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# **Implications of livestock development trends on recording systems and use of animal genetic resources in Eastern European countries (CEEC) and Commonwealth of Independent States (CIS)**

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This paper tackles selected issues and gives an overview of economic development and the impact on the livestock sector in Central and Eastern European countries (CEEC) and Commonwealth of Independent States (CIS). As the livestock sector cannot be independent from the economic and social environment, nor from development of agriculture, an attempt has been made to append the role of the livestock sector in this context. Central and Eastern European countries (CEEC) in transition have demonstrated a capacity to adapt rapid changes in production systems in the face of new challenges. The regions have faced many political and economic changes within the past ten years since socialism collapsed in the early nineties. Some countries have succeeded to move ahead fast with the liberalization of their economies and others have taken a moderate pace in the transition into market economy. Balkan as well as Caucasian and Central Asian countries are still depressed by the instability of political and economical changes and emergencies caused by conflicts and war.

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## **Summary**

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The livestock sector has diverse roles throughout transition countries. Furthermore, livestock has a diverse role within one country. Livestock and agriculture are important to poor CEEC and CIS and the role of the livestock sector is in transition and has an impact on the level of livestock improvement services. The state of the livestock development services and animal genetic resources is strongly related to the level of economic development of the countries in transition.

Livestock development prospects depend on the appearance of market forces, interaction between government and farmers' organizations and the experience and improvement of managerial skills in public and private sectors.

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## **Transition period**

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A dozen years have elapsed since the world witnessed the euphoria greeting the fall of the Berlin wall. At the beginning of the new millennium, a profound divide lies between Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS). Transition countries are not a homogenous group in any economic, political, social or geographical terms. Altogether 27 countries in transition belong to the CEE and CIS regions:

The most commonly used grouping of countries is as follows:

- Central and Eastern European countries (CEEC):
  - *Central Europe*: Czech Republic, Hungary, Poland, Slovakia and Slovenia.
  - *South-European Countries*: Albania, Bulgaria, Croatia, Romania, The Former Yugoslav Republic of Macedonia (FYROM) and Yugoslavia.
  - *Baltic Countries*: Estonia, Latvia and Lithuania.
- Commonwealth of Independent States (CIS):
  - *Western part of the former Soviet Union*: Belarus, Moldova, Russia and Ukraine.
  - *Caucasus*: Armenia, Azerbaijan and Georgia.
  - *Central Asia*: Kazakhstan, Kyrgistan, Tajikistan, Turkmenistan and Uzbekistan.

Although transition economies have shared many of the failures of the central planning model, there are significant differences between them. These differences concern the inherited ownership structure, geographical orientation, resources, timing of reforms and historical, political, administrative and cultural legacies. Despite these differences and the differences in strategy all governments have pursued the same broad goals of policy: economic growth and efficiency, stability, security and sustainability.

For many CIS, but also for CEEC, the structure of the economy has changed markedly since the early nineties and the share in the GDP of industry, which was the most important sector during the Socialist era,

declined. Though the output agriculture decreased to 40 percent in CEEC and CIS, the share of agriculture in GDP increased significantly: in Albania and Armenia, the share of agriculture in national GDP has doubled. In Central European countries as well as Baltic countries, the agricultural output remained stable, with the exception of Estonia, where the share of agriculture has reduced by more than 50 percent. Generally, in many countries agriculture did not decline as steeply as industry, largely thanks to the implementation of a sustained programme of land reform early in the transition. Livestock production makes up a significant portion of national wealth in the countries where agriculture is important. The role of livestock production in the economic structure of the country is tangibly highest in Armenia, constituting 11.6 percent of the GDP in 1999.

Privatization started in most countries in 1991-1992 and prices were liberalized. The markets in the former Soviet Union were cut off together with supplies of a number of basic commodities (cheap energy, cereals and industrial raw materials). The monetary reform together with the market economy reform has changed the supply/demand balances which were affected by the closer alignment between domestic prices and prices for imported commodities. At the same time many governments cut off massive subsidies for agriculture and signed free trade agreements. The restructuring also entails a dramatically reduced role of government in agricultural production, processing and marketing. The political liberalization in CEE is subsequent to the globalization of trade and markets.

According to the FAOSTAT, the total population of the CEEC and CIS was 478 million in 1999, of which 154 million is rural population (32 percent). Agriculture is still the largest and/or very important employer in the majority of CEEC and CIS. In proportion to total employment, agriculture is more important than in the EU. In Albania, Armenia as well as in Romania the share of agricultural employment in total employment is more than 35 percent; in Poland the figure is near 25 percent, at the same time in those countries small private farms account for more than 70 percent of all farmland.

Transition has clearly had an impact on social wellbeing. Poverty increased sharply during the transition period. According to the WB (1999) there was in 1987, one million poor people (i.e. consume less than US\$1 per day per capita) in CEEC and CIS. By 1998 the number had increased 24 times. The population below the poverty line is still increasing in CEEC and CIS: the population living on less than US\$1 per day has increased from 1.5 percent a day (in 1990) to 5.1 percent in 1998. The UN Human Development report 2001 shows, that life quality is qualified as high in only eight countries, whereas the same number of countries shows an increasing trend. At the same time, the majority of the countries shows a reduced average life quality and increased poverty.

The population below the income poverty line is between 21-50 percent in seven countries of the region and in ten countries 51-66 percent of the population lives below the income poverty line of US\$4 per day.

The search for explanations of varied economic outcomes, causes, differences in magnitude, variations and sustainability focus on the characteristics of countries at the beginning of transition, the shocks emanating from the breakdown of the central planning system, the dissolution of the Soviet Union, wars and civil conflicts, and the policies to facilitate transition. Some countries have succeeded in moving ahead fast with the liberalization of their economies and others have taken a moderate pace in the transition into market economy. According to the economic outcome the countries in the region can be divided into two subgroups:

- 1) Fast reformers of market economy: countries in Central Europe and the Baltics have demonstrated a capacity to adapt rapid changes and have succeeded to move fast ahead with the liberalization of their economies.
- 2) The second group has taken a moderate pace in the transition into the market economy (CIS, South Eastern European countries). Some countries are trapped in the situation of partial reforms and are “in a no man’s land” between plan and market. Balkan as well as Caucasian and Central Asian countries are still depressed by instability of political and economical changes and emergencies caused by conflicts and war (slow reformers).

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**Changes in farming systems and in support services**

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The transition process has led to profound structural changes in the agricultural sector in CEEC and CIS. Political reforms, economic and demographic pressures caused changes in farming systems. While globally, these pressures are generally for intensification of systems, the CIS and CEEC are exceptions to this. At a very broad level, this can be quantified by comparing the size of farms and number of animals on one hand and volume of production on the other.

With a few exceptions (Poland, former Yugoslavia), in most countries the public policy after World War II was to replace the family scale farm by socialized large-scale farms. Since the late 1980s the new political power in CEEC aimed at agricultural reform to create conditions for rapid emergence of the private and market-based agricultural structure. Within the agrarian reform the land and property reforms are affected by different speed and still continue to be so today in all countries. The quick formation of new farms was supported by the political and economic situation, while the Czech Republic, Hungary and the Slovak Republic maintained the majority of the large state properties undivided and restructured and privatized them to the new owners.

The privatization process has created a lot of problems where the restitution of land resulted in small and fragmented farms. Reduction of the average farm sizes, fragmented farm structures and decreased production and productivity are the common features of the structural changes in CEEC and CIS. Both the transitional process and the choice of ultimate farm structure, present major problems in CEEC. Following the dissolution of the State and Cooperative farms, the CEEC are in the process of establishing the livestock sector, which would be competitive in domestic and global markets. However, as a result of the agricultural reform and land restitution in many CEEC, the small-scale farming was re-established, which renders the collection of marketable surplus livestock products and makes the provision of cost-effective livestock support services difficult.

With prices now determined by the market, farmers are faced with soaring real costs of inputs and falling output costs (alternative private market channels are slow to develop in competition to the state channels). In early transition, largely demonetized subsistence agriculture relied heavily on bartering with the state (or semi-state) organizations for products that were otherwise unavailable. The processing industry was largely inefficient and oversized for the fast-reduced volumes. Transport and logistic systems designed for large farms became obsolete or too expensive to be maintained.

With the economic transformation so came changes in the urban consumer market. Widespread poverty and declining household incomes led to a fall in domestic demand for products (especially meat) of the livestock subsector. With the rapid rise of subsistence agriculture in the countryside, more milk and dairy products were being produced and consumed on farm. Subsistence farming is dominant in South-eastern European countries as well as in Caucasian countries. Although the dimensions of the livestock sector have decreased significantly (up to 40-60 percent), livestock is still very important in rural livelihoods where this is the major source of income for many rural families. Whilst during the socialist era animal production was merely planned to produce food as well as raw materials for industry, currently livestock contributes, more progressively, to the function of reducing risk, enhancing income and the livelihood support of the rural people, who are in many cases very poor

Countries more advanced in their recovery have managed to build up private enterprises, which overtook the state sector. The bulk of the livestock produce is processed and value added products are sold on the market. These countries have been more successful in increasing their exports and reorienting them to the industrial countries.

Current farming systems in CEE are described area-wide as large, specialized, intensive (high input) production systems greatly mixed with smallholder (low-input/low-output) farming whereas this farming patterns varies greatly from country to country.

Farms in a transition economy can be distinguished by history: are they new, restructured or old? They can also be distinguished by economic performance: are they productive? Furthermore, history and performance are related. New private farms were expected to be more productive than restructured collective and state farms. The role of history progressively weakens: years of transition has proven, that countries where small farming is prevailing, be it 'old' like in Poland, or 'new' like in Bulgaria, will face more challenges, than countries where state farms remained undivided and restructured as agricultural enterprises.

The decade of restructuring has not yet demonstrated, what would most sustain production systems in the future and it is not quite obvious which farming systems are not on a sustainable track.

Different farming systems face a number of challenges in the future:

*Challenges to large-scale industrial farms:*

- dependence on inefficient processing and marketing;
- quality requirements: consumer demand or a political decision?
- investment needs;
- ownership structure, incomplete privatization;
- labour intensive technology;
- environment.

*Challenges to small farms:*

- economic sustainability, efficiency;
- missing support services;
- access to markets;
- inadequate technologies (in new small farms);
- investment needs;
- missing skills and tradition;
- missing services and relatively high prices;
- quality requirements.

*Challenges to subsistence farms:*

- limited perspective for livelihood;
- alternatives;
- access to information and education;
- participation of society;
- sustainable management of natural resources.

The EU accession countries will have an additional external challenge: the milk production quota imposed by the EU upon enlargement. The milk quota will effect the prospects of dairy farming all over the region and will increase the risk of amplifying the existing problems in agriculture and society.

In general CEEC and CIS farming systems are extensive, labour intensive and still largely less productive than in western countries, which hampers competitiveness in domestic markets (which are wide open to global trade) and reduce trade prospects in global export markets. Although recent studies show a slow increase in farm size and gradual consolidation of resources, the differences in productivity and economic performance are disappearing slowly. Problems related to the fragmented farm structure demands resolution at political level and the majority of the governments in CEEC advocate sustainable intensification of farming as successful transition into a market economy commands increased efficiency and hereby, sustained government attention and support to the animal recording services plays a very important role.

Together with agricultural re-structuring and privatization has also come institutional change, reorganization of ministries, academic institutions and service organizations. Governments applied varied strategies to advance reforms. The striking diversity in challenges and circumstances has not proceeded far in transition, in particular, countries in the CIS and South-eastern Europe (SEE). While Central European countries have managed to maintain and/or re-establish the most important services to new livestock farmers, in CIS and SEE, many formerly state provided services are no longer available, or are inadequately prepared to serve the new farmers. Therefore, this part of the paper presents cases, where these countries can hopefully learn from successful reforms in Central Europe and the Baltics.

Although the general trend was towards privatization, there was hardly any initiative and very little interest and initiative from farmers to take over operational management. The establishment of farmers' organizations was encouraged and strongly supported by the government and international technical assistance projects.

There are no significant differences between countries with traditional farms (Hungary, Slovakia and Poland) and countries with new private farms, in all cases reorganization of the animal breeding services was operated by state institutions.

Central European governments and Baltic countries postponed the pain of liquidating and restructuring the old service structure while the cushion provided to the newly established breeders' associations, intended to take-over the state provided services: herd book, selection, artificial

insemination (AI), milk recording (MR), data processing (DP) and genetic evaluation. On one hand the State gave more responsibilities to the private sector, on the other hand, while heavily subsidising the activities.

Looking back, this decision has been important. Countries had bad experiences by imposing full privatization of livestock development services (like in western countries) in the early stages of transition. However, this period was still one of the extreme hardships for the farmers and in all such cases the new organizations failed to build up the service operations. Often those efforts were initiated by development projects and were only maintained until the project was finished.

The countries with strong involvement in the public sector in animal recording have succeeded to win time for learning the market economy principles and gaining experience. Generally in those countries farmers are responding better to external and internal demands in the business environment.

Irrespective of the ownership of a service organization (public or private), there are five main areas important for sustainable service:

1. Strategic and operational management (strategic planning, operational management, quality control, risk management, technological change).
2. Financial management (cost recovery, pricing of services, budgeting and cost control).
3. Customer service and service development (customer needs, customer orientation, service development technology training).
4. Legal and policy frameworks (modifying legal and policy frameworks).
5. Administrative effectiveness (coordinating activities with other organizations, decentralization, interaction).

CEEC demonstrate a wide range of options to adapt those needs by sharing the tasks between the public and private sector. In early transition strategic and operational management was clearly imposed by the government and only after some time were farmers' organizations able to take over a part of the strategic and operational management tasks, while risk management and technological change is still funded by the government in most cases. Here the state intervened in many countries: institutions and organizations are important, but so are policies, which need to encourage the creation of new organizations which are able to compete in the market place without seeking special favours from the state.

*Financial management* principles were an entirely new area of all the people in post-socialist countries. People who worked in budgetary institutions had never learned financial management. While small enterprises, farmers among them, learned the cost recovery approaches very fast,

### **Estonian Case**

Three cattle breeding associations were established in 1992. In 1994 two larger organizations privatized the AI centres, recruited former government staff and officially took over the HB from the state. The main income generated from AI service: state subsidy constituted ca 10-30 percent of the annual budget. Associations faced difficult times: constantly reducing cow population, less use of AI, higher transaction costs because of small farms: more members, less services, investment needs and increased competition at the domestic AI market. As a result the economic situation of new organizations was weakening further.

Although the Government of Estonia suggested a merge of organizations seven years ago, the organizations were enjoying their autonomy and farmers were reluctant to realize the need to consolidate resources until the economic situation became critical. Finally, the decision to merge three organizations into one took place in 2002. The main responsibilities of the newly reformed breeding association was to cover all cattle breeds: herd book registration, bull testing, marketing of semen and breeding stock, distribution of semen, insemination registration, advisory and extension. In the future perspective; one strong organization serves farmers better than several weak ones.

The new organization is expected to privatize the state owned Animal Recording Centre (milk recording, milk quality control, data processing services, and genetic evaluation) and it is only a matter of time until the organization become economically stable. The State is not involved in the operational management of the organization and support is mainly targeted to the development and technology change. Estonia's experience shows that timing of reforms (shifting the activity from public institution to the private organization) had to be postponed until organizations began functioning as a business association and the role of the Government was important in sustaining the service meanwhile.

the financial management of organizations and activity was emerged by monetary reforms and uncontrollable inflation. Regardless of whether the livestock development agency is public or private, most of them have learned to apply the self-financing approach and cost recovery principles.

Self-financing of the MR organization is problematic in the situation were farms are very small and/or participation in MR or AI service very low (transaction costs are high) and/or the total cattle population is reducing,

which makes the overhead costs per service unit increasingly higher. The situation is very critical especially for the MR organization, which has a high fixed cost component.

According to an ICAR survey, farmers pay an increasing part of the cost of the milk recording in all countries. In some of the countries (Lithuania and Slovakia) the MR service was fully paid by the State until recently and there are plans to relinquish this practice. Only a few of the MR organizations in CEE have the capacity to manage the organization as a business. For instance the Hungarian MR organization has operated as a limited liability organization for more than 10 years, all shares are owned by the State. Farmers pay close to 100 percent of the operational cost of the MR service in the Czech Republic, Estonia and Hungary. In Estonia only B recording is used.

The changes in the farming structure are still continuously deflating the financial situation of the newly established organizations. Trends in the CEE farming systems progress against the tendency in the western countries and do not favour meeting the challenge of implementing cost recovery principles in milk recording. Organizations serve an increasing number of farms of very diverse sizes and different needs. At the same time the average herd size is still declining and so is the total cow population therefore cost per cow and per farm is continuously raising.

When seeking good examples for *Customer service and service development*, we should not observe countries, where the service is still fully paid by the government. The best cases of customer (farmer) orientation can be

#### **Hungarian Case**

Hungary has been a star pupil in the transition process applying the cost recovery principles in the early stage of transition: pricing all services. Budgeting and cost control was imposed by the business operation (Ltd). Continuous investment into technical developments was aiming at improvement of services. Although the Hungarian average herd size in MR is one of the largest in the world, the financing of recording is emerged by constantly reducing the total cow population and especially by decreasing the average herd size, while the number of herds in the MR service is increasing fast. In this situation sustained cost recovery is a real challenge as well as maintenance of the quality of service without being directly sponsored. The A4 recording is increasingly replaced by other methods, which are remarkably cheaper. Hungary is seeking a solution by providing AT, B and C method of MR.

found in countries where there is high or fast growing participation in MR services. Service and technology development and training of farmers and extension people are becoming a daily practice. In most of the countries the participation in MR has risen, which is a sign of the desirable service. Bulgaria has about 10 percent of cows in milk recording, Croatia 38 percent, the Czech Republic 95 percent, Estonia 72 percent, Hungary 73 percent, Latvia 37 percent, Lithuania 24 percent, Slovakia 75 percent, Slovenia 45 percent, Poland 11 percent and Russia 18 percent.

The MR organizations gradually learned what does servicing mean: the service should support the farmers' decision-making process. Generally a lot of data on animals was recorded and analysed for administrative purposes in the socialist era and not many decisions were taken at farm level. Successful reorganization of milk recording services during transition is dependent on how fast the MR organization became service-oriented and functional for the farmers' decisions.

The "classical" milk recording (milk quantity and fat/protein measurement) is not the only information service provided to farmers. Milk recording organizations are expanding the number of services provided for farmers and seeking new customers: AI and HB organizations, veterinary service, dairy factories, and public sector. Some countries are fast moving ahead with innovative approaches in providing customers the real-time information: more than 200 farms in Estonia have daily access to their data via Internet and SMS message regarding the laboratory test of SSC which is becoming more popular.

The public sector is ruling in the *legal and policy frameworks*. In early transition most of the countries were operating in a legal system of socialism. The first attempts made to legalize private enterprising as well as new state agencies was important. In most cases the national legislation was harmonized with EU legislation and the current Animal Breeding Law in force is probably the second or third law since the 1990s.

*Administrative effectiveness* became important in the countries where governments withdraw in providing operational support to new organizations. New sets of institutional linkages were to be established: for coordinating and integrating activities with other organizations. Here the government is playing a central facilitator role and the private sector is not ready to take over the management, organizations and institutional linkages.

Central European countries and the Baltics started reforms early and learned very soon, that reforms have to continue. In reforming the animal recording and breeding organizations the public sector is still a new player in CEEC and CIS.

The Government's support can be provided in two ways:

1. Maintenance (budget, direct subsidy)
2. Encouragement (incentive measures, targeted support).

Provision of public support in transition countries should be targeted and provide incentives for improvement and encouraging farmers' involvement. In livestock development services incentive measures are advisable in most cases.

The principles of the self-help organizations were introduced by western countries. By definition (H. Nygaard) a self-help organization is an organization that solves professional, organizational and commercial tasks for the livestock producer, possibly in cooperation with other organizations, but is mainly financed and managed by the livestock producers themselves. In principle each livestock producer pays for the services ordered from the self-help organization either directly or via membership fees. The main function of the membership fee is to contribute to secure the existence of the organization and its professional advice and services.

The self-help organizations in Europe have a history dating back 100 years and successful reformers in transition countries have gradually applied the self-help organization principles into their operations. Here it is important to notice, that development of the current animal recording and breeding structure in western countries took place in the situation of constantly growing markets and it is often forgotten that the government was playing an important role in reorganization and supporting the farmers' organizations.

Development needs in the countries where animal recording and animal breeding collapsed and where farmers do not have access to information and quality control services can be divided into two groups:

1. Technical (animal science and technology related).
2. Operational (establishment and management of an organization in the market economy).

The countries in an advanced stage of transition have proven that technical problems are easy to solve but management skills need to be upgraded.

The discussion regarding the optimal share of the roles of the private and public sectors in animal recording and breeding will continue. Government and governmental institutions will play an important role in the countries, which have to 'get started' and sustain recording and breeding activities.

One may pose a question if animal recording is needed at all. I do believe it is important as much as it has been important for the developed countries to contribute to improve productivity, thus increasing the economic importance and activity of farming, e.g. via cheaper food or a higher export income. So the State has a clear economic and political interest in supporting the general activities of the recording and breeding, especially in the countries where agriculture is the major part of economy and employment.

Animal genetic resources constitutes an important resource for efficient and sustainable livestock production. Thoroughly modified and adjusted to meet society's needs livestock genetic resources are the basic environmental input to animal production systems. The utilization of the genetic reservoir largely determines the type and level of animal production systems employed and in this respect CEEC and CIS have faced many challenges:

Production systems changed drastically. The transition time did not clarify the concept of sustainable farming systems in order to provide a basis for identifying and making operational separate sustainability issues related to farming systems. Technology driven development requires economic performance which undermines sustainability issues, the diversity of farm animal genetic resources is among them.

The present Status of Domestic Animal Diversity is well-monitored in CEEC but there is very limited information available about the situation in CIS. The animal breeding structure was somewhat different in CEEC and CIS than in western countries, but still many globally used breeds were introduced during socialism and many countries operated improvement programmes for native breeds. The economically developed CEEC could maintain and develop further the animal recording and genetic improvement services while in the majority of the CIS no programmes are operational any longer.

In the context of the sustainable breeding we are concerned about the extent of the effect of inbreeding.

Inbreeding is dependent on selection intensity of parents, reproduction efficiency (use of AI, MOET, cloning), reduced generation as parents, co-selection of parents and allowing mating between parents.

In this context we may assume that the erosion of genetic biodiversity is not threatening CIS until the fast economic development takes place. In CEE erosion should be slowed down by reduced intensity of selection programmes and limited use of AI, MOET.

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## **Impact on farm animal genetic resources**

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However, drastic reduction in livestock numbers has been registered in all CEEC the livestock populations decreased by 50 percent. The reduction manifested also for breeding stocks and many small breeds disappeared, which has an impact on the diversity among breeds. Only a few genetic improvement programmes are operational, while genetic improvement is increasingly imported.

In order to assess the impact of transition to utilization of animal genetic resources in cattle populations, the FAO Subregional Office for Central and Eastern Europe, initiated a study in three countries of CEE: Estonia, Hungary and Slovakia. The key indicators of monitoring the change during 10 years of transition were:

- farms with cattle;
- breeding structure;
- inter-population gene flow;
- population size;
- monitoring and utilization of genetic diversity.

The results of the study are not completely summarized but some of the first conclusions can be made:

1. During 10 years of transition breed, the composition of milk producing cows has been changed in favour of HF cows in all three countries. HF population size increased by 175 percent in HR during the overall reduction of cattle numbers. In Estonia the Estonian red reduced by 75 percent while HF population reduced only 43 percent.
2. The population size of native breeds has been maintained by state subsidies.
3. Less breeds are actively used, only a few breed improvement programmes for smaller populations
4. Smaller active population size supports increasing reliance on foreign breeding programmes, less sires tested from national breeding programmes and AI uses imported bulls.

Looking for answers to the reasons of the erosion of diversity in cattle populations, we would like to better understand the farmers' decision-making process and failures in the management of the breeding programme as well as impact of the opening of the markets to the global trade and impact on economic developments.

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## **Conclusions**

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- The livestock sector has diverse roles throughout the transition countries. Furthermore, a diverse role within one country. The role of the livestock sector is in transition.
- Livestock and agriculture is important in poor CEEC and CIS.

- The state of the livestock development services and animal genetic resources is strongly related to the level of the economic development of the countries in transition; development prospects depend on:
  - appearance of market forces
  - the interaction between government and farmers' organizations
  - improvement of managerial skills in public and private sectors.