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DISCUSSION PAPER

REGIONAL DEVELOPMENT BASED ON CLUSTER IN LIVESTOCK DEVELOPMENT. CLUSTER IN LIVESTOCK SECTOR IN THE KYRGYZ REPUBLIC

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ABSTRACT

In most developing countries, where agriculture is the main economical source, clusters have been found as a booster to develop their economy. The Asian countries are now starting to implement agro-food clusters into the mainstream of changes in agriculture, farming and food industry. The long-term growth of meat production in the Kyrgyz Republic during the last decade, as well as the fact that agriculture has become one of the prioritized sectors of the economy, proved the importance of livestock sector in the economy of the Kyrgyz Republic. The research question is "Does the Kyrgyz Republic has strong economic opportunities and prerequisites in agriculture in order to implement an effective agro cluster in the livestock sector?" Paper focuses on describing the prerequisites of the Kyrgyz Republic in agriculture to implement livestock cluster. The main objective of the paper is to analyse the livestock sector of the Kyrgyz Republic and observe the capacity of this sector to implement agro-cluster. The study focuses on investigating livestock sector and a complex S.W.O.T. The analysis was carried out based on local and regional database and official studies. The results of research demonstrate the importance of livestock cluster for national economy. It can be concluded that cluster implementation could provide to its all members with benefits if they could build strong collaborative relationship in order to facilitate the access to the labour market and implicitly, the access to exchange of good practices. Their ability of potential cluster members to act as a convergence pole is critical for acquiring practical skills necessary for the future development of the livestock sector.

Keywords: development, livestock, cluster, agriculture
JEL: L16, O11, O13, Q13, R11

INTRODUCTION

The concept of clusters has attracted increasing interest in researchers of development, regional studies, and industrial development studies during the 1990s **(Rocha, 2004).**During the last two decades, the successful performance of clusters in developed countries has stimulated new attention to the cluster organization for firms of developing countries. The possibility of clustered firms to be economically competitive and developed has attracted interest in development studies (e.g. **Schmitz, 1995**). On the contrary, it is likely to be quite a challenge. The existing literature shows that clusters in developing countries (including those in the agricultural sector) are usually dominated by smaller-scale firms, which are organized in a more informal manner, have weaker linkages among actors, face more difficulties in achieving a critical mass of firms and have been specialized in lower-value niches, although they are now increasingly entering higher-value markets. Consequently, it is far more difficult to promote clusters in developing countries than in developed ones **(Gálvez-Nogales, 2010).**

Livestock production in the Kyrgyz Republic is predominately based on traditional agriculture. Livestock farmers manage to preserve age-old traditional methods and experience in livestock. Meat products are environmentally friendly, because the animals are fed on natural feed, without using chemical deposits such as those from insecticides and fertilizers. In return, the government makes efforts to develop the livestock sector while simultaneously maintaining traditional agriculture. All of these above mentioned factors give a strong point of livestock industry and determines good perspectives for the industry. Growth of the livestock sector during the last decade improved the material and technical basis for clusters, creating a large number of farms and an availability of trained professionals are the achievements of livestock breeders. At the same time, livestock development has also had a number of problems that need to be solved in order to provide sustainable livestock sector development.

The agro-processing sector of the Kyrgyz Republic is at disadvantage not only in respect to export markets; also they face similar problems while trying to remain competitive in local markets. Difficulties within the union of farmers such as lack of organizational and methodological guidelines in order to rearrange their functions in accordance with the needs of farmers, lack of sufficient cooperation between members of the association, insufficient quality of resource base, small production volumes, lack of equipment for processing enterprises and packaging, lack of standards for food quality and safety, including poorly equipped laboratories are some of the problems of the sector. Insufficient processing of agricultural products is becoming a major

obstacle to the further development of agriculture **(MAM strategy, 2012).**

Livestock, namely the meat production sector, is of great importance for the Kyrgyz Republic's economy and it has a significant part in the country's GDP. The Kyrgyz Republic is a country which has the potential to produce large amount of meat and has good perspectives to export meat products to neighbourhood countries such as Tajikistan, China, Iran and Custom Union between Russia, Kazakhstan and Belarus. This Custom Union envisages unified custom territory between the member-countries of union and within this territory; any custom duties and economic restrictions are not applied. The exceptions are special protecting, anti-dumping and countervailing measures. In case if f the Kyrgyz Republic joins the Customs Union between Russia, Kazakhstan and Belarus, then the Kyrgyz Republic must provide laboratory data not only for a meat, but also for any produced food.

The poverty level in rural areas is very high, where the number of people living below the poverty line is about 60%. Rural population is mostly engaged in agriculture. Thus development of livestock sector could be their way to overcome poverty.

Experience of the countries implementing clusters in the agricultural sectors has provided evidence that they create favourable conditions which boost business competitiveness through the implementation of strong linkages between cluster members associated with their geographical proximity, including facilitating access to new technologies, management skills, use of knowledge as well as reducing transaction costs, providing the prerequisites for the formation of joint cooperation projects and productive competition.

Agricultural clusters became popular and succeeded in developing economies, for instance, root crop processing cluster in Dong Lieu (Viet Nam), grape cluster in Maharashtra (India), Chinese livestock clusters, Kenya cut-flower cluster, South African wine cluster **(Gálvez-Nogales, 2010).** All of these successful examples of clusters demonstrate the importance of agro-based clusters for developing economies and indicate beneficial influence of agro-based clusters on economic development of developing economies.

This paper focuses on cluster development in the Kyrgyz Republic which illustrates challenges existent in developing country settings. Development of agriculture must be considered as one of the prioritized sectors of the economy. Ethnographic preconditions have played an important role in the development of livestock in the Kyrgyz Republic. For many centuries, the Kyrgyz people were engaged in cattle breeding. Although there is a wide range of research papers and initiatives relating to clusters in general, there has been little attention paid to clusters in developing economies and just few of them dedicated to agricultural sector. This is a relatively poorly investigated area within research on clusters. Even more, up to now there is no meat cluster in the territory of Central Asia. All of these conditions create the relevance of this study.

In the least developing countries, agriculture is the major source of income for 70% of the world's poor in rural areas. It takes up more than one-third of the world's area **(the World Bank, 2013)**. Since agriculture represents the largest share of output and employs the majority of the labour force, this sector has been integral to any linking about development **(NSCKR, 2012).** Hence, the greatest potential for sustainable growth lies in agricultural sector. But, ironically, it is the sector where poverty is the most widespread and found in its worst forms. So, "new agriculture" needs new tools to increase its competitiveness and innovation capacity. One of these tools is the promotion of clusters.

Concerning pro-poor growth, it has been shown that cluster approach can be a strong tool to reduce poverty (**UNIDO, 2010).** Implementing clusters in developing countries can be crucial on the way to achieve broad-based growth. In order to maximize pro-poor benefits, cluster research should focus on specific investment with respect to the poor. Despite a lot of benefits to be achieved by implementing a successful clustering strategy in developing economies, there are several obstacles influencing negatively on enterprises and supporting institutions in one location to work together. For instance, (1) engaging in collaborative ventures entails high transaction costs related to gathering and assessing information on, for example, whether partners are reliable and the relationship beneficial. Also, (2) small-scale firms usually operate under short-term horizons, leading them to magnify short-term costs while preventing them from identifying longer-term benefits. (3) Low levels of trust also makes difficult cluster firms and supporting institutions to interact, reducing their propensity to exchange information and hindering the development of business partnerships **(Meyer-Stamer, 2005)**. Local governments can be unresponsive to the needs of the private sector, particularly when this is mainly constituted by micro- and small firms.

MATERIAL AND METHODS

Farmers, households, and industries in the livestock sector of the Kyrgyz Republic, who have capacities to produce livestock products, were selected for this study. The cluster study was based on analysing qualitative data on farmers, workers, households, food processing enterprises, policy makers at national and local levels. Current research is based on official publications, surveys, interviews and experts' opinions. This method was important because there is considerable shortage of analytical data and research for the Kyrgyz Republic. The study classified actors into seven groups according to **Maya-Ambía (2011)**—namely, suppliers of inputs; a group of companies, as a basis of clusters; designers of public policies; research, development and educational institutions; financial institutions; consumers. Data is analysed by using the framework of S.W.O.T. analysis. S.W.O.T analysis helped to reveal weaknesses and strengths of cluster development. Secondary data were collected from the research, publications and annual

reports of the Ministry of Agriculture and Melioration of the Kyrgyz Republic, National Statistical Committee of the Kyrgyz Republic, USAID, and the World Bank. The results from this research were used to evaluate whether the Kyrgyz Republic has capacity to implement agro-based cluster in livestock sector. This paper is organized as follows: The second section analyses general economic situation, agricultural industry and the livestock sector in the Kyrgyz Republic. The third section proposes the cluster model for the Kyrgyz Republic. The final section concludes and provides recommendations.

RESULTS AND DISCUSSION

The Kyrgyz Republic's economy

Before the establishment of the Commonwealth of Independent States (CIS), the Kyrgyz Republic operated within the Soviet economic system, which had a planned economy. The Commonwealth of Independent States (CIS) was formed in December of 1991.The Kyrgyz Republic joined the CIS in March of 1992. The Kyrgyz Republic's main economic indexes such as employment, inflation, income, GDP were mostly at an average level, as it had received sufficient financial support from central budget that allowed the country to grow. After the collapse of the Soviet Union national borders and international trade controls were set up and divided Soviet Union member-countries into small independent countries with their segmented market economies with limited economic growth potential. Before the Soviet Union disintegration, all these CIS countries were interrelated in terms of production base due to the allocation of natural recourses and production bases located in different countries according to their possibilities, but then they were separated from each other.

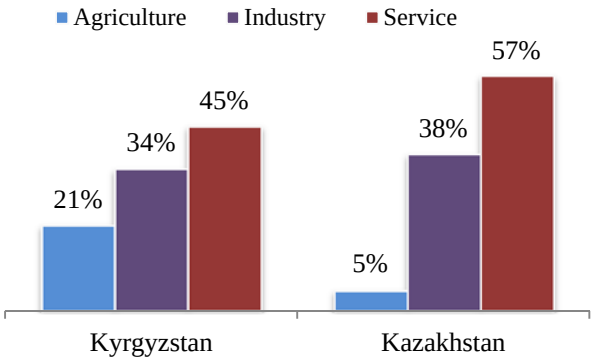

Figure 1 GDP by sectors (% of total GDP), (2012)
Source: Own elaboration based on the data from the World Bank

In order to clearly explain the importance of agricultural sector for the Kyrgyz Republic, I seek to compare some economic indicators of the Kyrgyz Republic and Kazakhstan. It can be helpful to compare both countries, because both of them are located in Central Asia, they have similar economic, climatic, historical and cultural background. Despite having the same background, Kazakhstan is more developed in economic terms. According to the structure, Kazakhstan's GDP resembles the more developed countries, as the main part of the GDP is industry and services, and the Kyrgyz Republic's agricultural sector is a major part of national production and income (Fig.1). But at the same time, a main part of the production and exports of the Kyrgyz Republic and Kazakhstan are neither innovative nor high-tech products, but the products of farmers and mining.

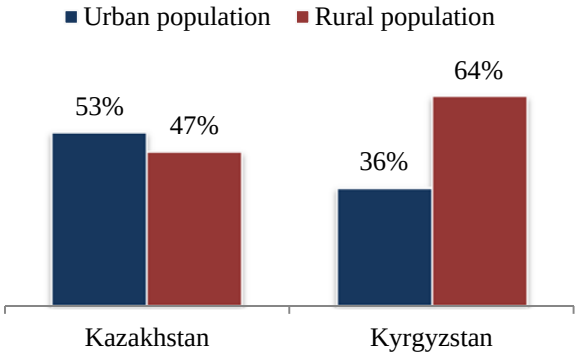

Figure 2 Urban and Rural population (% of total population)
Source: Own elaboration based on the data from The World Bank

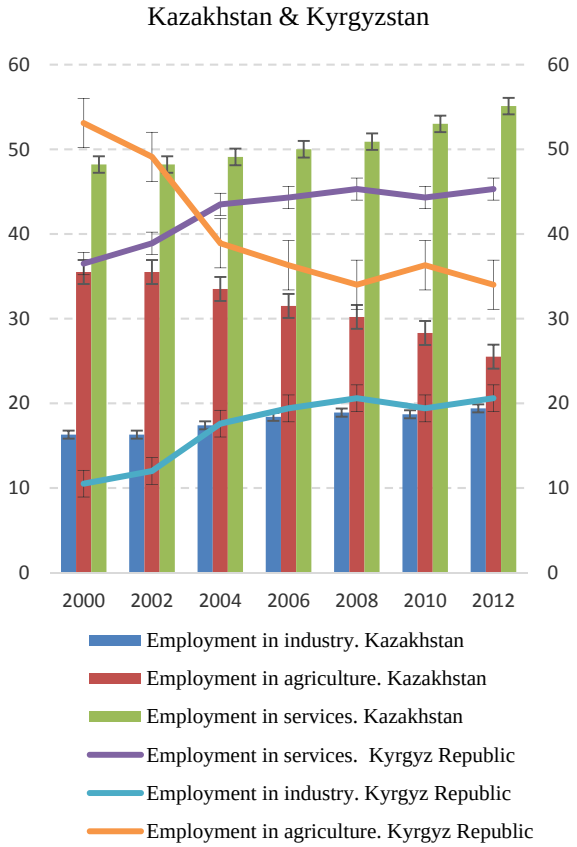

Figure3. Employment by sectors in the Kyrgyz Republic and Kazakhstan (% of total employment)
Source: own elaboration based on the data from UNCTAD stat

Figures 2 and 3 show that more than half of the population of the Kyrgyz Republic is a rural population. It indicates the central role of agricultural development for the country. On the contrary, Kazakhstan has more of

an urban population, demonstrating a comparatively lower influence of agriculture for economic growth. As it is shown, the Kyrgyz Republic is an agrarian economy, thus almost half of total labour force is engaged in agricultural sector and agriculture is the main industry providing employment opportunities. In accordance with the research of the Ministry of Agriculture and the goals of the Kyrgyz Republic; being to make agriculture the main source for employment, this sector uses only 2 % of all his production capacity.

Figure 4 shows that the economy of the Kyrgyz Republic is dependent on import. The Kyrgyz Republic imports food products (17.2%), machinery and transport (24.3%), minerals (22.2%), metal products (8.1%), textile (8.6%), other (19.6%) (**NSCKR, 2012).** Taking into consideration that the country is agrarian the ratio of import of food products to total import indicates that the Kyrgyz Republic's domestic market is still weak to provide population with the food.

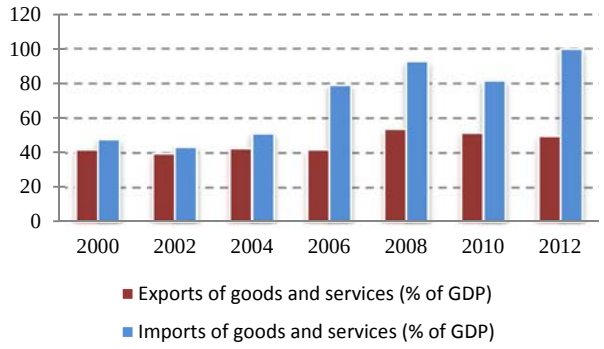

Figure 4 Export and import of goods and services (% of GDP)
Source: own elaboration based on the data from National Statistical Committee of the Kyrgyz Republic

Review of agricultural –industry of the Kyrgyz Republic

As other CIS countries, the Kyrgyz Republic started its economic transition in 1989-1990 after the Soviet Union disintegration. In the past, there was no private land ownership and land was organized in the form of large-scale collective farms sized at thousands of hectares with hundreds of workers. Since the Kyrgyz Republic has become independent, it started its transition into market–oriented agricultural industry. The Kyrgyz Republic is a mountainous country. It has about 10 million hectares of agricultural land, 900,000 hectares are irrigated land and 9.2 million ha are pastures. Most of the population lives in rural areas (60%). Specifically, 40 % of agricultural output is produced by private farmers, and more that 50 % by family farms (**USAID, 2012).** 60%-65% of population engaged in agriculture. Overall poverty level in rural areas is higher than in urban areas **(NSCKR, 2012).**

Agriculture in the Kyrgyz Republic is a growing sector of the economy, which has tendency to increase year by year. In order to enhance the productivity, government and private sector should work in close cooperation in terms of creating conditions to develop livestock cluster. Annual growth of production in 2012 is 1.2 %, compared with 2008 increased by 7.6 %. Average annual growth of production during the period 2008-2012 increased by 1.7%. In 2012 share of livestock production was 47.9 % of the total gross output of agriculture.

Despite the low production level of the livestock sector it has the potential to develop a livestock cluster. The Kyrgyz Republic has very strong potential to create a livestock cluster because of favourable climate conditions, territory possibilities (53.3 % of total territory is agricultural land **(NSCKR, 2012)** and available natural recourses. The livestock sector in the Kyrgyz Republic is one of the leading agriculture sub-sectors and a key component of agriculture. Involvement of farmers in clusters could provide for an effective use of local recourses, which could be competitive not only in the domestic market, but also in international markets. The agricultural sector consists of 33 % of total value-added GDP **(NSCKR, 2012).**

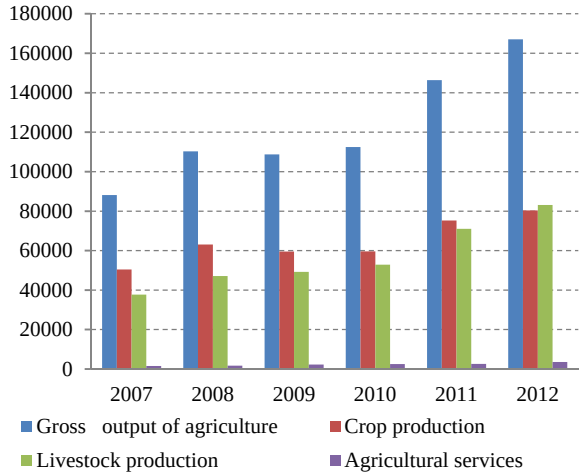

Figure 5 Gross output in agriculture including services
Source: own elaboration based on the data from National Statistical Committee of the Kyrgyz Republic

Livestock sector performance

More than 350 000 individual livestock farmers are operating in the Kyrgyz Republic, 70% of them have 1-5 cattle, about 10 sheep and several horses **(NSCKR, 2012).** Stockbreeding is based on two systems: (1) grazing on highland pastures and croplands in the mountain valleys; and (2) grazing on arable lands in valleys, where intensive dairy production and beef production are based mainly on indoor farming techniques. Mountainous regions can specialize in breeding calves for further growth in less mountainous areas. These regions have great number of cattle, sheep, horses and yaks, and these conditions create a good opportunity to develop domestic processing with increased added value and improve the performance of the region.

Table 1. S.W.O.T. Analysis of livestock sector corresponding to meat-cluster

(i)Input Suppliers	(ii) Production	(iii)Designers of public policy	(iv)R&D, educational institutions	(v)Financial institutions	(vi) Demand and consumers
Strengths					
Suitable natural and climatic recourses; Presence of pastures; **(MAM operational data, 2012)** Environmentally favorable region; Feed supply is satisfactory; **(MAM strategy, 2012)**	Low taxes on production stage; Presence of sufficient labor force at the production stage; There are a number of meat processing companies producing sausages for the local and regional markets; (**CCI, 2012)**	Presence of required government authorities that are responsible for agricultural-policy, livestock development. They could focus on regulation, coordination, control, monitoring and support.	Possibility to hybridize local breeds; Veterinary services are not developed properly;	Financial sector of the Kyrgyz Republic is developed enough in order to be able to provide with finance the farmers and enterprises involved into the cluster. There are sufficient number of banks, non-bank financial institutions; (**NBKR, 2013)**	Large number of markets for distribution of products of livestock; The Kyrgyz Republic was meat supplier for the entire Soviet Union and it has a good reputation as a country which has high quality meat; Steady demand for fresh meat in domestic market; The Kyrgyz Republic exports meat products to Kazakhstan, Russia, Tajikistan, Iran; **(NSCKR, 2012)**
Weaknesses					
Lack of initiatives on the part of farmers; Unstable feed supply; Lack of logistics between farmers and processors (slaughter floor); Absence of contemporary cattle slaughter points; (**USAID, 2011)**	Small-scale production; Low technical level of meat processing companies;	Sanitarian inspections are not carried out properly; There are no inspectorates, restricting uninspected meat; (**USAID, 2011)** Absence of sanitary standards;	Absence of laboratories for product standardization;	The Kyrgyz Republic has budget deficit, consequently it has no enough financial resources to invest;	Large number of traders, thereby livestock are bought and sold several times; Border issues restricting export; **(MAM operational data, 2012)** High retail costs; The Kyrgyz Republic imports large number of cheap Chinese meat;
Opportunities					
Traders could be involved in order to establish links between regions having livestock surplus and fattening farms; Possibility to create contemporary cattle slaughter points;	Production of economically friendly products that meet international standards; Taxes based on patent; Increase the level of production to provide with fresh meats other markets in CA countries;	Government of the Kyrgyz Republic could be responsible for meat inspection, licensing; Creation of Veterinary association; Development of production and develop import substitution policy	Most of high educational institutions are involved into international programs, which allow students to train abroad in the field of agriculture.	Presence of many international organizations such as USAID,UNDP, OSCE,WB, ADB, t creates opportunities to attract foreign grants, support, aid and investment.	High demand for cattle in Kazakhstan; Develop legal cattle trade in Kazakhstan's market; Develop young stock market in Dubai; Growing demand for meat production in Russian, Tajikistan;
Threats					
Emergence and spread of animal diseases and epidemics; **(MAM operational data, 2012)** Inefficient use and degradation of pastures;	Reduced product competitiveness in comparison with cheap Chinese meat; Absence of integrated approach across the value chain (from the farmer to the buyer) could make matters worse as a whole;	Lack of inspection, poor sanitary conditions led to spread of disease outbreaks; The "shadow trade" and bribes; Government of the Kyrgyz Republic do not control uninspected meat; (**USAID, 2011)**	There is a decrease tendency in the number of students who want to study in the field of agricultural sciences.	Attracted financial recourses could be allocated ineffectively, due to the high level of corruption and shadow economy.	Increase in imports of meat and meat products from China, Russia, Kazakhstan; Increased number of packaged meat from Turkey and Germany; (**NSCKR, 2012)** New requirements and regulations of the Customs Union which restrict the volume of export;

Seven distinct breeds of sheep are recognized. Though broadly adapted to the local conditions, the new breeds were more dependent on winter housing and supplementary winter feed than the traditional ones. During this time the dominant characteristic of the original indigenous fat-tail and-fat-rump, coarse wool sheep was changed to merino type fine wool breeds. Nonetheless a number of the indigenous breeds such as the Kyrgyz Coarse Wool Fat-tail and the *Hissar (sic Gissar)* fat-rump were retained and even 'improved' though in reduced numbers. Mutton from the indigenous types is generally preferred by the local Asiatic population (**FAO, 2010).**

Sheep and goats in the Kyrgyz Republic are about a million, and the approximate annual production capacity is 48,800 tons **(NSCKR, 2014).** Domestic demand for mutton and its consumption is very high. There is high external demand for mutton, for instance, the Iranian company has its cattle slaughter point in Kaiyndy.

The company sends carcasses to Iran. Recently, the company began to cut the carcass, then pack and freeze them in boxes of 20 kg for export to Iran.

Structure of livestock cluster

For a clearer understanding of the capacity of livestock sector to implement an agro-cluster S.W.O.T. analysis is carried out (**The World Bank, 2009)** (Table 1).

An agro-industrial cluster has the following seven components [13]: (i) input suppliers, (ii) production, a group of companies as a basis of clusters (meat processing companies) , (iii) designers of public policies, (iv) R&D and educational institutions (v) financial institutions, (vi) consumers.

(i) The first component of the cluster that was mentioned above is that it is a common supplier of inputs and services. The most important inputs and services for the livestock sector are cattle, seeds, agrochemicals and specialized machinery. Pastures in the Kyrgyz Republic occupy approximately 9.2 million hectares. These grazing systems are based on three grazing seasons: winter (animals are contained in a shed or outside the house), the inter-season (spring and autumn, when the animals are grazed in pastures or households) and summer (animals being kicked away from home to mountains). It should be mentioned that almost all families in rural areas have livestock; consequently there is a very low demand for meat and milk, because people do not need to buy them outside their own communities **(MAM operational data, 2012)**. Small fattening farms are located in Chui and the Talas regions. The Chui region has become a center of livestock fattening, having more than 500 fattening points **(MAM operational data, 2012)**. Improved feed rations and a reduction of production costs could help to improve the competitive advantage of the companies specializing in fattening cattle, sheep, horses for slaughter and export. Cattle slaughter points do not correspond to international requirements. Cattle slaughtering is carried out in old state buildings that were previously used as meat factories or slaughterhouses. A large number of cattle is slaughtered in private backyards and other uncontrolled territories. Consequently, the quality of meat and sanitary conditions are unsatisfactory. Newly established contemporary slaughter points will comply with standards for production buildings. Cattle slaughtering points will be able to perform several functions: (1) sell meat carcasses of beef, lamb and horses to fresh meat markets; (2) Process carcasses into the main part (the major muscle groups); (3) separate meat from bones and prepare fresh or frozen cuts of meat for retail sale; and (4) sell meat parings to meat processing companies for production of meat products. In total, the first component of the cluster is extremely weak.

(ii) Currently, the meat processing industry is one of the most dynamic sectors of the Kyrgyz Republic's economy. One-third of industrial output is processed and more than 25 % of production is exported to other countries. By the end of 2012 the total number of meat processing enterprises reached 298, including 92 legal entities and 206 individual entrepreneurs **(NSCKR, 2014).** The highest growth was observed among individual entrepreneurs. Currently, these small companies produce more than 93% of the total meat production in the country **(MAM strategy, 2012).** Their production over the last five years is steadily increasing. Even if there is an upward trend in the number of food-enterprises, most of them do not have sufficient capital to invest in necessary equipment which would enable them to be competitive and to meet international requirements. Furthermore, in accordance with the Ministry of Economy of the Kyrgyz Republic it is reported that only 2% of processing capacities are used in meat industry. The meat processing industries are characterized by low innovation and technology use, a lack of current assets and high indebtedness. We can conclude that the second component of the cluster is almost complete in terms of presence of sufficient number of food-enterprises, but at the same time it is not developed enough.

(iii) The next key component is a set of public institutions that design policies conducive to the formation of a cluster. Successful clusters reveal that the different levels of government (local, regional, national) play a central role. In the case of the Kyrgyz Republic, both the state and national government led to a large-scale livestock sector through the creation of required infrastructure. The main state institutions which would play a significant role in the livestock cluster are the Ministry of Agriculture and Melioration and other state bodies such as the Ministry of Economy and Anti-monopoly policy of KR; the Ministry of Finance; State Custom Service under the government of KR; the Ministry of Agriculture and Melioration and its main departments related to livestock development, for instance: State Veterinary Department; Department of pastures; Department of Mechanization and energy supply; Republican State Seed Inspectorate; State selection and breeding center; Certification Center of veterinary medicines. They could focus on regulation, coordination, control, monitoring and support. The central government could play a supportive role by managing funds. The State Veterinary Department could

be responsible for the appropriate veterinary services provided by government and private sector; Department of pastures could make regulations for the effective use of pastures. State selection and a breeding center may regulate laboratories in order to improve selection and breeding activities. However, there is a big lag in other infrastructure items, especially, an obsolete railroad operating in poor conditions and bad highways, particularly during the rainy and snowy season. In sum, the third key component of the cluster is complete and present.

(iv) The fourth component of a cluster is R&D and educational institutions. Most studies of successful clusters highlight the presence and active participation of educational institutions such as universities where research is carried out closely related to the economic activities of the cluster's core enterprises. There are two institutions whose graduates are closely related to livestock: Kyrgyz National Agrarian University named after Skryabin and the Institute of veterinary medicine and biotechnology. These High Educational Institutions train more than 8000 students **(NSCKR, 2014).** The most important problem of agricultural education system is an insufficient quality of education, regardless of specialty and status of institution. A number of educational institutions providing training in agriculture have disadvantages in teaching methods, material and a technical base. The present situation with low professional level of veterinarians is gradually getting better, however, the skills of these professionals are still unsatisfactory. Agricultural science is weakly involved in carrying out research work aimed to provide sustainable agricultural production. In sum, it is concluded that the forth component of the cluster is present but still extremely weak.

(v) The fifth component involves financial institutions supporting the cluster's activities. They are public financial institutions, government authorities at different levels (local, state, national) or private companies such as banks or non-bank organizations. The financial system is represented by 24 commercial banks, 195 micro-credit companies, 63 micro-credit agencies, 146 credit unions **(NBKR, 2013).** MKK "Finka", FG "Companion" are the largest micro-finance companies, which are considered as the largest creditors in agriculture. At this moment the financial and credit institutions system is institutionally developed, there are associations of banks, micro-credit companies and credit unions. Thus, all these conditions make it possible to provide farmers and agro-producers with financial services. Despite all these possibilities, several problems need to be resolved. For instance, high costs for insurance, leasing, financial services and lack of experience in leasing operations; Summarizing, the fifth component of the cluster has all the prerequisites to be completed, but in order to implement the cluster, these financial resources are not sufficient.

(vi) A final component of the cluster is the presence of customers and consumers, within the cluster or outside. In this case direct customers are local companies within the country. The indirect final clients would include a wide range of buyers, mainly local and regional population. In this case, the key to the operation of the Kyrgyz Republic's export of livestock is the concentration of trading companies at the border point closest to the producing region. Widespread practice is that farmers sell livestock to local traders, who in turn sell it to commercial traders, who has large trucks that could accommodate 60-70 sheep or 15-20 cattle. Kazakh traders buy livestock and livestock products in a livestock market located in Tokmok, but also directly from farmers and other private markets. The existence of trans-boundary diseases (FMD, anthrax, brucellosis) and a low capacity of national veterinary services to control the spread of these diseases have led to the fact that Kyrgyz producers of meat and meat products are not officially allowed to sell their goods in the markets of Russia, Kazakhstan and Belarus. However, this fact does not stop dynamic development of shadow market sales of beef carcasses and processed meat. Most of meat products are sold in local open markets. Enhanced and rapid increase in weight of livestock will benefit modern slaughtering industry, which, unfortunately are not developed at the moment. In conditions of absence of contemporary cattle slaughtering industry, conforming to required sanitary standards, livestock breeders will not be able to sell their livestock at the highest possible prices. The livestock are slaughtered in the places which do not conform to sanitary norms thus limiting the possibility of Kyrgyz meat products to be sold in international markets. Due to absence of contemporary cattle slaughtering points there is no opportunity to effectively processing of carcasses for fresh meat markets and for meat processing industries as well. Resuming, the last component of the cluster exists, but it is not adequate.

The proposed livestock cluster mode for the Kyrgyz Republic

Having analysed the agricultural sector of the Kyrgyz Republic, and having studied features and the potential of the Kyrgyz Republic for the implementation of livestock cluster, I will discuss the implementation of a cluster in Chui region. Almost 40 % of meat and dairy processing companies are mainly located in this region **(NSCKR, 2014).** Furthermore, the location of the cluster in the Chui region is the most effective in terms of selling meat in the local and international markets, due to a high demand for meat and meat products compared to other regions. Additionally, the international livestock market is located in the Chui region, Tokmok. This fact may facilitate access to the markets of Kazakhstan and Russia, which are the main foreign markets of meat in the external market. In terms of logistics and infrastructure for the development of the cluster, the Chui region is the most developed. In terms of labour recourses, main agricultural educational institutions are located in Chui. Taking into account the presence of both the local labour force and internal labour migration to Bishkek, I conclude that the cluster would have all possibilities to be provided with necessary human resources. To present more clearly the model of cluster, I propose this

organizational scheme of agro cluster which could be implemented in the Kyrgyz Republic.

Implementing any cluster initiatives in developed countries is different from implementing them in developing ones. With respect to developing countries, the role of government would be the most important. The importance of government intervention in developing countries is caused by the weakness of market institutions and low coordination possibilities between private and state actors. It does not mean that government should create clusters from "scratch" by declining markets and industries. Instead, government may work as a catalyst, a broker bringing actors together, creating forums for dialogs, supplying supporting structures and incentives to facilitate the clustering and innovation process.

The government's policy to clusters should be implemented by taking into account the Kyrgyz Republic's specifics, especially agricultural sector and cluster members. In order to implement successful meat production cluster, the government must develop a program for cluster development and include it to the regional, local and national strategies. The government must take legal and administrative measures in order to provide direct and equal partnership inside the cluster through creating legislative basis. Only with creation of cluster institutions to control and monitor financial, sanitary, organizational issues, it would be possible to develop effective clusters. Support of government and local authorities are needed in order to establish strong linkages between main actors of cluster: companies, government, research community, financial institutions, trade associations, etc. Regional and local authorities may serve as a nucleus of cluster formations and development.

They could stimulate farmers to enhance cluster efficiency through strong cooperation in solving common problems. In the case of the Kyrgyz Republic, it is possible to apply a "top-down" cluster approach **(Andersson, T. et al., 2004)**:

(i) step - Identify companies that could be basis for further growth and would be a basis for clustering, by identifying leading companies in order to concentrate on the basic recourses and tools, such as budget, centralized, own, borrowed etc. State-private partnership should be used for creation of these basic companies.

(ii) step - Clusters should be formed based on these leading companies, which would include input suppliers, processing, trade, marketing, and financial organizations. Recourses should address to create effective value chain. Livestock cluster should have three main centers: development of raw material production; development of meat processing; development of sales. These centers would ensure investment, planning, and production.

At the preliminary stages of the cluster development the government must support maintaining and expanding traditional methods of agricultural production and develop policy supporting specialization of agriculture in production of environmentally friendly products. Clusters of organic livestock production should specialize in producing competitive agro-products and products produced by using organic agro technology. Organic livestock production should be oriented toward international markets, which have high stable demand. External economic orientation of the cluster ensures rapid growth of profits of agro-producers, which allow the base to improve their technologies. Government must develop technical regulations on production and control of environmentally friendly products based on Eco-EU standards, national standards of halal products. Regulatory legal acts, which would contain provisions on production and controlling ecologically friendly products, must be developed **(MAM strategy, 2012).**

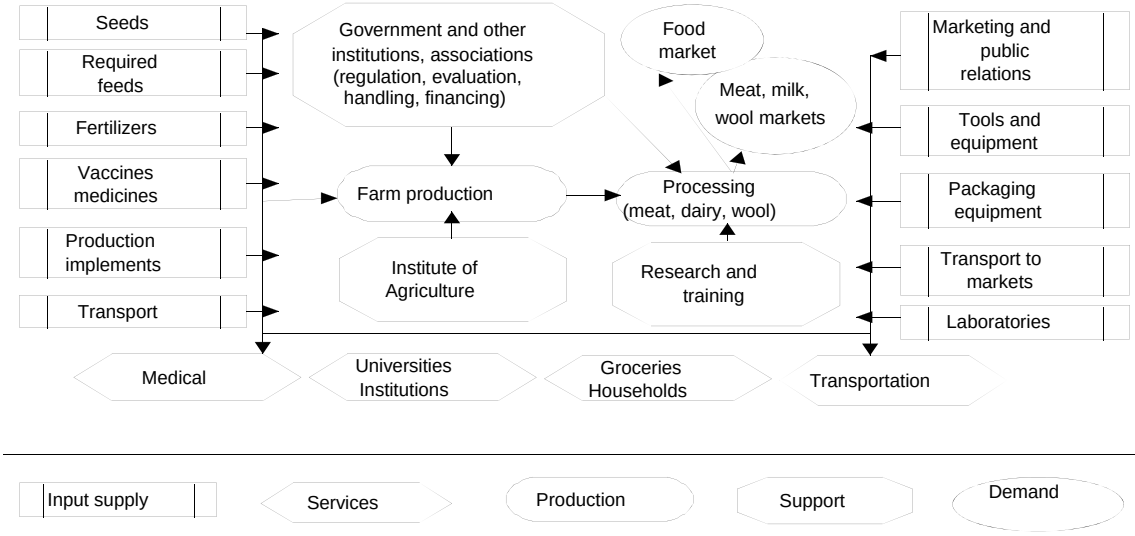

Figure 5 Proposed model of livestock cluster in the Kyrgyz Republic
Source: own elaboration based on the data given above

This paper pays more attention to implementing cluster and the role of the government in livestock cluster development. Mentioning the government as one of the main actor of cluster implementation is caused by weakness of market institutions and low coordination possibilities between private and state actors. But on the other hand other risks of involving government still exist. Large-scale corruption can stand a main obstacle to implement the livestock cluster and it would restrict its development. Due to high level of corruption in high-level officials the political situation had been extremely unstable during the last years since 2010 year. Large-scale corruption restricts the operations of international companies that wish to expand to the Kyrgyz Republic. Furthermore, getting licenses and permits is also used to be obstacle in doing business in the country. Another negative issue is high bureaucracy which can lead to corruption. Protection of property rights is still weak that confines the attractiveness of the country for foreign investors as well as for local business agents **(GAN, 2014).** Transparency International's 2013 Corruption Perceptions Index ranks the Kyrgyz Republic 150th out of the176 countries and territories assessed. In accordance with the data of the World bank the Kyrgyz Republic has scored 10.4 on control of corruption on a scale from 0 to 100 **(Martini, 2013).**

Taking into account all information mentioned above it can be concluded that in order to succeed in implementation of effective livestock cluster, firstly corruption reducing measures should be taken. Otherwise involvement of government in contributing to develop the cluster will result in its failure. To address corruption in the country the government of the Kyrgyz Republic has adopted the Anti-Corruption Plan in December 2013 which is aimed to prevent corruption among judicial and law enforcement officials. In order to support international companies and foreign investors in facilitating bureaucratic procedures the government has implemented a one-stop shop licenses and permits office under the Ministry of Economy and Anti-Monopoly Policy. The Kyrgyz Republic has five law enforcement agencies that deal with corruption: the Prosecutor General's Office, the State Customs Committee, the Financial Police, the National Security Service and the Ministry of the Interior **(GAN, 2014).**

CONCLUSION

Development of agriculture is a complex social and economic problem. The agricultural sector provides jobs for more than half of the Kyrgyz Republic population. Furthermore it is the main source of income for the most families living in rural areas. Development of agriculture is possible only through implementing appropriate public policy aimed at organizing modern agricultural production, more efficient use of existing resources and the improvement of the people's wealth in the rural areas. This paper is aimed to investigate the livestock sectors capacity to implement effective livestock clusters.

Being an agrarian country, the Kyrgyz Republic has not developed any agro-cluster. Before implementing any cluster in the country, all its capacities and features must be analysed. The Kyrgyz Republic has all necessary preconditions in order to start adapting to form a livestock cluster. Markets of organic agricultural products over the world are growing year by year. Kyrgyz people have been engaging in cattle breeding for centuries, up to now they could preserve traditional methods of livestock breeding, which will allow them to produce environmentally friendly meat products applying their unique skills. Natural and climatic conditions create possibilities in order to provide farmers and processors with required quantity of livestock, feed, and seed. Significant share of agricultural products are produced with minimal use of chemical fertilizers and pesticides. Livestock are fed on natural pastures. It gives additional opportunities for the Kyrgyz Republic to organize the production oriented to segment of environmentally friendly products. At the same time, veterinary and sanitary conditions are still weak. The lack of standards for food quality and safety, including poorly equipped laboratories are some of problems of the sector. International meat trading is a real opportunity for meat industry of the Kyrgyz Republic which requires compliance with certain sanitary requirements. The cost of compliance with these standards can be high and, therefore, necessary to attract financial resources at least in the initial stages.

Long terms cluster implementation for the country would result in agricultural production growth and improve food security of the Kyrgyz Republic, increase income of farmers, alignment of regional economic development, reducing migration. The main outcome is the development of agricultural production. Successful cluster implementation may result in reducing import of livestock products, as local producers would be able to provide domestic market.

In case of the Kyrgyz Republic (KR) it is clear which public institutions would be able to support network formation and clustering. The government bodies such as the Parliament, the Ministry of Agriculture and Melioration and its departments, the Ministry of Economy and Anti-monopoly policy, the Ministry of Finance, State Sanitary, Veterinary and Phytosanitary Inspections under government supervision may directly be involved design processes through creating legal framework which can serve as a cluster's codified policy. In sum, the main role of the government in cluster development is to create supporting networks and knowledge exchange structures for all actors involved in the cluster, namely farmers, households, food processing enterprises, financial institutions and non-government organizations.

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