

Sustainable Land Management in the Pamir Alai Region

Value Chain Assessment of Selected Mountainous Products in Alaikuu and Kashka Suu Aiyl Okrugs of the Kyrgyz Republic

Kenesh Shapakov¹, Jyldyz Tabaldieva² and Altynai Davletalieva³

Abstract

This paper focuses on identifying of possible opportunities for local people, living in Pamir Alai region of Kyrgyzstan, particularly in Kashka Suu and Alaiku, by conducting analysis of such value chains as wool production and collection of berries and medicinal herbs. Identification of key features of these two value chains provides insight into which entities benefit from the value of products, and provides the basis for projecting possible additional income to the populations in the areas.

Economic opportunities available for local population in Kashka Suu and Alaiku are very limited. Lack of opportunities linked to harsh terrain and climatic conditions makes livestock, including wool production, and collection of wild resources, are the most available sources of income for local communities.

¹ e-mail: kshapakov@rdf.in.kg

² e-mail: jtabaldieva@rdf.in.kg

³ e-mail: adavletalieva@rdf.in.kg

Population, living in Kashka Suu and Alaiku, is unable to produce good quality wool competitive even on domestic market, but investments in wool sector could help to improve livelihoods. Berries also play an important role in generating income, especially in off agricultural season. Income from berries is managed by women, and used for purchasing goods for family. Medicinal and aromatic plants and herbs sub sector is totally undeveloped and plays important role only for subsistence purposes.

JEL classification numbers: O10, O44

Keywords: value chain, non timber wood products, poverty, livestock, upstream and downstream enterprises, socio-economic development of households, producers, middlemen, small scale processors, collectors, wool, berries, medicinal and aromatic plants

1 Introduction

Kyrgyz Republic is a small country located in Central Asia with population of about 6 million people, majority being ethnic Kyrgyz. It neighbors Kazakhstan to the North, Uzbekistan to the West, Tajikistan to the Southwest and China to the southeast. The country's land area is about 200,000 square km, and almost 90 percent of it is at elevations above 1,500 meters above sea level (a.s.l.). More than half of the land territory consists of rangelands.

Widespread poverty is one of the most pressing problems in Kyrgyzstan; it not only has a negative economic effect, but also leads to social problems. Despite certain efforts and good interventions, the disparity between rich and poor continues to grow, especially disparity between richer urban and poorer rural areas, where 55% of the working population is involved in agricultural sector generating up to 70% of the GNP (CAMP Program, 2008).

Economy of Kyrgyzstan is being predominantly agricultural and majority of population living in rural areas. Poverty level is high, with 32% of population being poor, and 76% of poor living in rural areas (National Statistics Committee, 2010). Poverty level is not the same in all areas of the country. It varies not only from urban to rural areas, but also from valley to high mountainous remote settlements. Although poverty overall has been decreasing within the last five years, in some areas it is still high, with even growing trends in some areas. Such, if in some areas, like Talas Oblast, Naryn or Jalalabad Oblasts poverty level has decreased in 2009 in comparison to 2008, in Osh Oblast it has increased.

Poverty is much linked to country's geography with highest level of poverty concentrated in remote rural areas with scarce economic opportunities. Many young and economically active people left these areas for better job opportunities in Kyrgyz cities, Kazakhstan and Russia. More than 20% of income in Osh Oblast comes from the remittances (National Statistics Committee, 2010). Although there is no official data available on out migration of people from the study area, anecdotal evidence suggests that almost every family has someone working outside of the country.

The study areas are extremely important for their rich, but fragile natural resources. There is a wide range of renewable resources, feeding not only upstream, but downstream areas as well. At the same time, these areas are prone to resources degradation and depletion, caused largely by poor management of these resources and inadequate use practices. Households decide how to use their land based upon predominantly socio-economic interests, while ecological concerns such as preserving natural resources are mostly ignored. Whidespread rural poverty and a lack of support from state institutions to households facing hardship have led to an increase in theft (CAMP Program, 2008). The population there lives in harsh climatic conditions, at high elevation, resulting in limited economic opportunities and poor quality of life. The poverty in these areas is pervasive. Thus, many people, especially young, leave to cities and abroad.

However, many people still remain in the high mountainous areas and raise their children there. Their level of education is pretty high, majority of interviewed people in Kashka Suu and Alaiku areas have at least high school level of education. Only about 2-4% of interviewed have no school education (0.2%) or have incomplete high school degrees.

Livestock is the major economic activity in the study area due to geographic and climatic conditions. Area is rich with grazing lands, with a little less than a half of land area classified as pastures.

With the remoteness of Kashka Suu and Alaiku, with difficulties to reach these locations in winter when roads are closed and people basically isolated and have not much to do, it is feasible to develop other income generating opportunities.

Kashka Suu Aiyl Okrugis located in the western part of the Chong Alay rayon of Osh Oblast, is comprised of six villages and has total population of about 6,700 people, with about 930 people considered to be poor (source: Aiyl Okmotu Social Passport).

Local communities have very limited cropping opportunities with less than 2% of their land being arable. In addition to land scarcity and shortage of irrigation water, climate is very harsh with long and cold winters, so often crops do not have time to ripe before first frost. It is situated at the altitude from 2,800 up to 7,134 meters a.s.l. The average temperature in the coldest month of winter there is about -17.5C, with sometimes dropping down to -40C. The warmest month temperature is +9.2C.

Alaiku Aiyl Okrug is located in Kara Kulja Rayon of Osh Oblast, consists of 3 villages with total population of about 5,850 people, with 930 of them being poor (National Statistics Committee, 2003). These villages are surrounded by high mountains from all sides, while being at the average of 2,400 meters a.s.l. The weather, as in another location, is not favorable for diverse cropping. It is also predominantly livestock area, with only 2% of land being arable and used for

cropping, where they grow barley, potato, some vegetables and hey for own use and consumption. People grow mostly fodder crops, with some wheat and potato, but mostly for own consumption.

2 Research Objective and Structure

The PALM project is a transboundary initiative of the governments of Tajikistan and Kyrgyzstan. It aims to restore, sustain, and enhance the productive and protective functions of the trans-boundary ecosystems of the High Pamir and Pamir – Alai Mountains.

To address the interlinked problems of poverty and land degradation in these mountains, the project aims to improve the social and economic well-being of the rural communities and households utilizing the region's resources to meet their livelihood needs, while preserving its unique landscape and globally important biodiversity.

The project is funded by the Global Environment Facility (GEF) and a consortium of more than 15 national and international partners. The United Nations Environment Program (UNEP) is the GEF Implementing agency for the project. The United Nations University (UNU) is the International Executing Agency.

The Rural Development Fund is one of the national partners of the PALM Project in the Kyrgyz Republic. It conducted a research on small scale mountainous produces' value chain in Alai and Chong Alai regions.

The objective of this study is to identify key features of the value chain for the production of two important products – wool and berries/herbs -- in mountainous villages of the Pamir Alai region of Kyrgyzstan. Identification of these features provides insight into which entities benefit from the value of products if they do so, what are market constraints, and provides the basis for

projecting possible additional income/benefit to the populations in the areas.

The project is focused on issues of economic opportunities for small scale entrepreneurship in remote mountainous areas of Alai and Chong Alai, Osh Oblast which are located in the mountain areas of Pamir Alai. RDF conducted micro-level research in two targeted rural districts to understand the dynamics of how these products are utilized and marketed.

The *specific tasks* of the research are the following:

- To estimate the financial and economic viability of small scale community business operated by livestock holders and natural resources users;
- Describe the socio-economic profile of wool producers and rangelands' secondary users (i.e. gatherers of herbs/berries);
- Estimate the number of livestock producers and secondary users involved in typical types of enterprises (ranging from single-family to large enterprises) and the range of size of these enterprises in terms of output;
- Describe upstream and downstream enterprises involved in the supply chains for each type of enterprise in terms of their typical size (output/ employees) and number;
- Conducting a full value chain analysis and identify constraints in each value chain and make recommendations on their addressing at the policy level and through various interventions.

3 Methodology of Study

The research was conducted within one year of 2010, using quantitative and qualitative methods. Research was constrained by almost non- existence of statistical data on studied products.

Qualitative research was conducted in several stages: first to inform conceptual and theoretical framework, later to collect data and information on

various stages of value chain of wool and berries/herbs, and finally, to collect specific financial information and produce products' value chain maps. RDF team interviewed more than 100 people representing national and local government agencies, stakeholders engaged in the wool, medicinal and aromatic herbs and plants, as well as wild berries collection, production, processing, marketing and trade.

Survey used convenience sampling method and included 394 respondents in both localities: 197 stakeholders of wool chain and 197 stakeholders of wild berries chain. There were 150 collectors and users of medicinal herbs and plants interviewed, but this data didn't give much insight information on commercial use of these resources.

Each product's sample included producers and collectors, middlemen and traders, processors and users.

There were five questionnaires developed and used for stakeholders of five products: wool, honey, medicinal herbs and plants, berries, and other products. All questionnaires have parts with questions on socio economic and demographic data of the respondents, his/her engagement in specific product's chain.

The survey was undertaken by the local community researchers, trained and assisted by the RDF experts. Although using community researchers for the survey was efficient in terms of cost and better understanding of situation in two studied areas, data obtained had some flaws in terms of quality. Rate of error was in average 1.5%.

4 Wool Value Chain

Small-scale livestock production is economically important, because livelihood of about one billion poor people around the world depend on livestock. About 70% of the world's 880 million rural poor people living on less than US \$1

per day are at least partially dependent on livestock for their livelihoods. Livestock production is the principal source of livelihood for poor (FAO, 2010). Population of the study areas is mainly involved in livestock production with limited crop cultivation in lower lying areas, solely for subsistence purposes. About 850,000 sheep and goats are in Osh Oblast (out of about 3,800,000⁴ countrywide), of which about one-third is in the higher mountain areas, where there is an abundant rangeland for grazing.

Sheep play very important role in livelihoods of both areas making 73% of all agricultural animals there, not only because of a meat production but also because of wool. Wool and wool products are among the country's main exports. At a world prices, the value of Kyrgyz wool production would be approximately 30% higher. The Kyrgyz Republic represents about 10% of wool production in former Soviet Union and 1% of global wool production (World Bank, 1995).

According to the data of the Ministry of Agriculture, about 20% of sheep herds in study area are made of "Alai breed", with good quality wool, which can be used by the cottage and larger-scale industry. These fat-tailed, coarse-wool sheep represents an isolated breed, well-adapted for conditions of year-round pasture in Kyrgyzstan, resulting from a long historical evolution to Kyrgyz conditions. During the Soviet period, with the goal of development of the "high-income commercial sheep production" in Kyrgyzstan, it was decided to carry out the widespread inter-breeding of the fat-tailed with the fine wool breeds. In the beginning of 1990, the number of sheep in Kyrgyzstan reached more than 10 million heads of sheep, of which the Kyrgyz fine wool breed comprised the main direction, with more than 90% of all animals. The remaining share was comprised of semi-fine sheep (6%), coarse and semi coarse wool fat-tail breeds and goats making up the rest (4%)⁵. With the collapse of the Soviet Union and

⁴ Kyrgyzstan in figures 2003-2007. National Statistics Committee, 2007.

⁵ Comparative Analysis of Incomes of Private Sheep-Producing Farms from Different Production-Marketing Directions. KSBA. Bishkek, 2003.

dismantling of state and collective farms, there has been no policy in breeding and majority of farmers have mixed breeds, only few are focused on merino fine wool sheep production. However, our research highlighted that number of such sheep in the area is much fewer than reported and quality of their wool is not that great. The majority of sheep bred in these areas are of so-called “Kyrgyz Aboriginal Cross Breed”, which has poor quality coarse wool.

The project’s two focus rayons of Osh region (Kara Kulja and Chong Alai) produce about 1/3 of wool of the Osh region. Osh region produces about 1/4 of the country wool production.

In the course of survey *197 people* were interviewed on production, processing and trade of wool in both areas.

Livestock farmers in both areas are not deriving significant income, according to the survey data. About 65% of interviewed in Alaiku and 37% in Kashka Suu receive not more than 5,000 soms per month (about USD105). Livestock farmers in Kashka Suu seem to have a slightly larger income, than livestock farmers in Alaiku.

In average, all livestock farmers in Kashka Suu have monthly income of about 4,000 soms and annual income not more than 60,000 soms a year (about USD1,270) and livestock farmers in Alaiku have monthly income less than that (about 3,000 soms a month).

Livestock is not the only source of income of all interviewed farmers. It makes up to 40-50% of total income but there are other important sources of income in line of priority such as cropping, pensions and social transferts, and other secondary economic activities.

All interviewed think that they would like to open additional businesses, or engage into additional to agriculture activities but 60% can not do it because of shortage of cash.

When asked what other activities villages would like to be engaged into, many women expressed interest in crafts, making carpets and other items from

wool and hides, men would like to be more engaged into tourism related services, and car repair services, especially in Kashka Suu which is located on important road to Pamir (Tajikistan) and China, and has Peak Lenin attracting many trekkers from around the world.

4.1 Wool Production

While livestock is a major economic activity, all interviewed people in both locations have relatively small number of sheep. More than 80% of interviewed people in Kashka Suu and 90% in Alaiku have flocks with number of sheep below 50.

Many interviewed in Kashka Suu (84%) and Alaiku (83%) have no more than 10 cattle. There are more sheep in Kashka Suu than in Alaiku, where 35% of interviewed livestock farmers have up to 200 sheep in their flocks, while in Alaiku only 6% of interviewed have that many sheep.

Overall annual production of wool in Chong Alai Rayon was 314 tons and in Karakulja rayon 283 tons, as of January 1, 2009 (sources: Osh Oblast Statistics Committee). Kashka Suu AO produces about 60 tons and Alaiku about 18 tons a year. In average farmers produce up to 750 kilos of wool annually.

Currently about 90% of sheep is in private individual farms and 10% in big collective farms.

Farmers interviewed in Alaiku mostly have sheep with coarse and semi coarse wool and only 7% of them have sheep with fine wool, while almost 32% of interviewed in Kashka Suu have fine wool sheep.

In Kashka Suu wool is used mainly for making various products from it for own use, and if possible to sell for additional income. Only 9% have wool to sell it for major income and 19% to produce different items from it for sale.

In Alaiku wool is almost equally produced: for sale as major income source, for additional income and for making products for own use. Only 5% of

interviewed use it to make different items from it for sale.

Shearing is done by men while washing, cleaning and drying by women. Many women use wool for home consumption making out of it different parts for yurt decoration, carpets, and ropes.

Despite the willingness of farmers to sell their wool, survey data confirmed that it is difficult to do. In Kashka Suu, about 60% of interviewed farmers find ways to use their own produced wool, when more than 90% of people interviewed farmers in Alaiku don't do anything with it.

Interviewed farmers do not think that they need additional knowledge on livestock, but many of them, especially women, would like to learn how they can process wool even for own use.

4.2 Wool Processing

Interviewed users of wool buy it in their own villages or receive it as payment for shearing services, and mostly in raw condition (96%). Eevensome localuserscomplain,thatwool they buy is of poor quality. People tell that they don't have proper equipment and don't have money to buy this equipment to use wool for making carpets or other items.

Thus, all who sell wool in Kashka Suu and Alaiku, they sell it raw, without any cleaning or washing it. And they sell it mainly to people in their own villages, who use wool or who act as middlemen.

“Alai” wool was famous as an excellent carpet raw material during the Soviet time. It used to be white, semi-coarse, with length up to 20 sm. This sheep breed was created in 1981 at the breeding farm in Chong Alai rayon. Wool at that time was processed at the Osh and Kara Balta and Tokmok (Chui region) carpet factories, and was even exported to Russia.

With the collapse of the Soviet Union, wool industry had been dismantled and only recently has started to recover, but still at the very limited capacity. While industry was in decoy, with very limited demand for fine, semi coarse wool,

farmers focused on production of meat and breeding meat breeds. This led to further deterioration of wool quality, with all sheep breeds mixed and grazed jointly, with poor animal feeding, improper insemination techniques. Majority of farmers now have Gissar breed sheep, which have wool of very low quality. Gissar sheep wool is either stocked in sheds, burnt or thrown away.

Although people are engaged in livestock and have significant number of sheep overall, there is limited amount of good quality wool in the study area. There used to be merino sheep but they almost disappeared, Alai breed with semi coarse wool is also disappearing. Cross breed sheep which comprise majority of flocks there have in general poor quality of wool which can be used only for felt, requires a lot of processing because of its dirt and odor.

There is only one industrial wool cleaning factory in Tokmok (Chui valley) which is basically acts as a monopolist. Quality of its services is low and at the same time it establishes high prices for cleaned wool which makes Kyrgyz wool not competitive with imported one.

4.3 Wool Marketing

Marketing of all products produced in study areas is limited because of distance to the markets, poor roads leading to these markets, lack of storing, primary processing technologies, facilities and equipment. Thus, livestock products are largely consumed for own purposes, with some surplus of meat and some dairy products are sold at the local markets and in the valleys.

Majority of farmers in Osh region sell their wool in bulk to wholesale buyers for a lump sum for the price of coarse wool. Many small farmers are unable to sell any wool and use it for own consumption or just stock it.

The main processing facilities (wool cleaning and washing) are located far from these areas and there is a limited access to them. Significant markets and commercial buyers are also located far in the valleys, far from the study areas. These factors as well as others such as poor feeding and shearing technologies, as

well as loss of traditional knowledge and skills also affect ability of the producers in these areas to sell their wool for the good price.

Those interviewed, who sell wool, complain that they face two problems: firstly, wool price is very low and secondly, there is very limited number of buyers of wool even for low price (70% of interviewed livestock farmers have no buyers for their wool).

They all understand that transportation cost to take wool to Osh market is too high and would not be reasonable to sell wool directly there.

Furthermore, the small scale of production versus the distances to be covered to reach markets does not attract large wholesale buyers. This occurs even in the case of wool, which is one of the largest products by the total volume and number of farmers engaged in its production in the Pamir Alai region.

All interviewed middlemen noted that demand for wool, even for fine wool dropped especially in 2007, and since then it was getting only lower each year. If in 2007-2009 Chinese and local businessmen from Osh used to come to procure wool from middlemen in Kashka Suu or Alaiku, later it became difficult to find buyers even if to take wool down to Osh market.

Table 1: Export of wool from Kyrgyzstan to China

Years	2005	2006	2007	2008	2009
Tons	1312,1	1391,7	2228,4	1656,3	1531,5

(source: National Statistics Committee, External Trade of the Kyrgyz Republic, 2010)

About 60% of middlemen have their own established clients and their price for wool varies depending on its quality. It can cost from 2.5 somsto150 soms per kilo. Those clients who buy wool from middlemen in Kashka Suu usually buy it in small quantities from 20 kilos to 3 tons.

It is not profitable to engage in wool trade, when the annual profit does not exceed 7,000 soms or about USD200.

4.4 Conclusions

Wool Value Chain (VC) in study areas has four major clusters:

1. Sheep breeding;
2. Wool processing;
3. Yarn making;
4. Making final products.

There are following major stakeholders in wool VC:

Producers - individual livestock farmers, cooperatives, farmers with sheep.

Middlemen – private entrepreneurs procuring wool from producers for further sale of it.

Small scale processors – small cooperatives, small businesses processing wool and adding value to it.

Major expenses producers have in their livestock breeding relate to obtaining fodder, pasture lease, transportation cost, veterinary services cost.

Farmers in Kashka Suu and Alaiku areas have mainly cross breed sheep which are valuable in terms of meat production but have poor quality wool. However, their wool is of poor quality and only from some sheep it can be used for production of coarse felts and hairy carpets. First type wool is either burnt, thrown away or just stored. Better wool is still of poor quality and cost 2.5-5 soms per kilo at the Osh market and high transportation cost doesn't allow farmers to take this wool there.

There is no sufficient knowledge and skills among farmers in study area on working with wool breeds and if there are, they are not practiced, affecting even more quality of wool. Farmers have been focused on meat breeds of sheep for last decade and it led to almost complete degradation and extinction of wool breeds. If there are sheep producing wool, they are often cross breeds. There were many reasons for wool sector collapse, partially it happened because global prices for wool went down, with the dismantling of Soviet Union all state breeding plants

closed and farmers were left with no sources for semen to support breeds at the farm level. Lack of livestock knowledge and skills as well as high poverty level caused poor maintenance of animals. ALAI breed was developed in 1981 for its semi coarse wool to be used in carpet industry. With the collapse of carpet industry the demand for such wool felt down and this breed has almost fully disappeared by now. Farmers have either Gissar breed sheep which are good for meat but their wool can't be used for anything. All the cross breeds produce wool (cross breeds with Alai, merino breeds) which can be used only for handmade carpets and coarse felt production. Merino wool if it is available there is also of poor quality.

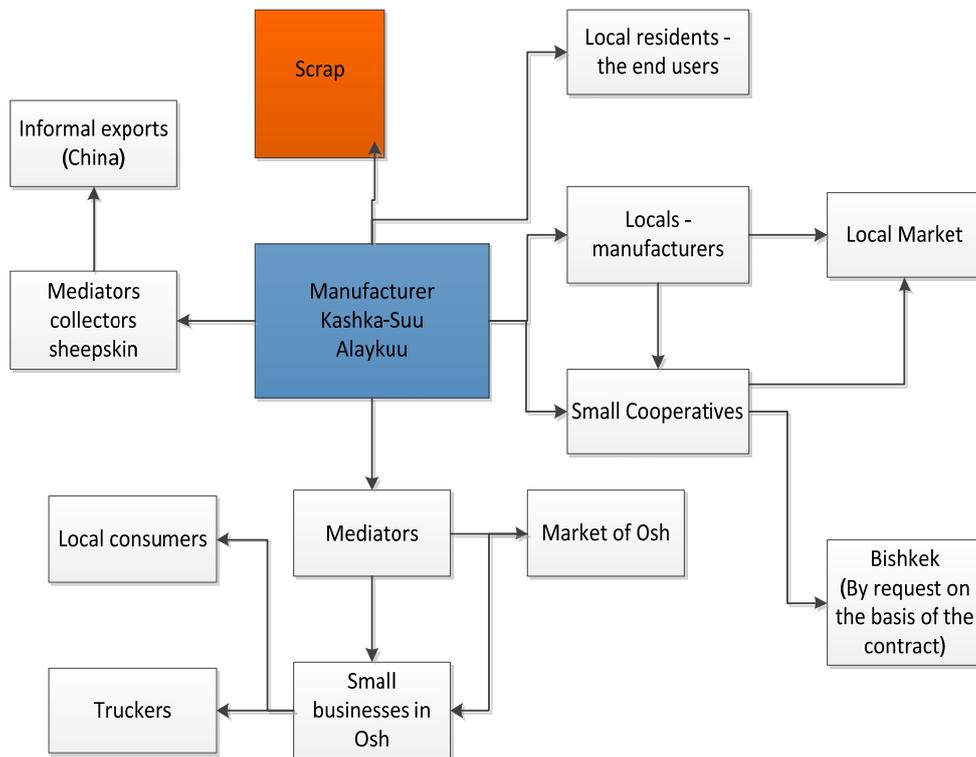


Figure 1: Value Chain Map of Wool Produced in Kashka Suu and Alaiuu

Many interviewed farmers do not realize importance of maintenance principles for wool breeds. They mix different breeds in one flock, and even if they have one breed in a flock, they mix all wool when shearing them, which leads to mixing of colors, various grades of wool, and wool from different parts of one sheep. Thus, for crafts industry it is risky to buy wool from farmers when quality and grade of the stock is not guaranteed. Interviewed craft businesses claim, that about 40% of wool they buy from farmers is wasted.

Demand for wool is low and number of enterprises processing wool produced in study area is limited, hence, local wool is mostly used for home consumption. Locally produced wool is mostly used for home consumption: production of felt pads, yurt decorative parts, and ropes. In spring season 40% of all respondents, mostly women, told that besides agriculture and farming, they work with wool cleaning, washing and processing, make woven and felt carpets. *Price of wool is very low.* Price of wool is generally very low, but for low quality of wool it cost to get rid of it. Since there are no national standards developed and established for wool, it is always decision of buyer how to rate the wool and what price to give for it. All wool in study area is mixed and sold as one grade for low price.

There are no viable and sustainable business connection established between producers of wool and processors. Crafts producers in Bishkek import fine wool from Australia, New Zealand, Spain, Russia. The TUMAR Art Studio in Bishkek, for instance, procures 80% of its wool from New Zealand via Russia, because its quality much better than Kyrgyz fine wool, but the price including all transportation and custom costs is the same – about US\$8-9 per kilo. Local wool is good for felt carpets and artisans prefer to buy it from Naryn, Issyk Kul and Chui where its quality is better than in the South of the country. Even women producing felt carpets and different national souvenirs in Chong Alai and Alai prefer to buy washed fine wool from Bishkek, which mostly comes from Issyk Kul and Naryn regions.

Demand for wool in cottage industry dropped down with inflow of synthetic materials. Demand for wool in Kyrgyzstan, as well as in the whole world, is going down. Wool universally is being replaced by synthetic materials in abundance and for low price supplied by China. Even for ak kalpak traditional Kyrgyz man's felt hat – pride of the nation- people started to use cheap Chinese synthetic materials. The whole cottage district in Osh – Dachnyi – producing felt hats switched to this material in 2010 which made their hats 3-5 times cheaper and affordable by many. In 2010 they didn't buy one kilo of merino fine wool which used to be procured for the production of these hats from Alaiku farmer.

Processing of wool in the South of the country is almost inexistent. Osh carpet factory specifically working on Alai wool, had been almost non functional and totally stopped its activities in April 2010. Other big factories are in the north of the country and they use wool from local farmers which is sufficient to cover existing there demand. Thus, many processors export wool as raw materials without cleaning to Russia, China. Small processors of wool are concentrated in Osh city, their number is very limited, and their processing capacity is not significant.

Kazakh company intended to open a felt sheets producing factory in Kyrgyzstan with full mechanical line of cleaning and washing but these plans with political instability in country were not realized.

Investments in wool sector would not bring large income to many people in the study area, but could help to improve livelihoods. It was evident even before study started that investments in wool sector in project areas will not generate significant income for local populations. Wool economics depend on many external factors, including global prices for wool and its replacement by other man made materials, would require huge investments into breeding, capacity building and support of policy development.

5 Berries Value Chain

About 30 species of the Non timber wood products (NTWPs) are wild –harvested in the Kyrgyz Republic in substantial quantities each year with involvement of thousands of families around the country. The NWFPs conceptually defined by the FAO as “goods of biological origin other than wood, derived from forest, and other wooded land and trees outside of forest” (FAO Forestry, 1999). In the Kyrgyz Republic, these are mostly berries, fruits, nuts, medicinal and aromatic plants and herbs, mushrooms collected in forests and on the vast area of rangelands. Collection of wild natural products was never considered as a significant commercial activity for the country in general, as well as for families in particular. Thus, very few data are available about production of wild harvested fruits and berries. The very nature of the wild harvest means that there are no complete data series that would help to review and analyze the main characteristics of the sector and understand its bottlenecks and trends.

The collection of wild gathered products, even though considered as a very old traditional activity of the people living especially in under-developed area, was never considered as a significant commercial activity for the country in general. For a long time it was presented as a sector providing some supplemental income to vulnerable groups (USAID Agrobiz program, 2008).

In the Kyrgyz Republic the harvesting of various natural resources of forests and rangelands, especially of wild berries, significantly contributes to both household dietary sustenance and nutrition, as well as supplementary household income. Kyrgyz traditional diet, based on livestock economy and nomadic lifestyle is very limited with intake of foods, rich in minerals and vitamins, this is especially true in regards to remote mountainous areas. Hence, household consumption of wild berries remains critical for health and well-being, especially of women and children.

In addition, the sale of wild berries provides significant supplemental household income in season, when no agricultural activities are undertaken in high

altitude and remote rural areas.

Women and children, who are more engaged in 'secondary' economic activities outside of livestock, use income from sale of natural resources for their specific needs, such as medicine, clothes and books.

According to RDF previous study in Kashka Suu aiyl okmotuin 2008, local people derive from 10 to 40% of their income from collection and marketing of wild herbs and berries. The amount of funds obtained from marketing are not that significant, but they play a crucial role in providing cash during off -agricultural season time.

Harvesting of berries and herbs in study areas Kara Kulja and Chong Alai is limited in diversity and scope and focused on few types of berries and herbs determined by availability and market demand.

People collect sea-buckthorn (*Hippophae* L.), deciduous shrubs in the genus *Hippophae*, family *Elaeagnaceae*, wild black and red currant, barberry and rose hip berries. There are some differences between two study areas, people in Kashka Suu collect mostly sea buckthorn and people in Alaiku collect mostly current (41%), less sea-buckthorn (23%) and even less barberries (11%). These berries are grown everywhere in high mountainous areas of the country, sometimes even in the alpine area, mostly along the rivers' banks.

In Kashka Suu and Alaiku study areas, many people collect berries. These are vastly low-income households, which cannot otherwise afford to buy berries or berry products. Collectors of berries do not have big farms, since their major source of income is from additional works, including from entrepreneurship (about 56%). Average monthly income of collectors, according to the survey data, is 1,000-5,000 soms (more than 60%) per household. More than 50% of all respondents receive various social benefits, as poverty, unemployment and disability subsidies. Land use gives only 6% of income.

People receive major income during the year, with additional income from harvesting wild fruits and berries in fall and winter.

People collect berries for own consumption, surplus is sold to better off villagers, intermediaries, or at the markets. Often berries or berry products simply exchanged for other products at the market.

Only few harvesting berries households use them solely for receiving additional income (10%). It is notable that all respondents who collect berries for commercial purposes are only women.

According to the survey data, 80% of interviewed collectors harvest berries for subsistence and for additional income, others only for own consumption (10%).

According to the survey data, among people who use berries less than half collect themselves (40% of respondents), others buy them from these people for own consumption (30% of respondents), others buy for selling them further serving as a middleman (30%).

There were: in Alaiku (N=99) and in Kashka Suu (N=98), engaged in berries value chain (VC). More than 76% of them are women, mostly of middle age.

Collection of berries in study areas is a seasonal work that happens starting from September through December. In general, all household members are involved in collection and, very often, collection is combined with other activities, such as herding.

Berries grow high in the mountains and its often difficult to reach them. People get there mostly on horses and donkeys (65%), or on foot (28%). Only 4% use vehicles to reach there.

Interviewed people collect at average 120 kilos of berries per season, with minimum of up to 40 kilos (45% of interviewed collectors) and maximum of 640 kilos per season.

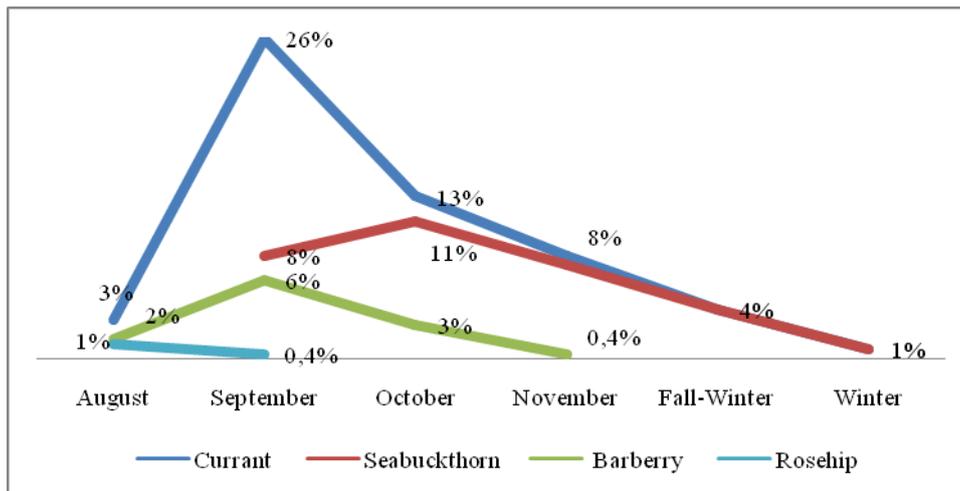


Figure 2: Berries collection time (N=251)

5.1 Berries Processing and Marketing

Given the large number of people of different backgrounds and ages collecting berries on a seasonal basis, this group is the least organized and represents the weakest link along the value chain.

Berries are mostly collected by women and children, men are also engaged, but mostly when collection is more difficult, i.e. in winter or high in mountains. Besides collection, other functions usually conducted by the collectors are cleaning, threshing, separating, basic grading, and simple air-drying.

All interviewed berries collectors do not use any equipment for processing. Very few of them use mechanical meatgrinder (6%). Berries are sold mostly fresh, but also processed in jam (only 15%). One household consumes at average 10-20 liters of jam annually. Many interviewed do not know other ways of processing fruits in homes, to increase its value. That is why income from berries is much lower than it could be. Average annual income from berries makes about 6,000 soms per household (about USD 120), and highest income makes about 25,600 soms (USD 600).

The surplus, if available, is sent to children and relatives living in cities, or goes to local and Osh markets.

Berry traders (N=62) sell berries mostly in bulk of upto 70 kilos to individual buyers. According to the survey data, maximum amount bought by one person in 2010 was 180 kilos. Average price in 2010 for wild current was 200 soms per kilo (about USD 5.00) and maximum paid price for that berry was 500 soms per kilo (about USD 12).

Berries are usually sold directly to users and only 9% of interviewed sell them to traders, who mostly live in the same villages (79%). Only 20% of traders come from other places.

People sell berries to their regular buyers without any preliminary agreements or contracts. People do not apply for any permissions for collection of berries from the State Agency for Environment and Forestry, though required by law if done for commercial purposes. Some faced difficulties when local environmental inspectors caught them during the gathering process, but nobody thinks that it's a serious bottleneck.

Interviewed traders (N=57) buy mostly sea-buckthorn. One middleman buys in average about 50 kilos of it. One interviewed middleman bought last year 300 kilos. They also buy rose hip berries and current but much less than sea-buckthorn.

Middlemen usually go to collectors to buy berries (70% of interviewed middlemen), buy mostly fresh berries, but many of them would prefer to buy jam products. Some process berries into jam to reduce risk to waste berries while looking for buyer, because many of them have no regular clients. Many middlemen are just people from the same village who sell produced jam in the same village. Middleman's income is pretty low making not more than 7,000-8,000 soms a year.

5.2 Collection of Sea Buckthorn in Study Areas

In Kashka Suu aiyl okrug sea buckthorn plant grows along the banks of

Kashka Suu river, in Alaiuku aiyl okrug it grows along the Kugart river's banks. Its area, as noted by local people, has significantly decreased within the last decade. While using improper harvesting techniques, local people destroy the plants. People often cut big branches or even the whole bush to the root, pick berries from it and either throw branches away, or bring them home to use as fence for fencing off livestock, or as fuel. Some even process the whole branches pressing them through the old washing machine's wringer to squeeze juice out and then give debris to animals. Such mode of harvesting inhibits regeneration of plant, make its root system weak so it is often washed away by river floods.

The collection season lasts four months, from mid September until the end of December. In fall it is collected mostly by women and children, when they bring cut off branches home and cut berries off. One person can collect one bucket of berries a day (5-7 kilos). Fresh sea-buckthorn berries can be stored for 7-10 days. In winter the sea-buckthorn is collected by men, who shake frozen by frost berries off the bushes with a stick. Frozen berries can be stored for up to six months.

The difficulties in collection of sea-buckthorn berries mostly relate to large distances one need to cover to reach growing places, and to plant's thorns which hurt when harvesting them.

5.3 Sea-Buckthorn Berries Value Chain

Understanding the value chain of a product is important to the business planning process because it helps to identify the costs, equipment, resources and staff that will be required (Vasquez, Buttolph, 2008). In regards of VC of non timber wood products, it is always important to understand two aspects (Keulen, 2008):

- 1) barriers to access non timber wood products, or harvesters ability to collect them; and
- 2) barriers to market products, or opportunities to sell them.

The value chain approach highlights the whole range of activities that are required

to bring a product through the different phases of production from collection to consumer.

Sea-buckthorn berries-fresh or pressed – sold at the local markets of Kashka Suu, Alaiku and sometimes in Osh. There are three markets in Kashka Suu area, which function on different days of a week. At local markets, berries if not sold, often just exchanged with other produces. Market traders sell sea-buckthorn berries, juices, or jams, as supplemental products to their major trade commodities- meat, dairy product, or other food groceries.

Traders interviewed at the local markets told, that during the season they sell about 100-300 kilos of fresh berries. Price for sea-buckthorn goes slightly down during the peak of the harvesting period. Collection is highly dependent on weather conditions, so collectors' prices change daily in accordance with quantities collected/offered, being highest off the season.

Middlemen sell berries at Osh markets (TESHIK-TASH or CENTRAL) to their regular clients for 50 soms a kilo. These clients/traders sell it for the price of 70 soms per kilo (in 2010).

In Osh, there are about 5-6 traders of sea-buckthorn berries, mostly people originally from Chong Alai and Alai, who have regular suppliers of berries from areas. Sea-buckthorn is also only a supplemental commodity for these traders. Each trader sells about 500 kilos of these berries per season.

It is not feasible to calculate cost of collection of sea-buckthorn berries because it is performed by household members, without engagement of a hired labor. It is also difficult to assess an opportunity cost because there are no labor hired for various works in study areas, but mostly its engaged as a community input.

Other component to cost are insignificant (cost of sacks, transportation cost) and do not notably affect final price. Thus, we based our calculation on zero cost of the product at the collector level.

Middlemen are those who trade at the local markets different products. The

remoteness of study areas from major markets (283 kilometers from Osh- regional center), middlemen deliver products from Osh and sell them at the local markets. Roads are satisfactory, but route itself through several mountainous passes is difficult. Transportation cost from Kashka Suu to Osh is at average 1,500 soms. Since sea-buckthorn is secondary product and profit from its sales is insignificant, it is not possible to calculate transportation cost only for this product.

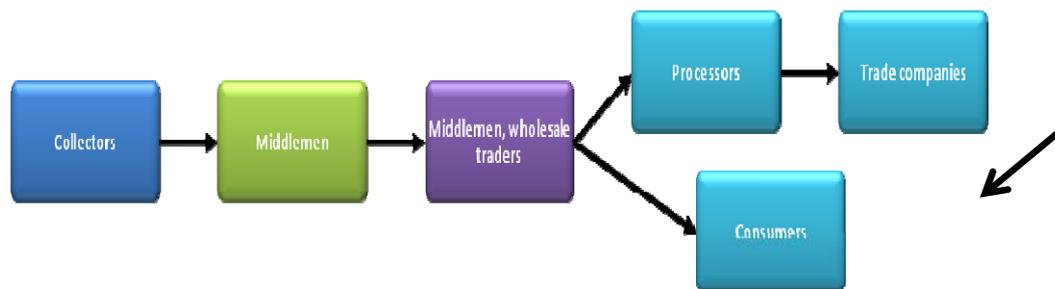


Figure 3: Sea-buckthorn value chain MAP

5.4 Conclusions

NTWP sector is undeveloped in Kyrgyzstan, and even less so in study areas. The NTWP sector can draw its strength from an extensive range of basic products, including berries and herbs, in abundance growing in the mountainous areas of the Kyrgyz Republic. Despite the socio economic importance of NTWPs collection in the study area, berries had never been seen as a perspective commodity to address issues of poverty and nutrition of local population. Only limited species and in small proportion are collected and sold, mostly as fresh products.

Collection is done with using inappropriate methods. Almost all interviewed people use unsustainable methods of berries collection damaging plants and preventing their regeneration without understanding it. Such collection does not increase volume of harvest but slightly makes process easier. Women in these

areas do not have good knowledge of berries, their values and use. They largely lost traditional knowledge on sustainable technologies of their collection and processing.

Harvesting of berries is sector is always supplemental activity and especially important for women. Berries are collected mostly by women and children, men participate in collection only in winter. All women noted that its important part of their revenue because it is managed by them and can be used for their personal or children's needs.

The harvesting of berries is supplemental activity to stock up jam for winter or to receive cash. Collection is done in off agricultural season and often during while grazing animals at the summer and fall pastures. Berries or jams sold as supplemental products. Many women do not know what they can do with these berries and herbs to increase income with little investments.

Major hindrance in developing NTWP sector related to general limited accessibility of NTWPs, lack of knowledge and skills, undeveloped processing industry and poor marketing. There are negative factors such as low quantities, limited variety of available species.

Income from berries is very low because they sold while fresh. People prefer to sell it fresh, because they have no knowledge, technologies, or equipment to store them, process. Input costs (sugar, equipment) is seen too high to be used for jams.

Local berries are not competitive in comparison with berries from the Northern region because of their poor quality, due to improper collection, storing techniques. Low volume of berries supplied from the mountainous areas of Chong Alai and Alai contribute to their low value for processors.

Supply of berries to markets and processors is very sporadic, unpredictable and unstable.

At present the greatest barrier to access is the weak transportation network. Study areas are far from major regional markets. Roads are difficult because of

terrain and they are closed few months in wintertime. Transportation factor limits the harvesting of NTWPs as well as the sale and marketing to geographically narrow and often overexploited forest areas near roads.

In addition to the weak transportation infrastructure and lack of processing equipment, the absence of competition among NTWP buyers in local markets means that harvesters receive only spot market prices. By organizing participants into producer groups, which would help their members with quality control, branding, direct linkages with buyers, the industry should be able to raise prices by adding value to the products.

On the collectors' side, this lack of organization is a result of fragmented collection, performed on apart- time basis by individuals or rural families. Further along the value chain, assembly and processing involves a large number of small stakeholders exposed to strong competition and struggling to secure market share. The main problem is a lack of information on the end product value on the part of both collectors and small traders (buying agents who link the collectors with the big processors).

The prices traders pay for the berries they buy from collectors are set based on the traders' experience on this market and market demand. The prices that processing companies will offer to traders are usually not known in advance. Artificially created market conditions of false low demand, combined with the poverty and powerlessness of most collectors, are exerting downward pressure on prices received by collectors. Therefore, collectors are receiving only a small portion of the product's value. As a result, there is little vertical integration/coordination within the subsector. Obviously, agribusinesses in the subsector would benefit tremendously from collaboration, gaining economies of scale, branding, quality control, and better sales marketing.

Collection and business operations in the NTWP are labor-intensive activities and make berry collection in study area attractive. High labor costs in neighboring countries of Kazakhstan and Russia, as well as plentiful human

resources in study area in winter at a competitive price make cost of berries sector attractive. A large segment of the rural population has extensive experience and tradition in the collection.

The use of these resources and the possibility of putting their production and resale to urban areas in Kyrgyzstan and neighboring countries on a commercial footing thus presented an opportunity to the population in the region

The income from these products could be increased. The income from berries can be significantly increased if value chain is better established and women can add value to the berries by drying or processing into oil, for which they might need technology, knowhow and some simple machinery. Processing must increase both total volumes and variety of products. Awareness on value of berry products among population can help to raise interest to them and thus improve marketing.

6 Medicinal and Aromatic Plants (Maps) Value Chain

The study areas are very rich with medicinal and aromatic plants (MAP). Study included review of this sector for understanding its development and bottlenecks. Survey and semi structured interview results showed that this sub sector even less developed than berries and almost fully oriented towards household own needs. However, with such a high level of poverty and remoteness from major cities with pharmacies and medical services, MAP can play much bigger role in improving livelihoods, nutrition and health of villagers, if they have better knowledge on their use, simple processing techniques (USAID, [12]).

This report provides just general overview of the situation with MAPs in study area, because its value chain is almost non existant beyond collectors. There were *150 people* interviewed in both areas engaged in medicinal and aromatic plants: 90 people in Kashka Suu and 60 in Alaiku. Morethan 62% of interviewed are women.

People collect MAP starting from late spring with the peak of the harvesting in early fall. These are mostly low and middle income families with majority having monthly income below 5,000 soms (about USD 100). People collect at average 60-7- kilos of dried plants, with the biggest collection mentioned of 240 kilos. The variety of collected herbs is very wide.

The value chain of MAP is almost non existent. MAP collectors dry plants themselves in houses and on the roofs and then sell them (85% of respondents sell dried MAPs). They don't use any equipment for drying or other types of processing.

Villagers sell dried MAPs at the average price of 84 soms per kilo, with 200 soms (about USD4.00) to be the highest price and 25 soms the minimal (USD0.50). They sell MAPs in small quantities (2 kilos) and in big with maximum volume being 200 kilos.

The price is determined by collectors, which is usually based on information about previous year price. In general, annual income of collectors from MAPs makes about 4,000 soms (USD 90). MAP collectors do not have regular relationships with middlemen and traders. Buyers come to village on irregular basis and procure available MAPs from the villagers.

There are no special difficulties in collecting and selling herbs, but there are difficulties in obtaining a license to collect herbs, as well as the lack of regular customers. Most of the buyers themselves come to buy herbs (46.3%).

7 General Recommendations

Wool production is not viable economic activity in Alai and Chong Alai region. There will be a need to invest huge resources in wool production and processing to make this sub sector viable.

If to support crafts and cottage industry in the study area, it is important to

make sure that skills developed among farmers and artisans are consistent with the quality and type of wool available, but also with traditional practices and knowledge.

Improvements in wool production and processing would require huge investments on national and local levels: improvements in breeding, animal health care.

Development projects have been focusing mostly on those who make crafts, but if there is no good quality and continuous supply of raw materials, cottage industry cannot survive.

In order to raise livelihood of people in study areas there are two possible *options* based on quality and volume of available wool. They are the following:

- 1) To increase value of wool products at the farm level with transfer to farmers new processing techniques and supplying them with simple equipment. In that case they would be able to produce simple pressed felt sheets and other basic wool processed products for which there is demand at the market.
- 2) To empower farmers to use available wool for own consumption, when they are able to process own wool to produce simple products which can improve their quality of life, such as felt for house insulation instead of throwing it away or burning.

To ensure market for the produced wool products, there is a need to undertake some *activities on the national level*:

- It is important to advocate use of natural local materials for, especially, production of traditional garments and home decoration. There should be a state policy and program on supporting local producers of traditional crafts and garments.
- There is a need to conduct research on products made or possible to make of coarse wool. It is possible to explore traditional use of coarse felt for wall and floor insulation material and adjust it to current housings with simple processing technologies.

To achieve these results, there is a need to support the following activities on the local level:

- There is a need to train specific farmers who have sufficient number of sheep to use proper shearing techniques, do some basic grading and storing.
- To train farmers and women artisans in processing techniques for production of simple goods for own consumption and some for the market.
- To link farmers interested in production of these goods for market into groups for joint marketing of products and conduct training on quality standards, on contractual arrangements and other business skills.
- To link farmers with those who would trade their products and/or buy it.

Berries play an important role in three aspects: 1) generating income in off agricultural season, 2) income from berries is managed by women, and mainly used for purchasing goods for family and especially children, such as medicine, books and stationery for school, clothing; 3) berries are crucial nutritional supplement in otherwise poor diet of mountainous people.

Some improvements could help many people to generate additional income in off -agricultural season, which is long in that area lasting up to 4 months, and to increase value of products for farmers.

- There is a need to undertake research on various very products, feasible to produce in study areas to diversify the products they provide and to focus more on commercially viable activities.
- Villagers, including collectors, processors and traders of berries need to be trained on sound environmental practices in harvesting. They need to be trained in proper collection techniques which are environmentally sustainable and would allow to increase harvest;
- The collectors need to be equipped with simple collection equipment, such as racks, special scissors not only increase harvest and preserve plants, but also to protect their health;

- Collectors need to be trained in simple processing techniques of berries, such as drying, preparation of juices, oils, natural dyes;
- It is recommended to establish informal groups of collectors for joint training, processing and marketing of their products to ensure economy of scale;
- Collectors can also form jointly with processors an informal association. Even though it will be weak in the beginning, it can be strengthened to develop the scope of activities in a way that will provide tangible benefits for the most vulnerable rural population in study area.
- In order to increase volume of products and continuous supply required by market it is recommended to establish nurseries of berry plants at the community level, which would provide seedlings for planting them at the riverbanks closer to the village. This would also ensure broad shift to cultivated plants but it would require investments for the following: (a) the high investment needed for equipment and initial training and planting, and (b) the specific know-how needed for success in growing, harvesting, and storing new species under cultivation.
- In order to increase value, the berry subsector stakeholders need to be trained to produce end-user products for which (a) the high investment needed for processing equipment, (b) the specific know-how related to processing technologies required for success, and (c) insufficient knowledge of consumers' behavior and of distribution channels for these products.
- In order to identify end-user products that can be produced at the farm or community level, there is a need to tap into the traditional medicinal value of the berry to reach the clear potential local market. There is a pretty high domestic demand for sea-buckthorn crude oil, which is not supplied from Russia and Kazakhstan but can be easily replaced by locally produced one.

Medicinal and aromatic plants and herbs sub sector is totally undeveloped and plays important role only for subsistence purposes.

However, if similar to berry sub sector interventions are undertaken, this sub sector might increase its share not only in income of local households, but also become an important factor for health improvement of local population.

References

- [1] Natural Resource Management for Sustainable Livelihoods, CAMP Program, 2008.
- [2] Adding Value Chain to Livestock Diversity, FAO Animal Production and Health Paper, 2010.
- [3] FAO Forestry, 1999.
- [4] Jakob Modéer, Qazim Pirana, Action Plan for the Rapid Development of Non-Wood Forest Products in the Republic of Kosovo, 2009.
- [5] Comparative Analysis of Incomes of Private Sheep-Producing Farms from Different Production-Marketing Directions, KSBA, 2003.
- [6] National Statistics Committee, 2010.
- [7] Kyrgyzstan in figures 2003-2007, National Statistics Committee, 2007.
- [8] Rik van Keulen, SNV Nepal Forest Products Sector Case Study. The Sea buckthorn Experience: Starting a Value Chain from Scratch, 2008.
- [9] Stephanie Vasquez, Lita Buttolph, Huckleberry Market Analysis: A Business Planning Guide for Small Woodland Owners, 2008.
- [10] The Kyrgyz Republic Agricultural Sector Review, The World Bank, 1995.
- [11] Herbs, mushrooms, and forest fruit (medicinal and aromatic plants): Value chain assessment value chain assessment, USAID Agribusiness Project, 2008.
- [12] Profile of the Macedonian WGP Value chain, USAID Agrobiz program, 2008.