkestan and Maktaaral districts, Kazakhstan, December 2013). In sum, the government of Kazakhstan has created mostly favourable conditions for cotton growers despite cotton not being a priority crop for the national economy.

Uzbekistan

For crops grown under the state procurement system, farmers and agricultural service providers alike depend on government loans (at 3% interest rate) to buy inputs. The amount of subsidy farmers receive for growing cotton is decided at the ministerial level and approved by the high officials at the Ministry of Agriculture and Water resources. Support for cotton is calculated on a basis of estimated expenses for cultivation, as well as yield per ha of cotton or wheat (Interview with an official, Ministry of Agriculture and Water Resources (MAWR) in Khorezm region, 2009). Based on the data from the regional Ministry of Agriculture and Water Resources, the Cabinet of Ministers of Uzbekistan promulgates the plan for growing cotton (and wheat). The Cabinet then orders the loan for farmers from the Ministry of Finance. The Ministry of Finance, in turn, decides on the

13 However, a clay farm house is not acceptable as collateral. The traditional clay farm house is a typical building style in rural areas of Kazakhstan, Uzbekistan and Tajikistan.

Working with Cotton in a Bio-Laboratory. Uzbekistan.
Photo: Anastasiya Shtaltovna

amount of subsidised loans allocated to farmers to grow cotton and wheat and the price at which the crops will be purchased. Subsidised loans are distributed (from the special state procurement system fund) via the central bank to each region by the Ministry of Finance. The money arrives at the district commercial banks and is used by farmers to pay for services and inputs needed to fulfil the state order for cotton and wheat. The commercial banks allocate money to farmers and control how the state subsidised loans are used by farmers.

To fulfil the state orders within the framework of the procurement system, farmers face a number of constraints. Under the current agricultural financing mechanism, there is a constant scarcity of finance for production. Instead of the full amount of a loan, just 60% of the cost of contractual agreements for growing cotton and wheat is made available to farmers. The Agrobank is the main outlet for farmers for this advance (Information Portal about banks of Uzbekistan 2012). As indicated by the following quote, the remainder of the costs has to be covered by the farmer alone.

'There is a misunderstanding: the state gives a loan of 60% of the amount needed to grow cotton and wheat, but it [the state] requires farmers to come up with 100% of the amount. A farmer has a huge hole in his pocket!' (Interview with officials at district branch of the Fertiliser Company, Khorezm region, 2010)

Beyond the problem of the limited amount of financing, there are also restrictions on how the money can be spent. The 3% interest loans allocated by the government oblige farmers to purchase inputs for growing cotton strictly from agricultural service organisations and not from the private market (see next section on relationships with agricultural service providers in Uzbekistan). In this way, agricultural service organisations and farmers are inextricably linked in the framework of the state procurement system. Many inconsistencies within the subsidised scheme emerge when one looks at the relationship between farmers and agricultural service providers. For example, farmers often cannot afford to pay agricultural service organisations on time, as the loans they receive are rarely enough to cover production costs. Some agricultural service providers like fuel supply (Neftebasa) and the Fertiliser Company are so closely connected with the government that they can manipulate the inputs allocated for the procurement system. For example, they can refuse to provide advance fuel and fertiliser and/or make the price so high that farmers never quite receive enough. As the following citation illustrates, farmers may not receive the full amount of allocated gas. The farmer has no room to manoeuvre, as he is required to buy from Neftebesa as part of his loan agreement and he would be punished by the government for not fulfilling the cotton plan on time.

'When I go to the Neftebasa, I receive 80 l instead of 100 l. And I cannot disagree; otherwise I will not receive any!' (Interview with the Uzbek farmer, 2013)

The next problem faced by farmers is that payment for cotton is sometimes pushed back until after the harvest, which means that the farmer is left waiting for the money, but must pay taxes on his or her earnings in the meantime. When the farmer fails to pay the taxes on time, a debt on the monthly taxes starts to accumulate (Farmers survey, Khorezm region, Uzbekistan 2009). Furthermore, as part of the state procurement system, frequent inspections are made by different state organisations (e.g. police, representatives of the local state administration, the tax office, public prosecutor's office, state technical supervision departments, the land surveyor, the water inspector), who, apart from their direct responsibilities, are expected to ensure that agricultural service providers and farmers follow the mandates of the state procurement system (Ilkhamov 2000; Markowitz 2008; Shtaltovna et al. 2012). In addition to their official responsibilities, these state organisations thus perform the unofficial function of exerting control over the agricultural sector. Practically speaking, this translates into the constant pestering of the farmers and agricultural service providers. Many farmers as well as agricultural service organisations have reported that they have to pay the clerks or at least cover their travelling costs in the region, including meals; moreover, agricultural service providers are often obliged to carry out various assignments for the private benefit of state representatives in order to receive a positive report about their contribution to the cotton campaign. This dynamic is apparent in the following two quotes:

'My entire profit goes to cover the bribes to the land measurer.' (Interview with the farmer, 2013)

'If we say 'no' to the hakim[14] or someone from above, they will take revenge on us by means of tax inspection or by public prosecution, easily!' (Personal communication with the manager of the repair workshop of the machine tractor park, Uzbekistan, 2009)

Because all transactions go through the bank, farmers indicated the necessity to bribe the bank workers in order to speed up the procedure of money transfer or getting a loan (Farmers' survey 2009; interviews with farmers 2013). Another problem faced by the Uzbek farmers is their limited access to cash. Because of state restrictions on accessing cotton payments, as well as the underdeveloped institutions for financial transactions, there is always need for cash, without which business comes to a standstill. Keeping things moving requires a multitude of (largely informal) efforts to generate cash incomes. One of these avenues is producing rice, which is also very water intensive, but nonetheless commercially attractive because it is a form of agricultural staple production not bound

14 Hakim (Uzbek) – the head of the local state administration

to the state plan. Within the procurement system, however, farmers do not have access to the money allocated from banks nor to their own profits. Instead, the credit tranches from the state bank reach the regional bank branches and are transferred directly to agricultural service providers who are owed money like Neftebasa, the Fertiliser Company, and others. If a farmer wants to spend cash on something else, he has to always negotiate with the bank, and the outcome of this is usually not in the farmer's favour. It also forces farmers to enter into relationships of informal redistribution of resources (which are on the border of illegality). In the end, the Uzbek farmer is left in a very challenging situation.

One hypothesis that can be put forward is that, if the farmers were in a position to make decisions about production, they would try to find better inputs (i.e. better types of seeds, fertilisers and other inputs) and develop more adapted production systems. To survive in the current system, farmers have to be very inventive, sometimes even using the inputs allocated to cotton for their commercial crops or circumventing the state-order in other ways in order to earn some cash money and be able to survive. One cannot help but observe that this artificial situation was created by the government. Under the current conditions of the state procurement system, farmers are not private decision makers of the cotton and wheat growing process. The interviewed farmers do not demonstrate a lack of motivation, but rather express fatalism about the current situation, as indicated by these two quotes:

'Nothing depends on us [farmers]. We are not heard. […] What will be done or decided for us, will be done by the state and this is the way it will be' (Farmers of 5 interviewed districts of Khorezm, 2009).

'The farmer is a debtor; because of that he cannot leave farming. If he does, he can be put into prison for his unpaid debts to numerous service providers, or for growing his own crops on the land allocated to cotton' (Interviews with farmers 2013).

Currently, farmers have low motivation to work in agriculture and are discouraged. The main point of contention is that they themselves have to cover the production costs even though they are forced to work within the strict state procurement system.

In comparison, during Soviet times, kolkhoz workers were given financial and moral incentives to pick cotton and fulfil the state plan. Their salaries were sufficient for a decent standard of living, e.g. for buying a car or having a vacation with the family once per year (Shtaltovna 2012). In addition, for a good harvest of cotton, people received a '13th month salary' bonus.

To supplement the lower incomes of today, farmers grow commercial crops in addition to state-ordered crops. The most widely spread commercial crop grown in Khorezm, as already suggested above, is rice. Wegerich (2006) explains that a farmer grows rice not just to cover the production costs for cotton, but also to have some cash for everyday necessities, as payment for cotton from the state goes to the account of the farmer and is then automatically used to cover production costs. As it was mentioned above, the farmer has no access to that bank account. Hence, with non-state-ordered crops, the farmer has the direct benefit of being able access cash outside the banking system.

Comparison: By providing a range of different subsidies as well as the freedom to decide what to grow, the government of Kazakhstan provides an avenue for farmers to maximize opportunity and develop themselves. In contrast to this, Uzbek farmers work under a state procurement system that exercises strict state control over the agricultural production system, offering limited opportunity for making the system profitable for farmers. In addition to their work, farmers spend a lot of time dealing with state inspections and struggle to even receive permission from the state to conduct various kinds of transactions (e.g. to get permission to grow something else). Another difference between the two systems is the conditions under which farmers can access cash money and inputs for growing cotton. Kazakh farmers have access to the money allocated from a range of banks as well as to their own savings. There are also numerous private input providers where Kazakh farmers can purchase any input they deem necessary. Uzbek farmers always have to negotiate with the bank in order to get access to cash and to gain permission to allocate the money they ostensibly have (i.e. how to invest and operate their farm businesses). Moreover, many agricultural service providers in Uzbekistan are under governmental control; those that are closer to the government are in a position to exploit their monopoly status (see more on agricultural service providers in the following section). Facing these difficulties is a great challenge and is only rarely overcome by creative initiatives on the part of farmers and some of the agricultural service providers. Following the rationale of the current reforms, the farmers can be seen as the "heirs" of the kolkhoz. As such, they also are, as the kolkhoz (and after that the shirkat) used to be, a "building block" of the state system. Therefore, the logic of farming still tries to preserve command system and to enhance the terms of usufruct similar to the command production apparatus (Trevisani 2008).

In the following section, we will shed more light on how relationships between farmers and agricultural services organisations differ in Kazakhstan and Uzbekistan.

Relationships with agricultural service providers for cotton growing

Kazakhstan

In Kazakhstan, there are numerous private companies that trade in agricultural futures, which are linked to the cotton gins. As part of their own business models, they provide inputs and machinery to farmers, including credit, seeds, fertiliser, fuel, and water. In exchange, a farmer signs a contract to borrow necessary inputs exclusively from the futures company and, at the end of the year, to sell cotton to that futures company. The company will charge the farmer an annual interest rate of between 18-25%, depending on the world cotton price (Interviews with farmers from Turkestan and Maktaaral districts, Kazakhstan, December 2013). One might suspect that the inputs obtained through futures companies are overpriced and that the gins are tough in their assessments of quality (and thus, how much they will pay the farmer) (Anderson and Swinnen 2008). However, because all inputs needed for growing

Collecting the ‚white gold'. Uzbekistan.

Photo: Kirsten Kienzler

cotton, such as fertilisers, bio-methods, fuel, etc., can be purchased on the markets, farmers can directly compare prices. If they wish to buy directly in the market, and more freely decide which range of products to acquire, they need to pay up front. The subsidy allocated to them from the state can be channelled through the market or a company brokering agricultural futures.

Purchasing seeds, quality control of cotton seeds: Currently there are 12 varieties of cotton seeds in use by cotton producers in Southern Kazakhstan (Kazakh state registry of selection 2013). During the Soviet period, all seeds in Southern Kazakhstan were of Uzbek origin, but nowadays cotton seeds are brought in from many different countries (e.g. Israel) as well as developed or produced locally (e.g. "Turkestan 2011" and "Turkestan-1"). All seeds are checked to determine if they are appropriate for the local climatic zone and, if so, added to the state registry of selected seeds and allowed for use in Kazakhstan (Interview with Murzabayev B., the head of South-Kazakh state seed variety inspectorate, Shymkent, December 2013). Within this registry, farmers can decide what kind of cotton to grow and from where to purchase it. Nevertheless, local cotton varieties developed in the 1970s by the local cotton institute continue to be regarded as the most suitable for the climatic conditions (Interview with Bigarayev U., the deputy head of the Cotton Institute, Maktaaral district, December 2013). According to the data from the administrative unit of the Ministry of Agriculture on the level of the oblast, traditional varieties of cotton are also considered of questionable quality as they have lost their beneficial characteristics and are outdated. Obtaining good quality seed, however, remains a challenge for cotton growers. Farmers often buy damaged or smuggled seeds to save money, but low quality seeds reduce potential yield and may lead to lower quality cotton. Cotton manufacturers often set low prices for cotton from such seeds, which regularly provokes conflicts between producers and processors (OECD 2013:98; Sadler 2006).

Agricultural insurance: This is not one of the more widespread services in Kazakhstan (OECD 2013: 134; Hussain and Perera 2004; Jooshev and Mityakova 2008); it is a missed opportunity to lower farmers' vulnerability to yearly fluctuations.

Machinery services: Repair, maintenance and leasing of machinery are available from Machine Tractor Parks (MTP), a private service provider. In most cases this requires upfront payment, unless there is a high level of trust between the farmer and the MTP (Interview with Kungrat, A., the director of the MTP, Maktaaral district, December 2013). Kazakh farmers can also borrow agricultural machinery from other farmers who own machinery. However, there are complaints by farmers that the available machinery is outdated and that farmers lack the funds to obtain modern machinery. The loans available at the bank for purchasing agricultural machines are not typically attractive to farmers, especially due to the high interest rate and the steep requirements for physical collateral (Interviews with farmers from Turkestan and Maktaaral districts, Kazakhstan, December 2013). For more details on credit for farmers, see previous section.

Agricultural advisory services: There is a Centre for the Dissemination of Knowledge at the Cotton Institute. Ostensibly, it provides training and consultations to farmers. However, due to the small scale of most of the cotton farms, introducing new technologies to farmers becomes a monumental task (Kovaleva 2012b). However, besides this institute, and as part of the knowledge dissemination strategy for agricultural development for 2010-2014, the government established a network of information and consultation centres around Kazakhstan. The main components of the study centres are (a) training and consulting, (b) transfer of technology, (c) human capital development, and (d) regional development (GTZ/ZEF 2011; www.agroextension.kz). Functionally, the system of knowledge distribution is meant to be carried out through study, training, theory, practice and demonstration, and long-distance consultation (GTZ/ZEF 2011; Hornidge et al. 2013b).

Despite the extension services being offered, many farmers rely primarily on their own expertise, their former training as agronomists and years of cotton growing experience (interview with the farmers, Almaty, December 2013; Shtaltovna 2013).

Labour: Apart from seeds and fertilisers, the main input in cotton production is labour, especially at harvest time. Mechanised cotton harvesting, which was vigorously promoted in the Soviet era, is not economical given the low Central Asian factor prices, and, in any case, handpicking yields a higher quality harvest (Pomfret 2000). As a result, most of the cotton in Kazakhstan and Uzbekistan is picked manually (Baffes 2007). Apart from family labourers, labour markets are highly competitive in Kazakhstan's cotton growing regions because they have access to cheap migrant labour from neighbouring Uzbekistan and Tajikistan (Anderson and Swinnen 2008). In particular, Southern Kazakhstan receives a substantial influx of temporary low-waged migrants from Uzbekistan (OECD 2013: 74; Pomfret 2008: 244). Every farmer interviewed has mentioned that they welcome Uzbek and Tajik agricultural workers. They are valued for being hard working and their expected wages are appreciably lower than for Kazakhs (Interviews, farmers, December 2013). In 2013, Uzbek labourers were paid 0.2 USD/kg, whereas the Kazakh worker received 0.3 USD/kg. Although this difference may appear small, it is significant enough that if Uzbek cotton pickers are not available and the price for cotton is low, the cotton will often be left in the fields.

Typically, two schemes are in place for employing seasonal workers. The first scheme arises if an Uzbek family arrives in spring (April-May) and takes care of the cotton from the sowing until the harvest. In between, the Uzbek family is employed in other jobs in the area (e.g. construction, growing other crops in the garden). Each family member receives a monthly salary. The family is usually registered with the local police office. Kazakh farmers prefer this scheme and it is also safer for the Uzbek family. However, there are many cases in which the Uzbek labourers are not registered with the local police. In this case, they cannot easily move around Kazakhstan. This second scheme arises when Uzbek labourers arrive just for the relatively short cotton harvest. Arrival is often brokered by middlemen who bring farmers from Uzbekistan and Tajikistan. Many Kazakh farmers mentioned that it is becoming increasingly difficult to bring immigrant workers to Kazakhstan due to problems on the Uzbek border. Uzbek workers can be paid either in cash or via Western Union transfer. The middlemen are also paid well in order to ensure that the Uzbeks return home safely. Sometimes, Kazakh farmers accompany Uzbek farmers to their homes to ensure their safety.

Cotton gins: The output of processed cotton from gins has been extremely volatile since the 1990s. Falling from 99,297 tonnes in 1990 to 68,968 in 1995, capacity peaked at 143,091 tonnes in 2005 before falling back again to 97,062 tonnes in 2009 (OECD 2013: 95). Kazakh farmers supply their raw material to 22 cotton enterprises that fully cover the few cotton growing districts of Southern Kazakhstan. These companies clean and pack cotton for further sale to the textile industry. 21 of the cotton gins are private and, thus, they are not bound by government mandates or party to government interventions. They decide independently about the price at which they will purchase cotton from farmers.

It was mentioned numerous times during the interviews for this study that some of the cotton collection points operated by the cotton gins try to cheat the farmers by manipulating the scales or trying to buy the cotton at the price of a lower grade. For the latter case, there are independent cotton laboratories where the farmer can check his cotton. With the results of these tests, the farmer can confidently prove to the cotton gin that his cotton should be graded higher. For other types of cheats, many farmers lamented that there is no farmer's union which they can consult for addressing such problems (Interview with the farmer from Turkestan and Maktaaral districts, Kazakhstan, December 2013). Even the local administration will not help the farmer if he has any problems with a cotton gin. Once sold, 95% of cotton produced in Kazakhstan is exported, primarily to Russia or China, but also a few other countries (OECD 2013).

Uzbekistan

The major services available to agricultural producers in Uzbekistan are water user or consumer organisations (WUAs), alternative machine tractor parks and machine tractor parks ((A)MTPs), fuel supply (Neftebasa), the Fertiliser Company, banks, veterinary stations, and bio-labs. A turning point in the evolution of agricultural service orga-

nisations occurred paralleled to the privatisation of farm lands in 2004. Agricultural service organisations transitioned from being centrally managed and providing services for a few state farms to providing services to a much larger contingent of individual farmers (Shtaltovna et al. 2012). Service providers that have not remained under the strict control or supervision of the state have been compelled to transform quickly since 2004, especially because many were made financially autonomous in the transition. Generally, however, they were not prepared nor given the necessary assets and infrastructure to make the transition, although they are obligated to fulfil the demands of the state procurement system for cotton and wheat. Before independence, agricultural service providers were subordinated to the government and were instructed how to fulfil their role in the state's plans. Today, most of them are still subordinated to the government but now they have to also act independently and maintain profitability (Interview with the MTP economist, Urgench, Uzbekistan, 2009).

Through the years since independence, the allocation of funds to different service providers involved in the state procurement system has changed as well, with three categories of agricultural service providers emerging in post-Soviet Uzbekistan (Shtaltovna 2012). The first category is *state-affiliated service providers*. The Uzbek government maintains control and monopoly power over the industries producing fertilisers, oil and gas products, and cotton. The agricultural services provided by the corresponding organisations are therefore oriented toward fulfilling state mandates. Of particular relevance in this case are the Fertiliser Company, fuel supply (Neftebasa), cotton gins, wheat mills and agricultural banks. Organisations of this type are of strong economic interest to the state and remain under state control. In exchange, these organisations receive more economic state indulgences (i.e. more state attention and financial support) but are also inevitably more bureaucratic and overstaffed than the other two categories of service organisations. The second category is the *state-ignored service providers*. Private bio-labs, commodity produce exchanges, western input suppliers (e.g. Ifoda), veterinary services, insurance, and other private services for animal husbandry and horticulture belong to

A Machine Tractor Park. Uzbekistan.
Photo: Anastasiya Shtaltovna

this category. Farmers that are not subject to the state procurement system (e.g. commercial farmers, animal husbandry farmers and horticulture farmers) are the primary users and customers of services offered by state-ignored agricultural service providers. They are of little economic interest to the state since service provision by this type of organisation is not strictly required by farmers who cultivate cotton and wheat. One result is that state-ignored agricultural service providers receive less state support than state-affiliated service providers and are monitored less than the service organisations involved in producing state-ordered crops. State-ignored agricultural service providers are free to provide services within and beyond the state procurement system. The final category, *state-neglected service providers*, encompasses (A)MTPs, semi/state bio-labs, water consumer associations and farmers' associations (information & consulting services). They are in the process of transition from being state-affiliated service providers to becoming state-ignored service providers. This type of organisation nonetheless remains vital for all categories of farmers. Due to the transition process, state-neglected service organisations are withering away since the state has (gradually) reduced support. The staff of state-neglected service providers still know the agriculture system as it was practiced during the Soviet period and function as a backstop for managing present-day agriculture, which is for the moment still of strategic importance to the state (Shtaltovna 2013).

As outlined above, state-affiliated and state-neglected service providers in Uzbekistan, apart from providing services important for agricultural production (e.g. provision of fertilisers, seeds, machinery), fulfil many other socio-political functions in society. These include various tasks requested by the state administration in regard to the state procurement system, such as participating in numerous meetings. It would be unusual even for an MTP, for example, to disregard such state tasks, as it could cause problems for the MTP in the future. The hakim, who is viewed as the primary authority figure in various local areas, is responsible for ensuring (among other things) agricultural production, and also exerts control over service organisations in his domain. The director of the MTP outlines the hakim's position as such:

"The hakim is the landlord of the territory. Everything and everyone is subordinated to him. Medical institutions, markets, all sectors are subordinated to him. We have to get used to our boss, the hakim. We need to adjust to all his conditions in order to keep on living" (personal communication, September 2009).

By providing employment for its employees through the process of transition, agricultural service organisations also act as a social security net for their staff during the transition period (Shtaltovna 2012). Leaders of the agricultural service organisations often have a lack of experience in, and knowledge about, how to govern an organisation in a market economy; what limited experience they have derives from having made the financial and institutional adaptations required since the end of the Soviet Union. As a survival mechanism, the directors have tried to steer their organisations through the political transitions, in the process often taking on a very multifunctional role, often including stewarding the business, but also managing relations with farmers. In the past, the managers of different departments carried responsibility for their work and duties were more compartmentalised. Now, workers and leadership need to be working towards the larger goal of fulfilling the demands of the state procurement system as well as many other new activities in their organisation. For example, production of commercially attractive cash crops (i.e. rice) gives agricultural service providers like an MTP additional opportunity to be a service provider. MTP workers are often willing to work overtime in order to provide the required machinery for rice, and farmers always find money to pay for machine services or inputs required for the rice production. Rice, as a commercial crop outside of the state system, therefore provides cash income for both farmers and the agricultural service organisations that cater to them (Shtaltovna 2012). Through such processes, agricultural service providers often provide services to farmers without being paid up front (which is not unusual, given that both farmers and agricultural service organisations chronically do not receive payment on time, as was described above). This can lead to the accumulation of debt and sometimes financial insolvency of service providers. In order to save the organisation and to be able to pay the salaries of some of the workers, the director often has to restructure the organisation, usually by letting go of staff (Shtaltovna et al. forthcoming).

State-affiliated and state-neglected service providers, in addition to providing services to farmers and taking care of their businesses, are expected by the state to 'support' the cotton growing process by supervising farmers, and by providing them advice and services for free when necessary – similarly to state civil servants. Regardless what is written in the statutes of service organisations, the state has assigned them this unofficial function of control, which is often more significant than their official functions. The MTP directors, bank managers, agencies for the supply of agricultural inputs, water consumer organisations and the district department for agriculture all form the indirect levers through which the hakim can make farmers compliant to his will (Shtaltovna 2012). Furthermore, the directors of service organisations have to take part in the meetings convened by the local and regional state administration, superior organisation of service providers, the selector, and others. For instance, one MTP director participates in approximately 200 meetings each year related to the preparation and harvesting of cotton and wheat (Interview with an MTP director, 2009). These are few examples where

the service organisations' directors, together with other former kolkhoz co-workers, are mobilised by officials to fulfil state-ordered tasks by using their former, rather than present, roles and knowledge. Thus, the functioning of many agricultural service organisations, which is shaped by the procurement system in agriculture, still has many echoes of the past. The main feedback from farmers about their cooperation with machinery service providers is that new machinery is very expensive. Old machinery that is available from the machinery service providers or other farmers is often worn-out and breaks down often.

Many other services (previously referred to as state-ignored service providers) are viewed by farmers and rural households as absent because they have declined in capacity to such a high degree since the state administration ceased providing the type of support common in the Soviet period (Shtaltovna 2012). The services they once provided in abundance were good quality fodder for animals, more varieties of vegetable and plant seeds, and fruit and vegetable processing. To fill this gap, private service providers have slowly emerged to meet the needs of farmers. Private service provision is of great interest for farmers who grow crops other than those demanded by the state procurement system (e.g. rice), or are engaged in animal husbandry. These types of farmers tend to be proactive in seeking out rare services. These emergent service providers usually work according to market principles, in contrast to agricultural service providers that have been running since Soviet period.

Insurance in agriculture is not common in Uzbekistan (Hussain and Perera 2004; Jooshev and Mityakova 2008; Shtaltovna 2012). There are two state insurance companies - 'Agrosugurta' and 'Kafalat' - and 24 private insurance companies in Uzbekistan (Interview with the deputy director of the Khorezm branch of Agrosugurta, 2009). Based on the results of a farmers' survey conducted by the first author in 2009 and 2010 in Khorezm Province, Uzbekistan, farmers hardly use insurance services in Uzbekistan for a variety of reasons, including: unawareness of its utility, bad experience with it in the past; avoiding any strictly unnecessary costs (especially related to production of state crops). A few, however, have reported that they buy insurance for animal husbandry that is not under the state plan (Farmers survey, Khorezm, Uzbekistan 2009-2010).

Information consulting service or association of farmers and dekhans: An active farmers' association that would lobby on behalf of farmers is currently missing in Uzbekistan. There is a Farmer's Union in Uzbekistan that until recently was an association of farmers and dekhans (Interview with the head of the Farmer's Union in Khorezm region 2013). It is supposed to provide a range of services and consultations to farmers on a broad range of issues; however, it existed only on paper until recently, as there were no district and local branches of it (Shtaltovna 2013). Recently it has been renamed and its status has been adjusted in order to change the payment structure; basically, farmers now have to pay for it (Interview with the agricultural expert, Uzbekistan 2013). Despite this, its content has not changed - it is still a top-down association that does not represent farmers' interests, but rather comprises an additional layer of the state control over farmers. This can be understood as part of the post-Soviet syndrome, which is observable in other former Soviet regions, e.g. Ukraine, Caucasus and Central Asia (Hofman 2013; Shtaltovna 2013; Hussain and Perera 2004).

Labour: Cotton picking season is viewed simultaneously as one of the most important and one of the most problematic periods for Uzbek farmers (Interview with the Uzbek farmers 2013). In contrast to Soviet times when some parts of cotton were harvested by machinery and the leftovers were gathered by people, nowadays cotton is mainly harvested by hand (Pomfret 2002). The pay rate for picking cotton is very low in Uzbekistan and thus does not serve as a motivation for any adult to take up this job. For example, the price for 1 kg of cotton harvested is predefined by the state and, in 2013 was 0.1 USD/kg. As noted above, in neighbouring Kazakhstan it was 0.2 - 0.3 USD/kg. As a consequence, the state administration has to coerce not only farmers, but also staff of agricultural service organisations, and even civil servants from all manner of governmental organisation to harvest cotton. While in Soviet times, the communist ideology supported the state's call to join in the cotton harvest, today this missing ideological embedding is compensated for only by a raw exercising of state control and coercion (Shtaltovna 2013). In consequence, Uzbekistan is criticised worldwide for using forced labour, especially child labour, in the cotton sector (Pohl 2007; Kandiyoti 2008; OSF 2014).

Cotton gins: The cotton ginning industry is a significant sector in the country's economy. Since becoming independent, Uzbekistan's average annual cotton production has floated between 3.4-3.6 million tonnes, which actually represents an underutilisation of the ginning industry capacity. This poor capacity is related to the fact that approximately 75-80 percent of the gins still use outdated and poorly maintained technology (Cotton Outlook 2005; Rudenko 2008: 51).

The cotton ginning sector is governed by the State Joint Stock Company "UzPakhtaSanoat", whose regional branches process raw cotton into cotton fibre ready for textile use. "UzPakhtaSanoat" encompasses 172 joint stock companies, 7 limited liability companies and 1 joint venture, all of which were put into operation by Presidential Decree No. 2874 from 11.06.2001 and the corresponding Decree of the Cabinet of Ministers.

The main feedback from farmers about their relations with the cotton gins is that the purchasing price for raw cotton is artificially low (as indicated by the quote below), payouts are often delayed (sometimes farmers have to wait months), and the quality of cotton seeds they get in return is poor. Farmers are also unhappy that cotton oil and other by-products of cotton production are not returned to them (Interviews with farmers 2009, 2010, 2013). In the past, farmers received cotton seeds, oil and other leftovers and were satisfied with this state of affairs. Now, the cotton gin keeps all of these products or sells them back to farmers. This has further eroded the motivation for farmers to engage in cotton growing.

'The purchasing price of cotton by the cotton gin is low. If the price was higher, we (farmers) could pay the hired workers better; if we could pay them better, they would work harder and quality and quantity of cotton would increase as a result' (Farmers survey in Gurlen and Pitniak, Khorezm region, 2009).

Comparison: Due to the strong focus on cotton growing during the Soviet period, there are still many agricultural experts in both countries, as well as many farmers or service providers who came as kolkhoz/sovkhoz workers. The problem, then, is not a dearth of knowledge; indeed, many have considerable knowledge on cotton growing and the skills to farm, and they share experience if called upon. Rather, the problem in both countries is a lack of updated, localised knowledge and expertise in agriculture. In Kazakhstan, there have been attempts by the government to establish agricultural advisory services (KazAgroInnovatia) but they are not yet readily accessible to farmers due to a lack of financial resources. In Uzbekistan, agricultural advice is provided by the representatives of the agricultural service providers, i.e. the Fertiliser Company, machine tractor parks, etc.; this facilitates knowledge transfer, but can also become an opportunity for communicating about and fulfilling a state control function. There is also the formal Farmer's Union but it is primarily a top down institution that controls farmers' activities instead of providing advice. As suggested above, an active farmer's association that would lobby for farmers' interests is missing in both Uzbekistan and in Kazakhstan.

A fundamental difference between Kazakh and Uzbek cotton growing schemes is that inputs for cotton are available from the private agricultural service providers or from the market in Kazakhstan. In Uzbekistan, despite some reforms, the development of agricultural service organisations has been stymied, and now many of them are on the brink of bankruptcy. This is caused simultaneously by shocks, such as the cessation of state financial support after the end of the Soviet Union, and by systemic challenges such as accumulating farmer debt, poor input availability, lack of resources for renewing hard-

ware, an underdeveloped market infrastructure, poor access to credit facilities, and a lack of knowledge on how to work and adapt to a changing and market-oriented environment (Shtaltovna 2012). The system of land allocation based on cronyism and favouring well-connected farmers who can evade the state controlled system further weakens the

Collecting cotton. Uzbekistan.

Photo: Kirsten Kienzler

basis of the cotton economy. As mentioned above, three types of agricultural service providers can be distinguished by the place in the transition process in the context of Uzbekistan: (a) *state-affiliated service providers* (the Fertiliser Company, fuel supply (Neftebasa), cotton gins, wheat gin and banks); (b) *state-ignored service providers* (private bio-labs, commodity produce exchange, western input suppliers and others); (c) *state neglected service providers* that encompasses (A) MTPs, quasi-state bio-labs, water consumer associations, and the Farmer's Union (information & consulting service).

The state-affiliated and state-neglected service providers are administered by reformed Soviet semi-state and state organisations and therefore more oriented towards exercising control than performing services. These service providers and most state organisations at the regional and district levels can be regarded as state instruments of regulation and incentive-making, created with the intention of facilitating and enhancing agricultural production activities (Shtaltovna 2013). Uzbek farmers have neither the freedom to buy inputs at the location they choose nor cash to pay for it, let alone the means to afford it. As a result of the multiple roles that agricultural service providers play in the society during the transitions, they are torn between different expectations by the state and society and often fail to evolve themselves sustainably as individual units. Thus, interaction among state officials, farmers and agricultural service providers creates a vicious cycle of declining service provision and a decreasing productivity (Djalalov 2007).

Another major difference is the way labour is mobilised for the cotton harvest. In Uzbekistan, the labour for cotton harvest is mobilised in the entire country during the harvesting season. It is done through coercion rather than economic incentives whereas, in Kazakhstan, cotton harvesting is driven by money. The cotton sector in Kazakhstan has been market-based since the mid-1990s. The conditions facing cotton farmers in Kazakhstan are far better than in neighbouring Uzbekistan and this has led to substantial smuggling and migrant labour flows from Uzbekistan and Tajikistan, which distort measures of output, ginning efficiency and labour productivity. With labour costs suppressed due to migrant labour, the squeeze comes for farmers in Kazakhstan at the point of processing and sale. Here, farmers can be subject to exploitation by more powerful players in the value chain. In the case of Uzbek farmers, in comparison, every stage of the production process subjects them to unfavourable deals.

Last but not least, the numbers of cotton gins varies in the two countries (1 in Uzbekistan vs 22 in Kazakhstan). In contrast to the 22 cotton gins (which are effectively operated by three owners) providing some choice in cotton price for the farmer in Kazakhstan, in Uzbekistan, there is one state cotton company that purchases all the cotton from farmers. There are no alternative locations to sell cotton.

Based on this and other sections of the paper, Figure 2 summarises the similarities and differences between cotton growing systems in Kazakhstan and Uzbekistan.

Figure 2: Comparison of cotton growing in Kazakhstan and Uzbekistan

	Uzbekistan	Kazakhstan
Land lease agreements of the government	50 years, with the possibility that contracts are cancelled overnight (see rounds of land consolidation 2011 and 2012)	49 years; in addition, - there is private land (1.5 ha was allocated per former kolkhoz worker); - previously, land could be sold
Average land size per farmer	50 ha	15 ha
Importance of cotton to the state economy (from the point of view of state priorities)	Strategic crop	Not important; has more of a social character
Average yield per ha	2.6 ton	2.9 ton[i]
Cotton processing	20% in Uzbekistan 80% export	5% in Kazakhstan 95% export
Subsidies for cotton growing	-	81 USD/ha 50% of costs for petrol, fertilisers and bio-labs are covered by the state
Credit/bank loan	Interest rate annually: targeted 3%	4%
Freedom to decide how to spend the loan, i.e. where to buy inputs and access to the bank account and cash money	No	Yes
Leasing of agricultural machinery	Interest rate: 16-18% from commercial banks and leasing companies. Interest rate: 6-7% within state programmes for an average of 5 years	Interest rate: 8-10% for 5-7 years. The state pays the interest rate. If one pays in cash, the interest will be lower.
Agricultural service providers (MTP, fertilisers, machinery, bio-labs, petrol, etc.)	Three types varying from state monopolies to state-neglected or state-ignored agricultural service providers	A large choice of service providers and many inputs can be purchased on the market
Up front payment to the service providers by farmers	30%-100% (depending on which service). Reports of delays and cheating for some services	100% up front
Cotton gins	1 state monopoly[ii]	22 (private and mixed ownership type)[iii]
Inspections by land surveyor, state prosecutors, local government representatives, etc.	Many checks, commonly involves social accommodation or bribery	Not common
Irrigation, times per year	3 times	1 time
Cultivation	8 times	3-4 times[iv]
State	Control, intervention and administrative pressure	Open selection of subsidies and guidance mechanisms
Independence from the state in running a farm	No	Yes
Farm-gate price of cotton	Set by state	Responding to world market fluctuations

(Source: Author's compilation based on the interviews conducted in Uzbekistan and Kazakhstan)

i Source: FAOSTAT.

ii Cotton gins are present all around Uzbekistan and they belong to one state cotton company, the State Joint Stock Company "UzPakhtaSanoat".

iii Given that cotton is grown just in the South in Kazakhstan, these 22 gins fully cover farmers' needs.

iv Different approach in the two countries.

5 Cost-benefit analysis of cotton growing in Uzbekistan and Kazakhstan

As part of this study, a joint workshop of Uzbek and Kazakh farmers was conducted, in which farmers shared their experiences on cotton growing in the two countries. One of the products of this exchange is a cost-benefit analysis of cotton growing prepared by farmers (Figure 3)[15].

In reflecting on the cost-benefit analysis above, despite the average yield in Uzbekistan being reportedly higher than in Kazakhstan, Uzbek farmers tend to sustain financial losses from growing cotton, in contrast to Kazakh farmers. Additionally, cotton production in Kazakhstan is less expensive due to subsidies for inputs such as seeds, fertiliser and fuel (see Section 4 on Kazakhstan). There are no subsidies for cotton growing in Uzbekistan. In fact, sometimes farmers are compelled to buy at less competitive prices than normal:

'Fuel is very expensive; for agricultural purposes it is more expensive than for private purposes'. (Interview with an Uzbek farmer, 2013).

In addition to this, there are many different taxes that the Uzbek farmer has to pay (see the end of Figure 3). Given that many farmers still have limited experience in farming and farm management, including accounting and bookkeeping, either the tax system should be simplified substantially, as it is in Kazakhstan, or farmers should be provided with assistance on these issues through advisory services or farmer's associations. In sum, cotton production in Uzbekistan is consistently unprofitable for the average farmer as it leads to a loss of roughly 151.1 USD/ha[16]. In Kazakhstan, in contrast, it is regarded as a profitable venture with the average farmer receiving around 570.8 USD/ha. The reality of these calculations is viewed discouragingly by Uzbek farmers, as expressed in the following example:

15 The programme of the workshop is in Annex 1.

16 Some farmers in Uzbekistan who have connections to the state administration (so called "blat" by Ledeneva 2006) can achieve profitability.

'What I see after their presentation is that he [Kazakh farmer] can support his three kids and purchase machinery with 14 ha; I have 60 ha and I have to sell three cows in order to pay all debts for the state cotton' (Uzbek farmer, 2013)

This participatory case study looking more precisely at the finances of cotton farming confirms a picture that we also found in other avenues of research. It suggests that a farmer with 100 ha has an annual loss of averagely 15,100 USD from cotton growing. Needless to say, this suggests that a purely monetary perspective of cotton growing in Uzbekistan apparently captures only part of the overall system. Despite the obvious loss the farmer makes while growing cotton, being a part of the cotton system and maintaining the social capital of this occupation provides the farmer with a number of benefits. For example if a farmer meets the cotton plan, he contributes to the overall cotton plan fulfilment of the region he lives in. Thus the hakim who is the landlord of the territory, and who is personally responsible for the cotton plan, will appreciate this (Shtaltovna 2012). Entering into good relationships with the hakim opens many doors for manoeuvre in the rural economy for the farmer, such as receiving permission to grow commercial with higher gross margin than cotton, being allowed to establish a business, gaining access to the limited number of the state subsidised loans or other state programmes, and many more. Thus, this strong informal connection that appears between farmer and hakim has a big non-monetary value in framework of the state cotton economy. By maintaining the social capital that facilitates this kind of relationship a farmer can capitalize on various benefits accrued within that system. Thanks to this reciprocity, both hakim and farmer manage to make a living despite the state procurement system in Uzbekistan.

Another example is with labour costs. The

Figure 3: Cost-benefit analysis prepared by cotton growing farmers from Uzbekistan and Kazakhstan

Uzbekistan		Kazakhstan	
Income		**Income**	
Yield, ton/ha	2.6	Yield, ton/ha	2.9
Raw cotton price, USD/ton	409[i]	Raw cotton price, USD/ton	432.0
		Subsidy for cotton growing	118.8
Revenues, USD/ha	**1063.4**	**Revenues, USD/ha**	**1371.6**
Expenses	**USD/ha**	**Expenses**	**USD/ha**
Harrowing	19	Harrowing	32.4
Ploughing	58	Ploughing	54.0
Ploughing with hand tool	29	Irrigation	8.1
Rental/use of cultivator (8 times)	152	Rental/use of cultivator	40.5
Sowing	19	Sowing	10.8
Seeds	38	Seeds	16.2
Cutting (3 times)	57	Chisel plough	54.0
Purchase of fertilisers	143	Purchase of fertilisers	67.5
Defoliation	19	Defoliation	37.8
Weeding (5 times)	61	Weeding and plant protection	67.5
Hand harvesting	182	Hand harvesting	290.0
Transportation	29	Transportation	37.8
Other mechanical works	48	Other works	70.2
Income taxes	33	Taxes	14.0
Pension fund	15	**Total costs**	800.8
Social insurance	33	**Gross margin/profit**	570.8
Land tax	40		
Road fund	18		
School fund	6.5		
Labour costs	130		
Chemical plant protection	25		
Application of the biological methods of plant protection	25		
Expenses arising from attendance at meetings on the state procurement system (selector)[10] and different kinds of informal payments (i.e. organising lunch for the auditors from various state organisations, giving small tips to drivers and cotton quality laboratory, etc.)	10		
Bank charges	25		
Total costs	**1214.5**		
Gross margin/profit	**-151.1**		

i This calculation uses the national exchange rate for dollar to Sum: 2,100 Som per 1 USD. It is important to mention that the unofficial exchange rate is 30% higher than the official one.

minimum wage in Uzbekistan is 210,000 Uzbek Som/month. A farmer often needs around 20 families to cultivate his/her land. There are at least 90 people to whom she/he would have to pay a monthly salary. Given a shortage of cash (see Section 4), the land manager/farmer allocates 0.2 ha per family instead of the cash payment. In this way, she/he manages the problem of short-term cash shortage, ensures that cotton is growing to be able to fulfil his cotton quota; and while fulfilling the plan, she/he can enjoy flexibility offered by hakim (Hornidge et al. 2013; Shtaltovna et al. forthcoming). One more reason why we cannot look at the calculation purely in terms of nominal values is because it does not capture the labour costs of the cotton farmers in networking. As part of his or her participation in the state procurement system, an Uzbek farmer spends a considerable amount of time travelling to meetings organised by the state (so called 'Selector', Figure 3). Even outside the cotton growing season, Uzbek farmers must still attend these kinds of meetings. To make matters worse, informal fees associated with visits to selector are a unique burden for Uzbek farmers that are not present in Kazakhstan.

Last but not least, in case the farmer considers exiting the cotton economy, the tax office will audit the farmer, often finding missing payments of many of the fees listed above. This usually results in the accrual of additional debts to many state organisations (e.g. different kind of state taxes, etc). In case she/he cannot pay it (and this is usually the case), the farmer can be sent to prison. This is probably the main reason why many farmers decide to stay farmers despite its poor financial outlook and the other problems outlined in this study. This also explains why Uzbekistan's cotton economy has a large informal dimension. The numbers presented in the cost-benefit analysis above – while valid – therefore do not uncover the full complexity of Uzbekistan's state procurement system, but are nominally suggestive of the intricate pattern of formalities and informalities that often contradict a more efficiency-oriented functional differentiation.

Museum of cotton history. Southern Kazakhstan.
Photo: Anastasiya Shtaltovna

6 Uzbekistan's Cotton Sector: Scenarios for the future

In this section we will present a number of scenarios about the future of the cotton sector under different socio-political models, which were articulated by the farmers interviewed for this study. These are the cotton sector (a) under market conditions, (b) in the framework of a state procurement system, and (c) as a collective farming system.

Scenario 1: The cotton sector under market capitalist conditions

For an optimum market-based organisation of the cotton sector, the interviewed farmers recommend the following reforms be implemented:

1. The price of cotton should be based on the global market prices;
2. Farmers who grow cotton should be selected on the basis of a tender competition (involving only those who are willing to deliver the indicated amount of cotton at the given price);
3. State support (subsidies or loans with low interest rates) should be provided to the farmers selected, to cover loans, taxes, inputs, machinery and infrastructure;
4. The bureaucratic/state intervention into the farmer's business should be reduced to a minimum;
5. The seasonal nature of cotton growing should be taken into consideration (e.g. if every farmer needs a tractor at a similar time, the MTP should be prepared to provide it);
6. Agricultural service providers should provide services according to **contracts** signed with farmers. Payment up front for the service should be the standard. If one of the parties fails to fulfil the agreement, the case should be brought to the court. Generally, it should be ensured that contracts between farmers and the service providers are enforced;
7. There should be alternative sources of agricultural service providers and inputs; the farmer has to have freedom to decide where to purchase inputs;
8. The farmer must have access to cash;
9. The farmer should be allowed to be independent in his undertakings.

Scenario 2: The cotton sector under the state procurement system

For an optimum result under a state procurement system, the interviewed farmers propose for the following improvements:

1. There should always be a balance between the revenues and the expenses on average cotton farms. The key issue here is that the state purchasing price must be increased to match costs;
2. The state loan at 3% interest annual rate for cotton growing should be available for use by farmers in the ways they choose;
3. The farmer should be able to concentrate on his/her business (i.e. farming) and not burdened with additional demands, such as participating in meetings or learning complex laws and tax schemes governing agriculture;
4. The legal framework for agriculture should be improved and simplified;
5. Farmers should have better access to education;
6. A farmer must be an entrepreneur. He or she should not simply be given everything; rather, inputs for faming should be sold to him or her in order to increase independence and responsibility for one's farm. To accomplish this, the farmer's status has to be adjusted;
7. State intervention into farmers' affairs should be reduced, both by state representatives and agricultural service providers.

A point repeated argued for was that farmers, if given more competitive purchasing prices for cotton and other reasonable incentives, would be motivated to act more like entrepreneurs and be willing meet state cotton plans.

Scenario 3: The cotton sector as a cooperative farming system

The third scenario is similar to the Soviet collective farm model and, in some important ways, to the cooperative model in Kazakhstan presented in Figure 1. Approaching this scenario, the interviewed farmers presented the following conditions as determining factors in the functioning of such a system:

1. All farmers must be shareholders; thus, all must have a stake in the efficient functioning of the cooperative farm;
2. The cooperative farm should be governed by stakeholder meetings and a stakeholder council;
3. At the initial stage, when the cooperative has just been established, there should be state subsidies for inputs (water, electricity, etc.) and a long-term loan (to purchase machinery, construction work, etc.). State support should be provided to the cooperative farm for an initial 2-3 years, or until the farm becomes independent and self-sufficient.
4. Every family is to be responsible for a certain number of hectares, depending on their capacity and degree of entrepreneurship;
5. Through shared ownership, a cooperative will have sufficient machinery that it can diversify its activities. It can grow crops on irrigated lands, manage pasture lands, and generally maintain fields where workers could grow staple crops; it would have its own bio-lab, storage capacities and capacity to preliminarily process cotton;
6. The cooperative independently decides where to sell its produce. It can be sold on the open market or based on the contract with the clients/agents from inside or outside Uzbekistan;
7. Should the cooperative profit, it would pay taxes to the state, partially for the purpose of repaying infrastructure, inputs and water provided;
8. The payment can be made either in cash or in-kind, depending on what the farmer prefers; payment is based on the shares held by each of the shareholders;

Regardless of which scenario, the farmers agreed that the following conditions needed to be changed in order to improve the current agricultural system:

- Bureaucratic and state intervention into the farmer's business must be reduced to a minimum. This includes tackling rent seeking and organising visits for any state representatives at the expense of farmers and agricultural service providers;
- The state apparatus/bureaucracy needs to be reformed/reorganised;
- Prices for cotton must be increased and transparency in regard to cotton policy to be strengthened;
- Alternative agricultural service providers are needed;
- Cooperation amongst farmers and agricultural service organisations must be based on a strictly enforced contract;
- Farmers should be made into entrepreneurs: a farmer should ideally be a career agriculturalist;
- Conditions should be created under which different models of cotton growing (similar to the three scenarios presented) can coexist, resembling the situation in Kazakhstan.

Intensive group work[17] helped illustrate that farmers are sceptical about radical changes in agriculture, arguing instead for adjustments to the current system, such as those outlined above. This is in line with calls for fostering locally contextualised transformation processes (e.g. Kollmorgen 2011). In particular, adjustments are needed for the purpose of limiting state intervention into farmer's business and cracking down on corruption by state employees or state-affiliated service providers. As one farmer has described:

'The state does not have to deal with everything; rather it should create favourable conditions for producers, regarding laws, pricing, and availability of energy, taxes, access to energy and water' (Uzbek farmer, Southern Kazakhstan, 2013).

17 This group consisted of six farmers.

If farmers did not have to deal with the state inspections and participate in the meetings, if they were the owners of their businesses and could decide what to grow, while in the background the state created favourable conditions for the work itself, the farmer could both fulfil the demands of the state and make a profit. How likely these reforms are under the given system, which is designed to create revenues for state elites rather than individual farmers, remains to be seen.

'The farmer does not need much. Give him a piece of land, and he will decide by himself what to grow; give some financial support/ provide the right conditions and, at the end of the year, the farmer will provide a financial report. That's it. If meat and potatoes were produced under the state plan, the market would be empty (now it is the opposite). In other branches of agriculture, everything is very good (e.g. apples, potatoes, onions, etc.), but not in cotton production under the state plan!' (Uzbek farmer 2013).

Last but not least, due to strict state control present in the current agricultural system in Uzbekistan, Uzbek farmers have been compelled to demonstrate creativity (especially in coming up with ways to survive under the circumstances). Moreover, they are extremely hard-working. Kazakh farmers testified to this frequently. As one Kazakh farmer has expressed it:

'If they (Uzbek farmers) had the freedom, they would take us over very fast and they would do much better than we are doing' (Kazakh farmer, Southern Kazakhstan, 2013).

7 Concluding remarks and recommendations

This section summarises the findings of the paper and provides some practical recommendations for improving the cotton sector in the two countries, with a focus on Uzbekistan.

The cotton industry in Uzbekistan and Kazakhstan: Summary of findings

Both countries, Uzbekistan and Kazakhstan, are undergoing substantial socio-economic transformation processes that influence the organisation of cotton production. While in Kazakhstan, investments into the oil and gas sector stand at the centre of government and corporate attention due to the revenue they create, in Uzbekistan cotton continues to be responsible for a significant part of export-based government revenues. Consequently, government control over the cotton sector has largely been eliminated in Kazakhstan, while in Uzbekistan, it has been maintained through the state procurement system. Rather than using market-based incentive schemes to regulate production, there is instead a state plan for cotton (and wheat), which regulates what, where, how and when to plant (e.g. when and how to irrigate), and which specifies the sale of raw material exclusively to the state at fixed prices. As long as centralised state rule remains dominant in Uzbekistan, the hands of agricultural producers will remain tied by the state procurement system, which persists despite the purported privatisation of farmers and claims that the country is moving towards a market economy. Structured by ongoing agrarian change and the state procurement system, many service providers and most state organisations at the regional and district levels can be regarded as instruments of state regulation, as well as the creators of the incentive structure meant to facilitate and enhance agricultural production. Consequently, the situation of service providers, like that of farmers, will not change fundamentally (for the better or worse) as long as the state procurement system is in place.

Taking a close look at the cotton growing systems, the main differences between both countries are:

Degree of importance of cotton in each country: Incentives for cotton farmers and the level of independence of farmers differ in the two countries in direct relation to the relative importance of cotton to the respective economy. In Uzbekistan, the centralised state rule remains dominant, resulting in farmers being compelled to implement the state plan with little of the dynamism and entrepreneurial spirit that would allow for a further development of the system on a basis of local realities. Instead, farmers seem to be kept in a situation of dependence under the state plan, neither participating in the planning of agricultural production nor reaping its profits, but merely implementing the production process itself. In comparison to the Uzbek situation, the Kazakh system that has largely eliminated state control over cotton production creates space for local and locally adapted decision-making and provides an avenue for farmers to develop.

Access to agricultural services and inputs: Agricultural input provision in Uzbekistan is organised on the basis of the former Soviet agricultural service organisations. Despite the reforms in Uzbekistan, the contribution of agricultural service organisations has been deficient and many of them are on the brink of bankruptcy. This has been caused by the decline in state support after the end of the Soviet Union, leaving indebted farmers unable to pay for services, poor provision of inputs, inability to renew hardware such as agricultural machinery and equipment, under-developed market infrastructure in rural areas, poorly managed agricultural service organisations, lack of access to sufficient credit facilities, and a lack of knowledge about how to work in a changing and increasingly market-oriented environment. The most apparent challenge with the most important agricultural service organisations revolves around their having monopoly power for inputs and farmers not having access to cash that would allow them to independently decide where to buy which product; as a result, farmer dependence on these organisations is high.

Currently three *categories of agricultural service providers can be distinguished in Uzbekistan:* the first category is *state-affiliated service providers* (i.e. the Fertiliser Company, fuel supply (Neftebasa), cotton gins, wheat gins and banks). This type of organisation is of strong economic interest to the state and remains under constant state monitoring. The second category includes *state-ignored service providers* (private bio-labs, western input suppliers (e.g. Ifoda), veterinary services, and other more rare services for animal husbandry and horticulture). These organisations are of little economic interest to the state since the services offered by this type of organisation are not required by farmers who cultivate cotton and wheat. As a result, they are more market-oriented and self-driven. The last category includes *state-neglected service providers* and encompasses (alternative) machine tractor parks, quasi-state bio-labs, water consumer associations, farmer's associations (i.e. information & consulting service). These service providers are generally in the process of transition from being state-affiliated service providers to becoming state-ignored service providers. This type of organisation nonetheless remains vital for all agricultural production systems. Due to the transition process, state-neglected service organisations are withering away since the state has (gradually) reduced support. The way in which these organisations have come to be characterised into the three types is suggestive of the way the state has strategically engaged the agricultural sector in Uzbekistan.

The state-affiliated and state-neglected service providers, as well as most state organisations at the regional and district levels, can be regarded as *state agents of regulation and incentive-making*, established to facilitate and enhance agricultural production along state-set guidelines. As a result of the multiple roles that agricultural service providers have continued to play in society during the transition, they are often torn between differing expectations of the state and society and often fail to evolve as institutional units. In contrast to this, in Kazakhstan there are governmental subsidies for the inputs, but their access and deployment is competitive, such that farmers are free to decide which inputs to invest in.

Given that many present day farmers in both countries have little experience in agriculture under a non-socialist system[18]; *agricultural advisory services* (i.e. the provision of agricultural expertise, advice and knowledge) would be of core importance in facilitating the transition in agricultural production. In Kazakhstan, there have been attempts by the government to establish agricultural advisory services (e.g. KazAgroInnovatia). However, they are not yet fully accessible to farmers due to the minimal capacity of farmers to pay. In Uzbekistan, agricultural consultations are provided by agricultural service organisations strictly as a part of the state procurement system.

Access to cash and profit: Kazakh cotton farmers have access to several credit schemes offered by commercial banks, as well as to the profit derived from their work. This situation differs markedly from the situation of the Uzbek cotton farmer, in which loans are approved only for predefined purposes, i.e. for buying seeds, fertilisers, paying for cultivation, etc. The funds are deducted directly from the farmers' accounts once the inputs have been provided. The farmer him/herself nevertheless cannot access his/her account and decide how and where to allocate the money. Once the cotton is sold (which often takes months), the amount paid by the state is transferred into the farmers' accounts, from which payments have to be made for all the debts accumulated in the previous production cycle (see Figure 3). Consequently, the farmer hardly has any access to capital and the profits derived from his/her work, and is unlikely to be in a position to invest into their farm enterprises.

Labour for cotton harvest: In Uzbekistan, labour for the cotton harvest is allocated by coercively mobilising the entire society during the harvesting season. This is done through enforcement rather than through economic incentives. In Kazakhstan, in contrast, cotton harvesting is a wage-labour market open to migrants from within and outside of Kazakhstan. The wage for hand picked cotton is higher in Kazakhstan than in Uzbekistan, which attracts a lot of migrant workers especially from Uzbekistan and Tajikistan.

The cotton ginning sector: In contrast to the 22 cotton gins operating in Kazakhstan, which allow for some price negotiations, in Uzbekistan, one state cotton company called 'Uzpakhatsanoat' monopolises the sector. It purchases all cotton-produce from farmers at a fixed price and there is neither space for price negotiation, nor choice for the Uzbek farmers about where to sell cotton.

Recommendations for improving the cotton sectors of Kazakhstan and Uzbekistan

For Kazakhstan and Uzbekistan

Improving communication between farmers and the state: As many services are state-supported in both countries, it is important to improve the system of feedback and to establish bottom-up communication channels between producers and the state. In general, improvement of communication and feedback mechanism between centre and provinces should be encouraged. Especially in Uzbekistan, old Soviet methods like interacting with the selector, conducting numerous inspections and requiring attendance at many meetings for the state procurement system can be adjusted by reducing unnecessary pressure, increasing the efficiency of inspections and identifying and solving problems that farmers and agricultural service providers really face when producing for a state procurement system. For example, instead of top-down meetings and dealing with the selector, an efficient agricultural advisory system could help farmers to obtain needed advice on farming or inputs.

Knowledge and innovation channels for agricultural producers: There is a need for the improvement of the old, or establishment of new, channels of agricultural knowledge, innovation in production and experience sharing. Contemporarily, knowledge is scarce and often found in unexpected places. Many farmers have invented ways to adapt to the challenges presented by the political transition because there was otherwise no training provided about how to get along in a changing environment. Establishing agricultural advisory services would help meet the needs of different types of farmers. They would, among other services, provide consultations, connect farmers to input suppliers, inform farmers about selling opportunities, help farmers compile business plans, and train farmers in accounting.

18 Moreover, farmers in Uzbekistan who were formerly medical doctors, teachers, etc. have little experience in agriculture.

Farmer's associations: Existing farmer's associations in both countries are inactive and do not represent the interests of farmers. These associations (e.g. the farmer and dekhan association in Uzbekistan) were created in a top-down manner and have hardly played a role in promoting farmers' interests. This aspect of the post-Soviet syndrome can be observed clearly in other former Soviet regions (e.g. Ukraine, Caucasus and Central Asia). This is overshadowed by the positive experiences with farmer's associations in agricultural development in Belgium, the Netherlands and other industrially developed countries. It has been shown that they consistently play crucial roles in helping farmers gain recognition as a sector and in lobbying in their interest at the national level (Kalna-Dubinyuk & Stanley 2005; Shtaltovna 2013). This research suggests that farmer's associations organised from the bottom-up, which receive some support from the state but are not overly controlled or influenced by it, are likely to contribute to the wellbeing of agricultural producers while establishing farmers as an important segment of the economy in the post-socialist Central Asian republics.

Diversification of cropping structure: Due to the high level of water consumption, worn-out irrigation systems, increasingly severe environmental impacts (especially salination) in the cotton sector, in addition to the high price volatility of cotton, the two countries should slowly move away from cotton monoculture production towards diversification with other crops like fruits (e.g. melons and watermelons) and vegetables. For these crops, there is a consistently high market demand as well as higher profit potential for the actual producers. Additionally, crop rotation should take place regularly. For Uzbekistan, soil quality should be evaluated in order to more knowledgeably decide what is best to grow where.

On-site cotton processing: Additional processing of cotton on site would bring more profit, employment and economic growth to cotton-growing areas. This is slowly becoming the case in both countries. The same recommendation would apply to fruit and vegetable production.

For Uzbekistan

State intervention into the farmers' affairs should be reduced to a minimum: More decision-making rights should be granted to farmers. The bureaucratic system in Uzbekistan should go through a reorganisation process with a number of goals. Some of these involve the tackling of petty corruption and freeing farmers and service providers from organising visits for any state representatives at their own expenses. This also includes facilitating the professionalisation of the bureaucracy, and increasing civil servant salaries. Employees of the state should be proud of their work and view their job as a national service. To accomplish this, civil service should be rebranded to encourage the best people to join and work for the government.

Prices for cotton must be increased and transparency strengthened: The price paid by the state to farmers should be market dependent (i.e. non-fixed), in order to more clearly allow market incentives to guide production decisions about cotton or other crops. Although it may seem simple, payments for cotton must be made on-time.

Access to cash and profit: The farmer must be able to access his profit and withdraw cash, so as to be able to make transactions more flexibly.

Simplification of the tax system for Uzbek farmers: Based on the cost-benefit analysis of a number of farmers, the many different taxes that Uzbek farmers have to pay appears burdensome. Given that many farmers have little experience in being a farmer and even less skill in accounting, either the tax system should be simplified substantially or assistance should be provided to the farmers (e.g. through extension services) so that they can also benefit from the taxes they pay to the state.

A need for alternative agricultural service providers: There is a need for monopoly busting and for providing competition in services supply in Uzbekistan. The system of private provision of agricultural services as is Kazakhstan could be an example of how to organise agricultural service provision in Uzbekistan. Indeed, the concept of 'integrated service provision' through public-private partnerships (PPPs) has been shown to be successful elsewhere, as long as PPPs are of high quality and located close to farmers (Mandel and Humphrey 2002). Linking service provision with extension, as is done in Kyrgyzstan and Tajikistan, would be a step in the right direction.

Transactions between farmers and agricultural service organisations must be based on strict contractual relations rather than on the type of informal relationships currently prevailing in the system.

In Uzbekistan, both farmers and agricultural service providers have little experience in running a business independently since they have never experienced a true market environment. Being organised in the particular way it is now, the state agricultural system contributes to the centralised wealth among Uzbekistan's elites. As a result, the country fails to extricate itself from excessive rules, especially informal ones, that reigned during the Soviet times. One result is that the majority of the service providers and farmers have had a difficult time moving ahead and developing themselves in a market economy.

Turning agricultural producers into entrepreneurs: Farmers should be qualified in agriculture and farm management, which is not the case now, as land has been distributed to those with little agricultural background or simply to those with the right connections (e.g. the brother of the local governor). To improve agricultural production, both farmers and agricultural service providers need training. Areas of skill development include: how to run a business in an evolving and increasingly market-oriented environment, how to deal with financial documentation and accounting, how to obtain a loan from the bank, how to benefit from state incentives (e.g. subsidies for infrastructure development, decreased taxes), and how to attract donor organisations that can help support small businesses and private initiatives.

Secure land rights: Farmland is state property and land use rights are not secured. Events such as the consolidation of farmland in 2008 and 2011 negatively affect risk proclivity and innovativeness. Many farmers suspect another round of land consolidation will come, which even as a rumour already discourages individual investments into land. Assuring land rights and leases is therefore crucial for increasing the willingness of farmers to implement long-term land and water-use planning.

Loosen norms for irrigation: In order to secure the natural resource base in Uzbekistan, reducing water losses and increasing water use efficiency is critical. In order to be in a position to improve the coverage of irrigation systems and efficiency of irrigation and to be able to react to changing environments (especially to increasing variability of water supply in the future), changes are necessary that may challenge the agricultural norms (especially in regard to ploughing if practicing conservation agriculture). To allow farmers to practice water-saving, the norms therefore need to be loosened and presented as benchmarks. Further, non-compliance that is justified in some way should be possible without sanctioning.

Favourable conditions should be created, wherein different models of cotton growing (similar to the three scenarios presented above) can coexist, in a similar fashion to the experience in neighbouring Kazakhstan.

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9 Annex

Programme of workshop for Uzbek and Kazakh farmers to share experiences in cotton growing

Day 1	
16:00	Arrival of Uzbek participants Meeting other participants, dinner
Day 2	
10:00	Arrival of Kazakh participants
10:15	Welcome, introduction, expectations of the participants
11:30-13:30	Presentations and plenary discussions on the themes: Experience of Uzbek and Kazakh farmers in • Receiving a bank loan for cotton growing • Preparation of land (machinery services, agricultural advisory services, etc.) • Land cultivation (farmers' experiences in receiving fertilisers and other inputs; farmers' relations with input providers) • Post-harvest operations (gins, transportation, marketing, export, harvest, and hired labour for harvest)
11:30-12:00	Coffee break
12:00-13:00	Continuation of the previous session
13:30-14:30	Lunch
14:40-16:00	Group work (each group consists of participants of both countries) **Group 1:** Cost-benefit Analysis of cotton growing in Kazakhstan **Group 2:** Cost-benefit Analysis of cotton growing in Uzbekistan
16:00-16:15	Coffee break
16:15-17:30	Continuation of the previous session Presentation of results of the group work Discussion: what works better in Uzbekistan and what in Kazakhstan? Why?
18:00	Dinner
19:00	Departure of Kazakh participants
Day 3	
09:00-10:00	Discussion by Uzbek participants of the Kazakh experience: what can we learn from the Kazakh cotton sector?
10:00-10:30	Coffee break
10:30-11:30	Group work **Group 1:** How should the Uzbek cotton sector look in context of a state procurement system? **Group 2:** How should the Uzbek cotton sector look in context of a market economy?
11:30-13:00	Presentation of the results of the group work Concluding discussion
13:00-14:00	Lunch
14:30	Departure of Uzbek participants

Photographs
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