PROCESSOR DRIVEN INTEGRATION OF SMALL FARMERS INTO VALUE CHAINS IN KYRGYZSTAN

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1. EXECUTIVE SUMMARY

In Kyrgyzstan over 75 percent of agricultural land is cultivated by small-scale farmers. These farmers are facing a number of challenges in production and marketing due to limited land resources (each farmer has 1.35 ha of land on average), low production volumes, lack of permanent buyers and a lack of knowledge and skills in agricultural technology and agro-marketing. Processing enterprises are also encountering difficulties exporting their outputs, one of the reasons for which is a lack of high quality raw materials.

The aim of this study is to investigate the agricultural sector in the Kyrgyz Republic by analysing the relationship between agro-industrial enterprises and small-scale farmers, and identifying the best practices of agro-industrial enterprises, which have managed to establish effective communication with local farmers and integrate them into national and international value chains.

The study aims to identify a successful model of cooperation between enterprises and small-scale farmers, and to explore the possibilities for integrating small-scale farmers into value chains, as an alternative to cooperatives. The study applies a value chain analysis methodology; the specific tools on data collection and analysis used in the diagnostics were as follows: document analysis, a questionnaire survey, interviews and observation and analysis of stakeholders. In general, the data collection and interviews went well, but it should be noted that some enterprises provided only general information, and were not open to communicating specific information. For example, a manager of one of the processing enterprises refused either to be interviewed or to provide information, claiming that is was a commercial secret.

Key findings

The study revealed that despite enterprises lacking quality raw materials, not all of them see small-scale farmers as the main suppliers of these materials.

The majority of processing enterprises have tried to work with small-scale farmers on the supply of raw materials within the framework of the projects of various international organizations and consulting agencies. According to the enterprises, difficulties have arisen in relation to the dishonesty of some farmers, who took advance payments in cash, fertilizer and seeds, but in the harvesting and delivery season failed to fulfil their commitments, and instead, sold their products on fresh markets, as the prices were higher there. This happened with the companies, Sokoev, Desert, Koopromservice, Richstem and others.

In light of this, many enterprises operate through intermediaries or procurers, which collect produce from small-scale farmers and sell it in bulk to enterprises or large-scale farmers.

In the course of the interview with companies, many of them expressed a desire to work with cooperatives and major suppliers, as working with small-scale farmers creates red tape and jobbing (small volumes and concluding individual contracts, providing each farmer with seeds, other materials and prepayments takes time).

Only a few enterprises considered it possible to work with small-scale farmers. One of these companies is the Agroplast processing enterprise, which deals with fruit and vegetable processing. Another is the Galenfarm processing enterprise, which deals with processing medicinal herbs. The study reviewed the agroindustrial sector and analysed the best practice of cooperation between small-scale farmers and selected enterprises.
The Agroplast processing plant started working with the small-scale farmers on produce delivery in 1995. Agroplast had bad experiences of working with dishonest farmers as well. Therefore, the company decided to make a selection of interested farmers and the company has now been successfully working with small-scale farmers for 15 years. The enterprise provides all kinds of support to small-scale farmers, ranging from providing seeds and fertilizer, providing advance payments and capacity building.

The enterprise operates primarily through a group leader, selected by the farmers themselves. The group leader supplies agricultural inputs and acts as an intermediary for information exchanges.

Interest from a large foreign processing companies and support from international projects has had a major impact on building trust between the Galenfarm enterprise and small-scale farmers.

Farmers in the Issyk-Kul oblast mainly produce potatoes, although marketing their products has always been a challenge. Interest from a German processing company in obtaining raw materials from Kyrgyzstan has made Galenfarm look for producers of medicinal herbs. Since only a small number of farmers produce common valerian, as it is labour-intensive and small-scale work, it became necessary to mobilize farmers and motivate them to acquire the skills needed to produce valerian. Based on commissions from enterprises, valerian is now produced by approximately 300 farmers on 0.05 ha each.

The study revealed the following factors, which contributed to creating successful cooperation between small-scale farmers and processors:

**The major actors: the main engine of the value added chain**

The major actors (large-scale, often foreign trade companies, processing plants) are the engines of the value added chain. The interest of a large German processing company in raw materials has made the valerian value chain operational. The interest of the Agroplast enterprise successfully involved small-scale farmers in the international value added chain. Therefore, the enterprises and producers are to be supported by the Government agencies, large-scale business organizations or consulting agencies in searching for big foreign actors and promoting local produce.

It should be noted that for any chain to be successful, it has to be pulled instead of pushed. This means that the entire value chain must have a strong actor that is able to pull the whole chain along with it. For example, in the previous decade the Kyrgyz walnut value chain existed in a chaotic form, with many actors and intermediaries but no stable partners. However, in this specific case, due to the interest of a large trading company from Europe, the walnut chain developed a sustainable value-added chain, which consists of regular partners; namely, a cooperative, a local exporter and a trade company/importer from Europe.

**A partnership based on mutual economic benefit**

The trust between small-scale farmers and processors was a driver for building those enterprises, which previously functioned on the principles of developing both themselves and the suppliers. An understanding of the fact that the development of raw material suppliers will help to develop processing enterprises as well became the main reason for companies supporting producers through advance payments, provision of seeds and fertilizer and training. For example, the Agroplast company does not only provide advance to farmers and provide the necessary seeds and fertilizer, but also plans production volumes and determines the product quality jointly with the farmers. It also organizes training for farmers, when necessary;
• The willingness and ability of small-scale farmers to form groups

By joining groups, small-scale farmers are able to organize product supplies, facilitate the purchasing process and deliver agricultural inputs. Farmers’ groups are now successfully working in product delivery without any support from the projects. Farmers rarely mobilize themselves to tackle their problems without assistance. Usually farmers are mobilized within the groups or with the support of local and international projects working in the field of rural development. In Kyrgyzstan, it used to be difficult to integrate farmers into groups, but now farmers are doing this more readily, especially since they have started to realize the importance of addressing their problems through combined efforts. In particular, in the town of Kyzyl –Kiya, Helvetas/ICCO implemented the Local Market Development project on mobilizing and linking farmers with the local processing company, and later this model was actively adopted by the local processing company Agroplast.

• The role of consulting agencies and projects

Consulting companies and projects play an important role in building trust between farmers and processors. For example, the Galenfarm and the Agroplast enterprises noted that the basis for working with the small-scale farmers was laid by consulting agencies with the support of international organizations. Moreover, the following policies and state support for the public and private sectors would improve the integration of small-scale farmers into the value added chain:

1. Aspects of the Government Management System

Public authorities play an important role in determining management aspects for small-scale producers. Farmers usually produce either what they are used to growing, or the produce that had a high price in the previous season. At this stage, the country is not properly analysing either the output or demand in domestic and foreign markets. Kyrgyzstan has unplanned crop production and does not consider risks and opportunities. The Government is to introduce a needs analysis system on the domestic and foreign markets, the output analysis, the demand for varieties, volume etc. and to develop an information system for small-scale producers by making it possible to obtain the necessary information about the market;

2. State policy on the introduction of food safety standards.

One of the barriers preventing exports is the inability to meet international food standards, such as ISO and HACCP. Virtually none of the companies that were interviewed had certificates for international standards. In this regard, the Government plays an important role in adopting the legal framework for introducing international quality standards, as well in helping enterprises implement them;

3. Support to small and medium-sized businesses.

Out-dated technology used by companies and producers also prevents products from being exported. For instance, almost every company has problems with obsolete equipment, which was inherited from Soviet times. It is necessary to for public authorities to provide support by issuing loans with low interest rates for purchasing equipment; by introducing a leasing system or subsidizing the enterprises. Besides, the capacity of the processing enterprises needs to be strengthened, as many enterprises do not provide training for their staff members.
Capacity building of small-scale farmers plays an important role

The survey revealed that farmers are trained by various projects, but these training activities mainly focus on agro-technical issues (disease and pest control, crop rotation, fertilizers, etc.) However, farmers need other types of knowledge and skills, such as agro-marketing, agro-management (stakeholder analysis, attracting and retaining customers, legal issues, financial management, quality management, etc.), as many of them cannot make economic analyses, calculate the cost of production, conduct market analyses or forecast yields and crop prices. Farmers need to know how to do these things as the global market is developing very quickly.

One of the Helvetas projects designed a mobile reference book on agricultural product prices, which aims to provide farmers and enterprises with information on current product prices. However, despite the fact that the mobile application was developed four years ago, farmers still cannot use the services due to a lack of knowledge on how to connect to the mobile internet;

4. Introduction of a fair trade approach

A fair trade approach could be used to develop small-scale farmers. Fair trade approaches are effective in supporting and integrating small-scale farmers into international value chains. This approach has the following benefits: minimum price to protect small-scale producers on the market, premium price, which will support producers in improving the economic situation of their communities and others. In addition, it would not only help to protect the interests of small-scale producers, but also strengthen their capacities, to improve their economic situation and to raise awareness on the situation of poor people related to protecting children’s rights and preserving the environment. For example, by introducing the fair trade approach, the Biofarmer cooperative in Jalal-Abad oblast was able to integrate small-scale farmers into the international organic cotton value chain.
2. INTRODUCTION

Value chains are important for the economic development of every actor involved. Moreover, chains operate more efficiently when they are being pulled forward, rather than being pushed. Figuratively speaking, chains that are pulled move smoothly than chains that are pushed. This means that value added chains develop actively when there is a business-driven actor, pulling the whole chain and initiating cooperation through the purchase of products, instead of farmers initiating activities from the bottom and working on product delivery.

In this regard, integrating small-scale farmers into large and stable value chains is possible if the larger actors (processing plants and trading companies) have the desire and ability to involve small-scale producers in their businesses.

In Kyrgyzstan, many farmers complain of facing problems marketing their produce, while at the same time, processors and traders also complain of a lack of raw materials. The main reason for having an unstable value chain is that the actors do not see each other as an integral part of the whole thing and invaluable for the development of each other’s business.

Producers looking for buyers that will pay the highest price for their products and processors looking for suppliers that sell at the lowest price is very risky from an economic point of view.

Enterprises that trust producers are more resistant to adverse market changes, as the actors can provide mutual support if necessary. The study explored the most successful models of the relationship between producers and processors by focusing on enterprises that found a way to integrate small-scale producers into value chains.

The purpose of the study is to identify successful models of cooperation between enterprises and small-scale farmers and explore the possibilities of integrating small-scale farmers into value added chains by focusing on processing as an alternative to cooperatives. The main objectives:

- To propose recommendations for policy options;
- To identify driving factors that can improve farmer-processor linkages;

To achieve the study’s objective, the following methods for collecting data and analysing information were used:

- **Collection and analysis of documents:**
  - Reviewing available materials on the development of the fruit and vegetable industry in the country (media coverage, surveys);
  - Reviewing legislation and statutory acts regulating the processing of agricultural crops;
  - Collecting and analysing official statistics provided by the MAWRPI and NSC for NSC annual publications;
  - Studying industry monitoring reports carried out in the framework of international organizations (Local Market Development in Kyrgyzstan, implemented by Helvetas Kyrgyzstan, the Swiss Agency for Development Cooperation and ICCO, Inter-Curch Organization for Development Cooperation, the Association of Fruit and Vegetable Enterprises in Kyrgyzstan, SIAR and others)

- **Interviewing farmers and processing enterprises**

- **Monitoring**
The study has been implemented in several steps. The objectives of the various steps are presented in the table below:

**Table 1. Project steps and objectives**

<table>
<thead>
<tr>
<th>Project step</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation</td>
<td>Planning; Elaboration of the work schedule; Questionnaire design;</td>
</tr>
<tr>
<td>Data collection</td>
<td>Collection of documents; Studying documents and reports; Preliminary meeting with target groups; Agreeing on interview schedule; Conducting interviews and questionnaire;</td>
</tr>
<tr>
<td>Data analysis</td>
<td>Processing and analysing the data received;</td>
</tr>
<tr>
<td>Elaboration of conclusions and reports</td>
<td>Formulating conclusions based on the analysis; Preparation of the first part of the report; Writing the draft study report; Writing the final version of the study report.</td>
</tr>
</tbody>
</table>

Processing enterprises and small-scale farmers were interviewed, and the experiences of local and international consulting agencies were analysed within the framework of the study. Thus, the main sources of information were:

- Reports of the donor organizations, projects and consulting firms;
- Around 200 farmers, delivering products to the processing plants and the fresh markets;
- Approximately 20 processing enterprises;
- Consulting agencies, NGOs;
- The internet

Despite the fact that the study was very important both for enterprises and producers, not everyone was willing to share information. Some companies refused to provide information by claiming that it was a commercial secret (volumes, costs, etc.). Other companies noted that various researchers approached them with the questionnaire survey and nothing would come of this.

Although some enterprises provided information, the interviewers got a feeling that they were holding something back. Some farmers did not want to share information either, saying that they were busy and that these kinds of studies are useless.
3. CONTEXT AND ENABLING ENVIRONMENT FOR DEVELOPMENT OF PROCESSOR-FARMER RELATIONSHIP

Overview of major production and market trends

The Kyrgyz Republic is a mountainous agricultural country with the area of 199 900 km². It is bordered by the Republic of Kazakhstan to the north; Uzbekistan to the west, Tajikistan to the southwest and the People's Republic of China to the east.

Fig.1 A map of Kyrgyzstan

The total population is 5 552 000, including 2 742 000 men (49.4 percent) and 2 810 000 women (50.6 percent). According to the Ministry of Agriculture of the Kyrgyz Republic, about 76 percent of the population lives in rural areas, out of which about 65 percent is employed in agriculture.

Since the early 1990s, Kyrgyzstan has carried out land reforms, which introduced private ownership of land. The country also adopted a number of laws regulating land and other relations in agriculture. As a result, 576 collective farms and state farms were abolished and replaced by family-operated farms or farming enterprises (locally called peasant and farmers’ farms).

In the course of the land and agrarian reform, farmers received 75 percent of the agricultural land of the country, and about 2 665 000 people (50 percent of the population) received shares of the land.

Table 2 presents the Kyrgyz farm structure in 2012. It shows that about 75.5 percent of all the arable land is cultivated by 345 000 peasant farms and 730 000 kitchen gardens.
Table 2: The Kyrgyz farm structure in 2012 (according to the National Statistical Committee)

<table>
<thead>
<tr>
<th>Farm categories</th>
<th>Quantity</th>
<th>Arable land (ha)</th>
<th>Average size per farm (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State farms, Land Redistribution Fund and collective farms</td>
<td>621</td>
<td>298700</td>
<td>481</td>
</tr>
<tr>
<td>Peasant farms and individual entrepreneurs</td>
<td>344 492</td>
<td>891 800</td>
<td>2.6</td>
</tr>
<tr>
<td>Kitchen gardens and household orchards</td>
<td>733 909</td>
<td>71 100</td>
<td>0.1</td>
</tr>
<tr>
<td>Arable land owned by processors, protected areas, forest fund, water fund and reserves</td>
<td>-</td>
<td>14 300</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>1 079 013</td>
<td>1 275 900</td>
<td>1.2</td>
</tr>
</tbody>
</table>

Source: Land Report, State Registration Service, the Government of the Kyrgyz Republic.

The analysis shows that the majority of agricultural commodities are produced by small-scale farmers, who have an average of 1.35 ha of land each.

Table 3 shows that more than 98 percent of the food produced in Kyrgyzstan comes from small-scale farmers; of this, 60 percent came from peasant farms and 38 percent from personal kitchen gardens. State and collective farms only contributed 2 percent to total production volume.

Table 3. Total output according to the farm types in 2012 (%)

<table>
<thead>
<tr>
<th>Farm type</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>State and collective farms</td>
<td>2</td>
</tr>
<tr>
<td>Peasants’ and farmers’ farms</td>
<td>60</td>
</tr>
<tr>
<td>Kitchen gardens</td>
<td>38</td>
</tr>
</tbody>
</table>

Source: Land Report, State Registration Service, the Government of the Kyrgyz Republic.

This underlines the crucial role of small-scale farmers in the country.

According to the National Statistical Committee of the Kyrgyz Republic, in 2012, agriculture contributed 17.5 percent to GDP.
A comparative analysis of GDP in 2011 and 2012 showed that agriculture increased its contribution by 0.9 percent in 2012. Animal products contributed 47.8 percent of this total; crop production accounted 50.5 percent, services for 1.6 percent and hunting and forestry for 0.1 percent. A comparative analysis of agriculture’s contribution to GDP in 1996-2010 was reflected in one of the articles (http://www.cawater-info.net/news/03-2013/01.htm):

Agriculture’s contribution to GDP dropped by 28 percent between 1996 and 2012, based on a statement by Mrs Lubov Ten, an adviser to the Minister of Economy and a FAO UN National Consultant on February 28 at the capacity building workshop of the Ministry of Agriculture and Melioration in the field of strategic planning. She further stated that in 2012 the share of agriculture in GDP was 18 percent, while in 1996 it was 46.2 percent. The minimum agricultural share in GDP was in 2010 - 17.4 percent and the maximum in 1996.

In 1997 the contribution of agriculture to GDP began to decline. Sharp drops were recorded in 1996 and 1997 (5.1 percent), from 1997 to 1998 (5 percent) and from 2008 to 2009 (4.3 percent).

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Factual Mio KGS</td>
<td>%</td>
</tr>
<tr>
<td>GDP</td>
<td>285 989</td>
<td>100</td>
</tr>
<tr>
<td>Agriculture</td>
<td>47 385</td>
<td>16.6</td>
</tr>
<tr>
<td>Industry</td>
<td>64 308</td>
<td>22.5</td>
</tr>
<tr>
<td>Construction</td>
<td>14 078</td>
<td>4.9</td>
</tr>
<tr>
<td>Services</td>
<td>128 650</td>
<td>45</td>
</tr>
<tr>
<td>Other</td>
<td>31 567</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 4. Structure and growth rate of GDP
The main reasons for agriculture’s decreasing contribution to GDP are:

- Reduction of the areas of unused arable land (hard rainfed, remoteness, rocky, water-logged, the problem of irrigation networks, etc.)
- Lack of fuel and lubricants, seeds and technology;
- Marketing of products; lack of predictive information about agricultural markets to determine the cropping patterns;
- Low agroprocessing capacity. Non-conformity of the certification level of domestic products and processing makes an adverse affect for the export;
- Weak relationships between producers and agricultural processing industry;
- Small farm size, which affects the quality of products.

The cropping patterns in the Kyrgyz Republic for the 2010-2012 period revealed the following:

### Table 5. Cropping patterns

<table>
<thead>
<tr>
<th>Cropping patterns, thousand ha</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total cropland, thousand ha, including</strong></td>
<td>1 145.7</td>
<td>1 159.2</td>
<td>1 165.7</td>
</tr>
<tr>
<td>Cereal crops</td>
<td>625.8</td>
<td>630.3</td>
<td>617.8</td>
</tr>
<tr>
<td>Industrial crops</td>
<td>94.8</td>
<td>104.4</td>
<td>94.5</td>
</tr>
<tr>
<td>Potato, vegetables, melons and gourds</td>
<td>133.6</td>
<td>134.7</td>
<td>143.4</td>
</tr>
<tr>
<td>Fodder crops</td>
<td>291.5</td>
<td>289.8</td>
<td>310</td>
</tr>
</tbody>
</table>

In percentage terms, the cultivated area allocated for crops in 2012 is as follows:

**Fig. 3 Crops growing area**

![Crops growing area, in %](chart.png)

Cereal crops: 53%  
Industrial crops: 8.10%  
Potato, vegetables, melons and gourds: 12.30%  
Fodder crops: 26.60%
Fruit processing is one of the priority and export-oriented industries in the agricultural sector of the economy of the Kyrgyz Republic. There are 22 industrial plants and over 300 mini-shops and private enterprises with a total production capacity for about 127,000 cans per year.

According to this study these enterprises process the following raw materials:

Table 6. The list of raw materials for processing

<table>
<thead>
<tr>
<th>Peas</th>
<th>Mushrooms</th>
<th>Carrots</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walnuts</td>
<td>Grapes</td>
<td>Cabbages</td>
</tr>
<tr>
<td>Lemons</td>
<td>Quinces</td>
<td>Squash</td>
</tr>
<tr>
<td>Mint</td>
<td>Cherries</td>
<td>Peaches</td>
</tr>
<tr>
<td>Melons</td>
<td>Beets</td>
<td>Eggplants</td>
</tr>
<tr>
<td>Maze</td>
<td>Pomegranates</td>
<td>Peppers</td>
</tr>
<tr>
<td>Garlic</td>
<td>Watermelons</td>
<td>Patison</td>
</tr>
<tr>
<td>Persimmon</td>
<td>Pumpkin</td>
<td>Pan squash</td>
</tr>
<tr>
<td>Onions</td>
<td>Beans</td>
<td>Cucumbers</td>
</tr>
<tr>
<td>Green bean</td>
<td>Tomatoes</td>
<td>Pears</td>
</tr>
<tr>
<td>Potatoes</td>
<td>Berries</td>
<td>Plums</td>
</tr>
<tr>
<td>Apricots</td>
<td></td>
<td>Pears</td>
</tr>
<tr>
<td>Apples</td>
<td></td>
<td>Others</td>
</tr>
</tbody>
</table>

Table 7. Amount of the processed types of the raw materials:

<table>
<thead>
<tr>
<th>Number of the processed types of the raw materials</th>
<th>Number of enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>From 10 to 13</td>
<td>3</td>
</tr>
<tr>
<td>From 5 to 9</td>
<td>8</td>
</tr>
<tr>
<td>From 2 to 4</td>
<td>14</td>
</tr>
<tr>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

Thus, only 63 percent of enterprises process at least five types of the raw materials. Three companies process over 10 types of products.

Table 8. Number of processed products

<table>
<thead>
<tr>
<th>Number of products produced by enterprises</th>
<th>Number of enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>From 5 to 8</td>
<td>4</td>
</tr>
<tr>
<td>From 2 to 4</td>
<td>16</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

The types that are processed can be divided into the following groups:

- Canned vegetables, pickles, canned mushrooms;
- Stewed fruit;
- Products of the sweet group (fruit puree);
- Fruit juices;
- Vegetable juices;
- Vegetable salads and caviar;
- Tomato paste, ketchup and tomato sauces;
- Tomato juice;
- Dried fruits;
- Wine, wine materials and alcohols.
**Employment in agriculture**

The total number of people in employment in Kyrgyzstan is 2 278 000, of whom 700 000 work in agriculture (62 percent of the rural population).

Table 9. Total number of employed people in Kyrgyzstan

<table>
<thead>
<tr>
<th></th>
<th>Number of employed, thousand persons</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>male</td>
<td>Female</td>
</tr>
<tr>
<td>Total employed</td>
<td>1 339</td>
<td>9 39</td>
</tr>
<tr>
<td>Including in agriculture</td>
<td>417</td>
<td>283</td>
</tr>
</tbody>
</table>

10 400 women (about 4 percent) work on employment basis in agriculture, and 272 500 women (69.3 percent of the total of number of women) are self-employed.

Distribution of the employees by a business type, sector of economy and sex in 2011

Table 10. Number of employees at processing companies

<table>
<thead>
<tr>
<th></th>
<th>Number of employees</th>
<th>% female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>including</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Female</td>
</tr>
<tr>
<td>Total in KR</td>
<td>85 930</td>
<td>28 330</td>
</tr>
<tr>
<td>In small-scale enterprises*</td>
<td>45 940</td>
<td>15 641</td>
</tr>
<tr>
<td>In medium-scale enterprises</td>
<td>39 990</td>
<td>12 688</td>
</tr>
<tr>
<td>Including in agriculture</td>
<td>5 480</td>
<td>1 310</td>
</tr>
</tbody>
</table>

* A small-scale enterprise is a legal entity or commercial enterprise with 50 employees or less. A medium-sized enterprise is an enterprise with 51 to 200 employees.

The number of managers of the operating economic entities by the economic types of activities in 2012 was taken from the Statistic Committee of the Kyrgyz Republic.

Table 11. Number of managers

<table>
<thead>
<tr>
<th></th>
<th>Number of managers, persons</th>
<th>% female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>including</td>
</tr>
<tr>
<td></td>
<td></td>
<td>female</td>
</tr>
<tr>
<td>Total in KR</td>
<td>484 846</td>
<td>114 738</td>
</tr>
<tr>
<td>Including in agriculture</td>
<td>345 290</td>
<td>61 451</td>
</tr>
</tbody>
</table>

Table 12. Number of chief executives

<table>
<thead>
<tr>
<th></th>
<th>Number of chief executives, persons</th>
<th>% female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>including</td>
</tr>
<tr>
<td></td>
<td></td>
<td>female</td>
</tr>
<tr>
<td>Total in KR</td>
<td>271 150</td>
<td>43 495</td>
</tr>
</tbody>
</table>
Table 13. Average wages of men and women by economic activities (2012)

<table>
<thead>
<tr>
<th></th>
<th>average wage, KGS</th>
<th>ratio of female wages to male wages %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>8 366</td>
<td>78.4</td>
</tr>
<tr>
<td>Male</td>
<td>10 675</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>including in agriculture</td>
<td>4 551</td>
<td>99.7</td>
</tr>
<tr>
<td></td>
<td>4 563</td>
<td></td>
</tr>
</tbody>
</table>

In 2011, according to the National Statistical Committee, the average salary of men was 1.3 times higher than that of women. However, in agriculture, men and women earn similar amounts.

**Market outlets**

The companies surveyed mainly sell their products in Kyrgyzstan, although about 30 percent of production is exported. The most attractive domestic market in Kyrgyzstan is Bishkek, as according to the survey, 42 percent of the enterprises sell 75 percent of their products there. 29 percent of companies sell their products throughout Kyrgyzstan. Most exports go to Kazakhstan and Russia (Moscow, St. Petersburg, and the Far East).

Exports did not develop on a large scale because certification of the international standards (HACCP, ISO) is required. Besides, such large markets like Russia and Kazakhstan require large quantities, which is a challenge for local enterprises. Dried fruits have the biggest export potential; these are currently exported to Russia and China.

**Enabling environment for small farm commercialization and development of small and medium agri-processing enterprises in rural areas**

Farmers and small-scale producers in rural areas are the most vulnerable actors in the value chain. They have to do business in uncertain conditions owing to lack of information, innovation and technology and others. Nevertheless, there are many other supporting actors that are interested in rural development; namely, government agencies, business organizations, consulting agencies, lending agencies and other structures through which villagers get information and knowledge and assistance in the form of loans. The Government supports farmers through indirect price subsidies for irrigation services: water use fees charged to farmers are half of MAWRPI actual current expenditures for the irrigation system. The use of agricultural machinery and equipment is also subsidized indirectly through leasing and attracting services. The fees for renting and leasing agricultural machinery charged to farmers are much lower of the real commercial costs and cost recovery. Farms only have to pay quite low rates of tax; for example, raw materials, including fertilizer, are not subject to value added tax. With support of the international projects and organizations farmers are supplied with fertilizer. Moreover, land tax is quite low.

The Government is making efforts to support agricultural producers and agro-processing enterprises. Public financial support covers about 40 percent of the industry’s requirements, which is fulfilled by providing seeds, commercial loans and grants and the sale of fuels and lubricants at reduced prices. The national annual budget allocates funds to be used for repair and rehabilitation of waterworks facilities, protection and quarantine of the plants and improvement of the epizootic situation.
The development of the network of microcredit institutions has had a positive impact on farmers' access to credit. According to the National Statistical Committee, as of the end of 2011, 969 credit institutions were operating in Kyrgyzstan, including:

- 24 commercial banks;
- 409 branches of credit institutions;
- 260 branches of commercial banks;
- 276 micro-credit companies, credit unions, etc.

Only 20 percent of micro-credit companies finance agriculture.

The basic requirements for micro-credit organizations lending to agricultural borrowers are as follows:

- Collateral in the form of real estate (66.7 percent);
- 33.4 percent of a movable property and guarantors (according to the social survey of the credit institutions).

The micro-credit companies indicated the following problems associated with agricultural loans:

- 44.4 percent - loan default;
- 33.3 percent - agricultural borrowers' financial illiteracy;
- 11.1 percent - lack of a collateral base
- 18.8 percent - banks provide leasing

The agricultural value chain actors identified the following problems related to the complexity of obtaining credit:

- High interest rates;
- Excessive collateral requirements;
- Bureaucracy

The legislation regulating export-import relations for processing fruit and vegetables, shows the complexity of statutory acts at various levels; namely, laws, decrees, regulations, orders and instructions of the relevant ministries and agencies, adopted or revised after the entry of the Kyrgyz Republic into the WTO. In line with the obligations towards the WTO, Kyrgyzstan does not apply export duties. Customs and tariff regulation measures are followed while exporting and importing fruit and vegetable products. Agricultural processing enterprises in Kyrgyzstan are subject to significant tax concessions. For example, processing enterprises are exempted from value added tax by the Government Decree of the Kyrgyz Republic as of 12 August 2009. Moreover, in 2012 changes and amendments were incorporated in Article 239 of the Tax Code, according to which the VAT exemption terms for goods delivery, work and services in the food and processing industry (except for those used for production of the excisable goods), processing of the domestic agricultural raw materials were extended. In addition, agricultural producers, agricultural commodity and service cooperatives, and agricultural processing enterprises are exempt from income tax. No license is required for export and import operations with fruits and vegetables. There are no restrictions or prohibitions on the export or import of goods. All physical entities have the same rights and responsibilities for implementing export-import procedures without a special registration or restrictions. 153 WTO member-countries are provided with preferential treatment. Trade with CIS countries is carried out on the basis of bilateral Free Trade Agreements.
The majority of companies have not introduced quality management systems (ISO standard series 9000-2001), food safety systems (work, processes and services) or the minimum HACCP. This fact greatly complicates the exporting process for enterprises. To date, product quality control is carried out according to the Kyrgyz Standard.

Kyrgyzstan has a single window system for participants of the Foreign Economic Activity (FEA). A single window is a mechanism that allows for standardized information and documents with a single entry point to the parties involved in the trade and transport operations (www.trade.kg).

The following documents are legalized through the single window:

- Certificate of origin of goods;
- Certificate of conformity;
- Phytosanitary certificate;
- Veterinary certificate;
- Sanitary-Epidemiological Conclusion;
- Import quarantine permission, a veterinary certificate;
- Statement of the quarantine inspection and examination;
- Export and import licenses

In addition, the Ministry of Economic Regulation of the Kyrgyz Republic has elaborated the export development strategy for the 2013-2017 period, which covers the main export support objectives.

Consulting agencies in the field of agriculture have been successfully developing for a number of years. To date, there are about 30 consulting firms and NGOs in Kyrgyzstan, which provide consulting and educational services in the field of agriculture. Almost all the consulting firms are supported by international donor organizations, as agricultural consulting is not well developed so far in Kyrgyzstan and has not yet found a niche in the consulting services market. The role of agricultural advisory organizations (AAO), however, is very important. They play a big role in educating farmers on building trust between themselves, traders and processors. One of the main roles of consulting agencies is to introduce IPM approaches through Farmer Field Schools and to build value chains. A list of the currently operating consulting agencies, providing services to farmers, is attached.

International projects and organizations have played, and continue to play an important role in agricultural development and value chain building in Kyrgyzstan by providing substantial support and assistance in the form of grants and technical support to all actors in the field of agriculture, starting from the producers up to the government agencies. The list of international organizations and projects, working in the field of agriculture, is attached.

In Kyrgyzstan, there are numerous business and professional associations, which are joint legal entities in specific industries or areas. The aim of these associations is to lobby for and protect the rights and interests of associations’ members, capacity building and to help them with marketing issues.

These associations are:
1. The Association of Entrepreneurs “Jer Azygy”, which deals with importing agricultural inputs such as fertilizer and pesticides and supplying them to its members;
2. The Association of Food Industry Enterprises, which combines more than 20 processing enterprises;
3. The Cooperatives Union of Kyrgyzstan, which has about 300 cooperative members from all over Kyrgyzstan.
4. The Seed Association of Kyrgyzstan, which comprises of 167 members and has the objective of protecting the interests of the seed industry.

The survey outcomes indicated that farmers face a lack of access to sales markets due to the following reasons:

1. Lack of trust and unstable relations between producers and processors;
2. Lack of the reliable market information, lack of the necessary production forecasting;
3. Low-volume of quality products;
4. Lack of mechanization;
5. Lack of quality seeds and means of crop protection;
6. Lack of knowledge on crop production technologies

Processing plants are also facing difficulties with product marketing and for the following reasons only use 40-50 percent of their capacities:

1. Lack of the high-quality and low-cost raw materials;
2. Small production volumes;
3. Lack of trust and unstable relationships with agricultural producers;
4. Customs barriers (Russia and Kazakhstan joining the Customs Union has become a major obstacle to exporting products from Kyrgyzstan);
5. Lack of working capital and high interest rates;
6. Outdated equipment and lack of new equipment;
7. High competition on the international market

Producers and processors depend on each other, and both parties need to understand this. Building good relationships is an important process that requires investment from both parties, and the parties should work to contribute to the development of the long-term and trust relationships.

On the other hand, Government support is needed both for the producers and processors in all aspects (financial, informational support, benefits, etc.). Building a value added chain is a complex process, which requires the involvement of various supporting organizations (consulting organizations, lending institutions, donor agencies, input suppliers etc.).
4. VALUE CHAIN PERSPECTIVE OF PROCESSOR-FARMER BUSINESS LINKAGES

The study analysed the agricultural sector and resulted in defining two value chains with the most successful business relationships between small-scale farmers and processors. A successful business relationship between small-scale producers and processors was determined based on the outcome of the assessment made by the producers and processors themselves.

The following two value chains are described in this chapter:

1. The tomato value chain in Batken oblast of the Kyrgyz Republic;
2. The valerian value chain in Issyk-Kul oblast of the Kyrgyz Republic

The tomato value chain in Batken oblast

One of the most successful value chains from the point of view of a successful relationship between the actors, as well as its stability and efficiency, is the tomato paste chain in Kyzyl-Kiya city of Batken oblast.

Schematically, the value chain consists of the following actors:

*Fig. 5 The tomato paste value chain*

In this value chain the Mehr Shafhat Public Foundation (PF) acts as an agricultural input supplier (seeds, fertilizers). The Mehr Shafhat Public Foundation is an organization that deals with the development of local communities in the Osh oblast and is currently working with very small-scale farmers. It regularly provides both the PF-supported farmers and the tomato VAC-related farmers with the required agricultural inputs, thus contributing to their development.

Tomato producers come from the villages of Markaz, Karavan, Too-Moyun and Ak-Bulak in the Batken oblast. All of them are located within 30 km of the plant.

The Agroplast processing plant has the status of an agricultural cooperative, established on the base of a canning factory built in 1968. The plant processes juice, jam, vegetables, salads and tomato paste. It has been successfully cooperating with small-scale farmers for 10-15 years.
One private entrepreneur from Yakutia exports the products to the Russian Federation (Yakutia).

Agroplast works with a network of commercial agents of the Shoro Company in the domestic market. The Shoro Company is one of the largest processing plants dealing with processing of non-alcoholic national drinks, and has over 4,000 sales outlets throughout the country. It is characterized as a trade and production company. It is mainly engaged in product distribution within the markets and small retail shops of the cities of Osh and Bishkek.

Local residents of the cities of Osh and Bishkek are the main consumers of products. They tend to buy them from local retail outlets. The tomato value chain has been successfully operating for a long time. It should be noted that a successful model of cooperation has now been achieved between small-scale farmers and the processors, but there are not such strong relations between other actors, such as agricultural input suppliers sometimes.

Response to the market demand

In Kyrgyzstan, tomatoes account for the largest share of vegetable crops. In 2012, out of 45,400 ha of vegetable crops, tomatoes accounted for about 9,000 ha. With an average yield of about 30 tonnes per ha, the total amount of tomatoes produced in 2012 was about 270,000 tonnes. The tomato production trend shows that if fresh tomato production was previously export-oriented, since 2008 the volume of fresh tomatoes that are exported has declined due to the increase of tomato processing increase in the country. Thus, according to the Ministry of Agriculture of the Kyrgyz Republic over 60 percent of tomatoes produced in the country are processed by local enterprises and small workshops, while the remainder is consumed by the local population. In particular, the Agroplast company alone requires an annual average of more than 1,000 tonnes of tomatoes for its tomato paste processing activity, while it requires additional tomatoes for processing of other products.

About 60 percent of Agroplast tomato paste is sold on the local markets, and about 40 percent is exported to Russia. The trend indicates that tomato paste production has fallen due to competition from imported Chinese products. In response to this, processing enterprises have put forward a request to the Government of the Kyrgyz Republic to limit tomato paste imports from China in order to protect domestic production.

The Agroplast processing enterprise exports about 80 tonnes of tomato paste to Russia annually. The tomato paste is exported in accordance with the requirements of the Kyrgyz Standard, and requires a certificate of origin, a certificate of conformity, and a phyto certificate. The enterprise has not introduced food safety systems in accordance with international standards, such as HACCP and ISO. However, the company has realized a need to be certified according to international standards, as it starts understanding their importance for export. The company is well positioned to access foreign markets, but is constrained by the lack of a food safety certificate and the lack of marketing activities. The company itself does not search for customers, does not have its own website and does not participate in fairs. The customers find the company themselves based on recommendations.

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4 Source: The National Statistical Committee of KR.
Adding value, production cost and margin

An added value of the entire value chain is as follows:

*Fig. 6. The tomato value chain*

Small-scale farmers produce and sell their products in the following way:
1. Conditioned (fresh and high quality) products are sold in the fresh market per KGS 15 per kg (USD 0.3 per kg);
2. Non-conditioned products are sold to the processing plants per KGS 4 per kg (USD 0.08 per kg).

Accordingly, the quality of products delivered to processing enterprises is significantly lower than the quality of the products sold on fresh markets.

**Table 14. The production cost**

<table>
<thead>
<tr>
<th></th>
<th>Producer</th>
<th>Enterprise</th>
<th>Wholesale buyer</th>
<th>Retail buyer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw material, kg</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production cost USD</td>
<td>0.11*</td>
<td>1.02</td>
<td>1.29</td>
<td>1.34</td>
</tr>
<tr>
<td>Gross revenue USD</td>
<td>0.25*</td>
<td>1.27</td>
<td>1.33</td>
<td>1.38</td>
</tr>
<tr>
<td>Gross profit USD</td>
<td>0.14</td>
<td>0.25</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>Added value USD</td>
<td>0.14</td>
<td>0.25</td>
<td>0.04</td>
<td>0.04</td>
</tr>
</tbody>
</table>

*the production costs and gross revenue are calculated for the total volume of output considering marketing of the products both to fresh market and the enterprises*

The varieties required both by the farmers and the enterprises are Sultan, 22/74 and Regranda.

**Post-harvest technology**

At producer level there is a problem with product storage due to lack of the cold storage facilities and warehouses. At enterprise level, a 2 000 m² is available to store finished products. The storage facility is located on the territory of the plant, but does not have refrigerating equipment.

The company has no equipment for sorting and calibrating, and such work is done manually by hired personnel. However, as the company noted itself, the calibrating and sorting procedures make are immensely complex, especially in processing cucumbers. The company has obsolete equipment, but
in 2011 it received a USAID grant and purchased equipment for over EUR 200 000 to process apple juice by direct extraction. Currently the company is seeking opportunities to purchase sorting and calibrating equipment.

In Kyrgyzstan, there are more than 22 fruit and vegetable processing plants and approximately 300 mini-shops. This study has explored about 30 enterprises, the manufacturing capacities of which is approximately 400 000 tonnes per season in total. Furthermore, there are large-scale enterprises, such as the Kaindy Kant LLC that have a processing capacity of 3 000 tonnes per day. There are also companies like Ailana LLC with the capacity of 250-300 tonnes per day, and Richstem LLC, which processes 250 tonnes per season. The existing production capacities of the surveyed enterprises allow them to process an average of 160 tonnes per day.

The volume of the raw materials, which the enterprises can process:

Table 15. Capacities of the enterprises

<table>
<thead>
<tr>
<th>Raw materials, tonnes per day (possibilities)</th>
<th>Quantity of enterprises</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 and more</td>
<td>2</td>
</tr>
<tr>
<td>From 40 to 60</td>
<td>5</td>
</tr>
<tr>
<td>From 20 to 30</td>
<td>6</td>
</tr>
<tr>
<td>From 10 to 15</td>
<td>3</td>
</tr>
<tr>
<td>From 0.4 to 10</td>
<td>17</td>
</tr>
</tbody>
</table>

Types of products processed:
1. Compote (stewed fruit);
2. Fruit juice;
3. Tomato juice;
4. Dried vegetables and mushrooms;
5. Canned vegetables, pickles and mushrooms;
6. Vegetable salads;
7. Tomato paste, ketchup and tomato sauces;
8. Fruit preserves (jams and jellies)

In general, quality control is carried out according to the Kyrgyz Standard. Almost none of the companies have introduced quality management systems, such as HACCP or ISO.

Management, marketing and product development

In the 15 enterprises surveyed, operational management is done by the owners of the enterprises, while other companies hire managers. The managers have overall responsibility for the activities of the enterprises, but technologists are responsible for processing. Only some plants have organizational strategic development plans (about 40 percent), but it should be noted that half of the companies have developed strategic development plans for the local USAID project and in order to get loans. Companies explain their lack of strategic plans by saying that they have no time for them and that their strategies are clear enough and do not need to be written down. The managers of the majority of companies participated neither in the management training themselves, nor dealt with the capacity building of their personnel.

Most companies produce outputs under their own trademarks. With support from Helvetas, the Association of Fruit and Vegetable Processing Enterprises produced a single brand “Taste of the Sun”, which is used by five companies. The majority of the enterprises do not have marketing plans for promoting their products.
Over the past five years, about 50 percent of the interviewed enterprises have applied for external funding, which three quarters of them received. However, on the whole, despite a lack of funds, companies have not applied for loans, mainly due to high interest rates and high collateral requirements. One of the managers refused to receive a bank loan as the collateral evaluation process was humiliating, especially when the bank employees photographed all of his property. According to the companies, they are able to provide 50 percent of the total required funds themselves.

The enterprises have no specific risk management plans. Practically all enterprises operate on a contractual basis with customers and suppliers. However, sometimes the contracts do not help and the enterprises suffer losses. For example, According to the Agroplast company director, one of the Kazakh trading companies connected to Agroplast has debts of USD 75,000 dollars.

The Government is implementing certain measures, such as tax remissions, to develop the private sector, which according to both the producers and enterprises are very helpful. Enterprises may be exempted from profit tax and value added tax. The single window system, which only covers started activities, is also designed to promote the export of products. Kyrgyzstan has a single window system for the participants of the Foreign Economic Activity (FEA). The single window is a mechanism that allows the standardized of information and documents with a single entry point for parties involved in trade and transport operations (www.trade.kg).

The following documents are legalized through the single window:

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- Phytosanitary certificate;
- Veterinary certificate;
- Sanitary-Epidemiological Conclusion;
- Import quarantine permission, a veterinary certificate;
- Statement of the quarantine inspection and examination;
- Export and import licenses.

**The valerian value chain**

Common valerian is produced by small-scale farmers in the Issyk - Kul oblast in the Kyrgyz Republic and is primarily processed by the Galenfarm local processing plant and exported to Germany for further processing. A main driving factor for the success of the chain is the major interest shown by a large-scale foreign processing company in receiving raw materials from Kyrgyzstan.

In 2010 the German processing company, Schwabe, approached the GIZ German International Organization in Kyrgyzstan with a request to find a local producer and exporter of common valerian, with the aim of establishing long-term relationships for delivering a large volume of raw materials in the form of the dried valerian roots from Kyrgyzstan. GIZ reviewed the valerian value chain situation, identified the chain actors and held discussions with them. As a result, Galenfarm LLC has become a processor and exporter of the raw materials. Besides, minor works have been carried out to supply the raw materials to the Galenfarm company. Currently the valerian value chain schematic is as follows:
The valerian producers come from the Ak-Suu and Tiup rayons of the Issyk-Kul oblast in the Kyrgyz Republic. Most of the valerian production areas are very small (0.03-0.05 ha) but there are also plantations of between 0.5 and 1 ha in size. The farmers grow, harvest, wash and cut the valerian themselves. In general, farmers market the raw valerian roots to the enterprise, although they sometimes also dry the valerian themselves.

The Galenfarm LLC is a pharmaceutical company engaged in processing medicinal herbs. The company was founded in 1996 and is engaged in procuring raw valerian, drying it, sorting it, packing it and exporting it.

The Schwabe company is a German pharmaceutical family company, established in 1866 by Dr Wilmar Schwabe. In this chain, the company deals with further processing of the valerian, in particular, extracting, crushing/grinding, prepacking, packaging and distributing.

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) is a German Society for International Cooperation, and being a German Federal company, it supports the Government of the Federal Republic of Germany in carrying out tasks in the field of international cooperation aimed at sustainable development. GIZ supports people and societies in developing countries, countries with transition economies, and industrialized countries in their efforts to enhance their own prospects and improve living conditions. GIZ has operated in the territory of the Kyrgyz Republic since 1992. ICCO & Kerk in Actie is a Dutch international donor organization, whose mission is to contribute to reducing poverty. It has been operating in Kyrgyzstan for over 10 years.

The AgroLead Public Association is a consulting agency in the field of agriculture, which provides consulting and training services to small-scale farmers in the Issyk-Kul, Talas and Jalal-Abad oblasts.

5 More information one can be found at: http://www.schwabepharma.com/international.
**Response to market demand**

During Soviet times common valerian was produced in large quantities, but after the collapse of the Union, production was stopped entirely, except for small quantities which were produced by a few farmers to sell on the local market and to export.

At this stage, the valerian production output is about 130 tonnes in green weight and about 18 hectares are planted with valerian. An overall increase in production has been observed. For example, in 2010 the production area was 6 ha, and the total production output was around 40 tonnes. Currently, the German company requires at least 100 tonnes of dried valerian roots a year, for which it is necessary to produce 500 tonnes of green valerian on 60 ha of land. To achieve these volumes, the Galenfarm company, together with the consulting agencies, has tried to mobilize more farmers and increase production.

In 2010, 90 farmers started producing valerian and within two and a half years this number had increased to 500. These farmers successfully produce over 100 tonnes of the green product per year.

### Table 16. The price trend for 2010-2013

<table>
<thead>
<tr>
<th></th>
<th>Green valerian (USD)</th>
<th>Dried valerian (USD)</th>
<th>Dried valerian export price (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>0.61</td>
<td>2.67</td>
<td>4.7</td>
</tr>
<tr>
<td>2011</td>
<td>0.61</td>
<td>2.67</td>
<td>4.7</td>
</tr>
<tr>
<td>2012</td>
<td>0.68</td>
<td>3</td>
<td>4.83</td>
</tr>
<tr>
<td>2013</td>
<td>0.78</td>
<td>3</td>
<td>4.83</td>
</tr>
</tbody>
</table>

### Table 18. Production cost of valerian

<table>
<thead>
<tr>
<th></th>
<th>Producer</th>
<th>Galenfarm</th>
<th>Schwabe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Green valerian, kg</td>
<td>Dry valerian, kg</td>
<td>Dry valerian, kg</td>
</tr>
<tr>
<td>Production cost USD</td>
<td>0.3</td>
<td>1.8</td>
<td>3.8</td>
</tr>
<tr>
<td>Gross revenue USD</td>
<td>0.8</td>
<td>3</td>
<td>4.83</td>
</tr>
<tr>
<td>Gross profit USD</td>
<td>0.5</td>
<td>1.2</td>
<td>1.03</td>
</tr>
<tr>
<td>Added value USD</td>
<td>0.5</td>
<td>1.2</td>
<td>1.03</td>
</tr>
</tbody>
</table>

### Table 19. Distribution of the added value

- **Producers**: Raw material USD 0.8 per kg, Processed product USD 3 per kg
- **Processing company Galenfarm**: Processed product USD 4.83 per kg
- **Export of the German company**
Table 20. Description of the functions of the value chain actors

<table>
<thead>
<tr>
<th>Actors</th>
<th>Photo</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers growing seedlings</td>
<td></td>
<td>Farmers can produce seedlings using one of two methods:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. In a greenhouse;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. In open ground (from May to July) for the next year</td>
</tr>
<tr>
<td>Production of valerian roots</td>
<td></td>
<td>Harvesting valerian roots</td>
</tr>
</tbody>
</table>
Primary processing

Primary processing is done mainly by farmers. The first thing that farmers do is to clean the soil from the roots.

After cleaning, the farmers cut the valerian roots.

Secondary processing

Then farmers wash the valerian roots.
The valerian is usually dried by the processing plant/exporter.

Then the dry valerian roots are packed and exported.

**Post-harvest technology**

The company has a 1,000 m² warehouse in Chui oblast, as well as a facility for processing medicinal herbs in the Issyk-Kul oblast, which is also 1,000 m². Sorting and calibrating is done manually by hired staff, and the product is then packed into bags.

In Kyrgyzstan, there are 18 licensed entities engaged in the processing of medicinal herbs. These belong to the following groups: water-alcohol solutions, ointments, tinctures, extracts and mixture of medicinal plants.

Out of 18 companies only five process valerian, namely:

1. Azat farm LLC;
2. Aidi Medical LLC;
3. Rusichi farm LLC;
4. Galenfarm LLC;
5. Asia LLC

Types of products processed:

1. Medicinal herbs (mint, thyme, sage, bur-marigold, chamomile, nettle, etc.);
2. Herbal potions;
3. Ointments;
4. Tea;
5. Jew's Tar,
6. Paste
Production is carried out based on a license from the Ministry of Health of the Kyrgyz Republic.

**Management, marketing and promotion**

The managers of the majority of companies are also the owners. Most enterprises do not have a strategic development plan, as some of them believe that the plan is in their heads, while others do not see any benefit in developing plans. The companies do not have marketing plans to promote products either, as they have long-term clients, which they home to retain. The enterprises are predominantly focused on local markets and only a minority of them (about 30 percent) export products.

Most enterprises face difficulties with their finances and the majority of them are trying to resolve these problems through gaining credit. Products are promoted on domestic markets through a network of pharmacies, as well as retail outlets.

**Overall assessment of value chain efficiency and constraints for improving communication between farmers and processors**

In general, the value chains described above are effective and sustainable. However, the following elements make the value chains more successful:

1. Joint planning of volumes, terms and prices of the small-scale producers and processors;
2. Regular meetings of farmers’ group leaders and top management of enterprises;
3. Concluding clear contracts with accurate indicators;
4. Companies motivating small-scale farmers by paying in advance and organizing agricultural machinery for the spring sowing activities;
5. Involving local advisory agencies in mobilizing farmers and building trust between small-scale producers and processors.

The limiting factors at this VAC stage are:

1. Lack of quality certificates and food safety certificates (HACCP, ISO). Since the enterprises in the chain are export oriented, they must meet the requirements of the importing countries. And one of the mandatory requirements is a certificate of quality (HACCP, ISO) accepted in these countries;
2. Lack of knowledge and skills in management and marketing. Almost all the enterprises started to work in this chain for the sole reason that they were approached by foreign companies. Thus, the initiative was not from the local exporters, but from external customers. The companies do not have strategic and marketing plans to promote either the companies or their products. Almost none of the companies that were interviewed are building the capacities of either managers or specialists;
3. Lack of skills to trace the market, lack of knowledge on how to search for and analyse information;
4. Deterioration of the old equipment and a lack of new equipment are constraints in increasing sales volumes. In addition, the enterprises’ costs are high.
5. APPROACHES TO THE DEVELOPMENT OF PROCESSOR-FARMER BUSINESS LINKAGES

Enterprises and farmers predominantly work based on verbal arrangements (93 percent) without signing any contracts for product supply. This allows them to avoid contractual obligations, which can pose big risks to processors and producers alike. At the same time, the survey indicates that the most profitable thing for an enterprise is to independently search for and buy raw materials (87 percent), as higher quality raw materials can be bought for cheaper, although this process is time consuming.

Enterprises are not willing to work on a prepayment basis due to lack of confidence in the suppliers of agricultural products and due to a lack of funds. Only a few enterprises issue credit to farmers as there is a risk of farmers not delivering the products. Enterprises experienced that if the market prices are higher than the agreed price, farmers tend to sell their products on fresh markets in violation of their obligations. The most stable model is the preliminary contract model, based on which there is compulsory delivery without prepayments.

Models of relationships between producers and processors (extract from the processing industry analysis report, made by the Helvetas/ICCO Local Development Market project in 2012).

A comparative analysis of the studies in 2008 and 2012 indicated that the relationship models between processors and suppliers changed significantly over this time. The proportion of enterprises using an "enterprise-farmer" cooperation model fell from 37 percent to 3 percent. Moreover, a number of enterprises that issue various types of credit to suppliers have also significantly decreased, from 47 percent to 7 percent. The number of enterprises that provide advance payment has fallen too. Currently, only 7 percent of the companies (41 percent in 2008) pay for raw materials...
in advance (from 20 percent to 50 percent of the total cost), and none of the surveyed companies pay for all of their raw materials in advance (7 percent of enterprises in 2008).

Based on the above aggregate changes it is possible to conclude that there has been a loss of trust between suppliers and processors.

An analysis of all processing companies indicated that there are only a limited number of companies that can manage to build trust and sustainable partnerships with small-scale farmers. The majority of enterprises talked about working with large-scale farmers, suppliers and cooperatives, and the suitability of such approach for them.

This study explored the relationship development models of about 20 companies, but the most interesting are the relationship patterns of two processing plants:

1. The Agroplast LLC (Kyzyl - Kiya city, Batken oblast)
2. The Galenfarm LLC (Bishkek)

### The Agroplast Agricultural Cooperative (processing plant)

Agroplast LLC has the status of an agricultural cooperative and deals with processing fruit and vegetable crops. The company is located in the south of Kyrgyzstan, in the town of Kyzyl –Kiya of the Batken oblast. The company was established on the site of a fruit and vegetable plant, built in 1968. The fruit and vegetable plant successfully worked until the collapse of the Soviet Union, but subsequently was unable to function due to a lack of funding, and all the factory workers were made redundant. However, in 1995 the former plant employees started a cooperative on the basis of the fruit and vegetable plant, which allowed the plant to survive. There are 30 permanent staff but during the processing season the enterprise staff increases to 60-70.

The processed products are divided into the following types:
- Fruit products (juice, jam, preserves, etc.);
- Vegetable production (vegetable salads, paste, etc.);
- Berry products (preserves, jam, juice)

The enterprise produces about 30 types of products and processes 500-600 tonnes of raw materials per year. About 20-30 percent of the plant’s finished products are sold on the domestic market and 70 percent of the production is exported, mainly to Russia and particularly to Yakutia. 2013 saw increased opportunities to export output to Kazakhstan too. Agroplast’s equipment was fully obsolete, and it only managed to modernize the equipment in 2011, the funds for which were partly granted by USAID. In particular, the apple juice production equipment was purchased for over USD 100 million, 70 percent of which came from USAID and 30 percent from the company.

This year the company is actively preparing to produce apple juice and export it to Kazakhstan. The raw materials to be used for juice production are supplied by the small-scale farmers with whom the company has been successfully working for the last 10-15 years. According to the director, in the early days there were big difficulties with supplying raw materials, as the farmers had small pieces of land in remote locations far from the plant and had various varieties of products.

Having tested various models of cooperation, the company started to invest in relationships with small-scale farmers. By providing them with seeds, the company began to receive one variety of products and by providing farmers with fertilizer the company has helped to increase the quality and yield of products.
In the words of the company director, it is necessary to invest in building trust with farmers, even though this takes a lot of time and money. The company provides farmers not only with the necessary agricultural inputs, but it also invests some resources into the development of suppliers. For example, once a year the company provides training to farmers. Also, one of the factors that has played an important role in the development of relations is the joint planning of the production volume and quality together with small-scale farmers.

The company has worked with 70 small-scale farmers on a regular basis over the past 10-15 years. The farmers are joined into the informal groups. Each group has a leader who serves as an intermediary between the company and the farmers. The group leaders provide information, organize logistics and coordinate delivery schedules and volumes.

Fig.9. The scheme of the enterprise work with the small-scale producers

At this stage there are five leaders of the farmer groups that the company cooperates with.

The company provides all kind of support to motivate farmers:

At the beginning of the year, the company invites all the farmers to plan production volumes and to determine their needs in terms of agricultural inputs (seeds, fertilizers, etc.). This planning exercise is done at least once a year.

Advance payments are often made in autumn to be repaid by next year’s harvest. Since, according to the tradition, most of major family events happen in autumn (preparation for school, weddings, funeral repasts, etc.), the farmers feel the greatest need in money in autumn. The company realizes this and pays them in advance against the next year’s harvest. However, in some cases, when the company is experiencing financial difficulties, farmers first deliver their products and sometimes have to wait several months to be paid.

Producers have most of their financial difficulties in spring when the growing season starts. At this stage they need agricultural materials, such as plastic film, seeds and fertilizer. The company provides farmers with the necessary materials at the height of the ploughing and planting season. The materials are delivered to the farmers centrally through group leaders.

The company has a well-developed method for motivating staff; in particular, the group leaders have additional motivation because they receive 5 percent of the yield delivered from the company. In addition, over the past 10 years, the company has helped two farmers to buy agricultural machinery.
by giving them large interest free advance payments. In order to do this, the company investigates the farmer’s economic situation and provides finances against a pledge from the group leader.

The main reasons for Agroplast initiating relationships with small-scale producers are as follows:

1. Lack of raw materials, which opens the risk of the company being unable to deliver the processed products to a buyer;
2. Poor quality of products (various varieties, various quality);
3. The dearth of producers, their remoteness and problems with transporting products to the enterprise;
4. Delivery of the guaranteed raw materials;
5. Ability to plan production volume of the finished product;
6. Untimely payment for products leading to reduced trust between the parties.

The main reasons for farmers initiating relationships with the enterprise are as follows:

1. Receiving advance payments for products in spring, when the funds are needed for sowing, as well as a guaranteed payment in autumn during the period of parties;
2. Ability to obtain the required agricultural inputs (seeds, fertilizers, films, etc.);
3. Guaranteed sales of products specified in the contract;

Contracts with farmers are signed every year and they are different for each farmer. If the parties agree, contracts are signed for 20-30 percent higher supply in the event of any disruption of supplies from any supplier (force majeure). Contracts specify deadlines, volumes and prices. It should be noted that the prices specified in contracts are as negotiated. In the delivery season the company buys products at the market price. Contracts tend to be signed at the beginning of the year (January-March), following discussions on the scope and terms of delivery.

Currently there is no problem in the relations between the producers and the processors, as the actors always try to resolve all issues through negotiations. It should be noted that during the interview it was noticeable that the actors highly value the relationships. One of the farmers mentioned the importance of justifying the confidence of the enterprise and the farmers try to comply with the terms of the contract. The enterprise also noted that one mistake (fraud, dishonesty, lack of keeping promises) can turn into mistrust on the part of producers and lead to the relationship with the suppliers in question being terminated. As for the quality assurance of the products, the actors agreed that the company would commit to supplying the farmers with the required seeds.

**Galenfarm LLC**

Galenfarm LLC is a local processing company engaged in processing medicinal herbs based on raw materials of plant or synthetic origin. The enterprise was established in 1996 in Kyrgyzstan. The company produces 60 different products (water and water-alcoholic solutions, ointments, tinctures, syrups, extracts and bandaging items). The company is privately owned and has an office, two production warehouses, pharmaceutical storage and pharmacies. It is a trading and manufacturing company and is also engaged in exporting and importing medicine from the CIS and other countries. It employs 30 people, 10 of which are specialists with the higher education and 20 have secondary special education.

An economic justification for initiating a relationship between the processing plant and the farmers is a good offer and good demand from the large-scale foreign company. It is profitable for the enterprise to work with the small-scale farmers as valerian production is a labour-intensive process, and it is easier for the farmers to cope with valerian production on smaller plots than on the large
plantations. It is profitable for small-scale farmers to produce valerian, as by using a small piece of land, they can earn a good income. In addition, there is the major benefit of guaranteed sales.

The business relationships between enterprises and farmers is formal. The company enters into individual contracts with each farmer for the supply of products. Each village has a responsible leader of a group, who negotiates with the company on deliveries, timing and volumes.

The company provides farmers with prepayment of up to 50 percent of total volume of delivery, and provides seeds at the beginning of a season, if necessary. The company meets with farmers on a regular basis and visits the field together with the farmers to inspect the sites.

No major problems in establishing relationships with the farmers have arisen. The factors that have played a role in building a successful relationship model, which resulted in building a sustainable value chain are as follows:

1. IPM/FFS approach for working with farmers;
2. The product delivery model and value-added chain;
3. Management of the processing facility;
4. Supporting organizations.

With the support of the GIZ and AgroLead consulting agencies, the enterprise managed to establish a trusting relationship with farmers. The training of farmers on integrated production management played an important role, when the farmers were trained on valerian production for the whole season. The consulting agencies applied a Farmer Field School (FFS) approach to join the farmers for producing valerian and building the valerian value chain. The training approach consists of joining the farmers in one group (15-20 persons) and training them in the seasonal production of valerian (from seed to seed). At first, six Farmer Field Schools (FFS) were formed, and in 2012 the number of FFS reached 35. This approach is interesting in forming a group of farmers from one village, with the objective of producing a certain volume of the single-type and single-variety products through experience sharing and learning. This creates certain conditions for the processing plant, as it simplifies the delivery of products. In addition, the company can count on the product quality as the group cultivates the crop following similar technologies.

During a year, several meetings between the producers and the processors are held to discuss the current situation relating to crop production. At such meetings, the farmers and processors discuss problems, agree on prices, plan the volume of delivery and develop the delivery schedules. The group leaders, selected by the group themselves, participate in these meetings on behalf of the whole group. A leader is entitled to sign a contract with a processing plant on behalf of the group or at the request of a group, and although the contracts are individually signed with each farmer the group leader is responsible for monitoring the quality and quantity of the raw materials supplied. The farmers deliver their products to the processor’s collection points according to the delivery schedule. The leaders and master trainers participate in product delivery so as to be able to control the quality and volume of production.

The management of the processing enterprise is open and available to discussing current issues with farmers. Frequent meetings of the enterprise director with the farmers also have a positive effect on sustainability of the value chain. Following the delivery schedule and paying farmers on time increases the confidence and desire of the farmers to work in this area.
Supporting organizations play an important role in value chain building between the chain actors too. In this specific case, AgroLead, ADI and GIZ consulting agencies facilitate the entire production process, supply and export of valerian.

While discussing the economic side of valerian production with farmers they indicated that their incomes had increased by 15-20 percent since they started producing valerian. However, the most important thing in this chain is the availability of a guaranteed long-term product market. Previously farmers in this area used to produce only potatoes. Due to a lack of guaranteed sales, the farmers could make good money in one year, but in the second year could only cover the costs of production. Producing valerian enables farmers to plan revenues, as product prices are stable. Valerian is a profitable crop (profit margin is 45 percent) and the product profitability increases if wage labour is not used.

Valerian production is a time consuming process as it requires agro-technology of valerian production to be followed closely, for example, frequent watering is required just after planting, as the valerian yield depends greatly on this process. At first, farmers faced difficulties complying with the agro-technical rates due to a lack of knowledge and skills related valerian production. Now, however, farmers are not facing problems with production.
6. CONCLUSIONS AND RECOMMENDATIONS

The main advantages for processors are:

1. **Sustainable supply of raw materials.** Companies that manage to build trust with small-scale producers are guaranteed a supply of raw materials. For example, small-scale farmers noted highly valuing the trust of companies and in light of this they make every effort to justify this trust. For example, one farmer indicated that in one year, he lost his entire crop as a result of applying the wrong pesticide, but so as not to lose the confidence of the enterprise he bought products from his neighbour and delivered them to the company. Perhaps the company would have treated him understandingly, if he had explained the situation. Nevertheless, this fact shows that farmers are willing to take great steps not to lose the confidence of the enterprise.

2. **Payment.** When enterprises are having difficulties, farmers are willing to supply products without immediate payment, and are willing to wait for payment for as long as necessary. This is true with the Agroplast company as well;

3. **Transportation.** The company has no problems with the transportation of products as the farmers transport the products themselves to the enterprise’s premises. This happens due to the small product volumes, allowing farmers to deliver the products in their own vehicles.

4. **The quality of products.** The company has an opportunity to receive single-variety products as the enterprise provides the small-scale farmers with the required seeds; however, there is a danger of receiving products of varying quality from various suppliers.

In the course of the study the following positive lessons were learned:

- **Mutual trust.** As noted both by the enterprises and farmers there is a need to invest in building trustful relationships. The trust between the actors plays an important role in the development of chains.

- **Capacity building among chain actors.** The availability of the necessary knowledge and skills on agricultural technology, management and marketing plays an important role in chain development.

- **The major actors - the main engine of the value added chain**
  The major actors (large-scale, often foreign trade companies and processing plants) are the engines of the value added chain. The interest of a large German processing company in the raw materials has made the valerian value chain operational. The interest of Agroplast has successfully involved small-scale farmers in the international value added chain. As a result of this, enterprises and producers are to be supported by Government agencies, large-scale business organizations or consulting agencies in searching for large foreign actors and in promoting the local produce. It should be noted that for a chain to be successful, it should be pulled from the front rather than pushed form behind.

- **A partnership based on mutual economic benefit**
  The trust relationships with small-scale farmers have helped to build enterprises, which were functioning on the principles of developing both themselves and their suppliers. An understanding of the fact that the development of raw material suppliers will develop the enterprises as well has become the main reason that companies support producers through advance payments, provision of seeds and fertilizer, and training. For example, the Agroplast company does not only prepay for produce and provide the necessary seeds and fertilizer, but it also plans the production volume and determines the product quality jointly with the small-scale farmers, and organizes training for farmers, if necessary;
• **The willingness and ability of the small-scale farmers to join groups**  
By joining groups small-scale farmers are able to organize product supply, facilitate the purchasing process and deliver agricultural inputs. At this stage, farmers’ groups are successfully working on delivering products without any support from projects;

• **The role of consulting agencies and projects**  
Projects and consulting agencies have played an important role in building trust between farmers and processors. For example, the Galenfarm and the Agroplast enterprises noted that the basis for working with the small-scale farmers was laid by the consulting agencies with the support of international organizations.

The adoption of the following policies and support of both the public and the private sectors could improve the situation regarding the integration of small-scale farmers into the value chain:

1. **Aspects of the Government Management System.**  
The public authorities play an important role in determining the management aspects for small-scale producers. Farmers usually produce either what they used to grow or the produce that received high prices in the previous season. At this stage, the country does not fully analyse either the output or demand in domestic and foreign markets. Kyrgyzstan has unplanned crop production without considering risks and opportunities. The Government should introduce a needs analysis system for domestic and foreign markets, an output analysis, and a demand analysis for varieties, volumes etc. It should also develop an information system for small-scale producers by making it possible to obtain the necessary information about the market;

2. **State policy on the introduction of food safety standards.**  
One of the barriers preventing exports is the lack of international food standards, such as ISO and HACCP. Virtually none of the companies that were interviewed were certified according to these international standards. In this regard, the Government’s role in adopting the legal framework for introducing international quality standards, as well as providing support to the enterprises in implementing them is very important;

3. **Support to small and medium-sized businesses.**  
Companies and producers using out-dated technology also prevent more exports. For instance, almost every company has problems with obsolete equipment, as it was inherited from the Soviet times. There is a need for authorities to support value chain actors by issuing low interest loans to purchase equipment; by introducing a leasing system or subsidizing enterprises. Also, the capacity of processing enterprises should be strengthened, as many enterprises do not provide training for staff members.

4. **Capacity building of small-scale farmers plays an important role.**  
The survey revealed that farmers are trained by various projects, but these training activities mainly focus on agro-technical issues (disease and pest control, crop rotation, fertilizers, etc.). However, farmers need other types of knowledge and skills, such as agro-marketing and agro-management (stakeholder analysis, attracting and retaining customers, legal issues, financial management, quality management, etc.), as many of them are unable to make economic analyses, calculate the cost of production, conduct market analyses or forecast yields and prices. This is necessary to do as the global market is developing very quickly, and small-scale farmers are unable to keep up with the market. One of the Helvetas projects designed a mobile reference book on prices for agricultural products, attempting to provide farmers and enterprises with information on current products prices. However, despite the fact that the mobile application was developed four years ago, many farmers are still unable to use the services due to a lack of knowledge on how to connect to the mobile internet;

5. **Introduction of a Fair Trade approach**  
A fair trade approach could be of interest for developing small-scale farmers. The fair trade approach is effective in supporting and integrating small-scale farmers into international value
chains. The approach has the following benefits: Minimum price to protect small-scale producers from the market, Premium Price, which will support producers in improving the economic situation of their communities and others. In addition, it would not only help to protect the interests of small-scale producers, but also to strengthen their capacities, to improve their economic situation and to raise awareness of poor people in terms of protecting children’s rights and preserving the environment. For example, the Biofarmer cooperative in Jalal-Abad oblast was able to integrate the small-scale farmers in the international value chain on organic cotton by introducing the fair trade approach.