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The Social, Economic and Spatial Organisation of Rural Dairy Farming. Examples from the Torpu Kyr Pasture

Introduction

In order to cope with complex economic challenges, the rural population of south-western Kyrgyzstan makes use of quite different approaches in their attempt to diversify income sources and strategies. One of the most important income activities is rural dairy farming and the processing of milk into value-added products. Animal husbandry has always played an important role in Kyrgyzstan, only the way how it was put into practice varied significantly from period to period.

> "Until the early socialist times, pastoralists exploited the […] grasslands […] as natural forage grounds by applying spatio-temporal mobility patterns between seasonal pastures" (Dörre 2012: 128).

During Soviet times mobile pastoralism was reduced to a minimum by the state administration using the argument that intensification of meat, wool and milk production only could go along with strict five year plans and sedentarization policies. After the collapse of the Soviet Union people were hit hard by a crucial economic decline that was compounded by financial instability and social insecurity. Still, livestock production was adding more than 40 % to the whole primary sectoral value creation in 2008 (Dörre & Borchardt 2012: 313) showing that animal husbandry still forms a significant part of Kyrgyzstan's society and economic identity. However, little is known about the logistical and economic challenges of rural dairy farming. This paper aims to contribute to a better understanding of dairy farming in Kyrgyzstan by looking at social and economic practices carried out in the summer season on the high pastures of the country. Analytically, the commodity chain approach promoted by Hopkins (1986), Wallerstein (1986) and Gereffi (1994) is employed to focus on the social, economic, and spatial organisation of rural dairy farming. Methodically, a case study approach centers on a specific summer pasture (*jailoo*, krg.) named *Torpu Kyr* that is located near the village Kyzyl Unkur. The research team spent one week among pastoralists on this high pasture in order to develop a better understanding on how dairy farming is organised, both socially and economically. The majority of interviews with place-based actors were carried out on *Torpu Kyr*, followed by additional interviews with local authorities and merchants on various markets where the products generated on the pasture are sold. This methodology aimed both at arriving at an understanding of place-based rural dairy farming in the case study area and a wide perspective on economical key aspects which included different production processes, financial coping strategies as well as the relevant commodity chain.

Commodity chain concepts as theoretical framework

Commodity Chain approaches offer a suitable framework for the analysis of rural dairy farming that in Kyrgyzstan is organised around the production of a few major products resulting out of specific labour sources, socio-political contexts and production processes.

Generally, the commodity chain debate focuses on *production* as the main unit of analysis. Following Hopkins & Wallerstein (1986), a commodity chain is to be understood as "a network of labour and production processes whose end result is a finished commodity" (Hopkins & Wallerstein 1986: 159). Gereffi (1994: 2) takes the debate one step further by including additional dimensions of analysis:

> "A Global Commodity Chain consists of a set of interorganizational networks clustered around one commodity or product, linking households, enterprises, and states to one another within the world-economy. These networks are situationally specific, socially constructed, and locally integrated, underscoring the social embeddedness of economic organization."

All proponents of the approach place commodity chains in the centre of global economic activities and try to explain the complexity of production processes crosscutting regional and national borders along different analytical perspectives that not only include hard economic facts but also socio-political, institutional and cultural parameters which all together form and influence commodity chains (Hassler 2009: 202). While taking global economic networks and developments into consideration, these concepts do not neglect the single actor on the micro level whose decisions are deeply influenced by very specific local or regional settings (ibid.: 203). Commodity chain concepts have furthermore been instrumental in changing the understanding of the term 'production' which now is not solely seen as a simple combination of inputs and outputs but is described as "a more dynamic approach whereby production takes place in time and space" (Hassler 2009: 203). As such, production is developed into a more complex and realistic model that comprises numerous activities and interconnected functions as well as *all* the processes (on *all* levels) enabling the production of a commodity.

The analysis of rural dairy farming on the high pastures in Kyrgyzstan takes these considerations into account and employs a more comprehensive approach, not focusing on specific parts of the commodity chain of certain dairy products but instead trying to grasp the chain in its entirety.

Analytical dimensions of commodity chains

Following Gereffi (1994) there are four analytical dimensions which offer four different perspectives on one commodity chain. These dimensions take note of economic, social, political, institutional, spatial and cultural parameters.

Economics: input-output structure

The input-output structure of a commodity chain can be defined as "a value-added chain of products, services, and resources linked together across relevant industries" (Hassler 2009: 202). Basically, the various stakeholders contributing to the commodity chain are analysed by taking a precise look at the value they add to a specific product. This analytical dimension addresses predominantly economic issues. Who is part of the value chain and how are all the contributors linked to each other? Where are the individual stakeholders located within the commodity chain? Analysis of input-output structures looks at so-called 'nodes' that can be understood as specific processes with different sets of components providing a product which is either submitted to the end consumer or to a successive node (Hassler 2009: 203). The value added to the final commodity usually

differs from node to node and therefore establishes a hierarchy of stakeholders. The aim is to provide an exact division of a particular commodity chain into its individual sequences while taking into account backward and forward linkages (ibid.). For the case of *Torpu Kyr* attention is drawn to the most important stakeholders regulating the commodity chain. Furthermore, it will be analysed how pastoralists and merchants are linked to each other and which value they add to the commodity chain.

Territoriality

Looking at the territoriality of a commodity chain attention is directed to the geographical dispersion of the chain elements, comprising geographical locations as well as geographical linkages between certain nodes or elements at local, regional, national and international levels (Hassler 2009: 204). The territoriality of commodity chains is very heterogeneous and can range from very concentrated and local to extremely disperse and global levels. As *Torpu Kyr* is located in the periphery of south-western Kyrgyzstan there is reason to presume that the commodity chain is local and concentrated. Another relevant task is to analyse the selling market of the dairy produce in order to identify the commodity chain as dispersed or concentrated. Generally, the geographical extension often derives from the final commodity and its role in the consumer market as well as its technologies of transport and communication. Furthermore, aspects like competitors, innovations and industrial capabilities can deeply influence the geographical concentration or dispersion of commodity chains (ibid.).

Governance structures

While input-output structures aim at gathering information about stakeholders and their locations and roles within the commodity chain and territoriality covers geographical aspects, the analysis of governance structures in commodity chains stresses the crucial importance of power relations. Governance in the context of chain concepts deals with "authority and power relationships […] that determine how financial, material and, human resources are allocated and flow within a commodity chain" (Hassler 2009: 202). Typically the governance structure of each commodity chain is formed by its explicit economic agents and their relations to each other also addressing power relations. Hierarchies arise from the role of different actors in the chain and these hierarchies are addressed by placing a strong analytical emphasis on governance structures (Hassler 2009: 204). Following Gereffi, the distinction between *producer-driven* commodity and *buyer-driven* chains appears to be practical. Producer-driven chains are concerned with mass production and therefore not directly influenced by consumption patterns. These producer-driven models are usually dominated by one specific (often transnational) stakeholder who is capable of controlling backward and forward linkages (1999: 1). In contrast, buyer-driven commodity chains are often more flexible and refer to those industries in which the production is carried out by contractors that provide finished goods for foreign buyers (ibid.). In the case of *Torpu Kyr* it has to be analysed if relations between different stakeholders have a strong formal or a rather informal and personal background.

Institutional framework

Institutional frameworks provide the rules of production and trade of certain products. They take note of the fact that "state policy plays a major role in Global Commodity

Chains" (Gereffi 1994: 100 quoted after Hassler 2009: 205). However, institutional frameworks may not affect commodity chains in the way the other dimensions do. The more local a commodity chain is operating, the more it will be influenced by the regional or national institutions and the more a commodity chain is globally organised, the less it is dependent on certain state-centred institutional frameworks. The setting on Torpu Kyr is influenced by Kyrgyz laws which regulate certain parameters playing a role in the rural dairy commodity chain.

Commodity Systems in pastoral contexts

The fourfold framework is instrumental in analysing the economic, social, and spatial organisation of rural dairy farming on the *Torpu Kyr* pasture area. However, pastoralism assumes a special role in commodity chain concepts. These approaches are usually applied to conventional production processes that usually do not include pastoral activities, even though extensive animal husbandry takes place on around 25 % of the world's area and provides about ten percent of global meat production (Gertel & Le Heron 2011: 5). Often characterized by non-market transactions, the use of unpaid labour, 'informal' activities and no official recording of pastoral economic activities, pastoralism and its significance as essential contributor to the livelihoods of up to 200 million households worldwide are clearly undervalued (ibid.: 6). The present focus on rural dairy farming and analysis of its commodity chain in Kyrgyzstan directs attention to an often neglected and chronically underestimated topic.

Rural dairy farming – research framework

Analysing the structure and the functioning of rural dairy farming on *Torpu Kyr* – looking at its impact on the local population and their income and disassembling the commodity chain, required to develop an understanding about how pastoralists were organised in their daily routines on the pasture itself and how raw milk is refined into durable products while at the same time focusing on the ways of marketing their produce. Questions and observations during pasture-based fieldwork centered on the significant value-added products that contribute to the pastoralists' incomes and the means of producing these commodities. In a second step interviews with customers, wholesale traders and merchandising partners aimed at disassembling the commodity chain (Fig. 3.1). Altogether twelve in-depth interviews focusing on a variety of issues were conducted on the *Torpu Kyr* pasture itself during one week of empirical fieldwork. These twelve interviews were conducted with the respective tent owners and heads of households and essentially cover the entire summer population on the study pasture. Subsequently interviews with representatives of local authorities and merchants on the markets in Bazar Korgon and Jalal-Abad were carried out. Observations and mapping the physical arrangements of tents and households on the pasture provide contextual information and a sense of the physical challenges of high mountain dairy production (Fig. 3.2). These qualitative methodologies were complemented by a brief questionnaire survey among pastoral households in the pasture itself, focusing on the amounts of pasture-based dairy production, on price levels and livestock properties.

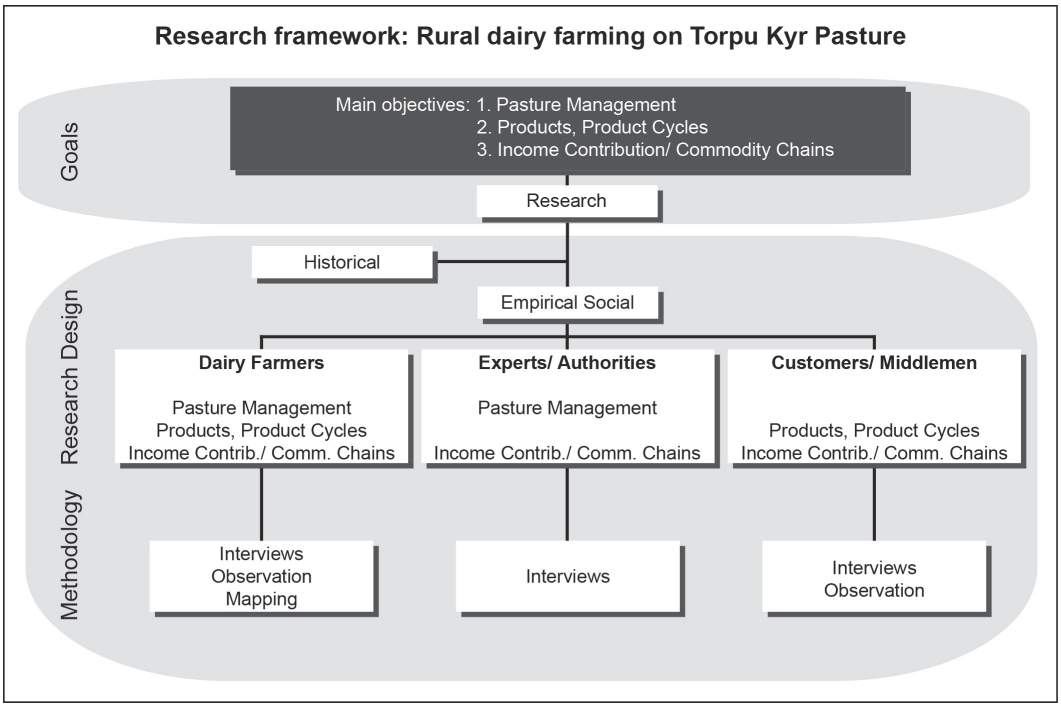

Fig. 3.1: Research framework: rural dairy farming

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Research area

Torpu Kyr is accessible through a six to seven hours horse ride from the village Kyzyl Unkur. It involves several river crossings and steep ascents before reaching an altitude between 1,800 and 2,200 meters (Fig. 3.2).

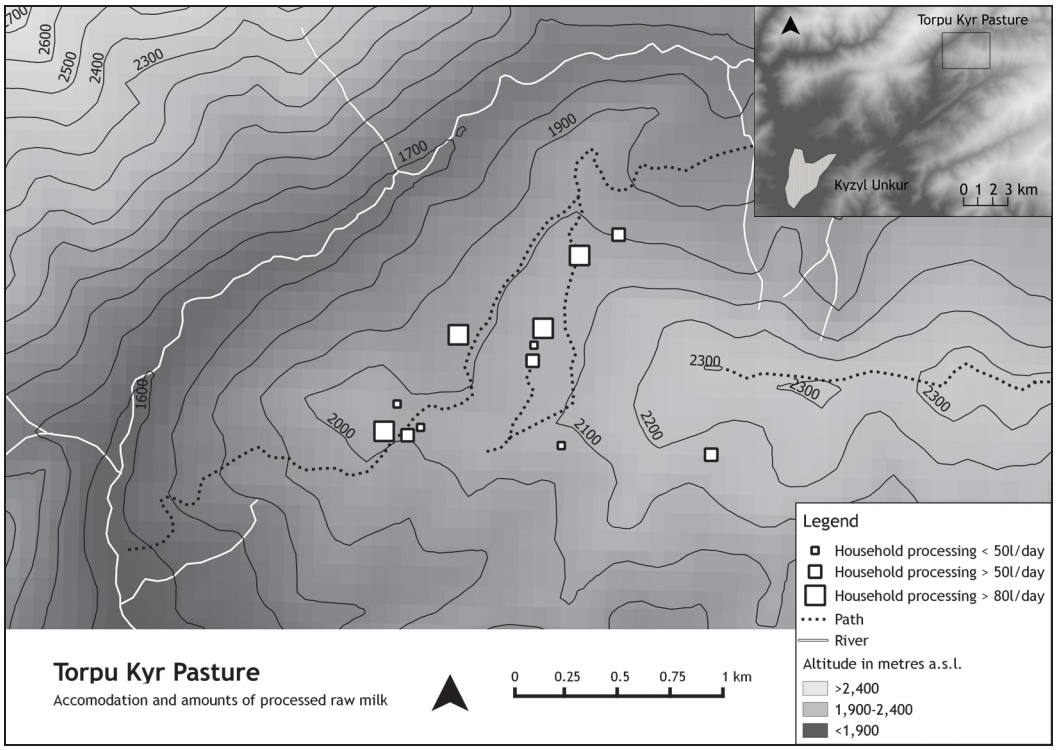

Fig. 3.2: *Torpu Kyr* Pasture: Accomodation and amounts of processed raw milk

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The difficulty of access leads to the moderate use of the pasture by twelve households who benefit from abundant fodder supply. The pasture is officially declared as a forest fund area which means that the State Agency on Environment Protection and Forestry (SAEPFUGKR) as well as the local forest enterprise (*leskhoz*, rus.) are responsible for the maintenance and distribution of annual user permits that pastoralists need to purchase. However, most of the pastoralists interviewed on *Torpu Kyr* either did not know exactly how much they pay or were not willing to tell us, and controls by the authorities on this remote pasture appear to be rather unusual.

Basic findings

An introduction into the basic elements of rural dairy farming in high mountain areas is crucial in order to better understand the shape and elements of commodity chains. These basic elements refer to as the general management of dairy farming in terms of location and daily practices on the high pasture, the essential products and their specific product-cycles contribution of marketing dairy products to household incomes.

Management of rural dairy farming on Torpu Kyr

Torpu Kyr Pasture is used by twelve independent pastoral households residing in a cluster of tents from April/May to August/September. Partly, these tents were installed in close proximity to another, indicating blood relationship or the same origin, while other tents are widely dispersed over rather large distances and require walking up to 40 minutes. Depending on the village of origin (five households originate from Karacha, four from Bazar Korgon and three from Kyzyl Unkur) different state authorities are in charge of collecting usage fees for the pasture. The twelve households on *Torpu Kyr* practice dairy farming and professional herding. Dairy farming exclusively addresses the processing of cow milk. Even though there are numerous sheep on the pasture, these are not used for any dairy production but rather as meat supply or marketing product. The selling of livestock forms a kind of economic 'emergency kit' in times of financial scarcity.

Herding practices vary. Households often consist of professional herders in charge of livestock that is not their own. In these cases payment is arranged per animal, 80 KGS for one sheep per month, and 350 KGS for one cow per month. Cows currently giving milk are considered as a form payment itself – professional herders are allowed to use this milk instead of being paid in cash. This practice of payment pertains to all twelve households. Just a few percent of the whole livestock on *Torpu Kyr* belong to the pastoral households themselves, but every entity possesses at least two own cows. The average amount of gathered milk per household per day is 85 litres which can be turned into valuable commodities. Average household sizes range among three to seven people, including brothers, sisters-in-law, children and sometimes grandchildren. Children support their families as most of the pasture period falls into school summer vacations.

Pastoral households in their summer areas stressed the importance of social and economic cooperation among themselves. This pertains to caring for the neighbours' livestock, giving support in milking cows, and mutual cooperation regarding the transportation down to the valley, through sharing the transport costs for animals and dairy produce. Cooperation is especially strong within groups residing in the same village. All pastoral households are

from the Bazar Korgon District, but distances to respective home villages vary significantly. This fact leads to different strategies regarding product storage and mobility: Households originating from Kyzyl Unkur as one of the closest villages to *Torpu Kyr* prefer storing goods in the village itself. They are transported to the valley several times during the pasture season, whenever somebody is going down e.g. for transferring animals to the market. Others residing in more distant villages keep the products in their tents on the pasture itself and take everything down in autumn when the pasture period finishes. All households market their products on the Bazar Korgon District market.

Products and product cycles on Torpu Kyr

Dairy farming on the high pastures concentrates on a few specific products that contribute to household income and for which the major Commodity Chains are assessed and analysed.

Specifically, three major dairy products dominate on the *Torpu Kyr* pasture, namely *qurut*, *tshobogo* and *sary maj* all of which show an extraordinary high durability. Once dried and stored they can be kept for up to two years. By using a so-called milk separator two production lines can be opened. The following illustration shows the detailed product cycle of these production lines.

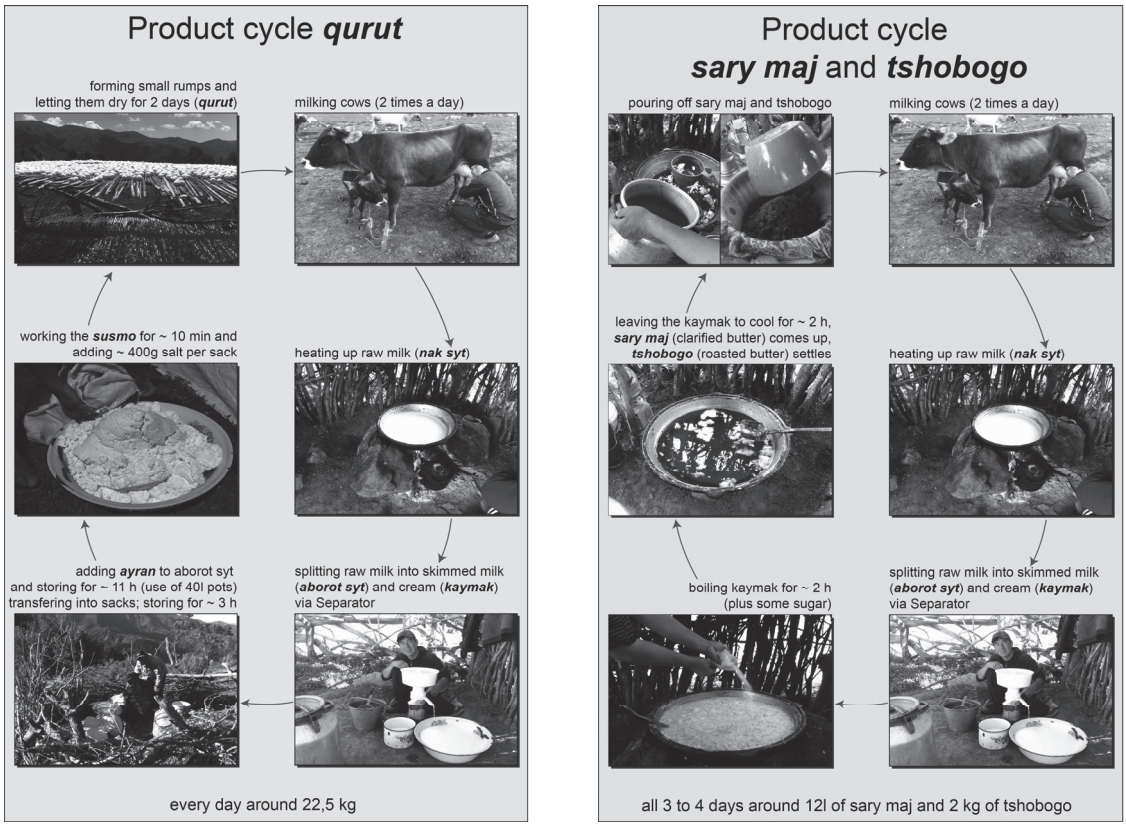

Fig. 3.3: Product cycles *qurut*, *tshobogo* and *sary mai*

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The raw cow milk is directly processed in order to receive durable products. After heating up, the milk is split into skimmed milk (*oborot syt*, rus.-krg.) and cream (*kaymak*, krg.) through the separator. Hence two production lines are established. The process for producing *qurut* is started by adding yoghurt (*ayran*, krg.) to the skimmed milk. This

composite is then stored for about eleven hours in specific pots. The next day it is transferred into sacks from where the remaining liquid is drained. After another three hours of storing, so-called *susmo* (krg.) is obtained. That soft bulk is now worked over for ten minutes and enriched with 400 g salt per sack. The final step is to form small rumps and let them dry for two days. This second production line can be illustrated as follows:

In comparison to the product cycle for *qurut*, the second production line focuses on the cream (*kaymak*) received after splitting the raw milk via the separator. All the *kaymak* (enriched with some sugar) is boiled for about two hours. During this boiling process, the cream is segregated into clarified butter (*sary mai*, krg.) and roasted butter (*tshobogo*, krg.). After leaving the *kaymak* to cool for about two hours the *sary mai* rises to the surface while the *tshobogo* settles on the bottom of the pot. The final step consists in pouring off the clarified butter and then collecting the roasted butter on the bottom.

Qurut, *tshobogo* and *sary maj* are the three most important commodities produced on the high pastures of Kyrgyzstan. In the following chapter we now want to link these products to their role of household income contribution.

Income contribution of dairy products

Evidence suggests that the income of all twelve households spending the summer on *Torpu Kyr* is based on two main pillars. All depend on professional herding with its huge advantage of providing a predictable income which enables pastoralists to calculate their revenue. For instance, if a certain household is taking care of 60 sheep for a period of six months (April to September) an amount of 28,800 KGS (around 430 Euro) is generated and can be planned with.

Dairy farming is the second important pillar of households' economic portfolios. Milk processing offers the possibility for households to trade in commodities to be sold on the market after the summer pasture period. Instead of merely being paid for cows giving milk, the pastoralists make productive use of that milk. In daily routine all twelve households on *Torpu Kyr* produce *qurut*, *tshobogo* and *sary mai* with respective amounts depending on the number of cows giving milk. Quantities among the twelve households differ significantly. The minimal amount of *qurut* produced within the summer pasture period is 120 kg while the maximum is around a ton. The minimal amount of *tshobogo* is only ten kg while the maximum is 300 kg, whereas the minimal amount of *sary mai* is 60 l while the maximum is 800 l. Regardless of the heterogeneous quantities every single household knows how much is paid for any produce at Bazar Korgon Market where demand for the produce is high. Again, such predictability makes the calculation of revenue easier. In average, one kg of *qurut* is sold for 110 KGS (around 1.65 Euro), 1 kg of *tshobogo* for 130 KGS (around 2 Euro) and 1 l of *sary maj* for 150 KGS (around 2.25 Euro).

Now, bringing these two pillars together the income gained through dairy production and shepherding on high pastures can be calculated which is complemented through possession of own as 'emergency kit' that can be used in the case of financial scarcity. One sheep can be sold for around 3,000-8,000 KGS (45-120 Euro), a cow is worth 35,000 to 40,000 KGS (520-600 Euro) and horses range between 80,000 and 120,000 KGS (1,200-1,800 Euro).

Yet it was evident that only four out of twelve households were able to make a secure living out of animal husbandry, since they can rely on enough cattle. The remaining eight families had to make use of additional strategies to raise their incomes. Five households were dependent on remittances relatives were sending from Russia. Two were involved in agricultural activities. Other income sources such as bee-keeping, renting trucks or working at the Bazar Korgon Market were evident too. The numbers behind the specific coping strategies in 3.4 indicate the quantity of households relying on the respective strategies.

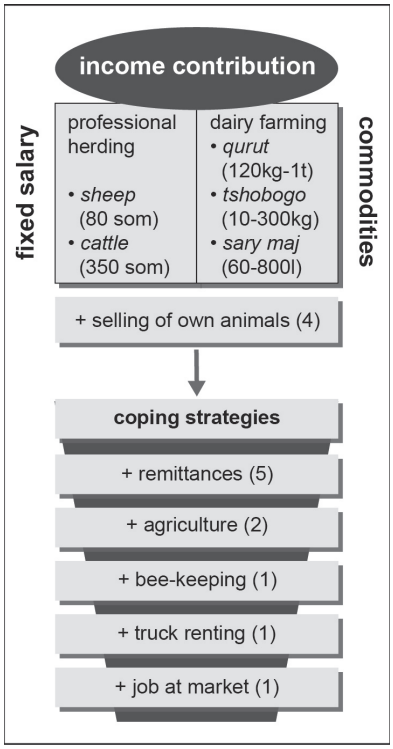

Fig. 3.4: Income contribution of livelihood strategies

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The final research step focused on the commodity chain of the dairy products. After dealing with the concrete production processes of *qurut*, *tshobogo* and *sary maj* interest shifted to the actual way of these commodities when leaving the pasture and the nodes of trade that can be identified on their way to end consumers. The analytical dimensions described above are used to disassemble the commodity chain illustrated in Fig. 3.5.

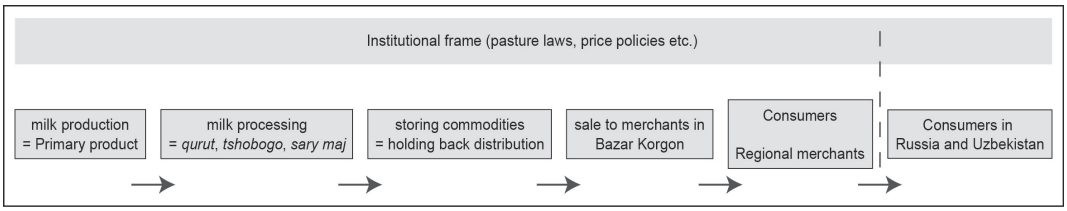

Fig. 3.5: Commodity chain of dairy farming

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Rural dairy farming: input-output structure

There are two major groups of stakeholders regulating the commodity chain. While pastoralists or farmers are in charge of milk production and processing as well as the storing of commodities, merchants take over at the Bazar Korgon Market, reselling the products to either local end consumers or to other wholesale merchants. These in turn frequently cross national borders and sell the dairy products to Russia and Uzbekistan. Because of the commodity chain consisting of two powerful parties the linkage between pastoralists and merchants is important. Prior to fieldwork it was expected that so-called middlemen take over the goods on the pasture directly after their production. However, in

the field it was learned that the farmers store their products until the end of the summer period (prices rise in the winter), but then need the merchants for further marketing of their commodities. In contrary, the merchants need the farmers and their know-how to produce the goods. Taking a look at the individual nodes and asking for the value added to the products, it can be stated that the farmers invest labour and know-how while the merchants add value through their ability to sell and their contacts and customers. Regarding power issues none of these two stakeholder groups dominates the other one or the commodity chain as a whole. In fact, pastoralists and merchants are equally dependent on each other. While pastoralists rely on the acceptance of their produce merchants are not able to trade without the dairy products being delivered. This equilibrium is crucial to the functioning of the dairy farming commodity chain. Still, from an analytical point of view there is a difference in contributing to the commodity chain. Pastoralists submit their products to a successive node (merchants) while these merchants often submit their purchased goods to the end consumer.

Rural dairy farming: Territoriality

Investigating the dairy farming commodity chain in south-western Kyrgyzstan meant to deal with a very concentrated and local chain. Geographically all farmers and the majority of the merchants act in the district of Bazar Korgon. The geographical dimension is subsequently expanded through regional merchants who buy in Bazar Korgon and resell in Kyrgyzstan's cities as Osh, Jalal-Abad and Bishkek. Furthermore there are consumers in Uzbekistan and Russia who are supplied by these merchants too. The following illustration shows the territorial dimensions of rural dairy products.

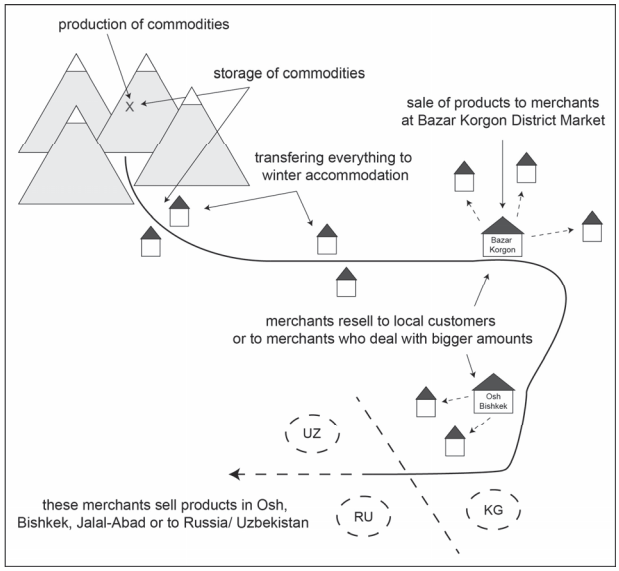

Fig. 3.6: Geographical dimension of the commodity chain

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Rural dairy farming: Governance structure

Looking at governance structures the field of power relations in rural dairy farming is addressed. Negotiations between relevant economic agents take place in quite informal ways. Personal relations matter and merchants buying the products of certain farmers often do so because they know each other and have worked together for years. The same is true for merchants from Osh, Bishkek or Jalal-Abad, buying from local merchants in Bazar Korgon. The governance structure appears to be very long-established and often personal. In essence, the dairy farming commodity chain is a clearly buyer-driven commodity chain with low entry barriers. The producers are bound to the decisions of buyers and are not dominated by one specific stakeholder.

Rural dairy farming: Institutional framework

The institutional framework of rural dairy farming refers to laws – especially pasture laws – as well as further national regulations that frame the room for manoeuvre within the commodity chain. However, formal institutions did not play a significant role in the interaction between farmers and merchants at all. Possibly because of the very regional character of the commodity chain, informal institutions such as family relations and personal friendship play a much larger role than any formal legislation.

Conclusion

As little is known about logistical and economic challenges of rural dairy farming in Kyrgyzstan this paper aimed at a better understanding of dairy farming by looking at social and economic practices carried out on a specific pasture. The final research step focused on the commodity chain of *qurut*, *tshobogo* and *sary maj* in order to track their way to end consumers. The research project on rural dairy production is to be seen in the context of further investigations of different study groups focusing on related issues together offering a quite comprehensive overview on the utilisation and management of natural resources in Kyrgyzstan. Field work on the *jailoo* is essential to develop a better understanding on how daily routines are organised. Introducing the basic elements of dairy farming was crucial in order to properly analyse shape and elements of the commodity chain.

As looking at economic and logistical challenges identification of major income sources was necessary. Evidence suggests that all twelve households are dependent on diversification of sources and relying on two main pillars of which one is shepherding and the other one is dairy farming. Yet it is evident that only four out of twelve households are able to make a living out of animal husbandry. The eight remaining families highly depend on additional coping strategies. To address logistics, interest was shifted to storage and transportation strategies which differ from household to household and are correlated with the origins of the families.

The commodity chains of rural dairy products are small-scale. *Qurut*, *tshobogo* and *sary maj* are very popular in the study region and hence mostly bought and consumed there. As such local markets play a significant role. The products can be seen as niche-products less influenced by globalization and less integrated into global power-structures and related disempowerment. The pastoralists of *Torpu Kyr* are no victims of hierarchical global market-structures but for the most part independent actors. They do not only provide the raw material but also run the processing and storage of the commodities. It is only at the marketing level where external actors come into play. Middlemen are non-existent while farmers sell directly to merchants they know personally at local markets. Both parties can be seen as equally dependent on each other. Dairy farming and the marketing of products are household businesses and no mighty power brokers dominating the market were identified.

Understanding the organisation patterns of pastoralists may able to modify the utilisation of natural resources. Daily routines when carried out in non-sustainable manners are able to severely damage the environment and hence the livelihoods of pastoralist households. But as *Torpu Kyr* is difficult to access, use of the pasture is moderate and so is human-

related impact on the environment. Research on the commodity chain can carve out crucial dependencies between relevant actors and nodes which often deeply influence the interactions and functioning of the respective commodity chain. In this case study it became obvious that the equilibrium between pastoralists and merchants is essential as both fully depend on each other. Still, the commodity chain seems to work efficiently. In fact, dairy farming does not seem to be a major problem area. This may indicate that the diverse additional coping strategies should be addressed when aiming at improving the livelihood conditions of pastoralists.

On a conceptional level this study focusing on the social, economic, and spatial organisation of rural dairy farming contributes to the growing canon of literature that is drawing attention to pastoralists' situation in a globalizing world and the underrepresentation of animal husbandry in commodity chain concepts.

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