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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 why 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 those two determinants 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 period challenges are discussed from a political economy perspective.

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 (AHMEDOV et al., 2009; MAKHMUDOV, 2011). Over 40% of dryland pastures in Uzbekistan are currently being degraded and have reached different levels of degradation (AHMEDOV et al., 2009). 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 (ibid). 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

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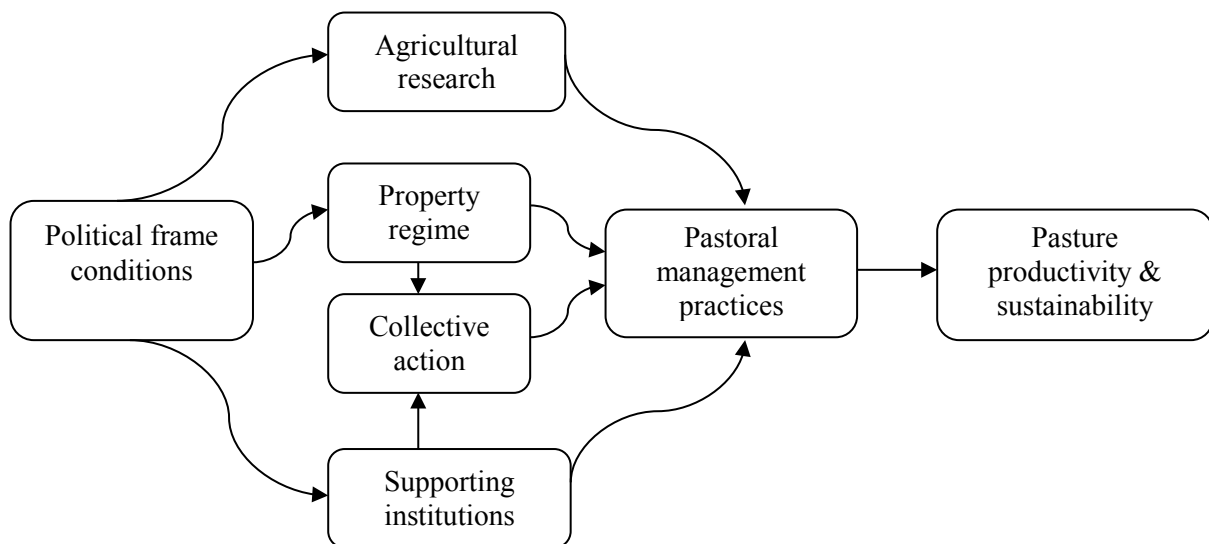
neglected in the current discourse on the common-pool resource (CPR) governance (see Section 2). This paper aims at addressing these gaps by analyzing the role of agricultural research in designing pastoral system management within the former Soviet regime, and at explaining why the former system was 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 economic 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, and the post-Soviet transition period institutional changes. The final two sections discuss political economy challenges in drylands, and finalize with concluding remarks.

2 Analytical Framework

The analytical framework presented below is based on the following blocks: The theory of CPR 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: 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,² 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 AND 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 AND 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 GUN-AWEERA, 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 (CA) 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 re-

² 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).

search 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 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 CA.

The political economy perspective: Taking a political economy perspective is essential to understand why alternative institutional arrangements for sustainable management have not been established, so far. The CPR theory would suggest that the highly centralized state management of rangelands 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, our historical analysis revealed exactly the opposite. The political economy perspective towards land reforms in transition period helps to resolve this contradiction and to answer questions of who wins and who loses from particular reforms. Literature review suggests that political incentives of the Soviets were strongly driven by ideology of surpassing capitalist economies in industrialization. Thus, the Soviets invested massively in research, infrastructure and services to develop rangeland system, among other sectors. The political economy analysis of transition reforms indicate that profit margin from rangelands, unfavourable geographic conditions, the lack of historical legacy of traditional land ownership, among other factors, created little demand both for private or community-based rangeland management reforms. SWINNEN AND HEINEGG (2002: p. 19) suggest that land reforms in post-soviet countries have strong correlation with political regime changes. This shows why sustainable pasture management reforms were mostly overlooked.

3 Methodology

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.

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 Sampling³ method was used to select relevant respondents and data sources. We collected secondary data from peer-reviewed articles, official reports, project documents, administrative papers and from archive

³ 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 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.

materials. We attempted to grasp historical evolution of institutions from Soviet research works and scientific experiments in the dryland pastoral areas.

In the field, we used individual in-depth interviews, formally and informally, to grasp data on opinions, perceptions and attitudes towards past structures functioned in the pastoral livestock system, and on 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. We applied focus group discussions 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. We also facilitated process-influence net maps with both individual and group of respondents to identify key actors in pasture management, to visualize financial, executive and administrative flows within and between national- and local-level organizations, agencies, resource users, producers, and their business interactions. This tool also helped to identify influence of the actors towards the quality of pastures. In total we facilitated ten participatory mapping sessions. We used participant observation method to compare and check collected 'soft' data against pasture management in practices, as well as to get better insights on collective action elements of the local land users. It was also useful tool to observe conditions of degraded and better maintained rangelands and livestock in field settings.

Field data were collected from two case-studies and two control group areas 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 farms (*shirkat*) 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 show that in early 1920s the Soviet Politburo initiated land reclamation and expansion of agriculture production in newly joined states. For these purposes, groups of highly qualified soviet scientists from Moscow and Leningrad were sent to study CA 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 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). Long-term stability of fragile desert ecosystem and extensive animal production in drylands were found as fundamental principles of dryland reclamation, as concluded by Soviet scientists (MOROZOVA, 1946), whereby fodder yields and water quality in pastures were identified as the main criteria for setting-up 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 climate risks, 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 CA, 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 (BABAIEV, 1977).

4.2 Role of Soviet Institutional and Organizational Structures in Rural Development

Our interviews and archive study indicate that a number of public services, infrastructure facilities and production units (see Table 1) were established to scale-up pastoral production from early 1930s to late 1960s. 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 AND ROZELLE, 2006). Massive financial and political support for rural industrialization in the USSR led to high employment rates and 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.

Organizational level	Type of institution	Functions in pastoral system
National agencies for sector coordination	<i>Karakul-Trest</i> (with status of the national Ministry) Ministry of Forestry Republican Corporation for Rangeland Melioration and Construction (<i>RPMSO</i>) with Mobile Mechanized Units (<i>PMK</i>) State Committee for Nature Protection	Planning and coordination of pastoral livestock production, mainly <i>Karakul</i> sheep Massive reclamation/afforestation in deserts Construction and maintenance of water facilities in pastures and villages Monitoring, maintaining ecosystems of drylands and to prevent their violence
Research institutes & experimental stations	State Institute of Land Resources Assessment and Planning (<i>Uzgiprozem</i>) Soviet Research Institute of Karakul Production (1935) Research institutes of Water Planning, Forestry, Veterinary, Livestock Breeding, Botany, and Plant Engineering	Designing distant pasture rotation schemes and mapping. Scientific expeditions to conduct regular geobotanical assessments Improving quality of Karakul pelt through research in genetics, breeding, planting, water quality and desert melioration 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) State factories of <i>karakul</i> pedigree Mobile veterinary brigades; zoo-technicians Mobile water tanks, machinery services and tractor brigades	Monitoring and forecasting factors of animal productivity based on climatic changes: number of unfavorable days for grazing, animal productivity changes, pastoral vegetation yields etc. Distribution of high quality breeds semen Disease prevention and treatment services in remote grazing areas, as well as disinfection of water points and sheds Supported remote watering, afforestation, phyto-melioration and construction of wells
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: Adapted from SERGEEVA, 1951; KHUDAYBERDYEV, 1976; BABAEV, 1977

Interviews on historical perspective and organizational process mapping results indicate that communication between academia and soviet farms was well established in the past. Staff positions 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 desert 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 also 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 and archive material confirm, that labor productivity at remote pastures was considerably raised by introduced motivating schemes by the state: gradual salary scales, formal rewards, recognition and staff promotions were widely applied with extra financial premiums and social bonuses. They were allocated to successful and distant-located 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). Those were rewarded 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 seasonal recreation, family allowances, privileged pension schemes and others (*ibid*).

4.3 Agricultural Reforms of Pastoral System in Transition Period

Literature review shows that after the collapse of the FSU, and its integrated production chains in 1991, the agricultural reforms in Uzbekistan commenced with vertical re-organization 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*⁴ 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 (ICARDA, 2009). The research institutes, *Uzgiprozem* had staff cuts after the Ministry of Land Resources was joined with the Main Department of Geodesy and Cadaster (*ibid*). A number of state agencies were dissolved and their functions transferred to *Viloyat* level administration. The former Pastoral Department of the Ministry of Agriculture is one 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 (GUPTA *et al*, 2009).

Next step of the reform was carried out in several stages by the adoption of the Law on Land (1990), and by disbanding of *Kolhoz* (collective) and *Sovhoz* (state) 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*) (*ibid*). *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

⁴ Self-organized traditional institutions on community level.

and new private farmers. Presently, only 106 *shirkats* are left in the structure 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* had shrunk, and the quality of *Karakul* breeds had 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 on rangelands of *shirkat* farms with verbal agreements. But in fact, the *shirkats* have neither capacity to monitor vast pastures nor a strong influence to exclude households from pasture grazing (*ibid*). Land use competition over grazing areas has increased even drastically after adoption of Livestock Development Program (2006) that widely encouraged rural households to increase number of their animal for meeting food security needs (LERMAN, 2008). However, this and previous land related legislation introduced unclear pasture user rights for households. For the time being, the *shirkats* have to accept this, since there is a limited institutional environment to legitimate sanctions or to process their complaints.

The former system of state-funded agricultural services had also been adjusted by early 2000 to provide on-demand services to agricultural producers as per contracts with market-oriented prices (GUPTA *et al.*, 2009). As our net-mapping results show, currently *shirkats* have to pay, among other services, for the construction and maintenance of water sources, for agrometeorological assessments, for the provision of pastoral rotation schemes, as well as for rangeland afforestation and phyto-melioration services. However, as interviews indicate, they are not willing yet to pay for additional services that government used to provide in the period of FSU. This led to less service demand from producers and to personnel reductions in service supply institutions. Data from our interviews indicate that in addition to covering pasture maintenance and other production costs, the *shirkats* are also involved in sustaining local budget lines by fund allocations to primary schools, pension funds, road reconstruction, infrastructure services, cultural events etc. Additionally, they 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 revenue⁵. 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 indicate. However, as interview respondents highlighted, 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 identified number of political and economic factors to explain agricultural transition reforms in post-soviet countries that occurred in certain

⁵ Estimated from internal budget reports of *Uzbek Karakuli*, 2011.

directions. Based on literature review, below we discuss factors that significantly influenced political decisions in pastoral system development in transition reforms period in 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 Central and East European 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 drylands of Uzbekistan are characterized by a relatively low level of fertility and precipitation (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 Newly Independent States (NIS) (SWINNEN & HEINEGG, 2002). For example, countries such as Turkmenistan, Uzbekistan, Kazakhstan 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 grass-root 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). Thus, a positive correlation between political reforms changes and land reforms has been identified by SWINNEN & ROZELLE (2002: p.19) in most of the NIS.

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 AND SWINNEN, 2009a). One can argue that deterioration of pastoral production system was inevitable after disintegration of interdependent exchange mechanisms and the massive 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 CA region than in the rest of the FSU (SWINNEN AND 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 individuals, 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 AND SWINNEN, 2009b). Agriculture had always been a country's food base, and among other factors, the consideration was due to the high share 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 AND HEINEGG, 2002). Often being close relatives, friends or acquaintances, the interests of local leaders were closely aligned with those of farmers (ROZELLE AND SWINNEN, 2009a). Farm leaders and lower-level officials were opposing reforms primarily due to benefits derived from subsidies and high wages (*ibid*). 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 *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 in a 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 AND 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. Economic stagnation of the '80s had also affected labour productivity and corruption in the *karakul* sector, whereby most of the farms were found unprofitable by the time of the Soviet system collapse (*ibid*).

6 Conclusion

The current debate on the common-pool resources governance largely neglects two aspects: the state-managed regime 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 former-Soviet political regime and development of the sector in the current period of transition to market economy, after its independence.

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

Our findings indicate that a strong political will and economic incentives are the key reasons for such contrast changes. Our historical analyses show that 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.

Prior to Soviet regime collapse, a gradual transformation reform strategy of Uzbek government was concentrated on other important sectors of the national economy rather than rangeland system reforms: e.g. industry, construction, infrastructure, cash-crop and staple food systems in irrigated lands and others that would have development effects in larger number of population. Therefore, dryland livestock production systems, where reside less than 10% of population, had been 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.

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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