



Abbreviations

ABCC	Agribusiness Competitiveness Centre (supported by World Bank)
ABMP	Agribusiness and Marketing Project (supported by World Bank)
GTZ	German Technical Cooperation
MOH	Ministry of health
MAWR&PI	Ministry of Agricultural, Water Resources & Processing Industry
NSC	National Statistic Committee
Som	Local currency
SVD	State Veterinary Department
SME	Small Medium Enterprises
TEV	Total Economic Valuation
UAE	United Arabian Emirates
WISP	World Initiative for Sustainable Pastoralism
VAT	Value Added Tax

Currency 1 USD = 38 som

Introduction

The following knowledge management report on utilitarian values associated to pastoralism and pastoralist areas was implemented by the NGO "Center for Development of Kyrgyz Nomadic Pastoralism" and the World Initiative for Sustainable Pastoralism (WISP), UNDP/GEF program. For the report creation was used the data collected by NGO "Center for Development of Kyrgyz Nomadic Pastoralism". The report is also a result of consultations and studyings with stakeholders (government bodies, pastoralist, NGOs, local governments). During report preparation1 three workshops and a round table in local sites were conducted. Also additional data from National Statistic Committer, Ministry Agriculture Water Recourses & Processing Industry of the Kyrgyz Republic and International donor organizations was used. This report presents a holistic representation of the total value of pastoralism in Kyrgyzstan, using frameworks for Total Economic Valuation elaborated by MacGregor and Hesse (NED, 2006) and the report TEV of Kenyan Pastoralism (Kenya,2007) and highlights the strong economic rationale of the livestock sector, the significant contribution it makes to Kyrgyzstans' economy and environment conditions

Kyrgyz Pastoralism – is much more than simply a mode of livestock production; it is also a consumption system that supports Kyrgyz population, a natural resource management system, key to poverty reduction, development livestock contribution, decreasing external-internal migration and also support of the pastorable livelihood systems.

Policy decisions affecting pastoralism and dry lands/pastures cannot be safely taken in the absence of information over these existing contributions. Let's consider use of pasturelands as an agriculture arable land. These arable lands faced loosing of fertilizer, erosion processes, water shortage; these lands are also difficult to manage because of slope, lack of solar activity, and a short vegetation time. In this case use of these lands as pastures is a better way.

Table 1 shows trend of the changing land use in deal with agriculture and pasture lands. Today the amount of arable lands is decreasing. The reasons of these changes are indicated above.

Table 1: Land as agriculture and pasture uses and official designations 1993-2005 (thousands of ha)

Type of Use	1993	2001	2005
Arable land	1,384.8	1,367.4	1,333.9
Pastures	8,924.1	9,165.2	9,184.8

Sources: Govt. Resolutions Nos. 324, 479 and 521 on the Distribution of the Land Fund for 1993, 2001, 2005 respectively

ownership (i.e. after USSR collapse). Therefore the NGO has built up a good relationship with pastoralists. At present time our NGO works on strengthening sustainable pastoral development, poverty reduction and environment management, working in a consultative manner through local, regional, national and international (as WISP) partnerships to ensure that appropriate policies, legal mechanisms and support systems are established to enhance the economic, social and ecological sustainability of the pastoral livelihood system. The aim of NGO is to provide the social, economic and environmental arguments for pastoralism to improve perceptions of pastoralism as a viable and sustainable resource management system.

Kyrgyz pastoralists

The Kyrgyz Republic is located in center of the Asian continent. Total area of the Kyrgyz Republic makes about 20 million hectares; the population is 5.1 million people. More than two thirds of all population of the country lives in rural areas for which the main source of the income is agricultural sector. There are seven regions in the Republic: Chui, Issyk-Kul, Naryn, talas, Jalaj-Abat, Osh and Batken.(2006). In the Kyrgyz republic the area of pastures takes about 9.1 millions hectares, almost half of all territory , forests takes about 4.2% territory of country. Agriculture is possible only on 5-7% of territory. The pastures are() Tj -120

Small-scale farmers (household plots and private farmers own more than 96% of cattle and sheep, 97% of horses and 85% of poultry). The main measurement of pastoralists wealth is the number of the livestock. Table (table 4) below shows disparateness so that it can be seen that poor families have up to three sheep/goats, and rarely a cow or a horse. Poor families do not possess a car or agricultural machinery.

Households with average income, according to respondents, have ten times more livestock than poor families. Some families have Soviet era cars. Like poor families, households with average income do not possess agricultural machinery.

Rich families own substantially bigger heads of sheep/goat, horses and cattle. These households have one and sometimes two cars, and their own agricultural machinery

Table 4 Households profile in Chui Region

	Number of sheep/ goats, heads	Number of horses, heads	Number of cattle, heads	Availability of a vehicle	Agricultural machinery, pieces
Poor family	2.9	0.2	0.4	0	0
Average family	29.5	2.25	2.72	0.38	0
Rich family	250	24.8	13.8	1.37	1.3

As we see the sector substantially contributes to the national economy by providing high value food, income, employment and foreign exchange. There are also significant indirect benefits which include reduced risks to human health, more sustainable use of arable land and pastures, access to lucrative markets and the possibility to add value to livestock products. According to table 5 the Kyrgyz republic has more than half of territory of pastureland (see table 5), however the livestock sector gives only 25.396 mln. som of output in 2004. There are two reasons to explain why livestock sector gives less output than crop sector. The first one is a changing ownership and dramatically decreasing amount of livestock after USSR collapse. The second one is a seasonal pasture use so more then half of pasture land is used in summer season. Now days there is an incentive measure to develop livestock sector creating by government. It will be discussed in following sectors

Table 5: Pasture Land Use (as of January 1, 2004)(thousand of ha)

Total Area of pasture, thousands	regions	Percent
590	Batken	6,4
1638	Jalal-Abat	18
1350	Issyk-Kul	14,9
2795	Naryn	30,4
1283	Osh	14
633	Talas	7
859	Chui	9,3
The Kyrgyz Republic		
9 188,000 ha		100 %

Source: "Agro press" # 9, January 2004.

Figure 1: Livestock region in Kyrgyzstan



The livestock sector employs about 30% of the total labor force from Agricultural economical sector (58 - 65% of total country population are engaged in the Agricultural sector). The comparison of people and livestock population by regions gives to us difference senses (See table 6). For livestock calculation the Kyrgyz Republic as well as Central Asian Countries uses "Sheep Equivalent Unit (SEU)"*. The SEU is used to calculate pasture capacity, government statistic and etc.

Table 6: People, involved in livestock sector (% from labour resources), and number of animals in seven pastoral regions of Kyrgyzstan (thousands of SEU), (2006)

region	People, %	Cattle,	Yak	Horses	Sheep and Gouts	Pigs	Poultry, million
Republic	21.0	1074.8	21.9	345.2	3876.0	77.7	4278.9
Batken	22.6	103.9	1.2	7.6	415.9	0.3	243.6
Jalal-Abat	6.6	188.7	0.2	51.1	641.1	1.2	667.7
Issyk-Kul	50.2	140.7	8.3	63.9	587.9	13.3	604.3
Naryn	20.8	115.0	7.5	89.1	662.0	0.0	203.0
Osh	27.0	251.1	3.9	73.1	792.4	0.7	607.5
Talas	22.8	564.0	0.2	21.7	358.8	1.4	235.1
Chui	22.2	208.0	0.3	37.6	395.4	59.2	1619.6
Bishkek city		1.7		0.2	5.6	1.3	69.7
Osh city		8.6		0.4	15.2	0.1	26.8

* - calculated using data from table 7
Source: NSC 2006

Table 7. Labor resources and Employment in regions (thousands)

Parameters	2005						
	Batken	Jalal-Abat	Issyk-Kul	Naryn	Osh	Talas	Chui
Population persons	398,9	920,0	166,3	300,0	1,0 million	213,6	754,461
Able-bodied persons	228,4	343,8	153,4	246,0	577,1	116,8	420,050-

Livestock population

Livestock numbers are difficult to estimate and in fact the logic of the pastoral system dictates that livestock numbers must fluctuate over the space of a year. In Kyrgyzstan relies on livestock diversity to harness diverse pasture resources and typical pastoral herds and flocks include grazing cattle, horses, sheep and goats, pigs and poultry. Pastoralism also relies on a diverse array of livestock products

Among smallholders, the earlier dominance of livestock production on household plots has been overtaken by new, private farmers. But while these smallholder farmers have sharply increased production and sales, they have yet widely to adopt modern production techniques or to raise productivity significantly. Livestock marketing arrangements also remain rather rudimentary, despite the rapid growth of livestock product sales. The challenge now is to complete the transformation of smallholder agriculture as the basis for sustained livestock sector growth.

Figure 3 Change in the structure of livestock ownership

Source: NSC, 2004

The shift from public to private livestock ownership⁷ also dramatically changed the nature of production systems (see Figure 3) smallholder production systems now predominate, and among smallholders, private farmers have steadily replaced household plots as the main source of output and sales. While household plots have continued their active involvement in livestock production, as before Independent, their limited access to land and capital has constrained their ability to expand output as far and as fast as private farmers. The private farming sector has driven the growth in livestock sector output, while livestock output in the household sub sector has stagnated. In terms of the number of animals, the changes virtually offset each other, and the net effect has only modestly positive: I e, the decrease in animals held by household farms has been offset by the increased number of animals in the private farms sub sector. Householders, however, remain important – especially in dairying.

According to a questionnaire survey⁸ the average monthly income of households in the Chui pastoral region is 3,356 soms per household (approx USD 1006/annum/household). On the assumption that an average household consists of 7 people, average annual incomes equal about 5,750 soms/head/annum (about USD143/head/annum). This is considerably below the 2001 general national poverty line which was set at 7,500 soms/head/annum. The survey revealed that nearly 16% of households do not receive any income and rely on subsistence farming entirely.

Table 9: Number of Livestock farmers (pastoralists) and average herd sizes in 2003

	Number of farms with livestock	Average herd Size per farm	% of farms with less than 10 animals
Cattle	374,384	2,8	98
Sheep and goats	208,798	13,2	57

access to market information. However, because of their ability to vary production levels and consume the products in the household, and because a wide choice of marketing channels, there is a certain resilience built into these systems. The challenge now is to enable these systems to become the basis for sustained supply of low-cost, high-quality and safe livestock products.

Households and the majority of private farmers generally consume around 40% of their milk production and sell the remaining 60% in either raw or processed form. These proportions are similar for meat production. Sales of young animals are limited because, in the face of greatly limited access to credit, smallholders rely on breeding their own replacement stock. Hides, skins and wool are sold more readily, because this is an active market for these products and because processing skills and capacities of the farmers are limited. Table 10 presents the manner of livestock products.

About half of all products marketed are sold through inter-market-traders, and a somewhat lesser quantity is sold directly to final consumers. There are few direct sales to processors, and almost nothing is marketed through marketing associations or cooperatives because these are only emerging.

There is substantial seasonality in the sales of livestock products. Most milk sales take place during summer; in winter, with lactation rates low, the majority of households consume all of their own milk.

Table 10 Manner of livestock production (thousands metric tons)

Manner of livestock production	Years								
	1990	1992	1994	1996	1998	2000	2002	2005	2006
meat	451.1	401.6	358.0	323.4	329.8	346.2	355.5	318.782	321.123
Milk	1185.0	960.9	871.6	885.3	972.7	1105.2	1173.0	1197.640	1212.098
Eggs	713.8	591.0	201.6	159.6	175.8	207.6	243.1	317.504	328.746

According to government data the table 11 shows value of offtake only 192.1 mln. USD. If we compare with Asset value the value of offtake has small part of asset value (17.3%). It explains that much market activity is made by unregistered bargains. Table 11 also shows high standard deviations of prices that also influence on the receiving accurate data. Taking account all these comments and mention that livestock numbers must fluctuate over the space of a year no less then 50% to increasing we can conclude following points

- The majority of livestock market activities are made by unregistered bargains (data do not allow the consumption and exchange of livestock within pastoral the pastoral community)
- The NSC or other governmental data need to use for estimation of value offtake in livestock production and calculation of value offtake more closely to accurate data
- The table shows high difference of prices. The price depends of animal quality, location and demands. (Many producers slaughter their animals after fattening them on summer pastures and before the onset of winter when feeding costs are high and there is notable weight loss).

The main production objectives of livestock sector are not to increase herd size. This sector economy also aims to increase milk yield, leather production, maintain an appropriate herd structure for short and long term reproductive success, and ensure disease resistance by selective breeding. Such national herd heterogeneity reflects and enhances a diverse production base, and flexibility of the system is an insurance policy that sustains livelihoods and promote conservation (it particularly attitudes to mobile livestock sector or mobile pastoralism)

Dramatic decline and subsequent stagnation in household incomes, combined with rising food prices, led to major changes in the demand for and consumption of livestock products (See table 12). Household incomes fell particularly sharply in rural areas where income levels are lowest. In consequence, consumption of meat and eggs fell by 50% and 27% respectively from 1995 to 2003, and dairy product consumption declined by 48%. Since about 2000, aggregate consumption of livestock products has finally begun to recover due to economic growth and rising incomes, especially in urban areas.

Table 12: Trends in Livestock Product Consumption

	Year			% of change	
	1995	2000	2003	1995-2003	2000-2003
Meat Products (Kg/capita)	25.0	12.8	12.6	-50	-2
Urban	26	15	16	-39	7
Rural	24	12	12	-50	0
Dairy Products (Kg/capita)	171.2	87.4	88.6	-48	1
Urban	87	62	75	-14	21
Rural	204	101	96	-53	-5

About half of all products are sold through inter-market traders, and a somewhat lesser quantity is sold directly to final consumers. There are processed activities in the Households and private farms⁹ almost do not make except milk production.

There is also a challenge in estimating the real value of different products (i.e. the difference between the value received by the producer and retail price). There continues to be traditional inter-regional price variation, but many of the regional price differences have narrowed in the past few years. Important to note is the sharp effect that the existence of a local processor can have on inflating prices in a given region. The interregional price differences are closely linked with differences in processor demand in the various region of the country.

The table 14 presents the value chains for small and large dairy producers, respectively, with prices based on the summer season. The shows the distribution of revenues for one liter of raw milk as it passes through the chains. The calculation of taxation assumes the payment of 20% VAT and 4% sales tax, based on the final sales prices as discovered.

Table 14. Milk producers' value chains for selected processed dairy products

Chain	Price of each categories (Som /liter)		
	Small cheese plant	Large cheese plant	Large milk processor
Producer	4	4	4
Trader	2	2	2
Processor	3	5	10
Trader	3	-	-
Retailer	3	5	7
Taxes	3	5	7
Total	18	21	30

Source: Basis market survey, 2007

The first chain in Table 14 represents the sale of milk by a small producer to a local cheese plant through a local trader and the subsequent sale of cheese to the final consumer. The largest share of the price paid by final consumer is made by processing industries (processor) combining with service sectors of economy (trader, retailer) and taxes. The producer prices consist only 22% (4som), with the balance being fairly evenly divided among the other actors in the transaction chain. Total taxation on the chain is 3 Som, and this is actually paid at the last point of retail.

The second chain represents the sale of raw milk from small producers to a large processor a local trader and the further sale of the cheese to the local consumer. The value shared by the producer remains unchanged, whereas the processor's and retailer's margins are higher than in the forest chain because the chain is shorter and the final sales price is higher. Total taxation now amounts to 5 Som and is collected at two points- the processor¹⁰ and the retailer.

The third chain represents the sale of milk by producers to large processors through local traders for the production of pasteurized milk which is then sold to consumers. The largest return in the chain is made by the processor (10 Som), due to the relatively high net margin. The producer's share is sharply lower (only 20%) because of the high price for pasteurized milk in comparison with raw milk. Total taxes are 7 Som, or 24% of the total value of the chain.

For calculation in the following section of dairy value has been taken end of market price. The average price from table 11 is 23 Som.

Meat production

The marketing infrastructure for live animals in Kyrgyzstan is generally well developed. All major rural areas have live animal markets and they are well attended by traders, producers and exporters. This ensures that prices are competitive and transparent for sellers and there is little opportunity for buyers to act in a collusive manner. Most meat sales pass through the bazaar system. The table 15 presents the value chains for beef and mutton and composes the most common value chains for sales of meat and live animals expressed relative to kilogram of meat.

The first and the third chains on the left represent the sale of live cattle by producers to inter-market and then on through the bazaars¹¹. The vast bulk of the value in this chain accrues to the producers (about 92%), while the shares of the inter-market traders and bazaars sellers are relatively small, reflecting the fact that they work on small margins but large volumes. Traders'

⁹bazaars se787Tf 0 Tc 0.0 Tc 0.80hird chaino2l63nimals e10 Tc 0.10accrunaerall0 -

return are higher when they purchase live animals and then slaughter them, because they can achieve more weight gain by

For estimating of direct values from pastoralism including processing industry and service sectors of economy in the Kyrgyz republic is used calculation of livestock production in previous section and based on statistical data and survey report. The result of the estimations are shown on the following table

Table 14: Estimates Direct Values from pastoralism per capita¹² per annum (2007)¹³

	Proposed estimates (USD)
Dairy consumed	48
Dairy sold	96
Livestock consumed	15
Livestock sold	15
Hides consumed	-
Hides Sold	0.3
Skin consumed	-
Skin sold	0.5
Wool consumed	1.5
Wool sold	3.2
Total	179.5

Table 15: Estimates of total direct values from pastoralism

	Proposed estimates (USD)
Per capita per annum	179.5
National total per annum	915, 450, 000
Percentage of GDP ¹⁴	20.5%
Direct value per hectare ¹⁵	99.6

Indirect values of pastoralism

In this section, we consider indirect values of pastoralism which was indicated in the subsequent section. However, some of these values may overlap and other values may not be entirely attributable to pastoralism. The data presenting in this section illustrates other areas of activity that can be associated with pastoralism.

The "system" that constitutes pastoralism is majority recognized, but often not given much weight in policy decisions that affect

Table 16: Tourism sector indicators (2006)

Tourists	GDP	Government Annual revenue (USD)
219 442	3.6%	164 600 000

Interaction with agricultural sector (manure, traction, transport and logging forages)

These are another indirect values of agricultural and pastoralism that is not well captured in the official reports and literature. The livestock and agricultural sectors have mutually benefits. According to official report ("Agropress" 2004), the forages of the national pasture estimates about in 2167.8 thousand tons of forage unit¹⁷ but additional forages producing by agricultural (Alfa Alfa, maize, oats, processed sunflower, sugar beet and etc.) it is difficult to estimate (it occupies about more then 200 thousand hectare). Taking into account price of oats we can calculate potential value of pasture forages. The price of oats is 230 USD per ton and potential value of pasture forages is equal to 499 mln. USD.

The pastoralists in Kyrgyzstan use manure as heating in winter season and fertilization of arable land. It is also.0032 Tc 0.1 762.48

Table 19: The main Kyrgyz national crop products

	Volume of products ('000 tons)
Wheat	1013.7
Maize	398.5
Cotton	105.9
Tobacco	8.7
Sugar beat	812.2
Oil-bearing crops	77.7
potato	1308.2
vegetables	678.0
forages	-

Indirect values, Unmeasured

Environmental services

Around 90% of forests of the Kyrgyz republic are located at an altitude of 700 to 3600 m above sea level. In accordance with forest code of the Kyrgyz republic, all the forests of the country are considered to be especially valuable natural recourses, exercising the environmental, ecological, sanitary, curative, and other protective functions.

As of January 1, 2003, the forest fund of the Kyrgyz republic amounts to 3321,5 thousand hectares, including the forest-covered area of 864,9 thousand hectares, or 4.32% of the total area of the country. The forest fund area managed by the State agency for Environment protection and Forestry (SAEPF) under the Government of the Kyrgyz republic amounts to 3275.7 thousand hectares, including the forest-covered area of 834.7 thousand hectares.

Despite the fact that the Kyrgyz republic is referred to the forest-poor territories, the Kyrgyz forests have their own unique features and play a great ecological role in the global processes or regulation of the environment status and prevention of the negative changes of climate. Growing on the mountain slopes, these forests contribute to prevention of mudslides, impede the formation of landslides and avalanches in the mountains, and regulate the water discharge in rivers making it more even during the year. Therefore, it is hardly possible to overestimate the significance of the Kyrgyz forests both for Kyrgyzstan and for the whole of Central Asia, where the agricultural is based on the irrigation.

The forestry sector of the Kyrgyz republic is not a deciding branch in the national economy of the country. Its contribution to the national economy is inessential. The gross output of the hunting and forestry branches taken together amounts to 97.6 million soms, or 0.09% of the country.

Table 20 Annual Potential Economic benefits of selected Environment services in Kyrgyzstan

	unit	Volume
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Conclusion

Continuing a long Kyrgyz tradition, the livestock is one of the strongest components of rural economy. The sector contributes substantially to the national economy by providing high value food, income, employment and foreign exchange. There are also significant indirect benefits which include reduced risks to human health, more sustainable use of arable land and pastures, access to lucrative markets and possibility to add value to livestock products. The processing and marketing of livestock products are also attractive to women.

During the USSR era Kyrgyzstan pastures sustained decades of overstocking and increasing signs of degradation. The disintegration of the USSR precipitated a corresponding collapse of the Kyrgyz rural economy and resulted in a dramatic decline in livestock due to the large scale slaughter or bartering of livestock in order for rural populations to survive the initial crisis period. At this period low numbers of livestock and the collapse of the support systems previously in place, resulted in traditional transhumance practices ceasing. However fifteen years later the numbers of livestock in Kyrgyzstan are beginning to gradually recover. Though efforts have been made during these intervening years to replace Soviet era institution and management systems, they have had mixed results and limited practical impact on the ground. Therefore some values need to work out for livestock valuation. Other values remain contentious, particularly the value of services that are ascribed to pastoralism, and requires a lot more research to understand the role that livestock inputs to environmental and economic of country.

Some conceptual and methodological issues have resolved, including the most appropriate way to present the measurable values of assets, income and inputs. However, it is already possible to present rough estimate of direct values of pastoralism to Kyrgyz's economy and to use this report data to compare with other published estimates of potential costs, or economic value, or alternative land use options

A number of points are clear from this report, despite the some of the points were omitted in some areas:

- Pastoralism could be even one of the main contributors to domestic trade and export earnings, given the high value of the subsistence economy.
- Pastoralism is predominantly meat and dairy production system, so a policy focus on wool and fine wool production need to repair previous position
- Data from livestock and pastoralism sector remains poor and government unable to make appropriate policy decisions in an information vacuum.
- Pastoralism should get more deep attention by investment and governmental support – it is making its significant returns of inputs to the State and could become a much g6 Tc Tc 0 Tttpld g9Tw (es maki8vi 0.098t2aking its signc 1.55.m (the 6p