Dryland Pastoral Systems in Transition: What are the Options for Institutional Change in Uzbekistan?

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Abstract

Within the last two decades, 40% of rangelands in Uzbekistan have been taken out of use due to non-functioning water facilities and pasture degradation. A retrospective study of rangeland production system development in the former Soviet Union (FSU) shows that the pasture land was used more productively, socio-economic benefits were created in rural areas, and land degradation was effectively addressed. Considering that pasture lands are a common-pool resource, which – following the current discourse – might be best used by local communities, the question arises as to how the highly centralized Soviet system was able to achieve a very productive use. The historical analysis presented in this paper shows that this was achieved by means of (a) making intensive use of agricultural research on the one hand, and (b) setting-up an effective institutional structure, on the other. This paper aims at highlighting the role of agricultural research as well as institutional mechanism that allowed Soviets to manage common-pool resources productively, taking into account the political incentives to make such a system work. The paper also asks the question why lessons from the past were not derived to move the current transition reforms for the pastoral system in a direction that allows for a sustainable and productive use of this system. To better understand the current trends of change in dryland pastoral systems in a broader context of institutional reform, the current transition reforms and potential institutional options are discussed from a political economy perspective. Based on this approach, alternative options are derived for the further development of the rangeland production systems.

Keywords: Agricultural research, Grounded Theory, Pastoral degradation, Political economy, Transition reforms in Uzbekistan.

1 Introduction

Natural rangelands of Uzbekistan occupy 23 million ha - nearly half of its geographic territory, and supply over 30% of the country's meat output, 60% wool, and also provide food and shelter for more than 2 million rural people. Over 40% of dryland pastures in Uzbekistan are currently being degraded and have reached different levels of degradation (AHMEDOV *et al*, 2009; MAHMUDOV, 2011). These areas are characterized by 25-30% lower yields, by livestock mismanagement and overgrazing, by soil erosion and desertification, by water salinity, and by obsolete infrastructure (AHMEDOV *et al*, 2009). Pastoral degradation in Uzbekistan has far-reaching implications for incomes of rural households, for regional food security and for the soil carbon balance. As the historical analysis presented in this paper shows, scientific methods and institutional structures applied in animal production during the period of the former Soviet Union (FSU) had resulted in a better management of dryland resources and higher animal productivity, whereas land degradation issues were tackled at regional scales much more effectively than are now (HOLLAND, 2010).

In spite of these facts, there is a strong focus in the current transition studies literature on arable farming reforms in Uzbekistan, whereas the challenges of pastoral systems in the transition period have not received much attention. The role of agricultural research has also been neglected in the current discourse on the common-pool resource (CPR) governance (*see Section 2*). This paper aims at addressing these gaps by analyzing the role of agricultural research in designing pastoral system management within the former Soviet regime, and at explaining why the former system was rather successful in managing pasture lands fairly sustainably on a large scale, why its organizational and institutional elements collapsed during the current transition

period, and why alternative institutional arrangements that allow for a sustainable management of pasture resources have not been established, so far. To answer these questions, this paper combines a political economy approach with the institutional theory of common-pool resource management. The empirical evidence presented here was collected by using a Grounded Theory approach from two case-studies in dryland pastoral areas of Uzbekistan (*see Section 3*).

This paper proceeds as follows: Section 2 presents the analytical framework and Section 3 the research methodology. Section 4 highlights the major results of the study, including the role of agricultural research and organizational/institutional mechanisms in the former Soviet pastoral production systems. The next sections present transition period reforms, discusses political economy determinants, and derives potential options for alternative institutional reforms.

2 Analytical Framework

The analytical framework presented below is based on the following building blocks: The theory of common-pool resources and property rights, the economic theory of innovation which focuses on the role of agricultural research, and the political economy perspective. These conceptual blocks in conjunction with institutional/organizational support are considered as key determinants to design a certain pastoral management practices that may lead to different productivity outcomes.

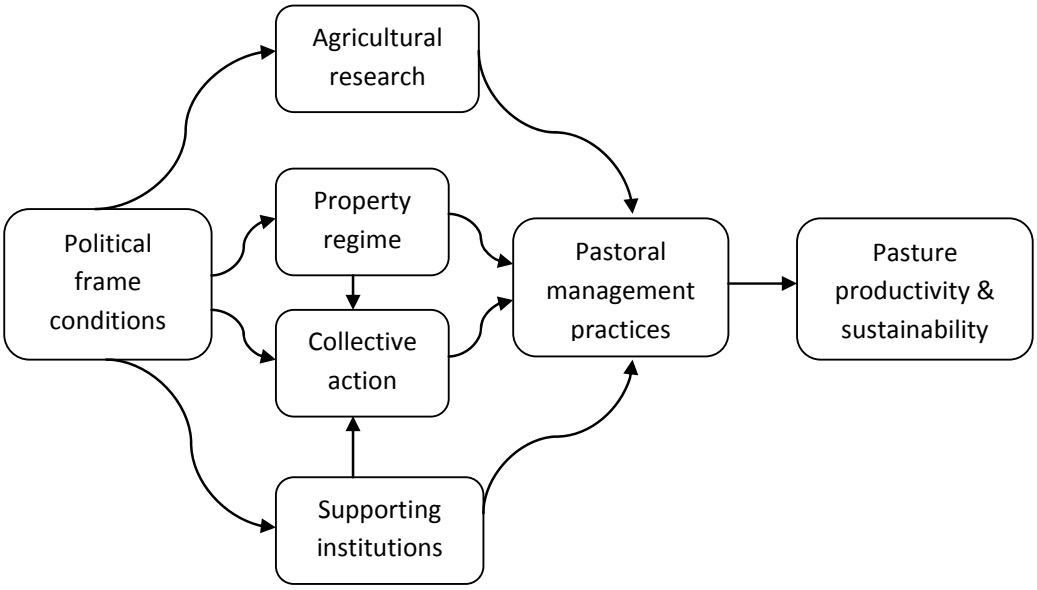

Figure 1. Conceptual Framework.
Source: Authors

Common-pool resources (CPRs): Rangelands, among other natural resources such as forests, ground waters aquifers, fisheries etc., are classified as a CPR. Scholars distinguish between *characteristics* of those resources and type of *property-rights regime* in which these resources are held and managed (NATIONAL RESEARCH COUNCIL, 1986). There are two basic characteristics that define CPRs: (1) *Non-excludability:* The physical nature of the resource makes it difficult, that is virtually impossible or extremely costly, to control access by potential beneficiaries; and (2) *Subtractability:* The level of exploitation by one user does adversely affect the ability of another user to exploit the resource, thus subtracting from the welfare of other users (Ostrom, 2010). Scholars typically distinguish four basic categories of property-right regimes in

which land and other natural resources can be held: *private property,*[1] *state property, communal property,* and *open access*. In practice, many CPRs are governed by overlapping, and even conflicting combinations of these regimes (FEENY *et al*, 1990; OSTROM, 2010). From a CPR perspective, property rights are important to make decisions concerning access to the resource and the level of its exploitation. However, the property rights regime alone might not be sufficient to draw conclusions about behavior of resource users and consequences. This is why one has to explore a whole diversity of institutional arrangements governing access to and use of resources (FEENY *et al*, 1990).

Property rights dilemma in CPR management: For the last half century scholars attempted to define a type of property rights regime which could govern and preserve CPR sustainably - be it held under private, common or public regimes. Earlier proponents of the private property rights regime, such as GARRETT HARDIN (1968), argued that there were only two alternatives to manage CPR successfully and to avoid a 'tragedy of the commons' – *privatizing the resources,* or turning them into *state property*. A state regime for CPRs was seen as efficient only under external control systems, such as *"iron government"* or military state regime (OSTROM, 1990: p.9), and was neglected from most of the empirical studies. The main focus of the empirical literature was motivated by ELINOR OSTROM's seminal book "Governing the Commons" (1990), which identified the conditions under which local communities are able to manage resources sustainably. This book and the large body of literature that it stimulated changed the paradigm that only state management or privatization were the only solution to the "Tragedy of the Commons", which – as this literature emphasized – was rather a "Tragedy of Open Access." A more recent shift in the literature on CPR governance is the concept of *collaborative management* (also referred as co-management), whereby some CPRs can be managed by collective efforts of the actors and stakeholders from different levels (BERKES, 2009).

The practice of development projects that aimed to implement community-based management and co-management showed that realizing the promise of these management regimes is not so easy. Such projects often suffer from elite capture, clientelism, corruption, exclusion and other challenges embedded in the community (MANSURI & RAO, 2004; BIRNER, 2008; WORLD BANK, 2008). FEENY *et al.* (1990) concluded that one has to look at specific incentives that owners and managers face in allocating the resources under their control. One can conclude from this literature that sustainable CPR management requires further in-depth study. Natural field settings, social heterogeneity and institutional diversity should make it possible to analyze the multiple factors that play a role in determining the success, or failure of CPR management (MANSURI & RAO, 2004; OSTROM, 2010). Each of the three sectors – private, public, civil - has its own advantages and challenges, hence checks and balances between the three sectors might play an important role in achieving sustainability (BIRNER and GUNAWEERA, 2002). The literature also suggests that one has to identify institutional structures that would fit best to certain community settings in particular socio-ecological conditions, rather than promoting a "one-size-fits-all" approach.

The role of agricultural research in CPR governance: Bringing the fragile vast rangelands of Central Asia under productive use required substantial innovations in pasture and water management, which would not have been possible without major advances in agricultural research. While the economic theory of induced innovation has emphasized this factor (HAYAMI and RUTTAN, 1985), the literature on CPRs and the literature on the transition economies have both largely neglected this factor. This is rather surprising as support for research and technological development was a key priority principle of both agricultural development and industrialization in the FSU (GREGORY, 2008). The historical analysis presented in this paper

[1] Turning CPRs into private property requires the possibility to establish a functioning system of exclusion, either through physical means (e.g., fencing), or by allocating exclusive rights to the resource (e.g., grazing rights).

demonstrates how important the results of agricultural research were for the use of pastoral resources, and how consistently they were utilized in the political decision-making of the Soviet Politburo in pastoral sector development. In combination with the political economy factors outlined below, the Soviets were able to use agricultural research effectively to achieve a fairly successful management of CPRs at a massive regional scale—throughout Central Asia.

The political economy perspective: Taking a political economy perspective is essential to understand why the former Soviet regime was fairly successful in managing pastoral resources, why the system collapsed and why alternative institutional arrangements for sustainable management have not been established, so far. CPR theory would suggest that the highly centralized state management of CPRs during the Soviet period should have been unsustainable and ineffective, whereas the political change should have created good conditions for a successful management of the CPRs by local pastoral communities. However, the evolution of pasture management in in Uzbekistan, as indicated in the introduction, was almost exactly the opposite. This study employs a political economy perspective to resolve this contradiction. The term "political economy" is used here to refer to an analysis that studies the linkages between politics and economics, drawing on theories of economics, law as well as political and social sciences (WORLD BANK, 2008b). This perspective provides a broader understanding about conditions under which various configurations of political actors and institutions can curb incentives and, as a result, advance or hinder a reform agenda (CORDUNEANU-HUCI *et al.*, 2013). The analytical building blocks used here are principal-agent relationships, information asymmetry, and credible commitment (*ibid*). The approach used here also looks at key actors and policy decision-making within political parties, bureaucracies, interest groups, and others. The general analytical question put forward in the political economy theory is the following (CORDUNEANU-HUCI *et al.*, 2013): *How do political and economic factors as well as institutions related to development affect political outcomes?* In contrast to a rational-choice perspective, a power-based perspective on the political economy, as used here, facilitates an analysis of how factors constitute risks or opportunities for country-driven change. This perspective helps to answer questions of who wins and who loses from particular reforms, and to understand what is the driving force of transformation, and finally, to explore how political interests surround reform decisions (WORLD BANK, 2008b).

3 Methodology

General approach: This research involves qualitative research techniques with the *Grounded Theory* approach playing a central role. From a methodological perspective it is categorised as an *inductive reasoning* study. The Grounded Theory is the constant comparative method of data collection and analysis, it helps to discover a theory from systematically obtained and analyzed data (CHARMAZ, 2010). Design of the theoretical framework in Grounded Theory approach obtained from the constant reading of relevant literature, empirical data collection, systematic generating of evidence-based categories, theoretical sampling, building analytical blocks, as well as by developing abstract concepts. This approach entails open frame of inquiry for the theory, which is why a conceptual framework is built in a 'bottom-up' manner in the last stage.

Data sources: Primary data were gathered primarily from interviews with community-level actors (e.g. shepherds, households, peasants, service providers, farmers), and externally from meso- and macro-level stakeholders: local- and national-level agencies, international development programs, national and international research institutions. The *Theoretical Sampling*[2] method was used to select relevant respondents and data sources. The secondary data

[2] As described by KATHY CHARMAZ (2010: p.96), *theoretical sampling* is a type of purposeful sampling, which has been developed in the context of the Grounded Theory. According to this sampling method, the sample size is not predetermined. After starting with initial cases, the sample is extended with the goal to develop the categories, that

was collected from scientific articles, official reports, project documents, administrative papers etc. It was used to grasp historical background of soviet's research works and scientific experiments in the dryland pastoral areas.

Empirical data collection tools:

- Individual in-depth interviews were used formally and informally to grasp data on opinions, perceptions and attitudes towards past structures functioned in the pastoral livestock system and the current institutional and administrative settings in pasture production. It was also used to collect opinion and feelings about aspects of climate change in the study areas. In total, 54 interviews were carried out, including 16 interviews with national-level respondents, and 38 interviews with community-level actors;
- The focus group discussions were applied to facilitate active communication and discussion with pasture user groups and to cross-check data from interviews about institutional and organizational transformation, and to get evidence of collective action practices by local land users in pastoral management. Seven focus group discussions were conducted;
- Process-influence net maps were used to visualize influential networks of actors in pasture management, to visualize financial, executive and administrative flows within and between national- and local-level organizations, agents, resource users, producers, and their social interactions. Ten participatory mapping sessions were facilitated;
- Participant observation was used to compare and check collected 'soft' data about pasture system management, as well as to get better insights on collective action elements of the local land user groups, and to observe conditions of degraded and better maintained rangelands in the field settings.

Field data were collected from two case-study villages from July to October, 2012. Four weeks in between were used to meet and to gather information from national-level respondents. Six weeks were spent in each case-study areas to collect relevant field data. Selected case-studies represent degraded pastures, and control groups represent better maintained grasslands. The Theoretical Sampling was used to select these study areas with the purpose of contrasting two different outcomes (degraded and well maintained categories) of management practices and institutional settings both within the same socio-environmental conditions. Case studies represent the territory of Karakul sheep production shirkat farms with degraded pastures. Selected control groups represent well maintained protected territories of the Forestry Department, which leases pastures seasonally to the local livestock owners. The first study area, with treatment and control groups, is located in *Madaniyat* rural settlement in *Karnabchul* steppe of *Navoi* region, Uzbekistan. The second field study groups located in *Ortaqishloq* settlement in *Forish* district, *Jizzakh* region. The study areas were selected according to representativeness of pastoral vegetation and soil characteristics in drylands. Accordingly, one study area was selected in semi-desert pastures and the second one in desert areas.

4 Results

4.1 Contribution of Agricultural Research in Development of Dryland Pastoral Systems

The review of archive materials' shows that in early 1920s the Soviet Politburo initiated land reclamation and expansion of agriculture production in form of a campaign in newly joined states. Groups of highly qualified soviet scientists from Moscow and Leningrad were sent to study Central Asian traditional agriculture (NECHAEVA *et al*, 1943). In the drylands, the initial research phase (1920-1925) included a geographical study of desert and semi-desert territories, a

is the building blocks, of the theory. For this purpose, additional cases selected that serve to test to what extent the emerging theory holds under contrasting conditions, or whether new categories have to be included to explain the phenomenon under consideration. The sample is considered to be saturated if additional contrasting cases do not yield additional insights for the development of the theory.

general inventory of rangeland areas, of its water sources and an analysis of soil physical features. This then led to extended studies and reclamation of rangelands in the period from 1925-1940, which included: (a) Botanical analysis and mapping of local plants; (b) groundwater mapping, including mineralization, water-table, and carrying capacity; and (c) testing optimal utilization of distant rangelands (GAEVSKAYA & SALMANOV, 1975). Traditional nomadic practices were also found useful in accessing distant pastures, in setting up seasonal rotation schemes, and identifying grazing techniques, water harvesting and natural desalinization techniques (UNDP/GM, 2007). The *long-term stability* of fragile desert ecosystem and *extensive animal production in drylands* were the main fundamental principles of dryland reclamation (MOROZOVA, 1946). *Pastoral biomass* and *water quality* were identified as the main criteria for setting an effective pasture rotation schemes (NECHAEVA *et al*, 1943). Based on sound scientific evidence that was created with substantial efforts over decades, the scientists were able to develop a large-scale livestock production schemes for over 20 million ha in drylands of Soviet Uzbekistan (KHUDAYBERDYEV, 1976).

As the designers of the pastoral production systems understood the fundamental problem of risk, a range of pastoral risk reduction mechanisms were introduced: housing, animal shelters, and water and fodder storage facilities were designed to reduce production losses in cold seasons. Meteorological stations were installed in districts all over the territory, and radios communicated unfavorable weather conditions. Plant phyto-melioration and afforestation methods were introduced to reduce desertification and to rehabilitate degraded pastoral areas (GAEVSKAYA & KRASNOPOLIN, 1957).

Materials from archives show that the results of in-depth research by Soviet scientists were instrumental to provide evidence on high potential of pastoral livestock production system and to encourage a massive Soviet investment programs in the drylands of Central Asia, the Caucasus, and Siberia (NECHAEVA *et al*, 1943; FEDOROVICH, 1950). From 1920 to mid-1960s, in spite of the World War II period, all 23 million ha rangeland areas of Uzbekistan were fully utilized, and the number of *Karakul* sheep reached from about 1 million to 6 million heads, respectively, which was considered to be the maximum grazing capacity for the given territory (KHUDAYBERDYEV, 1976). Studies reported that the primary cost of pastoral livestock production was 50% lower, labor costs were 30% lower, and animal maintenance was 40% less costly than in those parts of the USSR that had sedentary livestock production (BABAEV, 1977).

4.2 Role of Soviet Institutional and Organizational Structures in Rural Development

According to interview information on historical perspectives a number of public services, infrastructure facilities and production units were established based on the Soviet scientists' long-term studies in drylands to scale-up pastoral production from 1930s to 1960s (see Table 1 below). Large-scale *Kolhoz* and *Sovhoz* farms were administratively designed as rural towns with associated agro-production, social infrastructure and rural services attached to each territory (SWINNEN & ROZELLE, 2006). Massive financial and political support for rural industrialization in the USSR led to livelihood improvements in rural areas (RAZZAKOV, 2009). For example, as archive materials indicate, the infrastructure construction investment programs of early collectivization period (1930-1945) included provision of the following to all state farms: production warehouses; rural housing buildings; groundwater wells, irrigation canals, water reservoirs, pumping stations and communal water networks; roads, equipment and tractor machinery; networks of electricity and gas supply systems etc. (MOROZOVA, 1946). Archive records also show that further development efforts in rural areas after 1945 established other social infrastructure and services, especially in remote rural settlements: health-care clinics, primary schools and professional colleges; transport and postal communication; pharmacy, bakery and grocery stores; veterinary offices and research stations (UNDP/GM, 2007). Brezhnev's campaign program on 'Entire villages' electricity supply' in Soviet Uzbekistan was fully accomplished in all rural areas by the end of 1950s (RAZZAKOV, 2009).

Table 1: Institutions and services established for pastoral system development in the FSU.

Organizational level	Type of institution	Functions in pastoral system
National agencies for sector coordination	*Karakul-Trest* (with status of the national Ministry)	Planning and coordination of pastoral livestock production, mainly *Karakul* sheep
	Ministry of Forestry	Massive reclamation/afforestation in deserts
	Republican Corporation for Rangeland Melioration and Construction (*RPMSO*) with Mobile Mechanized Units (*PMK*)	Construction and maintenance of water facilities in pastures and villages
	State Committee for Nature Protection	Monitoring, maintaining ecosystems of drylands and to prevent their violence
Research institutes & experimental stations	State Institute of Land Resources Assessment and Planning (*Uzgiprozem*)	Designing distant pasture rotation schemes and mapping. Scientific expeditions conducted regular geobotanical assessments
	Soviet Research Institute of Karakul Production (1935)	established to improve quality of Karakul pelt production through animal genetics, breeding, arid planting, water quality and desert melioration;
	Research institutes of Water Planning, Forestry, Veterinary, Livestock Breeding, Botany, and Plant Engineering	Wide range of public goods and services to improve pastoral system production
Additional services	Agro-meteorological and Zoo-climatic assessments (based on national agency for Hydrometeorology)	Monitoring and forecasting factors of animal productivity based on climatic changes: number of unfavorable days for grazing, animal productivity changes, pastoral vegetation yields etc.
	State factories of *karakul* pedigree	Distribution of high quality breeds semen
	Mobile veterinary brigades; zoo-technicians	Disease prevention and treatment services in remote grazing areas, as well as disinfection of water points and sheds;
	Mobile water tanks, machinery services and tractor brigades	Supported remote watering, afforestation, phyto-melioration and construction
Production, processing & construction	Units for primary processing of meat, pelt, wool and milk	
	Factories with brigades to construct furniture and mobile housing for shepherds	

Source: Author's compilation based on: (SERGEEVA, 1951; KHUDAYBERDYEV, 1976; BABAEV, 1977)

Interviews on historical perspectives and organizational process mapping results indicate that communication between academia and soviet farms was well established in the past. Staff units of agricultural scientists, engineers and specialists were initiated in every *Sovhoz*. These staff also served to monitor production processes, to regulate and report results to senior executives (SOVNARKOM, 1945). Economic incentive schemes introduced by the state facilitated considerable rise of labor productivity at remote areas. Promotions and bonuses for years of experience, gradual salary scales, formal staff recognitions and extra financial premiums were widely applied to facilitate productivity of shepherd brigades, veterinarians, scientists and specialists (KHUDAYBERDYEV, 1976; LOBANOV, 1953). Conducive policies and enabling environment in soviet rural areas allowed better management and distribution of higher numbers of livestock herds across 20 million ha pasture areas (KHUDAYBERDYEV, 1976).

Not surprisingly, the former Soviet agricultural enterprises and their integrated product supply chains did face numerous organizational challenges that are inherent in public sector management: low labor productivity, production inefficiency, money siphoning, clan networking and corruption (FILTZER & GREGORY, 2006). However, as interviews show, in response to these challenges, the Soviets created a number of regulatory bodies and structural mechanisms for crime detection and strict punishment. In his notable Soviet Archive study, WILLIAM CLARK

(1993) identifies a whole range of monitoring, conspiracy, investigation, prosecution and revisionary formations created at the all-Soviet level (Party-State Control Committee, Soviet Department for the Struggle Against the Theft of Socialist Property – *OBKhSS*, Criminal Investigation - *ORUD*), at the regional level (People's Control Committees - *KNK*) and at the local level (Soviet Whistleblowers free-press section in newspapers, complaint phone lines) in order to control political and organizational crime cases and to take a radical measures against offenders. Thus, the corruption in the FSU had a form of 'controlled corruption' and was a measurable expense (*ibid*), rather than 'uncontrolled corruption' in the current transition period, which is unpredictable. Obviously, the measures used to resolve management problems during the Soviet period are highly sensitive from a human rights and wellbeing perspective, and no intention is made here to justify them in any way. The point rather is to highlight the role that they played in achieving the observed outcomes.

It is worthwhile to note that the Soviets employed a range of incentives, as well. Interviews confirm that labor productivity at remote pastures was considerably raised by introduced economic incentive schemes by the state: gradual salary scales, formal rewards, recognition and staff promotions were widely applied with extra financial premiums and social bonuses allocated for successful farm shepherds, veterinarians and specialists. For example, best employees of the year (nominated by the highest work hours and output) received state recognitions such as titles *'Stakhanovets'* or *'Udarnik'* (KHUDAYBERDYEV, 1976). They were complemented with additional land plot allocations, free access to secondary and higher education, were subsidized with state apartments and automobiles, and were privileged with free health care and recreation, family allowances, privileged pension schemes etc. (*ibid*).

4.3 Agricultural Reforms of Pastoral System in Transition Period

After the collapse of the FSU and its integrated production chains in 1991, the agricultural reforms in Uzbekistan commenced with vertical organizational transformation of state agencies. A multi-level governance system was constructed, which comprised the national level, the regional level (*viloyat*), the district level (*tuman)* and production units. Community-level governance was represented by traditionally established *Mahalla*[3] committees in towns, and by *Qishloq aholi yig'ini* (Council of Village Residents) in rural areas. Some ministries and state committees were transformed into associations, and joint-stock as well as holding companies. The Ministry of Agriculture was merged with both the Ministry of Forestry and the Ministry of Water Resources. The research institutes, *Uzgiprozem* had staff cuts after the Ministry of Land Resources was joined with the Main Department of Geodesy and Cadaster (ICARDA, 2009a). A number of state agencies were dissolved and their functions transferred to *Oblast* level administration. The former Pastoral Department of the Ministry of Agriculture is an example. Functions of *Karakul-Trest* were discharged and all its pastoral farms and corresponding facilities transferred to the newly-formed state company *Uzbek Karakuli*. *RPMSO*, the responsible agency for all water facilities in pastures, was functionally dissolved and recreated as *Obi-Hayot Association*. A major part of its territorial inventories and facilities were distributed to *viloyat and tuman* administration, as well as to agro-producers (ICARDA, 2009b).

Land reform was carried out in several stages by the adoption of the Law on Land (1990), and by disbanding of *Kolhoz* (collective enterprise) and *Sovhoz* (state enterprise) farms within 1992-2000. The Land Code of 1998 formally recognized three forms of market oriented agricultural land users - household producers, private farms and agro-cooperatives (*Shirkat*) (ICARDA, 2009b). *Shirkat* farms are direct successors of *Sovhoz* farms. The majority of *shirkats* were gradually disbanded by 2006 due to poor productivity, and their resources were distributed among households and new private farmers. Presently, only 106 *shirkats* are left in the structure

[3] Traditional institutions for community-level administration

of *Uzbek Karakuli,* located in drylands and primarily specialize in *Karakul* production (UNDP, 2010).

Coincidentally, as interview respondents indicate, during the transition reform period, the world market fur prices and demand for *Karakul* pelt both decreased significantly. As a result, the number of *Karakul* lamb owned by *shirkats* has been shrinking, and the quality of *Karakul* breeds has deteriorated (ROBINSON *et al*, 2012). On the opposite, the numbers of livestock owned by rural households increased dramatically, as interviews indicate, due to the abolition of any past restrictions on permitted animal numbers per family, and also to ensure stable income and food base in the households. Interview respondents confirmed that rural households usually graze their animals illegally on rangelands leased by *shirkats*. The latter have neither capacity to monitor vast pastures and nor any legal framework to exclude other users (*ibid*). The situation has even been accelerated with adoption of Livestock Development Program (2006) that widely encouraged rural households to increase number of their animals for food security (LERMAN, 2008). However, this and previous land related legislation introduced no clear pasture user rights for households. For the time being, the *shirkats* have to accept this, since there is no clear institutional framework to make them legitimate.

The institutional reforms of the transition period were meant to replace centrally planned exchange mechanism with market-oriented contractual arrangements between service providers and agricultural producers. As organizational mapping results show, currently *shirkats* have to pay, among other services, for the construction and maintenance of water sources, for agro-meteorological assessments, for the provision of pastoral rotation schemes, as well as for rangeland afforestation and phyto-melioration services. Less service demand from producers led to personnel reductions in service supply institutions (*see Annex, Fig.A-1*). In the period of FSU, all these and other services were covered from central state budget.

Data from our interviews indicate that in addition to covering pasture maintenance and other production costs, the *shirkats* are also involved in sustaining local *rayon* budget lines by allocation of funds to primary schools, pension funds, road reconstruction, infrastructure services, cultural events etc. Now they also have to pay land taxes, to cover social infrastructure bills, meet annual quota of *karakul* pelt production by *Uzbek Karakuli,* and to adapt to the market uncertainties. According to *Uzbek Karakuli* reports, in 2011 these expenses exceeded 45% share of *shirkats'* total revenue[4]. Social responsibility schemes were also practiced in the FSU, because the administrative form of the soviet farms was planned as rural towns with corresponding social infrastructure, as archive data show. However, as interviews show, the former soviet farms were well subsidized from the central state budget, and they did not have to pay land taxes. Therefore, it is not surprising that *shirkats* are currently not able to afford additional services to fully utilize distant pastures, to maintain their productivity, to monitor overgrazing, and consequently, to avoid land degradation.

5 Discussion

5.1 Political Economy Perspective of Transition Period Reforms

Politics and reforms of agricultural transformation in Uzbekistan have widely been described by number of western social scientists such as MAX SPOOR (2007), DENIZ KANDIYOTI (2003), SCOTT ROZELLE and JOHAN SWINNEN (2006; 2009b), ZVI LERMAN (2008) and RICHARD POMFRET (2010), among others. The scholars have identified a number of political economy determinants to explain why agricultural transition reforms in Uzbekistan, and in other post-soviet countries in general, have occurred in the current trends of transitional development. Below we discuss political economy determinants and other factors that influenced decisions

[4] Estimated from internal budget reports of *Uzbek Karakuli, 2011.*

involved in making the political reform changes and played a major role in pastoral system transformation in the transition period of Uzbekistan:

Why was the pastoral land not given to private sector or to the community?

Historical legacy and traditions of land ownership: Historically, in pre-soviet period of Uzbekistan, the land tenure was feudal regime. All territories were owned by two Khanates and the Bukhara Emirate (VALIEV, 1980). Arable land plots were leased to peasants, and grasslands were leased and used as common property resource by wealthy landlords. Apparently, there was neither a tradition nor a legacy of private land ownership, and no demand from grassroots existed for privatization. Historically, private land ownership legacy and tradition existed in several former soviet CEE nations, and one could observe strong demand for land privatization by households during the post-independence transition period (ROZELLE & SWINNEN, 2009a).

Characteristics of geographic location: The rangelands of Uzbekistan are characterized by a relatively low level of fertility (SNC, 2009), and the lands are often located in a greater distance from settled communities, which makes their use particularly problematic or costly. Inputs prices are expensive and services often unavailable in distant areas (SWINNEN & HEINEGG, 2002).

Changes in government structure and political regime have induced changes in politics: It is argued that little change in political leadership structure, level of participation of the civil society and private sector in political decision-making affect the likelihood of reforms and the pace of liberalization in most of the CIS countries (SWINNEN & HEINEGG, 2002). For example, countries such as Turkmenistan, Uzbekistan, and Belarus are still run by more or less the same leadership as under the Soviet period (SWINNEN & ROZELLE, 2006). In the case of Kyrgyzstan, the frequent conflicts between pastoral users signaled grassroot NGOs, community leaders and municipalities for change. This created a strong pressure for the parliamentarians and the World Bank to develop a new law on community-based pasture management in 2009 (ROBINSON *et al*, 2012). A positive correlation between political reforms and reforms in agriculture has been identified by SWINNEN & ROZELLE (2006) in most of the CIS countries (*see annex Fig.A-2*).

Why have pastoral system institutions deteriorated?

Level of technological and capital integration into production systems: State farms in FSU were organized as capital- and land-intensive, and were strongly integrated into industrialized production systems; complex network of exchange relations existed between input suppliers and processors (ROZELLE & SWINNEN, 2009a). One can argue that deterioration of pastoral production system was inevitable after disintegration of interdependent exchange mechanisms and the entire centrally planned fiscal, economic and political structures. Moreover, increased outmigration of Slavic population from the country after the Soviet collapse had influenced the availability of highly qualified field specialists and service professionals significantly (FERGUSON, 2003).

Specificities of traditional institutions: The local traditional institutions are characterized by historical domination of ethnic, religious and clan networks. Due to the pervasiveness and extensiveness of these networks, clientelism and patron-client relationships are more extensive among political actors in Central Asian region that in the rest of the FSU (SWINNEN & HEINEGG, 2002). Cronyism and kickbacks to officials have been at the heart of CA corruption (FERGUSON, 2003). Administrative and executive power in regions and districts is concentrated in hands of Hokims, who have a strong influence on resource users, service providers and producers on local levels both formally and informally. Therefore, unless accountable and transparent checks and balance mechanisms are established, taking a radical transition reform agenda could facilitate more tensions between these networks and interest groups.

Difference in pace of economic reforms towards market liberalization: Following China's successful example of transition reforms, Uzbekistan took gradual reforms of agriculture sector transformation towards market economy (ROZELLE & SWINNEN, 2009b). Agriculture had always been a country's food base, and among other factors, the consideration was due to the high sha re

of agricultural output in GDP - over 45% by 1991, and the share of population living in rural areas - nearly 65% (UNDP, 2010). Uzbekistan's gradual reform agenda can also be explained by the mismatch of reform interests between top politicians and farmers (SWINNEN & HEINEGG, 2002). Often being close relatives, friends or acquaintances, the interests of local leaders were closely aligned with those of farmers. Farm leaders and lower-level officials were opposing reforms primarily due to benefits derived from subsidies and high wages (ROZELLE & SWINNEN, 2009a). However, despite resistance, transitory pastoral reforms were gradually launched – state farms transformed into market-oriented agro-cooperatives, state subsidies replaced by taxes, institutional memory and functional management structures shrank, and public services were made available on a contract basis. Most of the former soviet state *karakul* farm managers and operational staff are still employed by *shirkats.* Thus the previous resistance of farmers now reshaped as unofficial profit-seeking (e.g. shadow budgeting) and short-term resource capture behavior, resulting in low productivity of *shirkats* and pastoral degradation.

Competitive spirit of the FSU to surpass the production outputs of the U.S. and other capitalistic countries existed since the early years of the Communist Party establishment (FERGUSON, 2003; FILTZER & GREGORY, 2006). This external competition was a major driving force of the Soviets for rapid industrialization and development (GREGORY, 2008). Soviets' Five-Year Plan approach aimed at boosting labor productivity, increasing quality, supporting development of heavy industry and machinery, and at uplifting all sectors of economy, including agriculture (KARIMOV, 1975). This competition, however, had vanished due to stagnations in economic reforms in the last decade of the Soviet regime (RAZZAKOV, 2009), and finally, came to its end after its dissolution.

5.2 Alternative Reform Options for Pastoral System Development

There is a rising awareness in the Uzbek Parliament and in state agencies about the pastoral land management conflicts between rural households and *shirkats*. Different models are under consideration: private versus collective leasehold of pastureland; remuneration of the *shirkat* for pasture use versus leasehold directly from the state (ROBINSON *et al*, 2012).

In the current institutional environment of pastoral system of Uzbekistan, as discussed above from a political economy perspective, it is unlikely that land ownership rights would be transferred to private or communal property regimes. Taking the current experience of Kyrgyz Pasture Users Associations into account, more favourable and more likely reform options for pastoral systems in Uzbekistan would be the following:

- Establishing clear pasture use rights for each group of land users. Revision and amendments to the current Land Code have to include legal considerations of pasture land;
- Creating a legal recognition of integrated pastoral planning and management schemes for community-based self-organized groups; Develop a methodology for land use planning with participation of community users would empower them and facilitate more transparency. Contribution of research institutes and development agencies would be helpful;
- Legitimizing long-term pastoral leasehold relations for community groups, preferably with land titles directly from state agencies to avoid rent-seeking from middlemen. These user groups have to be given a clear autonomy for internal decision-making for pastoral production, monitoring, rehabilitation, sanctions etc., within the given territory. This mechanism could draw lessons from the current Uzbek Forestry Department experience of seasonal grazing tickets schemes applied effectively in the forestry fields. The public budget revenues could also benefit from taxes that have be collected from pastoral users as 'per head' of animal, and not 'per ha' as practiced presently.
- Creating a favourable institutional framework and enabling environment, so that pastoral user groups are able to fairly access international financial mechanisms on soil carbon finance. This would also increase political incentives for pastoral system development. Although international climate change institutions have not been able to develop a fully

functional soil carbon finance scheme yet, there is currently a soil carbon finance available from both Payment for Ecosystem Services (PES) and voluntary carbon market schemes (FAO, 2011). Though these carbon sequestration mechanisms are tiny compared to compliance market (e.g., Clean Development Mechanism), the pastoral users in Uzbekistan could largely benefit from potential soil carbon finance bonuses by massive application of sustainable grazing practices in large-scale grasslands. However, this requires a considerable contributions and efforts both from respective national agencies and land users. For this purpose, the next option could be to establish a National Pasture Reclamation Fund from tax revenues collected from pastoral sector. This financial scheme would be used to streamline public finance allocations to soil-carbon related initial investments and to generate potential bonuses from its implementation. This fund would also serve as a long-term monetary buffer against climatic-, market- or other external -uncertainties faced by pastoral communities.

- In the past, researchers generally performed extension functions, but the system has been losing its impact after the breakdown of the Soviet Union (GUPTA *et al*., 2009). The former channels of knowledge transfer in agriculture have also broken down. Therefore, another vital reform option has to rebuild the formal channels of knowledge transfer and extension service as part of the country's rural development strategy. Researchers have to be retrained for new standards and new communication channels with international research institutions have to be established. This would help to disseminate knowledge and new technologies to the rural producers in the long-term perspective.

These reform options need further evidence-based studies to better support the given arguments. The challenges of political economy of these reforms could be overcome by introducing a more transparent system of governance at all levels. This could be achieved by empowering civil society institutions and by engaging multiple stakeholders (e.g. free media, political groups, pastoral communities etc.) in decision-making processes. Institutional reforms towards market liberalization to some extent may also create new opportunities for land users in pastoral production sector. For further steps it is crucial also to explore what could be a key motivation factors and political incentives to invest in development of a large-scale pastoral production system. It would also be feasible to study alternative institutional mechanisms for pastoral system regulation to reduce rent-seeking and resource leakage cases. Answering these questions would help to understand which proposed alternative scenarios fit best into the realities of the current regime.

6 Conclusion

The current discourse on the common-pool resources governance largely neglects two aspects: the state regime for governance of the commons, and the role of agricultural research in managing the resources. This paper discusses the evolution of dryland pastoral production systems in Uzbekistan during the past socialist regime and development of the sector in the current period of transition to the market economy.

The historical analyses of the pastoral management system evolution in the FSU show that the Soviets' research experiments, institutional structures and established services played a major role in development of an effective production system in massive pastoral areas. Scientific results were backbone for the political decision-making in the Soviet Politburo. However, the scientific advancements, institutional models and modern research results are largely neglected in development of the pastoral livestock production systems in the current transition period.

It is found that a strong political will and economic incentives are the key reasons for such contrast changes. The discourse analysis shows that the industrial and ideological race of communist leaders against the capitalistic economies was a major political driving force towards capital injections into all sectors of national economy, including pastoral production systems.

After the collapse of the Soviet regime, the Uzbek government took a gradual transformation strategy, where the other priority sectors of the national economy were addressed such as e.g. industry, construction of infrastructure, staple food production in arable areas etc. Therefore, dryland livestock production systems had been largely paid less attention. Thus we conclude that the pastoral sector is still in transformation stage and the major structural changes and institutional reforms yet to come.

We suggest that in order to increase economic incentives for pastoral system development, the government has an option to create an enabling legal and institutional environment, and agricultural knowledge transfer services so that pastoral user groups are able to fairly access international financial mechanisms on soil carbon finance.

In the current political regime, however, it is unlikely that land ownership rights would be transferred to private or communal property regimes. The more favourable option would be to establish a long-term pastoral leasehold relations for local community groups.

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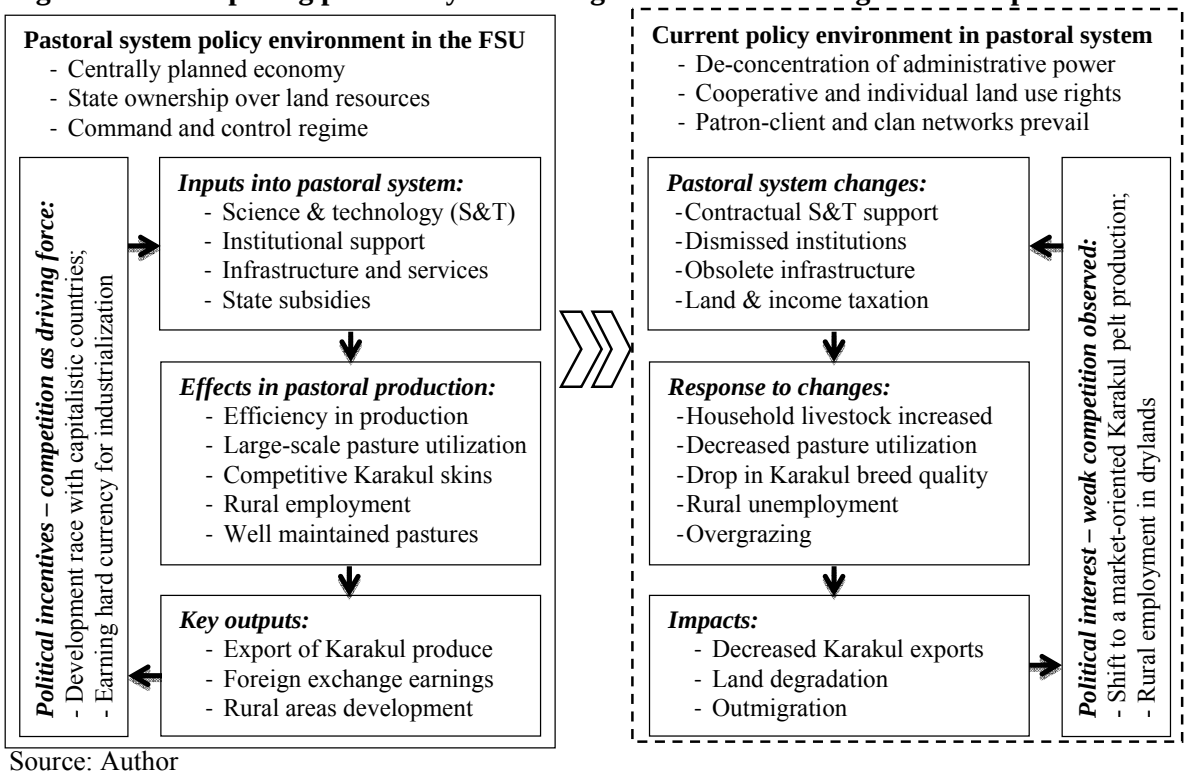
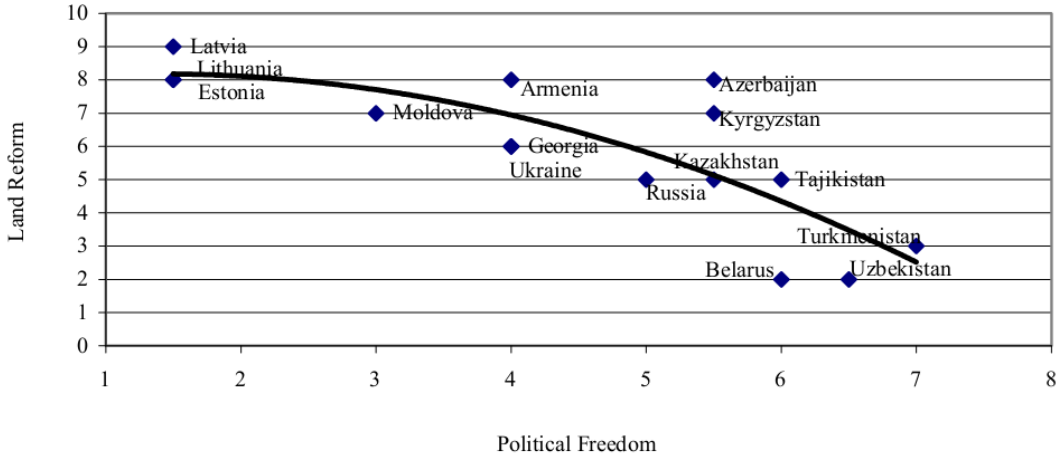
Annex 1

Figure A-1: Comparing pastoral system changes before and during transition period



Source: Author

Figure A-2: Political reforms and land reforms



Source: SWINNEN & HEINEGG, 2002: p.19