KYRGYZ REPUBLIC

MINISTRY OF AGRICULTURE,
WATER RESOURCES AND PROCESSING INDUSTRY

INTERNATIONAL DEVELOPMENT ASSOCIATION

KYRGYZ REPUBLIC’S COMMUNITY DEVELOPMENT AND INVESTMENT AGENCY

AGRICULTURAL INVESTMENTS AND SERVICES PROJECT

ENVIRONMENTAL ASSESSMENT AND MANAGEMENT PLAN

January 2008
KYRGYZ REPUBLIC
Agricultural Investments and Services Project
Environmental Assessment and Management Plan

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<tr>
<td>AISP</td>
<td>Agricultural Investments and Services Project</td>
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<td>APIU</td>
<td>Agricultural Projects Implementation Unit (MAWRPI)</td>
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<td>ARIS</td>
<td>Community Development and Investment Agency</td>
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<td>ASSP</td>
<td>Agricultural Services Support Project</td>
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<td>CDS</td>
<td>Country Development Strategy</td>
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<td>CPMP</td>
<td>Community Pasture Management Plan</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<td>EAMP</td>
<td>Environmental Assessment and Management Plan</td>
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<td>EMP</td>
<td>Environmental Management Plan</td>
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<td>FMD</td>
<td>Foot and Mouth Disease</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GOKR</td>
<td>Government of Kyrgyz Republic</td>
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<td>IDA</td>
<td>International Development Association</td>
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<td>IPM</td>
<td>Integrated Pest Management</td>
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<td>ISDS</td>
<td>Integrated Safeguards Data Sheet</td>
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<td>MDG</td>
<td>Millennium Development Goal</td>
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<td>MAWRPI</td>
<td>Ministry of Agriculture, Water Resources and Processing Industry</td>
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<td>NEAP</td>
<td>National Environmental Action Plan</td>
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<td>NGO</td>
<td>Non-governmental Organization</td>
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<td>NSC</td>
<td>National Statistical Committee</td>
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<td>PD</td>
<td>Pasture Department (MAWRPI)</td>
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<td>RAS</td>
<td>Rural Advisory Services</td>
</tr>
<tr>
<td>SAEFP</td>
<td>State Agency for Environment Protection and Forestry</td>
</tr>
<tr>
<td>SARRIP</td>
<td>State Agency for Registration of Rights to Immovable Property</td>
</tr>
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<td>SEE</td>
<td>State Ecological Expertise</td>
</tr>
<tr>
<td>SVD</td>
<td>State Veterinary Department (MAWRPI)</td>
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<tr>
<td>VIP</td>
<td>Village Investment Project</td>
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<td>WHO</td>
<td>World Health Organization</td>
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1. INTRODUCTION

This Environmental Assessment and Management Plan (EAMP) has been prepared for the Kyrgyz Republic’s proposed Agricultural Investments and Services Project (AISP), which will be co-financed by the International Development Association (IDA), in order to ensure that the proposed project incorporates sound environmental management principles and practices and thus complies with the environmental policies and laws of the Government of the Kyrgyz Republic (GOKR), as well as with IDA environmental safeguard policies.

1.1 Background

Efforts to promote the development of the agricultural sector in the Kyrgyz Republic over the past decade have focused on establishing a market environment in which growth is driven by private farms and agribusinesses, refocusing the government’s role on policy formulation and regulatory functions, and establishing a basic set of essential support services in the crop production sub-sector. A cornerstone of this process has been the agrarian reform, resulting in private ownership of the vast majority of arable land. The newly established private farms have been the engine of agricultural growth and now account for over 95 percent of total agricultural production. Essential agricultural support services (e.g. extension, improved irrigation and water management, credit, market information, access to quality seeds, crop protection) have been established and agribusiness and marketing linkages are being fostered.

The resulting positive sector performance, driven by growth in smallholder productivity, has had significant impact on economic growth, rural employment and poverty reduction. From 1991 until 1995, immediately after independence, agricultural growth plummeted (-5.9 percent) and only the major economic reforms during the first phase of the transition process reversed this downward trend. The agricultural sector witnessed rapid growth until 1999 of 9.6 percent, contributing substantially to overall economic growth during this period. Growth in the crop sub-sector (66 percent) dominated the agriculture sector’s growth when compared with the livestock sub-sector (34 percent) during the recovery period (1995-2002). Smallholder productivity has been the key in this process with household plots contributing 38 percent and private farmers 59 percent of the agricultural value added, while large agricultural enterprises resembling the former state and collective farms accounted for only 3 percent (2002). Since then, however, performance has been lower than expected, with a growth rate around 2.5 percent and a decline in agricultural output in 2005 (-4.2 percent) and in 2006 (1.5 percent), mainly due to political instability and adverse agricultural conditions.

Although representing a declining share of nominal gross domestic product (GDP), agriculture (34 percent in 2005) remains a structural backbone of the economy. It provides more than half of total employment (53 percent) remains critical for food security and consumer price stability and is a leading source of exports. With an average annual growth rate of about four percent since 1999, agriculture has also contributed substantially to rural poverty reduction. Countrywide the level of poverty (consumption per capita) declined from 63 percent in 2000 to 43 percent in 2005, and extreme poverty fell by 50 percent. In the rural areas poverty decreased from 65 percent to 51 percent, and both off-farm and on-farm income have been important to this reduction. Nevertheless, poverty remains high and is concentrated mainly in the rural areas, where three quarters of the poor (1.8 million) and extremely poor live. These people depend mainly on agriculture, including both crop and livestock production for their livelihood.
Among the key challenges facing Kyrgyz agriculture are the limited supply of arable land (highly dependent on irrigation), coupled with currently unsatisfactory management, resulting in suboptimal utilization of the country’s extensive pasture resources, of which a significant share is subject to severe degradation. Only seven percent of the total land area is suitable for arable cropping, while approximately 50 percent is classified as pastures (the remainder is mountains, rocks and glaciers). Pastures account for 86 percent of the agricultural land and cover a total area of 9.2 million ha (see Table 1), including winter pastures (2.1 million ha), summer pastures (4.1 million ha) and spring/autumn pastures (3.0 million ha).

### Table 1: Pastures of the Kyrgyz Republic

<table>
<thead>
<tr>
<th>Types</th>
<th>Characteristics</th>
<th>Area (000 ha)</th>
<th>Percentage</th>
<th>Percentage Degraded</th>
</tr>
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<tr>
<td>Summer</td>
<td>Middle and high elevations, far from settlements</td>
<td>4,129</td>
<td>45.1</td>
<td>35</td>
</tr>
<tr>
<td>Spring/Autumn</td>
<td>Foot hills below 2,500 m, remote distance to settlements</td>
<td>2,955</td>
<td>32.3</td>
<td>16</td>
</tr>
<tr>
<td>Winter</td>
<td>Close to permanent settlements</td>
<td>2,063</td>
<td>22.6</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>9,147</td>
<td>100.0</td>
<td>24</td>
</tr>
</tbody>
</table>

Source: Project Appraisal Document, Annex 1

The rural population, which accounts for about two-thirds of the total population, is heavily dependent on these pastures, since herding is the dominant livelihood system outside the few major valleys. Further agricultural growth and gains in rural incomes, therefore, depend greatly on the efficient use of this resource. Yet pasture conditions have deteriorated significantly during the recent past, with village and close-in (winter) pastures being severely overused and degraded, while the more remote summer pastures are underutilized. As a result, pasture productivity has declined, particularly that of winter pastures (see graph in Figure 1), pasture use has become environmentally and socially unsustainable, and a vicious, self-perpetuating cycle has been set in motion. The close-in pastures no longer provide adequate livestock nutrition, and supplemental winter feed is insufficient in both quantity and quality. Combined with widespread and largely untreated livestock parasites and diseases and the general lack of farmer knowledge of good husbandry techniques, this has led to poor animal performance and livestock production.

### Figure 1: Decline in Pasture Productivity
Traditionally, the pastures were used in a transhumant system. Animals grazed at the higher altitudes during the summer when pastures there were productive. Then they were moved to lower altitude pastures in autumn and back to the valley bottoms for the winter. A mix of grazing on the winter pastures and of conserved hay and crop by-products provided animal feed during the winter months. In the spring, as pasture vegetation became available again, the animals were moved back up to the low-altitude pastures. During Soviet collectivism this system was replaced by extensive winter feeding with largely imported winter feed. Now, transhumance is no longer widely followed and livestock is grazing year-round on the close-in winter pastures, causing significant overuse and degradation and leaving no time for recovery, while at the same time the distant summer pastures are underused. Unless pasture use is aligned again with the seasonality of vegetation growth and recovery, all other measures to restore the productive capacity of the pastures will be fruitless.

The root of the current problem of pasture use not being aligned with the natural cycles of plant growth, seeding and rest lies in the present fragmentation of administrative control over pastures. The present division of responsibility for close-in, intermediate and remote pastures, respectively, between community, raion and oblast administrations separates pasture users from pasture management and impedes the investment of pasture revenues back into pastures. These diffused regulatory and management authorities (see table below) are compounded by inconsistencies between various laws and regulations concerning pasture use and management including the 2002 Government Resolution #360 on Pastures Land Lease and Use, the Land Code, the Forestry Code, the Tax Code and the Law on Management of Agricultural Land. Furthermore the competitive pasture leasing process is complicated and impractical to implement, and the pasture leasing practice differs markedly from the regulations: most pasture rights allocations are made on a first-come first-served basis without consideration of the needs of other pasture users.

Sustained agricultural growth and measures to raise farm productivity and farm incomes are key priorities of the GOKR. Three of the GOKR's overall policy objectives, as outlined in the Kyrgyz “Country Development Strategy” (CDS) for 2006-2010 that was finalized by the Government in December 2006, are the alleviation of poverty, improvements in the level and quality of the population's living standards, and effective democratic governance, including decentralization and providing local communities with more authority and improved budgets.

In the agricultural sector the main goals are increases in agricultural productivity, income growth and environmental soundness, placing high priority on (i) developing agricultural...
support services and (ii) improving the normative-legislative base governing agriculture. The “Agrarian Policy Concept of the Kyrgyz Republic to 2010,” prepared in 2004 by the Ministry of Agriculture (MAWRPI), highlights the importance of introducing a more sustainable system of pasture management, of strengthening agricultural advisory and information services, and of improving veterinary service provision as priority tasks.

The proposed project will address these critical issues.

1.2 Objective

The objective of the environmental assessment (EA) in Sections 1-5 of this document is to identify the significant environmental impacts of the proposed project (both positive and negative) and to specify appropriate preventive actions and mitigation measures to prevent, minimise or eliminate any anticipated adverse impacts. The environmental management plan (EMP) contained in Section 6 of the document is the mechanism that ensures that the environmental prevention and mitigation measures identified in the EA, as well as the monitoring and institutional strengthening activities recommended, will be properly undertaken during implementation of the proposed project. The EMP also establishes the necessary institutional responsibilities, proposes a timetable for implementing these activities and estimates their costs for the proposed project budget.

1.3 Safeguard Policies

IDA’s initial Integrated Safeguards Data Sheet classified the AISP a Category “B” project, triggering the environmental safeguard policies for environmental assessment and pest management. The EA confirmed the Category “B” classification for the AISP, finding no significant, irreversible, cumulative or long-term adverse impacts. On the contrary, the EA identified a number of positive impacts of the proposed project and only minor negative impacts that could be effectively prevented, minimised or mitigated by application of appropriate preventive actions or mitigation measures (see discussion of impacts in Section 5). The EA also confirmed the application of the pest management safeguard policy and considered but rejected application of the safeguard policies for involuntary resettlement, physical cultural property, forests, natural habitats, indigenous peoples, safety of dams, projects on international waterways or projects in disputed areas. A discussion of the EA’s findings with respect to these policies follows.

1.3.1 Environmental Assessment (OP 4.01). The anticipated environmental impacts of the project’s pasture-related and other small-scale infrastructure improvements trigger this safeguard policy, requiring a partial EA and preparation of an EMP. The EA performed during project preparation confirmed the Category “B” designation, finding no significant, irreversible, cumulative or long-term adverse impacts. On the contrary, the EA found that the project would provide a number of environmental benefits (i.e. sustainable pasture management, improved veterinary services, expanded extension and farmer training in good agricultural practices) and would involve only minor negative impacts (i.e. increased pesticide use, small-scale infrastructure impacts, animal waste management) that could be effectively prevented, minimized or mitigated by application of appropriate preventive actions or mitigation measures identified in the EMP. The EMP will ensure that the recommended preventive actions and mitigation measures will be taken and that the environmental impacts of the AISP will be monitored.
1.3.2 Pest Management (OP 4.09). The EA also confirmed that the pasture management and agricultural services aspects of the project trigger the pest management safeguard policy. The improved use and management of pasture lands (Component 1) may initially require the selective use of herbicides to rid the pastures of noxious weeds. The project itself will not finance the procurement or use of pesticides in the pastures, but the project’s community pasture management plans may include selective application of herbicides or pesticides in some cases. Throughout the project, however, emphasis will be placed on appropriate alternatives to the use of pesticides. The agricultural extension services and farmer training activities (Component 2), for example, will promote the use of integrated pest management (IPM), thus continuing the efforts initiated under the Agricultural Services Support Project (ASSP) to build the knowledge and capacity of agricultural producers to employ such techniques. Given the limited nature of the pest management issues presented by the AISP and the project’s overall emphasis on IPM, the EA determined that preparation of a separate pest management plan was not necessary. The project’s approach to addressing the pest management is instead set out in the Pest Management Framework contained in Annex C.

1.3.3 Involuntary Resettlement (OP 4.12). The project does not trigger the safeguard policy on involuntary resettlement. The project will not require the acquisition of private land or rights of way over private land or restrict traditional access to income-generating natural resources. New pasture legislation is expected to devolve management of all pastures to the aiyl okmotu. On the aiyl okmotu level, community pasture associations are expected to assume responsibility for pasture management on behalf of the aiyl okmotu. Once the aiyl okmotus are given responsibility for spring, summer and fall pastures, leases issued on these pastures by the raion and oblast administration will be allowed to expire or will be terminated, if leaseholders are found to violate lease agreements. The terms for termination and expiry are explicitly stated in leases, so this safeguard policy is not triggered.

1.3.4 Physical Cultural Resources (OP 4.11). Pasture lands are vital economic resources of the Kyrgyz people and they also have historical and cultural significance. During the soviet period, most of the cultural values of transhumant livestock production were suppressed through collectivization and some traditions were lost. Since independence, however, some traditions are being revived both for everyday life and as an element of ecological tourism. Neither traditions nor physical cultural assets will be put at risk by the project, thus it does not trigger the safeguard policy on physical cultural resources.

1.3.5 Remaining Safeguard Policies. The EA also found that, consistent with the initial ISDS determination, the project did not trigger the remaining safeguard policies for the following reasons:

- **Forests (OP 4.36).** The project will involve no forested or woodland areas; thus it does not trigger this policy.
- **Natural Habitats (OP 4.04).** The project will involve no conversion of natural areas or critical natural habitats; thus it does not trigger this policy.
- **Indigenous Peoples (OD 4.2).** The project will involve no indigenous peoples, ethnic minorities or tribal groups; thus it does not trigger this policy.
- **Safety of Dams (OP 4.37).** The project will not involve the construction or repair of any dams or water retention systems; thus it does not trigger this policy.
- **Projects on International Waterways (OP 7.50).** The project will not affect any international waterways; thus it does not trigger this policy.
- **Projects in Disputed Areas (OP 7.60).** The project will not be implemented in any disputed areas; thus it does not trigger this policy.
2. DESCRIPTION OF CURRENT SITUATION IN RURAL AREAS

2.1 Physical and Biological Environment

Pastures have always been and remain a national wealth of the Kyrgyz Republic. They constitute 85 percent of all agricultural land and are the main forage reserve for livestock. Pastures are of primary importance for breeding sheep because more than 70 percent of the country’s sheep graze on natural pastures.

The total area of the Kyrgyz Republic under natural pastures is 9.1 million ha, of which summer pastures cover 3.9 million ha, spring-autumn 2.8 million ha and winter 2.4 million ha. Besides the grazing lands, there are also pastures which are part of the Forestry Fund covering an area of 32,000 km², of which some 21,300 km² are not covered by forests and actually serve as pasture resources. By geographic location, pastures are divided into near-village, distant and intensive pasture lands.

According to geo-botanical studies of pastures performed by the Kyrgyzgiprozem Institute, more than 1.2 million ha of them are degraded by excessive bush growth; some 1.3 million ha are threatened by poisonous weeds, plants with coarse stalks, and poorly edible grasses; around 1.4 million ha are basically stony pastures; more than 800,000 ha are both stony and bushy; 400,000 ha are classified in the category of difficult access (greater than 45° slope, remote from highway access), which are currently not used. A high infestation of noxious plants is observed at spring-autumn and summer pastures, with erosion of pasture soils observed in an area of more than 200,000 ha.

From year to year, the overgrazing of pastures, the use of unsystematic grazing practices and the lack of improvements performed on natural forage lands have caused more and more deterioration of pasture grasses. The overloading/overgrazing of pastures by cattle negatively affects their ecological condition. Significant overgrazing has led to degradation of plant sods and the mechanical structure of the soils, resulting in decreases in yields and increases in erosion.

Critical decreases in recent years in the number of heads of cattle in the republic have not resolved the ecological problems related to grazing animals in pastures. Reduction in overgrazing has occurred only in remote pastures where small farmers and peasants were not moving. Cattle owners have no possibilities of moving their cattle to remote transhumant pastures due to the lack of transport and funds. As a result, all cattle are being kept at spring-autumn pastures near villages, which suffer from overgrazing. Such disproportionate cattle dislocation at pastures has led to further degradation of near village pasturelands. The soil is compacted because of the animals’ impact, and its seepage is declining. Improper grazing of cattle has reduced plant growth, uncovered soil and hastened erosion. As a result, yields and supplies of pasture forage are decreasing; the appearance of weeds in pasture grass and the number of inedible, harmful and poisonous plants are increasing. Threats from bushes in pastures are intensifying (especially thorny bushes); pasture scouring is growing (availability of pasture paths, scoura, ravines, etc.). Certain types of plant varieties are disappearing from pasture grasses altogether.

According to the Kyrgyzgiprozem data, average pasture yield in the country decreased by 15 percent in the period from the 1970s to 2000. A considerable area of pastures (about 25 percent) has been moderately or heavily degraded. Spring-autumn pastures are especially
prone to degradation. Degrading of pastures represents a danger not only in terms of decreases in the pastoral forage supply but also in terms of pasture erosion on mountain slopes, which contributes to the development of scouring and can cause an irreversible erosion process in mountainous areas.

Besides beautiful scenery, pastures also serve as a source of biodiversity of flora and fauna. Growth of natural forage lands provides opportunity for numerous varieties of medicinal herbs, melliferous and ornamental plant vegetation. Pastures provide natural habitat and forage reserve for many wild animals. Ecologically sustainable management of pasture resources is a necessary factor for potential development of profitable industries, such as pharmacology, bee keeping, tourism and hunting, as well as for organization of national parks, nature reserves and game reserves. Pasture degradation leads to the disappearance of certain plants, the varieties most sensitive to grazing, as well as to the loss of particular mountainous landscapes and to depletion of biodiversity and the gene pool.

The current number of heads of cattle is probably significantly lower than the carrying capacity of the country’s pastures under proper conditions of sustainable and productive use. However, the existing system of distribution of pasturelands and managing pasture holdings does not provide for optimal distribution of resources. The traditional practice of moving cattle to summer pastures is not applied broadly any more. As a result, summer pastures are underused, while spring-autumn and winter pastures undergo significant overuse, which is a main reason for both the poor productivity of animals and the extent of environmental damage.

Determining the number of cattle and the terms of grazing that pastures can handle is a complicated problem. The ecologically acceptable load on mountain soils and vegetation should be taken into account, otherwise livestock grazing will not be possible in the future and pastures will degrade further. At present in Kyrgyzstan, the issue of pasture use is most important and the need to resolve it is a high priority. For now, while the use of pasture resources is not related to seasonal vegetation and rehabilitation, the remaining proposed measures for improvement of pasture productivity will remain essentially ineffective.

2.2 Socio-Economic Context

Today, due to growing marginalization of the population of mountainous areas, the issues of employment and migration are critical. One of the main conditions for resolving these issues is successful economic growth in the mountain raions, development of agricultural and industrial infrastructure and establishment of sufficient employment opportunities.

Health. Because of insufficient development of the economy of the mountain areas, few funds are spent on social development of mountain and sub-mountain settlements. At the present time, healthcare remains inaccessible for the populations of remote rural raions, especially for unprotected layers of the population. Expenditures of the state budget for health care are decreasing annually. In 1991 the allocation for health care was 13.1 percent; in 2004 it was reduced to 10.1 percent. The number of doctors went down by 19 percent and paramedical personnel by 26 percent. There are no first aid posts in 485 small village settlements and no drug stores in 70 villages.

In this respect, substantial improvement of the rural mountain population’s health is critical, as well as long-term development of a regular system of health care. According to data from
the Ministry of Health Protection and the National Statistical Committee, the mortality rate among children and the overall population of the mountain raions is higher than among inhabitants of the lowlands. Life expectancy is shorter and the prevalence of infectious and blood diseases (mostly with iron deficiency conditions – 90 percent) is higher.

Education. Nationwide, 8,588 children out of 100,000 do not attend school, of which 6,520 are from rural areas, i.e. mainly inhabitants of mountain oblasts (according to the National Statistical Committee, 1999). As a rule, the lowest rate of school attendance is in Naryn Oblast. Children from the rural raions do not go to school because of poverty (expenses on school needs, clothes and books) and the need for children as manpower for agricultural work (e.g. grazing animals, field work, etc.).

In rural areas, there are 1,701 schools (82 percent of the state schools) functioning, where 618,857 pupils (71 percent of the total number of pupils) are studying. Rural schools are faced with many serious difficulties, such as a lack of textbooks, new manuals for teachers and visual aids; inadequacy of teachers; poor provision of school libraries with teaching materials, which significantly lower the quality of education. Furthermore, the availability of education for children from socially unprotected and unfavorable families (i.e. orphans and handicapped) has declined. Of the total number of children who don’t attend school for any reason, 75 percent are children from rural areas.

Recently, the number of specialists prepared for agro-industrial occupations at rural primary vocational schools has been critically decreasing. In 1991 the number of professionals graduating for the agro-industrial sector was 11,500 persons. In 2002 it was only 5,600 persons. Furthermore, the network of primary schools has decreased by 893 since 1990; and the number of children at primary schools has declined by 74,324 since 1991.

The lack of teachers is critically felt in rural schools. The occupation is poorly-paid and of no prestige. Many students who come to the city from rural raions in order to be trained for the occupation of teacher do not return to their raions. Because of the high rate of migration from mountain oblasts, many professional teachers have already quit their schools.

To raise the educational culture of the rural population and provide specialists to all areas of the mountain raions, the challenge is to improve the system and methods of middle, vocational and higher education for inhabitants of mountain areas, develop and introduce new forms and technologies of education in rural settlements.

Many mountain villages are remote from the political, economic, information and cultural centers of the country. However, as a rule they are not simply distant but also dispersed. The peculiarity of the mountain area landscapes means that they are located at significant distances from each other. At the same time, many of them are difficult to access, not only due to the peculiarity of the mountain landscape but also due to unfavorable weather and climate conditions at different seasons of the year. There remain considerable difficulties with transport-road communication (overland, air communication) between mountain raions, oblast centers and the capital.

All these factors complicate implementation of administrative and political management of mountain raions. They also complicate exchange, receipt and distribution of information among inhabitants of mountain settlements. One of the current issues is the provision of mountain raions with independence in implementation of managerial functions, in
arrangement of vital activity and self-sufficiency of their raions in accordance with a principle of maximum independence and self-sufficiency. Another issue is related to solving problems in introducing modern means of communication, which have broad capabilities for transfer, collection and exchange of information, like a branched telecommunication network.
3. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 Environmental Policies, Plans and Programs

The national environmental policy of the Kyrgyz Republic is found in a number of national strategies and action plans adopted over the last two decades. The fundamentals of the country’s ecological strategy were most recently stated in the important conceptual document: Country Development Strategy 2006–2010 (CDS). One of the CDS’s priorities for national reforms is a provision for environmental safety, which defines the main objectives in the sphere of environmental protection and rational use of natural resources. Of course, the overall goal of the CDS is to increase the level and quality of life of the country’s citizens through sustainable economic growth, creation of conditions for full employment, receipt of a high and stable income, accessibility to a wide range of social services and observance of high living standards favorable to a healthy environment.

In 1995 the Kyrgyz Republic became the first country in Central Asia to develop a National Environmental Action Plan (NEAP). Adopted for the period 1995-1997, the NEAP remains one of the best statements of national environmental policy objectives. Taking a long-term perspective, the NEAP recognizes that the country’s primary objectives are to ensure sustainable economic growth and reduce poverty but emphasizes that environmental protection is both a tool and a condition for achieving these long-term economic goals. To this end, the NEAP contains objectives for improving management of renewable and non-renewable natural resources and protecting public health. Among the actions planned to achieve these objectives are investments into water and sanitation infrastructure and support for rural natural resource-based activities in order to achieve economic development while conserving the natural resource base.

In addition, the GOKR developed its National Strategy and Action Plan on Sustainable Development of Mountainous Territories in order to ensure optimal benefits from mountain resources for the rural population of Kyrgyzstan. A main focus of this document was on managing agricultural resources, including pastures and meadows. One of the major tasks of this strategy is the organization of pasture management at the local village level, which would require changes in the Land Code, the Law on Bodies of State Self-Government and Local Administrations, the Law on Administration of Lands of Agricultural Use, the Tax Code and other normative acts. Special attention will be paid to provision of clear strategic principles but with preservation of adequate flexibility for taking into account local conditions in the sphere of pasture management.

Finally, the Kyrgyz Republic firmly supports the principles of sustainable development. The GOKR confirmed this commitment to the achievement of the Millennium Development Goals (MDGs) at the Millennium Meeting held in September 2000.

3.2 Legal/Regulatory Framework for Environmental Assessment/Management

The Kyrgyz Republic has adopted a range of laws in the process of reforming its ecological and agricultural policy. These laws include: On Environmental Protection (1999), On Ecological Expertise (1999), On Chemicalization and Plant Protection (1999), On Fauna (1999), On Protection and Use of Flora (2001), On Mountainous Territories of the KR (2003), the Land Code (1999), and On Veterinary. At present, a Law on Pastures has been
drafted and is in the process of approval. The principal laws and regulations relevant to the project are summarized in Table 2.

The existing framework of laws and normative acts in Kyrgyzstan, however, lacks clarity in the system of legal relations in the sphere of natural resource use and farming, which often leads to conflicts between business entities, natural resource users and local communities. This also creates constraints in attracting foreign investment in production in the Kyrgyz Republic. The legal framework often poses obstacles to fully implementing environmental and agricultural activities. Furthermore, the lack of legal tools that effectively regulate water and land relations is a potential source of social-ecological and political conflicts.

**Table 2: Principal Environmental Laws, Regulations and Resolutions**

<table>
<thead>
<tr>
<th>Legal Authority</th>
<th>Legal Mandate</th>
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<tr>
<td>Constitution (1993)</td>
<td>Addresses environmental protection and management of the country’s natural resources, rights and duties of citizens</td>
</tr>
<tr>
<td>Law on Environmental Protection (1999)</td>
<td>Defines national environmental policy and establishes the legal and institutional framework for environmental protection and use and management of natural resources</td>
</tr>
<tr>
<td>Law on Ecological Expertise (1999)</td>
<td>Requires environmental review (ecological expertise) and the prevention of negative environmental and human health impacts from economic and other activities</td>
</tr>
<tr>
<td>Law on Chemicalization and Plant Protection (1999)</td>
<td>Regulates registration, use, storage and control of pesticides and sets standards for allowable pesticide residues in soil and water</td>
</tr>
<tr>
<td>Land Code</td>
<td>Regulates the use and management of lands (agricultural, pasture, etc.)</td>
</tr>
<tr>
<td>Law on Mountainous Territories (2002)</td>
<td>Regulates management of natural, historical and cultural resources, including pastures, in mountainous areas</td>
</tr>
<tr>
<td>Law on Administration of Lands for Agricultural Purposes (2001)</td>
<td>Regulates the use of lands for agricultural purposes</td>
</tr>
<tr>
<td>Regulation on Allocation of Pastures for Rent and Use (2002)</td>
<td>Establishes current allocation system governing use and rent of pasture lands</td>
</tr>
<tr>
<td>Law on Pastures (draft)</td>
<td>Would promote sustainable management of pastures, employing community-based approach and transferring responsibility to the ayl okmotu</td>
</tr>
</tbody>
</table>

The **Constitution** of the Kyrgyz Republic, adopted after independence in 1993, is the starting point for all normative and legal acts of the republic and contains provisions addressing environmental protection and management of the country’s natural resources. Article 4, for example, provides that the lands, air, waters, plant life, wildlife and other natural resources are the basis of life for the Kyrgyz people and are granted special protection by the State. The **Constitution** further recognizes the right of all citizens of the republic to a healthy and safe environment and to compensation for damage to health and property caused by improper use of natural resources (Article 35). This right is accompanied by the duty of each citizen to use the environment and natural resources of the country with care in order to protect these resources for the generations to come.

Pursuant to these provisions of the **Constitution**, the Kyrgyz Republic established a framework of laws for environmental protection and management. The principal environmental laws and codes of relevance to the AISP are the **Law on Environmental Protection**, the **Law on Ecological Expertise**, the **Land Code**, the **Law on Administration of Lands for Agricultural Purposes**, the draft **Law on Pastures**. A brief description of these principal environmental measures and their relevance to the AISP follows.
The basic law governing environmental management is the **Law on Environmental Protection** (1999), which establishes the country’s basic principles of environmental protection and provides the legal authority for setting standards of environmental quality, designating specially protected areas, promulgating rules and procedures for use of natural resources, establishing a system of environmental monitoring and control and setting procedures for handling emergency situations. Among the norms and standards of environmental quality authorized under the law are the following of relevance to the AISP:

- Norms of maximum safe concentrations of hazardous substances in air, water, soil and subsoil
- Norms of maximum safe use of chemicals in agriculture
- Standards on natural resource use
- Norms of maximum safe levels of noise, vibration and other hazardous physical impacts.

Finally, the law establishes requirements for the environmental examination (environmental assessment) of planned economic and other activities in order to prevent possible harmful environmental impacts. Furthermore, it prohibits financing and implementing projects associated with use of natural resources without positive conclusions of the State environmental examination.

The **Law on Ecological Expertise** (1999) is the basic legislation dealing with environmental assessment. Its goals are to prevent negative impacts on human health and the environment from economic and other activities and to assure compliance of such activities with the country’s ecological requirements. The law applies broadly to “development projects” that may have an impact on the environment, including:

Feasibility studies and also construction, reconstruction, development, re-equipment, … projects, other projects regardless of their estimated costs, affiliation and patterns of ownership, implementation of which can have an impact on the environment (Clause 3).

Under the law the initiator of a project is responsible for submitting the necessary documentation on the project and its ecological impacts for State Ecological Expertise (SEE). Review of the documentation submitted for SEE is performed by an expert commission established by the **State Agency for Environment Protection and Forestry** (SAEPF). A positive statement of SEE is required before the project can be financed or implemented. A negative statement prohibits the project from being implemented. The details of the requirements for the SEE process are set out in **Instructions for Ecological Expertise** promulgated in 1997 (see pertinent excerpt in Annex A), which establish a unified approach to conducting SEE for review of pre-design and design materials and documents for projects and activities to be implemented in the Kyrgyz Republic that may have impacts on the environment.

The **Law on Chemicalization and Plant Protection** (1999) provides the legal framework for regulation of all aspects of pesticide and agrochemical use. Pursuant to the law, the GOKR promulgated regulations specifying requirements for (i) testing and registration of pesticides, (ii) standards for allowable pesticide residues in soil, water and air, (iii) supervision and
control of pesticide use, and (iv) safe use, storage and warehousing of pesticides (see Pest Management Framework in Annex C).

The Land Code regulates land use and management in the Kyrgyz Republic, and provides the basis for execution and termination of land rights and for land ownership registration. The Code also aims at the establishment of a land market, defining the conditions of State, municipal and private ownership of land and the rational use and protection of land. Although the Land Code is the main document that regulates land use, it has few provisions related to pasture lands; however, it specifies State ownership of pasture resources. Finally, the Land Code defines the types of management of land for agricultural use.

The Law on Mountainous Territories of the Kyrgyz Republic (2002) was developed with an objective of creating a socio-economic and legal basis for sustainable development of mountainous territories, preservation and rational use of natural resources, and historical, cultural and architectural heritage. This law provides the basis for regulating the activities of people in mountainous territories.

The Law on Administration of Lands for Agricultural Purposes (2001) regulates legal relations for administration of lands used for agricultural purposes and aims at providing efficient and safe use of such lands in the interest of the population of the Kyrgyz Republic.

The draft Law on Pastures of the Kyrgyz Republic has been developed with the aim to provide for environmentally sustainable and economically viable use of pastures. The law would promote a community-based approach to pasture management, encouraging local communities to participate in managing pasture resources. The new law would provide a solid legal basis for sustainable management of pastures, liquidation of the three-level management and transfer of all responsibilities to the aïyl okmotu.

The Law on Fauna (1999) establishes legal relations in the sphere of protection, use and reproduction of wildlife. Under the law, fauna is considered the common property of the Kyrgyz Republic, an integral element of nature, a natural resource, and an important regulating and stabilizing component of the biosphere. As such, fauna should be protected and rationally used for satisfaction of material and spiritual needs of the citizens of the Kyrgyz Republic. The Law on Protection and Use of Flora (2001) provides the legal basis for effective protection, rational use and reproduction of flora resources. The Forestry Code provides the legal basis for rational use, protection and reproduction of forests, increase of their ecological and resource potential and overall efficient use. It also regulates land use within the borders of the State Forestry Fund.

The Law on Local Self-government and Local State Administration (2002) establishes the principles of organization of local authority on the level of administrative and territorial units of the Kyrgyz Republic. The law defines the role of local self-government in execution of public powers, assigns the organizational and legal bases of their activity. It also establishes the principles of interrelation between bodies of local self-government and local state administration, and guarantees the rights of local communities to self-government.

The Law on Veterinary defines the general, legal, organizational and financial bases for veterinary activities. The law regulates veterinary activities in accordance with international requirements, determines the legal status and structure of veterinary services, and establishes needed veterinary and sanitary requirements and fundamentals of veterinary control. The law
aims at protection of animal health, protection of human health from animal-related diseases, and provision of production and sale of good quality, in terms of veterinary and sanitary relation, livestock products.

The Resolution of the Government of the Kyrgyz Republic “On Approval of the Regulations on Order of Allocation of Pastures for Rent and Use” (2002) divides pastures by geographic location and regulates allocation of pastures for rent and use. These regulations determine that the transfer of pastures, which were put up for commercial and investment auction, shall be performed according to terms of open competition with further approval of a rent agreement by resolution of: (i) oblast state administration - out of summer pasture lands; (ii) raion (city) state administration – out of pasture lands located in the area of intensive use; and (iii) ayl okmotu (village authority) – out of lands of near village pastures.

The GOKR has also ratified a number of international environmental conventions and agreements of relevance to the project:

- Agreement on Cooperation in the Sphere of Environmental Protection and Rational Use of Natural Resources (Kyrgyz Republic, Kazakhstan, Uzbekistan) (1998)
- Convention on Wetlands of International Significance (1971)

3.3 Institutional Framework for Environmental Assessment/Management

A number of GOKR institutions share environmental management responsibilities in the Kyrgyz Republic. The primary institution, now called the State Agency for Environment Protection and Forestry (SAEPF), has the general mandate to implement the Laws on Environmental Protection and Ecological Expertise mentioned above. Its responsibilities include setting national environmental policy, promulgating environmental quality norms and standards, designating specially protected areas, establishing an environmental monitoring network and conducting ecological expertise reviews of development projects and economic activities.

Responsibility for pasture management and animal health/veterinary services in the Kyrgyz Republic is assigned to the following State bodies:

- **Ministry of Agriculture, Water Resources and Processing Industry** (MAWRPI) of the Kyrgyz Republic - a state executive body that performs functions on development of state policy in the agro-industrial sector, including land and agrarian reform, livestock, veterinary, fishery, crop production, plant quarantine, land-reclamation, soil fertility, use of land for agricultural purposes, regulation of markets for agricultural raw materials and food-stuff, and food and processing industry. Under MAWRPI are the Pasture and Veterinary Departments:
- **Pasture Department** (PD) – performs the functions for use of lands allocated to peasant, farmer and other types of farms, including grazing lands.
- **State Veterinary Department** (SVD) - organizes and provides State veterinary inspection of compliance with veterinary and sanitary requirements on keeping and use of animals, production of livestock products, forage, fodder additives, their preparation, processing, storage, transportation and sale by legal entities, individual businessmen, and citizens. Together with institutions related to health, it protects the public health from animal-related diseases, conducts research on the reasons and regularity of their appearance, clinical course and dissemination of animal diseases, and performs forecasts of their likely outbreak (risk assessment).

- **State Agency for Registration of Rights to Immovable Property** (SARRIP) - a State managerial body that performs coordination of operations of a unified State system of registration rights to immovable property, conducts a unified policy in the sphere of regulation of land relations, development of a market on immovable property, executing registration of rights on immovable property and providing a state protection of registered rights on immovable property, as well as topographic-geodesic and cartographic works.
  - **Kyrgyzgiprozem** - a State Design Institute on Land Surveying of the SARRIP that performs a complex of land surveying and land cadastre works overall the Kyrgyz Republic independently from organizational and legal form of business entities on land.

- **National Statistical Committee** (NSC) - a main State information and statistical body that performs organization and management of accounting and statistics over all the Kyrgyz Republic. The NSC is assigned to organize a system of state accounting, collection, processing, analyzing and summarizing statistical information.

Table 3 provides an overview of the primary institutions with responsibilities relevant to the AISP.

**Table 3: Primary State Environmental Institutions**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Relevant Responsibilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Agency for Environment Protection and Forestry (SAEPF)</td>
<td>Management of environmental protection activities, Monitoring of the state of the environment in general and the water bodies in particular, Reviewing Ecological Expertise of diverse projects, Monitoring wastes from economic activities</td>
</tr>
<tr>
<td>- Department of National Ecological Expertise</td>
<td></td>
</tr>
<tr>
<td>Ministry of Agriculture, Water Resources, and Processing Industry (MAWRPI):</td>
<td>Development of state policy on agricultural issues, including land and agrarian reform, pasture management, livestock, veterinary services, crop production, plant quarantine, land-reclamation, etc.</td>
</tr>
<tr>
<td>- Pasture Department (PD)</td>
<td></td>
</tr>
<tr>
<td>- State Veterinary Department (SVD)</td>
<td></td>
</tr>
<tr>
<td>State Agency for Registration of Rights to Immovable Property (SARRIP) -</td>
<td>Coordination and operation of State registration system for immovable property, land surveying and cadastre, development of a land market system, etc.</td>
</tr>
<tr>
<td>- Kyrgyzgiprozem</td>
<td></td>
</tr>
<tr>
<td>National Statistical Committee (NSC)</td>
<td>Organization and management of state accounting, collection, processing, analyzing and summarizing statistical information.</td>
</tr>
</tbody>
</table>

As noted above, the SAEPF has the responsibility for performing the state ecological expertise (SEE) review of projects like AISP. The **Department of National Ecological Expertise** administers this process. This department reviews the project documentation.
submitted for approval, assessing environmental impacts and evaluating the proposed mitigation measures. It also has the responsibility for monitoring the environmental impacts during construction and operation of projects. In the case of the pasture management-related and other micro-projects financed by the AISP, the Department’s oblast offices will review project proposals.
4. DESCRIPTION OF PROJECT AND ALTERNATIVES CONSIDERED

4.1. Description of Project

4.1.1 Project Objective. The project objective is to improve the institutional and infrastructure environment for crop and livestock farmers, with an emphasis on the livestock sector, which would enable farmers to raise their productivity and incomes and thereby help reduce poverty in rural areas. The project will directly support more productive, profitable and sustainable smallholder crop and livestock production by providing critical capital investments, essential support services and appropriate know-how and by facilitating and supporting the effective and sustainable management of the country’s valuable pasture resources.

4.1.2 Project Scope. To achieve its objective and ensure maximum impact, the project addresses a set of closely linked constraints in animal nutrition, animal health, farm management practices and livestock marketing. The project will be implemented country-wide, in a phased approach starting initially with a few but ultimately reaching all rural communities, over a period of four years.

4.1.3 Project Components. The project comprises three main components: (i) Pasture Management and Improvement, (ii) Agricultural Support Services and (iii) Project Management.

Component 1: Pasture Management and Improvement. Under this component, the project will foster integrated, equitable, socially and environmentally sustainable pasture use and management by devolving responsibility to the local levels and applying a community-based approach to pasture management. Enhancing citizen participation in the allocation, use and management of this natural resource and livestock production asset on which their livelihood critically depends will improve governance at the local level, fostering equitable and socially acceptable distribution and providing effective public oversight. This will require capacity building at the local level and at the same time provision of investment funds to undertake rehabilitation of some degraded or critically needed pasture infrastructure. The component will support three major sets of activities:

- technical assistance for legal and regulatory reforms,
- capacity building and community empowerment in pasture management, involving training in social mobilization and participatory, consensus-based decision-making, combined with intensive information on pasture rights, responsibilities and the benefits of good pasture use and management practices; establishing representative pasture management committees, which will develop annual Community Pasture Management Plans (CPMPs) for improved pasture management
- a facility for small community pasture investment grants to address some of the problems identified in the CPMPs, such as rehabilitation of critical infrastructure (e.g. watering points, stock routes, bridges, animal shelters, etc.), improvements in pasture quality (e.g. overseeding), or the production, preparation and storage of forage crops and winter feed.

Component 2: Agricultural Support Services. Under this component, the project will support the development and operation of market-oriented support services that will assist farmers with agronomic and farm management advice, market information, and animal husbandry, nutrition, health care and breeding. The objective is to improve farmer access to relevant
information and know-how and hence strengthen their knowledge, understanding and adoption of sustainable and profitable practices. Specifically the project will support the following activities:

- **Veterinary Reforms and Animal Health Services.** The project will support activities to promote the effective provision of animal health services country-wide, including vaccinations, de-worming, pre- and post-slaughter inspection, etc. The measures supporting delivery of animal health services will center on regulatory and institutional reforms fostering a clear distinction but ensuring effective collaboration between public and private veterinary service providers, strengthening both in the fulfillment of their respective functions.

- **Extension Services.** The project will also support the institutional development of the Rural Advisory Service (RAS), by improving the governance, staffing and management structure and by increasing the quality, range and outreach of the extension services. The menu of crop-related extension advice will be expanded to include more advanced topics in crop production, integrated production management and soil fertility. The integrated production management program will be scaled-up, increasing both the capacity to carry out IPM training and the delivery through farmer field schools. The animal sector extension services will include a comprehensive livestock extension package and demonstration efforts, providing critical information and know how to livestock farmers.

- **Community Fodder Seed Banks.** To increase access to quality forage crops for winter feed production, the project will provide approximately 100 start-up grants for revolving community fodder seed funds (alfalfa, sainfoin, maize and barley). This will not only increase the supply of adequate winter fodder and thus animal nutrition but also complement the pasture rotation system to be re-introduced.

- **Small-Scale Livestock Processing and Marketing.** In addition, to improve access to safer processing and more effective marketing chains for livestock products, the project will co-finance 50 small-scale community investments in primary livestock processing and marketing or storage facilities through small grants (up to approximately $6,500). Support will be provided for investments that have a public good value, such as training and demonstration, food safety and environmental benefits. These will likely include refrigerated milk collection points for organizing the sale of milk to processing companies, slaughter houses for safer meat processing or investments for improving the value added of wool and cashmere through better grading and sorting (tables, cement floors, press) and group-based marketing.

**Component 3: Project Management.** The project will support coordination of the major project activities and the fiduciary functions through the Agricultural Projects Implementation Unit (APIU) in the MAWRPI. The project will finance staff, consultants, operating costs, some technical assistance and training, monitoring and evaluation activities, special studies and impact assessments, information dissemination and annual audits. The APIU is adequately staffed and equipped to carry out these activities and has long experience with coordinating the implementation of IDA-funded operations.

4.2. Analysis of Project Alternatives

**No Action Alternative.** Taken from an economic, ecological or social point of view, the project alternative of taking no action to improve pasture management (including the small-scale investments) or to strengthen agricultural services (including the veterinary services and
the small-scale livestock investments) is not desirable. This alternative would allow the existing pasture management and agricultural services systems to continue to deteriorate, further reducing the ecological integrity and productivity of the pasture lands and permitting the animal health and agricultural services sectors to decline. Given the importance of sustainable pasture management to the welfare of the rural population and the critical role that agricultural services play in the development of the sector, the ‘no action’ alternative would not be an acceptable option.
5. ENVIRONMENTAL IMPACTS AND PROPOSED PREVENTIVE ACTIONS AND MITIGATION MEASURES

The AISP is designed to provide economic, social and environmental benefits, through the sustainable management of pasture lands and improvement in agricultural support services, to the farmers, farm families and rural communities in the project areas. The overall environmental impact of the project is expected to be positive.

The integrated, equitable and sustainable management of pasture lands promoted by the project (see Component 1) will realize both environmental and social benefits by devolving responsibility to local levels and applying a community-based approach to natural resources management. The project’s support for community-based pasture management, including organizational capacity building, preparation of community pasture management plans and pasture-related investments, will provide long-term environmental and social benefits to the rural communities involved. Furthermore, the project’s support for the development and operation of both public and private sector agricultural support services (Component 2) will not only assist farmers with the veterinary, extension, farm management and marketing services they need but also promote long-term environmental benefits through the use of good agricultural practices, integrated pest management (IPM) and improved fodder production for sustainable pasture management.

The potential adverse environmental impacts of the project are primarily those associated with the small-scale infrastructure investments for improving pasture management (see Component 1) and livestock processing and marketing (Component 2). These impacts, largely related to the design, construction and operation of the infrastructure investments to be financed by the project, are readily identifiable, small in scale and minimal in impact. Thus the adverse impacts are not expected to be significant and can be effectively prevented, minimized or mitigated by the appropriate preventive actions or mitigation measures identified below. Overall, the environmental benefits of the project’s interventions are expected to outweigh any potential risks.

5.1 Anticipated Positive Social and Environmental Impacts

Further growth in agriculture and increases in the income of the rural population depend on effective management and use of pastures. The nearest pastures cannot provide the required amount of forage. Production of winter forage is limited because dairy cattle and young animals are kept near the owners’ dwellings. Pastures need grazing animals and this reduces the lands available for growing forage crops. The reasons for unstable use of pasture resources are: presence of many small-scale cattle owners (more than 85,000 private peasant farms), underdeveloped and poorly spread practice of transferring animals to professional herders for summer grazing, mixed structure of ownership, which deals with pasture management and distribution of pasture resources for use. Furthermore, the existing system for providing veterinary and other livestock-related services is in need of improvement. The lack of adequate veterinary services has left livestock nationwide in poor condition. The present project is designed to address these problems.

Among the main problems faced by the owners of cattle in different raions of the republic are the constraints related to seasonal movement of animals from near-village to intensive or summer pastures:
• the authority on distribution of near-village, intensive and summer pastures by local, raion and oblast administrations, which has led to their unbalanced use;
• the lack of information on conditions and system of rent payment;
• the outdated maps on land use used by ayl okmotu’s, which serve as a reason for lack of information on the location of pastures;
• the lack of funds among the majority of farmers for moving cattle overland;
• the destroyed infrastructure of summer pastures.

5.1.1 Benefits of Improved Pasture Management. The proposed project would help to improve the management of a major resource – the country’s pastures, and will do so with an explicit focus on fostering strong and sustained pro-poor growth and on long-term environmental sustainability. Through its reliance on the community-driven approach and on devolving responsibilities for pasture management and for investments into infrastructure for processing of livestock production to the communities, it will improve governance in the rural areas. Implementation of the proposed project will lead to considerable increase in the environmental sustainability of pasture use. Project activities aim at providing a positive impact on the environment through a whole range of direct and indirect measures, including rehabilitation and broadening of needed infrastructure of watering points, stock-routes, bridges, roads and animal shelters and so on, improvement of pastures quality, production, preparation and storage of forage crops and winter feed.

5.1.2 Benefits of Community-based Pasture Management. A systematic view of the future is needed for getting out of this existing unfavorable situation, which takes into account environmental, social and economic issues related to all pasture systems. With support from the project, responsibility for management of all the types of pastures (near village, intensive and summer) shall be assigned to the ayl okmotu. Certain pasture plots must be assigned to specific farmers or to groups on long-term rent conditions. Thus, every pasture plot will get an “owner”, who will be taking care of his pastures and will not be waiting for outside assistance. A farmer, cattle-breeder will be constantly conducting observations of changes happening with pasture grass. If needed, to improve pasture productivity it will be possible to sow needed varieties of plants, apply chemical fertilizers and rehabilitate pasture infrastructure (cattle-driving routes, bridges, roads and watering points, etc.). Allocation of pastures for rent and conduct of monitoring of rented plots will be of help in educating cattle-breeders to treat grazing lands economically, will raise a sense of responsibility for rational use and improvement of pasture conditions. An adequate approach to management must provide for integrated and seasonal use of pastures with consideration of vegetation growth and fallows.

5.1.3 Benefits from Strengthened Policy, Legal and Regulatory Framework. For production of winter forage, it is necessary to consider a possibility of expansion sowing areas with legumes and maize and its conservation as silage. Regulating pasture use through adoption a new law on pastures is critical. This legislation is needed for preservation of pastures as a main constituent of the mountain ecosystems. It is aimed at conduct of a single state policy in the sphere of pasture use, which can prevent further degradation and desertification of pastures.

5.1.4 Benefits from Improved Information Dissemination. Many current problems occur due to lack of cattle-breeders’ knowledge. Distribution of information must become a part of a broad program on mobilization of rural inhabitants for participation in management of pasture resources. Use of summer pastures must become compulsory for all farmers. A rotation
system of grazing shall be introduced at summer pastures to provide for needed period of rest for plants and for possibility for ripening seeds. It is possible to envisage annual rotation of pastures that are used for grazing. The project will support the development and operation of market-oriented support services that will assist farmers with agronomic and farm management advice, market information, and animal husbandry, nutrition, health care and breeding. The objective will be to improve farmer access to relevant information and know-how and hence strengthen their knowledge, understanding and adoption of sustainable and profitable practices.

5.1.5 Benefits from Improved Veterinary Services. The changes in livestock management system of post-soviet period represent a serious problem, with lack of adequate and timely changes to veterinary services. After distribution of animals among small cattle owners, the veterinary service lost its direct contact with the animals. Due to the agrarian reform, State veterinary services, which were serving collective and state farms, stopped operating altogether. The end of the guaranteed supply of vaccines and drugs and the deficiencies in the current animal health service delivery system have combined to bring about an increase in animal and animal-related human diseases. Veterinary drugs are not supplied any more without advanced pre-payment. Production, sale and storage chains were destroyed, and instead a wide range of alternative processing and sale systems appeared, many of which operate without veterinary inspection. According to Ministry of Health data, the situation, especially in the case of brucellosis, is extremely critical and needs swift and determined action. While the contribution of private veterinarians to animal health care in the country has increased tremendously, the recently adopted veterinary law does not suggest a clear policy and strategy on how the public-private collaboration is to take shape and flourish.

These changes have brought serious challenges for the staff of the SVD. Instead of working only with the veterinary fraternity in the state and collective farms, they now have to interact and communicate extensively with numerous individual livestock producers, private veterinarians, consumers and their organizations. Due to budgetary constraints, the number of diseases for which the SVD intends to have an active control campaign has been reduced from 45 to 5: brucellosis, foot and mouth disease (FMD), anthrax, sheep pox and rabies. The vaccines against these diseases currently distributed free of charge only cover some 50-60 percent of the animals that should be vaccinated. The state has ceased to supply veterinary drugs except for a highly inadequate number of echinococcus treatments. Moreover, WTO membership has added a commitment to communicate about animal health, trade and food safety issues at the international level and to develop a domestic food safety assurance system that is compliant with the Codex Alimentarius.

Livestock services will be improved through several measures, centered on regulatory and institutional reforms fostering the development of private livestock service providers. The aim is to promote the effective and country-wide provision of animal health and breeding services, including vaccinations, de-worming, pre- and post-slaughter inspection, artificial insemination, etc. This will be coupled with investments and capacity building of the State Veterinary Department and the Livestock, Pasture and Veterinary Research Institute to position them for effective fulfillment of their functions such as epizootic disease monitoring and control. Given the widespread prevalence of brucellosis in animals and humans, private and public veterinary service providers will be supported in a regionally focused pilot program for brucellosis control and eradication. The project will support extension and demonstration efforts regarding proper animal nutrition, particularly during winter, with
emphasis on forage and silage production and the use of feed supplements and concentrates. Special attention will be given to the establishment of community seed funds, successfully introduced under the ASSP, for fodder crops. In addition, to foster the development of effective marketing chains for livestock products, the project will co-finance small-scale community investments in livestock processing and marketing facilities.

5.2 Potential Negative Environmental and Social Impacts

As noted above, the potential adverse environmental impacts of the project are primarily those associated with the small-scale infrastructure investments for improving pasture management (see Component 1) and livestock processing and marketing (see Component 2). These impacts are largely related to the design, construction and operation of the infrastructure investments to be financed by the project. Experience with similar investments under the Village Investment Project (VIP) suggests that the potential impacts are readily identifiable, small in scale and minimal in impact. The adverse impacts are not expected to be significant and can be effectively prevented, minimized or mitigated, as was done under the VIP, by appropriate preventive actions or mitigation measures. Other potential environmental risks the EA identified are from the application of pesticides and herbicides in pasture management and the burning of vegetation on pasture lands. These potential impacts are discussed below.

5.2.1 Construction Impacts. The infrastructure improvements to be financed under the AISP for the most part will involve construction or rehabilitation of pasture management–related infrastructure (e.g. watering points, stock routes, bridges, animal shelters, etc.) identified under the CPMPs prepared under project guidance. The project will also finance construction of community investments to support livestock processing and marketing (e.g. dairy facilities, slaughterhouses, etc.). These are small-scale infrastructure investments and thus limited in environmental impact. Nevertheless, care should be taken under the project to prevent or minimize the potential adverse impacts from construction and operation of these investments.

To this end, the project will ensure that all civil works will be designed and operated in accordance with environmentally sound engineering practices and governed by the applicable environmental standards of the Kyrgyz Republic. For the most part, these works will not require the use of heavy machinery (i.e. excavators, bull dozers). The principal construction impacts will involve (i) management of construction waste but may also include (ii) interference with access and movement of animals and people; (iii) disturbance of pastoral activities resulting from access restriction, soil compaction; (iv) waste, noise, mud and dust at sites and on access roads; (v) damage to trees or other vegetation and (vi) disturbance of wildlife at sites close to ecologically sensitive areas.

Recommended Preventive Actions The EA recommends a combination of preventive actions and follow-up monitoring to minimize the potential construction-related impacts described above. First, all projects will undergo environmental screening by the Community Development and Investment Agency (ARIS) in order to identify and address potential environmental risks. Second, all contractors will be required to prepare a site-specific environmental management plan (EMP), which will describe in detail the measures proposed to prevent or mitigate construction-related environmental impacts. In the case of community investments that may result in the generation of animal or other solid wastes (e.g. slaughterhouses, dairies), the EMP will include an appropriate waste management plan to address these potential impacts. The environmental screening and site-specific EMPs will be reviewed by ARIS and by the SAEPF at the oblast level in order to comply with its SEE
requirements before any financing or construction can begin at the project site. Third, all construction contracts will have standard environmental, health and safety clauses required by Kyrgyz legislation and IDA procedures (see Annex B for model environmental contract clauses). These preventive measures should address any potential adverse impacts from the construction activities.

**Monitoring** ARIS will conduct site inspections prior to, during and upon completion of construction activities to ensure full compliance with the site-specific EMP and contract conditions. Final payment to the contractor should be contingent on the final inspection, with particular attention to the requirement to restore the site to its original condition upon completion of construction activities. The involvement of oblast officials from the SAEPF in monitoring and evaluation will help in developing systematic environmental monitoring at project sites.

5.2.2 Application of Pesticides and Herbicides. The principal ecological concern in regard to pasture management is the potential application of pesticides and herbicides as part of pasture management plans. Here it is necessary to take into consideration that in the light of new requirements of GOKR environmental laws on protection of environment, chemical methods of weed control at mountainous pastures are not always acceptable. The main ecological risks are related to safe use and application of pesticides and adequate application of fertilizers with the goal to prevent excessive surface runoff and contamination of soil, as well as surface and ground water. The Kyrgyz Republic has adopted the UN Food and Agriculture Organization (FAO) manuals and guidelines on use and handling of pesticides (see Pest Management Framework in Annex C) and promotion of integrated pest management (IPM). The Department on Plant Protection within MAWRPI has distributed the regulations related to safe use and storage of permitted pesticides and renders services on training, licensing and regulation of their use in accordance with the Stockholm Convention and FAO manuals. These regulations will be applied to any purchase, distribution or application of pesticides or herbicides under the project.

**Recommended Preventive Actions** The EA recommends a combination of preventive actions and follow-up monitoring to minimize the potential environmental risks from application of pesticides and herbicides. First, the EA strongly recommends that the project not finance the procurement or application of any pesticides or herbicides for use on project-related pastures. In fact, the project should recommend alternative management techniques for any pest or weed problems identified in the CPMPs. Second, the project should provide appropriate training of farm workers in alternative management methods as part of its training in IPM and other good agricultural practices. More detail on the project approach to pest management issues is contained in the Pest Management Framework in Annex C.

**Monitoring** The Pasture Department of MAWRPI will observe and monitor the use of pesticides or herbicides at project-related pastures during project implementation and, where warranted, periodically monitor water quality for pesticide or herbicide residues in surface runoff. The involvement of oblast officials of the SAEPF may be needed for this water quality monitoring.

5.2.3 Burning Vegetation. There are some potential negative impacts on the mountain pastures caused by the practice of burning vegetation and bushes. Burning, particularly in autumn, considerably changes the water schedule towards withering, which under Kyrgyz conditions of prevailing arid climate is extremely undesirable. Mountain slopes made bare by
withering retain snow poorly because it is blown away by wind and transferred to valleys and shallow gullies. Any melted snow and precipitation quickly flow down the slopes, resulting in soil deprived of moisture and aggravating erosion. At scorched-earth sites where this burning has taken place, the soil on sunny days gets significantly warmer than at non-scorched sites (due to the black cinders and lack of plant residuals that play the role of mulch). It is impossible to burn bushes out completely. The practice of burning is appropriate only at places where there are too many plant residuals that impede the growth of nurslings.

**Recommended Preventive Actions** The EA recommends a combination of preventive actions and follow-up monitoring to minimize the potential environmental impacts from the practice of burning vegetation and brush on mountain pastures. The EA recommends that the project *disseminate appropriate information* on the environmental impacts of this practice and *provide training in alternative pasture management practices* as part of its training in good agricultural practices.

**Monitoring** Again the Pasture Department will monitor the use of burning practices at project-related pastures during project implementation and encourage alternative pasture management practices. The involvement of oblast officials of the SAEPF may be used to support Pasture Department monitoring.
6. ENVIRONMENTAL MANAGEMENT PLAN

The EMP contained in this section is the mechanism that ensures that the environmental prevention and mitigation measures identified in the EA will be properly undertaken during implementation of the proposed project. The EMP includes guidelines for environmental screening of project investments, mitigation and monitoring plans and institutional strengthening activities that help ensure that the project will have beneficial impacts. Finally, the EMP describes the institutional arrangements for carrying out the preventive actions and mitigation measures, proposes a schedule for implementing these activities and indicates their costs in the proposed project budget.

6.1 Guidelines for Environmental Screening of Investments

The objective of these environmental screening guidelines is to ensure review of the small-scale infrastructure investments to be financed by the AISP in order to identify and address (prevent, minimize or eliminate) potential adverse environmental impacts. Where potential impacts are minor, they should be addressed through the preventive actions or simple mitigation measures identified in the EMP; more significant impacts may require review under Kyrgyz regulations and implementation of specifically identified mitigation measures.

6.1.1 Investments Subject to Environmental Screening The AISP includes financing for a number of different investments involving the construction/rehabilitation of pasture management–related infrastructure (e.g. watering points, stock routes, bridges, animal shelters, etc.) and the construction of community investments to support livestock processing and marketing (e.g. dairy facilities, slaughterhouses, etc.), most of which will be identified during project implementation. Because these infrastructure investments may have adverse environmental impacts, they will be subject to the environmental safeguard screening criteria and procedures described here.

6.1.2 Use of Environmental Screening Criteria for Investments Environmental screening will be incorporated into the regular project development cycle for all investments financed under the AISP, beginning with initial identification of the investment by the pasture management committee (for pasture infrastructure) or the community (for livestock marketing and processing infrastructure), followed by review and approval by the technical staff in ARIS, ending with execution of the investment under the supervision of ARIS technical staff. At the identification stage, ARIS technical staff, working with local officials, will review the environmental screening criteria (see Appendix D) in order to identify potential environmental impacts, suggest appropriate good practices, preventive actions or mitigation measures, and trigger further environmental review, where necessary, under Kyrgyz environmental requirements.

6.1.3 ARIS Review and Approval ARIS will ensure that all investments have been properly reviewed using the screening criteria before approving execution of an investment under the AISP. Where the screening criteria suggest the need for appropriate good practices, preventive actions or mitigation measures in location, design, construction or management of an investment, ARIS will ensure that the appropriate practices, actions, measures or training are provided and that such practices or measures are followed in execution of the investment. Where the screening criteria trigger further environmental review under Kyrgyz regulations, ARIS will ensure that the appropriate forms are completed and delivered to the SAEPF for
review and that execution of the investment awaits approval by the appropriate authorities. ARIS will provide any additional information needed to facilitate the SAEPF review.

6.1.4 SAEPF Review and Approval Under the SAEPF regulations, projects with potential negative environmental impacts are subject to SEE review and approval before project construction can begin. The vast majority of AISP investments, because they are small in scale and minimal in impact, are expected to be reviewed at the oblast level of SAEPF. The good practices, preventive actions and mitigation measures identified in this document for location, design, construction, and management should be used to address potential environmental impacts.

6.1.5 Field Supervision and Monitoring ARIS technical staff will monitor execution of all AISP investments to ensure that environmental considerations are incorporated, i.e., that good practice, preventive actions or mitigation measures are employed. Once an investment has been completed, ARIS technical staff will certify that appropriate practices, actions or measures have been utilised or that any required mitigation measures have been completed. The ARIS will monitor compliance with environmental requirements and include the results in regular project reports.

6.2 Mitigation Plan

The preventive actions recommended by the EA above are shown in the mitigation plan in Table 4. The plan identifies these measures according to the phase of project implementation in which the potential impacts are likely to occur:

- the construction phase, which covers the actual civil works to be financed by the project at selected community pastures and involves the immediate construction impacts and waste disposal impacts described in Section 5.2.1 above and
- the operational phase, which covers the period after actual construction of the civil works has been completed and involves the continuing and longer-term impacts on environmental conditions, as well as the potential impacts posed by pesticide and herbicide application and burning practices described in Sections 5.2.2 and 5.2.3 above.

The plan then identifies the recommended preventive actions, estimates the costs of implementation and operation for these measures where appropriate and assigns the institutional responsibility (e.g. ARIS, PD or SAEPF) for ensuring that the measures are effectively implemented.

6.3 Monitoring Program

As part of its overall responsibility for execution of the AISP, the APIU will ensure that regular environmental monitoring and evaluation of project activities take place. The results of such monitoring will be recorded, analyzed and maintained by the APIU throughout the life of the project. The APIU will report the results of its monitoring program in the periodic progress reports it submits to IDA; IDA supervision missions will review the results of the monitoring program on a regular basis.

6.3.1 Oversight of Compliance with Preventive Actions and Mitigation Measures The APIU will also be responsible for overseeing proper implementation of the various preventive actions and mitigation measures required by the EA above, by the site-specific EMPs
prepared for each investment. This will entail periodically making site visits to verify that the appropriate preventive actions and/or mitigation measures have been implemented. The APIU will also conduct random evaluations of project sites to determine the effectiveness of measures taken and the impacts of project activities on the surrounding environment.

6.3.2 Monitoring of Ecological Indicators. During the life of the AISP, the APIU, with the collaboration of SAEPF, will carry out periodic monitoring and analysis of the soils, water and vegetative resources in pastures at sites where project investments have taken place and where pesticide/herbicide application and burning practices are carried out. As detailed in the monitoring plan in Table 5, this monitoring will include regular analysis of:
<table>
<thead>
<tr>
<th>Phase</th>
<th>Issue</th>
<th>Preventive Action/ Mitigation Measure</th>
<th>Cost</th>
<th>Institutional Responsibility</th>
<th>Oversight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>Construction impacts</td>
<td>Environmental screening and preparation of site-specific EMPs; incorporation of environmental covenants in construction contracts</td>
<td>n/a</td>
<td>to be determined (tbd)</td>
<td>Initiators/contractors/ARIS</td>
</tr>
<tr>
<td></td>
<td>Construction waste</td>
<td>Appropriate disposal</td>
<td>n/a</td>
<td>tbd</td>
<td>Contractors</td>
</tr>
<tr>
<td>Operation</td>
<td>Threats to soil/water quality, waste management impacts from infrastructure investment</td>
<td>Training in protection of soil/water quality, proper waste management practices</td>
<td>n/a</td>
<td>n/a</td>
<td>Pasture management committee</td>
</tr>
<tr>
<td></td>
<td>Threats to soil/water quality from pesticide/herbicide contamination</td>
<td>Training in improved pasture management and pesticide/herbicide practices</td>
<td>n/a</td>
<td>n/a</td>
<td>Pasture management committee</td>
</tr>
<tr>
<td></td>
<td>Soil degradation/erosion resulting from burning</td>
<td>Training in pasture management practices</td>
<td>n/a</td>
<td>n/a</td>
<td>Pasture management committee</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PD site inspection to ensure compliance, coordination with SAEPF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PD site inspection to ensure compliance, coordination with SAEPF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PD site inspection, coordination with SAEPF</td>
</tr>
</tbody>
</table>
### Table 5: Ecological Monitoring Plan

<table>
<thead>
<tr>
<th>Project Phase</th>
<th>Parameter</th>
<th>Location</th>
<th>Method/Equipment</th>
<th>Frequency</th>
<th>Purpose</th>
<th>Cost</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Baseline</strong></td>
<td>water, soil and vegetation quality: turbidity, pesticide/herbicide concentrations</td>
<td>near infrastructure sites, project pastures, selected points on receiving waters</td>
<td>field sampling equipment, vegetation surveys, sampling for laboratory analysis</td>
<td>before construction, in project pastures, in areas of pesticide/herbicide application</td>
<td>measure impacts of civil works measure quality of vegetative cover measure impacts of agrochemical practices</td>
<td>Install: 0 Operate: negligible</td>
<td>ARIS/SAEPF sampling ARIS/SAEPF</td>
</tr>
<tr>
<td><strong>Construction</strong></td>
<td>site-specific EMPs environmental contract clauses turbidity</td>
<td>Construction sites near infrastructure sites</td>
<td>site inspections, field sampling equipment</td>
<td>once before, during and after completion same</td>
<td>ensure compliance measure impacts of civil works</td>
<td>Install: 0 Operate: tbd</td>
<td>ARIS/SAEPF sampling ARIS/SAEPF</td>
</tr>
<tr>
<td><strong>Operation</strong></td>
<td>water, soil and vegetative quality: turbidity, pesticide/herbicide concentrations soil quality after burning</td>
<td>near infrastructure sites, project pastures, agro-chemical application pastures near burning sites</td>
<td>soil sampling/analysis vegetation surveys field sampling equipment</td>
<td>annually annually annually</td>
<td>determine impacts on water and soil quality determine quality of vegetation determine soil quality</td>
<td>Install: 0 Operate: negligible</td>
<td>ARIS/SAEPF PD/SAEPF</td>
</tr>
</tbody>
</table>
• the quality of pasture run-off at sites of project investments and pesticide/herbicide application and the quality of selected receiving waters
• the quality of soils, especially the concentrations of pesticides/herbicides
• the quality of vegetative cover on pastures covered by the project.

Environmental specialists in ARIS, in collaboration with the SAEPF and Kyrgyzgiprozem, will take samples of water, soils and vegetation at selected project sites using the field equipment provided by the project, keep records of the results and report these results periodically. Samples taken for chemical analysis will be sent to a national laboratory for analysis. The APIU will analyze and report on the results of the water and soil quality monitoring program on an annual basis, recommending appropriate preventive actions or mitigation measures where the results warrant such actions.

6.3.3 Pasture Monitoring. Efficient monitoring carried out by the PD, SAEPF and other institutions that supervise different aspects of ecological safety (e.g. the Ministry of Health Care, MAWRPI and Kyrgyzgiprozem), may act as a guarantee for minimization or avoidance of potentially negative environmental impacts of some proposed investments. The capacity of these institutions in the field of monitoring is limited though, in particular, in rural areas where most part of the project activity will be carried out. In this connection, pasture land monitoring targeted at prevention of soil erosion, as well as overgrazing, should be included into the monitoring of pasture investments that envisage adoption of more productive and sustainable methods of pasture management. Good-quality monitoring can demonstrate if management applied was adequate, successful or not.

The pasture land monitoring objective is to document changes in vegetation, soil and in other environmental aspects. Presently, the Kyrgyzgiprozem specialists that register areas filled with weed grass and bushes are carrying out monitoring of pasture lands, eroded areas and degraded sites; they collect samples based on dry weight of various categories of vegetation and provide information related to their institution and its details. The decreasing productivity of pasture lands has been identified through such monitoring, as well as the growing number of weeds and other types of grazing impacts.

This methodology is acceptable for monitoring at the community level. Leased out pastures and monitoring of rented plots can help to raise the attitude of livestock breeders towards pasture grazing land and will raise a sense of responsibility for rational use and improvement of pasture plots. An increase in livestock production quality, but not an increase in cattle heads, is a key for improving pasture management in the Kyrgyz Republic. Animal health, however, is quite a serious problem, and facts available verify degradation of the existing situation in this area. The growth of animal and human diseases caused by infected animals (zoonosis), as well as increasing number of cases related to the unprofessional behavior of veterinarians damaged the image of veterinary services in the field. The government and the SVD cannot alone be responsible for supervision of animal diseases and for protection of public health. Every livestock breeder, or milk producer or milk and meat processor, has to be responsible.

In this regard, improvement in good animal husbandry techniques should be included in the investments for livestock monitoring plans, and animal health monitoring into the investments for organization of veterinary services, which may increase livestock breeders’ responsibility for provision of information about animal health condition and food safety. Thus, in the
course of time and with organization of rational pasture use, capacity for qualitative growth of cattle head will be built up.

For pasture and animal/human health monitoring, the EMP proposes that the project use two standard checklists, i.e. a list of control questions, to simplify monitoring by farmers (see Tables 6 and 7). At the community’s discretion, additional points could be introduced to these checklists.

Table 6: Pasture Monitoring Checklist

<table>
<thead>
<tr>
<th>No</th>
<th>Indicators</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Area (number of ha)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pasture load (overgrazing, undergrazing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Assessment of water supply conditions (condition of watering points, waterlogging)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Assessment of soil conditions (compaction, erosion, etc.)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Assessment of infrastructure conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Weeding</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bushing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Infill with stones</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Herb names</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 7: Animal/Human Health Monitoring Checklist

<table>
<thead>
<tr>
<th>No</th>
<th>Indicators</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Population of rural community</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Number of cases of brucellosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Number of inhabitants diagnosed with brucellosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Number of heads of cattle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Number of cattle vaccinated against brucellosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Number of cattle diagnosed with brucellosis</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Number of ruminants</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Number of ruminants vaccinated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The project will be directed to promotion of the potential capacity of local government in carrying out environmental monitoring and to overall environmental management. In this regard, the project should ensure inclusion of efficient monitoring programs into the investments that will be financed by it, as well as recovery of cost for such monitoring out of the project’s funds. For investments that have potentially significant environmental impacts, the availability of a monitoring plan will be required for as a constituent element of documentation required for getting approval for the investment. The results of the monitoring will be taken into account during consideration of requests for financing.

Within the framework of its regular supervision missions, the World Bank should perform monitoring of the selection of investments with the objective of identifying their correspondence with mitigating action plans.

6.4 Institutional Strengthening Program

In order to ensure proper implementation of the various environmental activities (preventive actions, monitoring) recommended in this EMP, the AISP will provide the necessary institutional strengthening to the APIU, ARIS and the MAWRPI, as well as support public outreach on environmental management issues to the community-based pasture organizations and their members. This institutional strengthening will comprise the delivery of technical assistance and training, as well as support for public outreach/awareness activities. Each of these activities is described below.

6.4.1 Technical Assistance and Training In order to ensure proper attention to the environmental activities identified in the EMP, the AISP will recruit a national ecologist/environmental management specialist to work with the APIU on a part-time basis for the life of the project. This specialist will provide technical assistance for implementation of all environmental oversight and monitoring activities identified in the EA and EMP. Specifically, the specialist will organize appropriate environmental training for the project specialists in the APIU and ARIS who work with project communities, both to raise environmental awareness and to strengthen overall environmental management capacity in the project team. This training will address the specific technical skills necessary to perform the environmental oversight and monitoring functions required. Additionally, the environmental specialist will support environmental outreach activities for the community-based pasture organizations established under the project, raising their awareness of sustainable pasture management practices and of the environmental requirements applicable to the pasture-related infrastructure investments.

6.4.2 Capacity building in MAWRPI The AISP will provide technical assistance to strengthen the institutional capacity in the Pasture Department of MAWRPI for the environmental oversight and monitoring activities of pasture management. To this end, the environmental specialist will provide on-the-job training to technical personnel in the central and oblast offices of the PD to help them perform their oversight and monitoring functions. This will include additional technical training in monitoring and analysis for these personnel, as needed.
6.4.3 Public Outreach and Awareness The AISP will also support outreach and awareness-raising activities for project communities and their community pasture management organizations. This support will include meetings or workshops with communities organized at the *aiyl okmotu* level, distribution of printed material on pasture management and monitoring or other public outreach and information activities of this nature.

6.5 Schedule

Implementation of the activities described in the EMP will begin in the first year of project implementation, with an immediate review and refinement of the details of the mitigation plan, monitoring plan and institutional strengthening program proposed above. The APIU, with the support of the environmental specialist, will then ensure implementation of the mitigation and monitoring plans and institutional strengthening program, as appropriate given the schedule of pasture management-related and other infrastructure investments under the project. The mitigation measures for construction impacts, for example, will obviously track the pace of infrastructure investments. These activities will continue, as appropriate, throughout the life of the project.

The institutional strengthening activities, for example, will take place over the life of the project, on the basis of identified needs, with scheduled training for APIU and ARIS environmental management specialists occurring early in project implementation, followed by the outreach and public awareness activities. The environmental specialist will be provided to the APIU on an as-needed, part-time basis for the life of the project.

The monitoring plan will be implemented throughout the life of the project based on the schedule of project interventions with community-based pasture management organizations and with the small-scale infrastructure investments. Periodic monitoring will be used to evaluate the impacts of mitigation measures and track baseline environmental conditions in the areas of project intervention.

The proposed schedule for implementing EMP activities is shown in Table 8.

<table>
<thead>
<tr>
<th>Table 8: EMP Implementation Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EAMP Activities</strong></td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td><strong>Mitigation Plan:</strong></td>
</tr>
<tr>
<td>-- Oversight of construction impacts</td>
</tr>
<tr>
<td><strong>Monitoring Plan:</strong></td>
</tr>
<tr>
<td>-- Pasture Management</td>
</tr>
<tr>
<td>-- Animal Health</td>
</tr>
<tr>
<td>-- Pesticide/herbicide residues in water</td>
</tr>
<tr>
<td>-- Soil quality after burning</td>
</tr>
<tr>
<td><strong>Institutional Strengthening:</strong></td>
</tr>
<tr>
<td>-- Technical assistance (env. consultant)</td>
</tr>
<tr>
<td>-- Training</td>
</tr>
<tr>
<td>-- Public outreach and awareness</td>
</tr>
</tbody>
</table>

6.6 Institutional arrangements

Responsibility for implementation of the EMP will be shared by the APIU, ARIS and the SAEPF. The MAWRPI, working through the APIU, will have overall responsibility for
implementation of AISP and will ensure that the EMP is fully integrated into implementation of the project, including the monitoring and reporting required by IDA. More specifically:

- The APIU will assume responsibility for (a) the design and assessment of the physical works in accordance with Kyrgyz environmental norms, regulations and requirements and (b) the physical implementation of the activities under the project. Contractors will be responsible for implementation of the construction works in accordance with environmental requirements specified in the site-specific EMPs and bidding documents.

- The APIU’s environmental specialist will work to ensure that all preventive actions and mitigation measures identified by the site-specific EMPs are undertaken in a proper and timely manner and will take the necessary actions to monitor their effectiveness. To the extent feasible, the local ARIS and SAEPF staff in the project oblasts will assist the environmental specialist in monitoring implementation of the mitigation plan. Where it becomes apparent that different or additional measures are required to minimize potential negative impacts, the environmental specialist, with the advice of the SAEPF staff, will recommend such measures to the APIU.

- The environmental specialist will also oversee implementation of the ecological monitoring plan specified in the EMP, ensuring that the monitoring assigned to the APIU and ARIS specialists is performed effectively and that the information is shared promptly with appropriate project and MAWRPI officials. The specialist will package the results of the ecological and social monitoring in annual reports to the APIU Project Coordinator, national and local GOKR officials, and IDA staff.

- The environmental specialist will directly manage the institutional strengthening activities recommended by the EMP, including scheduling training, overseeing the purchase of equipment and managing efforts to raise public awareness.

MAWRPI and SAEPF will work closely with the APIU in implementing the EMP. ARIS and SAEPF, through its state ecological expertise functions, will be the primary monitoring agencies for AISP activities and will support the environmental specialist in the assessing the environmental impacts of project activities, evaluating the effectiveness of the preventive actions and mitigation measures taken and performing the ecological monitoring assigned. Finally, the pasture management committees will collaborate with the environmental specialist to ensure that environmental considerations are incorporated into their activities, not only in the construction/rehabilitation, operation and maintenance of pasture infrastructure but in improved practices for pasture, water and soil resources management among their members.

7. CONSULTATION WITH BENEFICIARIES

7.1 Environmental Screening Mission

The EMP team, comprising two national environmental experts and an environment officer from FAO, began the process of consulting the relevant stakeholders and beneficiaries of the project during its environmental screening mission in June 2007: meeting with officials in the APIU in Bishkek and with officials in the PD/MAWRPI and the SAEPF. While in the filed, the team met with village councils, their officers and members, and with numerous farmers and other beneficiaries (and potential beneficiaries) in several raions in project oblasts.
7.2 Public Consultation

8. PROPOSED BUDGET

The estimated costs of implementing the various activities specified in the EMP are displayed in Table 9. The costs are broken down in terms of personnel expenses (i.e. the part-time environmental specialist), institutional strengthening expenses (i.e. training, outreach), monitoring program expenses (laboratory analyses) and equipment costs.

AISP will finance these expenses as part of the project budget. The project should make every effort, however, to ensure that the GOKR shares some of the costs that support government functions (e.g. monitoring by the SAEPF). The costs of the EMP will be included in the total costs of the AISP and will be financed with funds from the IDA credit. No additional costs are envisaged in implementation of the EMP.

Table 9: Proposed EMP Budget

<table>
<thead>
<tr>
<th>EMP Category</th>
<th>Quantity</th>
<th>Unit Rate (US$)</th>
<th>Cost (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Personnel:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>APIU environmental specialist (part-time over 4 years)</td>
<td>12 m*</td>
<td>700/m</td>
<td>8,400</td>
</tr>
<tr>
<td><strong>Institutional Strengthening:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- training, workshops, etc.</td>
<td>4</td>
<td>2,000</td>
<td>8,000</td>
</tr>
<tr>
<td>- public outreach/awareness campaigns</td>
<td>4</td>
<td>1,000</td>
<td>4,000</td>
</tr>
<tr>
<td><strong>Monitoring Program Expenses:</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Laboratory costs (estimated based on other projects)</td>
<td>4 yrs.</td>
<td>5,000</td>
<td>20,000</td>
</tr>
<tr>
<td>Travel costs</td>
<td>4 yrs.</td>
<td>1,000</td>
<td>4,000</td>
</tr>
<tr>
<td><strong>Field Monitoring Equipment:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- microprocessor device (turbidity)</td>
<td>1</td>
<td>960</td>
<td>960</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td></td>
<td><strong>45,360</strong></td>
</tr>
</tbody>
</table>

* person months of labour
5. EIA Procedure Stages

Stage 2. Environmental impact assessment.

This stage includes:
- collection and analysis of information on existing environmental condition;
- preparation of information on types of impact, its qualitative and quantitative parameters;
- detection of sources and objects of impact (their sizes, location relative to other sources, environmental objects);
- forecast of environmental changes and environmental components (water, soil, atmospheric air, flora and fauna, entrails etc.);
- technological decisions analysis including alternative options;
- assumed impact zone fixing;
- socio-environmental-economic analysis of intended project aspects (including alternatives).

The determination of project’s impact and its alternatives on environment includes the following types of information and research:
- project implementation scale expediency and necessity justification;
- comparative technological and environmental-economic analysis of alternative decisions, their conclusions sufficiency justification;
- project implementation location and time justification
- availability of resources for main object (raw materials supply, power, natural resources, labour resources);
- technical analysis of design solutions with possible emergency risk analysis at all the stages of object construction, maintenance and liquidation. A technical characteristics sheet (*technological passport*) has to be drawn up on technical analysis findings;
- present condition of a planned object location environment.

The degree of completeness and sufficiency of information on the nature of environmental conditions in a specific territory must be considered from the standpoint of how well it has been scrutinized and its sensitivity to impacts. The sufficiency of survey must be determined at the site selection stage and implies the availability of information on the types and nature of intended impact.

The information must include the following components:
- land resources;
- climatic factors;
- soil factors;
- geological, hydro-geological factors;
- geo-morphological factors;
- hydrological factors;
- biological factors (fauna and flora);
- background value of contaminating substances in environmental components;
- socio-economic and business aspects of reviewed territory, which include the information on:
  a) demography;
  b) economy;
  c) employment;
  d) historical and archaeological objects;
  e) infrastructure;
  f) transportation;
  g) public organizations;
- cost and benefits analysis;
- basic impact characteristics:
  a) sources of impact;
  b) spatial arrangement;
  c) types of impact:
    direct;
    indirect;
- by type description of impact on humans, flora, fauna, soil, air, climate, landscape, tangible values and cultural heritage, and impact on interrelation of these factors;
- qualitative and quantitative impact indicators:
  a) impact intensity (ingress of contaminants per one unit of time);
  b) impact power density (ingress of contaminants per one unit of square);
  c) impact frequency (discrete, uninterrupted, nonrecurring);
  d) duration (year, month);
  e) spatial dimensions of impact (depth, size, form, impact zones).
Significant types of impact: out of the initial list must be selected the impacts of the highest intensity, longest duration, significant area of impact and those affecting particularly sensitive areas (extraordinarily protected territories);
- impact mitigation measures;
- environmental monitoring program for the entire “life cycle” of the object.
This stages must be completed with the preparation and drawing up of the Environmental Impact Statement (EIS), which must be presented to all the interested parties – authorities, management and supervision bodies and the public.

The environmental and economic assessment.

EIA economic estimates must be done in the following way:
- do complete public cost estimates for proposed options accomplishment considering all the detected effects;
- conduct additional assessment depending on calculation objectives and detected positions, for instance, financial benefits, compensation payments, specific negative effects mitigation or elimination costs etc.;
- do a comprehensive environmental and economic calculation to summarize all PROs and CONTRAs in terms of cost;
- comment on assessment findings according to the public interests scale and with the use of indicators unavailable in value terms;
- do approximate estimates of object’s cost-efficiency with regard for the price development of raw materials, inputs and final products as well as for variable sources of original crude and complete sets of equipment etc.;
- object’s cost-efficiency must be estimated within financial self-sufficiency according to the existing tariffs and prices.
The estimates should include production and sale costs, manufacturing and social infrastructure operations and maintenance costs. The consumption of natural resources and utilization of waste processing and burial services of outside organizations are estimated according to the fixed tariffs under the existing payment procedure.

- cost efficiency is estimated in relation to the project implementation with regard for all the consequences including project cancellation.

Stage 3 – Environmental effects detection
- EIS public hearings organization.
- Public hearings’ results registration.

The goal of this stage is to detect environmental, social, economic and other relevant effects of intended activity in this territory at certain time. The detection of effects has to be done with the assistance of EIS public hearings. The participation of the public is to form different groups’ opinions as to the project implementation based on research findings and project information submitted to them. These public hearings must result in a document (protocol) to be the basis of making changes to the project with additional surveys conducted. The general criteria of social effects detection may be population’s health and security, possible resettlement to other districts, changes in usual living conditions and traditional forms of employment, proximity to recreation zones, natural reservations, archeological, ethnic and historic monuments. The degree of public concern must be identified based on this information. This information is subject to being a part of EIA materials.

Stage 4 – Project adjustment

The goal of this stage is to forecast environmental condition changes which will follow project implementation. The forecast has to be done for those natural components, which, if impacted, will cause apparent and undesirable effects detected at the EIS preparation stage. These changes may occur to the quality of atmosphere, land resources, surface and underground water, hydro-geological, hydrological, engineering-and-geological, seismic and other conditions. This stage envisages the development of project monitoring required for control over hardly forecasted environmental changes. The project monitoring is required by the projects, which are not clear about environmental impact and its mitigation measures, when its project proposals implementation is experimental or they may change due to certain circumstances or have the possibility of irreversible changes or the project decision making may change in such a way to end up with quite serious impact.
Environmental clause for bidding documents and contracts:

For environmental damage possibly caused by contractors during construction activities, such as noise, dust, solid wastes, excavated sediments and other materials from irrigation and drainage canals and structures and any damage to natural vegetation etc. appropriate mitigating measures would constitute an integral part of the design and implementation, including the contracts binding the contractors to carry out the environmental obligations during construction. The standardized environmental clauses will be included in each contract. Other clauses specified by the raions will be included in the awarded contract and will provide additional details for following environmental precautionary clauses.

The key mitigating measures against the potential negative impact that is being envisaged under the project EMP with regard to each of the items are as follows:

“The natural landscape should be preserved to the extent possible by conducting operations in a manner that will prevent unnecessary destruction or scarring of natural surroundings. Except where required for permanent works, quarries, borrow pits, staging and processing areas, dumps, and camps, all trees, saplings, and shrubbery should be protected from unnecessary damage by project-related activities. After construction any unavoidable damage should be restored to quasi-original conditions where appropriate;

“The contractor’s operations should be performed so as to prevent accidental spillage of contaminants, debris, or other pollutants, especially into streams or underground water resources. Such pollutants include untreated sewage and sanitary waste, tailings, petroleum products, chemical, biocides, mineral salts, and thermal pollution. Wastewater, including those from aggregate processing and concrete batching, must not enter streams without settling ponds, grave filters, or other processes, so as not to impair water quality or harm aquatic life;

“The contractor should ensure proper disposal of waste materials and rubbish. If disposal by burial or fire, it should not cause any negative impact to either the air, soil nor ground water supplies;

“The contractor should minimize air and water pollution emissions. Dust from the handling or transporting of aggregates, cement, etc., should be minimized by sprinkling or other methods. Materials, brush or trees should only be burned when the owners permit, under favourable weather conditions;

The contractor’s facilities, such as warehouses, labour camps and storage areas, should be planned in advance to decide what the area will look like upon completion of construction. These facilities should be located so as to preserve the natural environment (such as trees and other vegetation) to the maximum extent possible. After project construction, camps and building should either serve as permanent residences and form future communities, if such use can be foreseen and approved, or be torn down and the area restored to its quasi-original condition in order to avoid deterioration into shanty towns;
Borrow pits should be landscaped and planted according to an ecological design to provide some substitute area for lost natural landscapes and habitats.”
ANNEX C
PEST MANAGEMENT FRAMEWORK

Although the EA team did not find evidence of widespread abuse of pesticides or herbicides, either in its meetings with GOKR agricultural and environmental officials in Bishkek or in its field visits with local officials and farmers in the field, the team does believe that a cautionary approach is warranted in order to ensure proper management of pesticides and herbicides in project areas. For this reason, the EA recommends a number of preventive measures and follow-up monitoring to address pesticide management concerns and proposes this pest management framework for structuring the AISP’s approach to dealing with any pest management issues associated with project interventions.

Current Situation in Pest Management

There is little recent public information on the use of pesticides or herbicides in agriculture and animal husbandry in the Kyrgyz Republic. The GOKR, for example, has not published any recent reports on the use of these agrochemicals or on the public health or environmental hazards posed by their misuse.

According to a recent Bank study, the market for pesticide and herbicide imports has been fairly complex, divided between government interventions, private sector dealers and illegal trade. Historically, the GOKR has played a key role, importing pesticides through the 1990s with aid funds and then selling them in the domestic market, at times at subsidized prices. However, GOKR interventions were not always successful because of products the farmers did not want to buy or high prices they could not afford to pay. The private sector pesticide and herbicide dealers include representatives of a handful of foreign agrochemical firms, private oblast- and rayon-level companies and several large farms and farm management companies. These private sector dealers face difficulties because of low demand and price undercutting by illegal imports of subsidized pesticides and herbicides from neighboring countries. It is the illegal trade in pesticides and herbicides that undermines both establishment of a normal market for these agricultural inputs and effective GOKR regulation of their use.

In its preparation of the AISP, the project team, composed of both nationals and internationals, did not find widespread use of pesticides in Kyrgyzstan at present. As in much of Central Asia, this is a question of their limited availability, high costs and lack of financing available to farmers. According to the AISP preparation team, pests are generally not a significant problem in the country and there are some biological control methods currently being used. Most of the existing use of pesticides is on cotton, where there are reports of illegal imports (unsubstantiated by any documentation) from Uzbekistan, but the amounts imported are limited and may be declining due to recent events in the border area.

Current Legal Framework Regulating Pest Management

In the last decade, the GOKR has put in place its legal framework for regulating the registration and use of pesticides and agricultural chemicals. This began with adoption of the Law on Environmental Protection (1999), which authorized promulgence of norms and

1 “Policy Note on Competitive Input Marketing in the Crop Sector” (2005).
standards for maximum safe use of chemicals in agriculture. The GOKR then adopted the **Law on Chemicalization and Plant Protection** (1999), which established the specific framework for regulating pesticides (including chemical or biological preparations used for fighting pests or diseases of plants, weeds, vermin threatening the stored agricultural product, etc.) and agricultural chemicals (including fertilizers, food supplements, chemicals for land reclamation, etc.). Among other things, the 1999 law provides for:

- registration testing of pesticides and agrochemicals to determine the effectiveness of their application and their danger to human health and the environment;
- official registration of pesticides and agrochemicals and entry into the State catalogue of pesticides and agrochemicals permitted for use;
- State supervision and control for safe handling of pesticides and agrochemicals, as well as information requirements on safe handling, production, import/export, transportation and storage of pesticides and agrochemicals;
- regulations and rules for sale, proper application, adequate destruction and disposal of pesticides and agrochemicals;
- State supervision, inspection and enforcement of the law and penalties for violations of the law, its regulations and rules, terms of licenses, etc.

The GOKR promulgated regulations under the law for (i) testing and registration of pesticides, (ii) standards for allowable pesticide residues in soil, water and air, (iii) supervision and control of pesticide use, and (iv) safe use, storage and warehousing of pesticides. The GOKR established a commission for the testing and registration of pesticides in 1998, which approved a list of pesticides and agrochemicals permitted to be used in 2000-2004 (the EA team was unable to find a copy of this list in English). Furthermore, the GOKR is a party to the Stockholm Convention on Persistent Organic Pollutants (2001) and, pursuant to the convention’s requirements, the GOKR has begun preparation of a National Plan for Implementation of the Stockholm Convention and, at the close of 2006, was in the process of publishing a list of forbidden and highly restricted chemical pollutants, including a number of pesticides and agrochemicals (see table below).

As noted in the EA, the GOKR has adopted the code of conduct and guidelines of FAO on the use and handling of pesticides and the promotion of IPM (see description of the code and guidelines below). With support provided by the ASSP, the GOKR strengthened its regulatory framework over pesticides and began promoting safe pesticide use and IPM through extension services and farmer training programs provided by the RAS. Furthermore, the Department on Plant Protection within the MAWRPI has distributed the regulations related to safe use and storage of permitted pesticides and provides services on training, licensing and regulation of their use in accordance with the Stockholm Convention and FAO guidelines. The APIU will ensure that these regulations are applied to any purchase, distribution or application of pesticides or herbicides under the project.

### Table: Forbidden or Highly Restricted Chemicals*

<table>
<thead>
<tr>
<th>Chemical substance</th>
<th>Details of limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,4,5-T</td>
<td>Teratogen, carcinogen, mutagen, contains admixture of dibenzodioxine</td>
</tr>
<tr>
<td>Aldrin</td>
<td>Highly toxic</td>
</tr>
<tr>
<td>Binapacry</td>
<td>Highly toxic</td>
</tr>
<tr>
<td>Captaphol</td>
<td>Highly toxic</td>
</tr>
</tbody>
</table>
Chlordane | Resistance and bioaccumulation in environment
Chlordimephorm | Carcinogen
Chlorbenzylat | Highly toxic
DDT | Stable, highly accumulative, carcinogen Dieldrin
Dinoseb and salts | Highly toxic, marked skin absorption effect
1,2-dibromomethane | Highly toxic
Phthoracetamid | Highly toxic
HCH (mixed isomers) | Highly toxic, bioaccumulation
Heptachlor | Highly toxic, stable, carcinogen
Hexachlorobenzene | Highly toxic
Lindane | Highly toxic
Pentachlorophenol | Skin absorption, irritating effect, poisonings
Compounds of mercury, including inorganic compounds of mercury, compounds of alkyl mercury, and also compounds of alkyl oxialkylic and arylated mercury | Highly toxic substances
Monocrotophos (soluble fluid) mixtures of substance | Highly toxic, extremely dangerous pesticide
Metamidophos (soluble fluid) mixtures of substance | Highly toxic, extremely dangerous pesticide
Phosphamidon (soluble fluid) mixtures, structures of substance with E-and with content of active ingredient Z-isomers) | Highly toxic, extremely dangerous pesticide
Methyl parathion (emulsifiable and embryo toxic property, concentrates with teratogen 19.5-, 40-, 50-, the 60-percentage content of active ingredient and powder structures with 1.5-, 2-, the 3-percentage content of active ingredient) | Sharply marked skin absorption, effect on reproductive function
Parathion (all structures of pesticide are included - aerosols, pulverized powders, emulsified concentrates, granules and moistened powders, except for suspensions in capsular | Highly toxic, extremely dangerous
Ethylene dichloride | Carcinogen
Ethylene oxide | Highly toxic, carcinogen

* Source: Persistent Organic Pollutants Program of the Kyrgyz Republic (chemicals highlighted in yellow are organochlorine pesticides identified for elimination under the Stockholm Convention).

**Recommended Project Measures to Improve Pest Management**

Given the current situation in pest management described above, the EA recommends that the AISP take a three-pronged approach to preventing or minimizing any potential public health or environmental hazards posed by the use of pesticides (including herbicides and insecticides) associated with project interventions:

- **Environmental screening** The first prong is to require environmental screening of all AISP interventions that may involve the purchase or use of pesticides and preparation of specific EMPs addressing any potential adverse environmental impacts. This screening process, described in the project EMP and elaborated in the operational manual, will review the environmental impacts of all project-financed interventions, particularly the community-driven infrastructure investments, which may include the use of pesticides for animal protection (e.g. insecticides in cattle dips) or other purposes. The screening will ensure project compliance with all Kyrgyz regulations (see above) as well as with international standards (see below) applicable to the purchase or use of pesticides.
• Information dissemination and training  The second prong builds on the successful work initiated under the ASSP in recent years in providing farmers and herders with information, advisory services and training on proper and effective application of pesticides and promoting the use of environment-friendly pest management alternatives, including IPM. The AISP will expand on the information dissemination, advisory services and training programs currently provided by the RAS and private sector providers in order to reach a wider segment of farmers and communities with critical information on improved pest management practices.

• Monitoring  The third prong involves the selected use of ecological monitoring, in cases where it is warranted, to determine the impacts of questionable pesticide uses. Under the AISP, the APIU will observe and monitor the use of any pesticides, herbicides or insecticides at project-related pastures, farms or community-driven investments during project implementation and, where warranted, periodically monitor soil and water quality for any pesticide residues in soils or surface water runoff. The limited technical capacity of the APIU for such monitoring and analysis may require the involvement of oblast officials of the SAEPF and the use of SAEPF laboratories for the soil and water quality analysis needed.

**FAO Code of Conduct and Technical Guidelines**

The FAO has taken the lead among international organizations in promoting the safe use of agricultural pesticides and has adopted an *International Code of Conduct on Distribution and Use of Pesticides* (2002). First adopted in 1985, the Code establishes voluntary standards of conduct for all public and private entities engaged in, or associated with, the distribution and use of pesticides and serves as the globally accepted standard for pesticide management. The Code, in conjunction with its supplementary technical guidelines, has been instrumental in assisting countries to put in place or strengthen pesticide management systems. Revised in 2002, the Code embodies a modern approach, based on sound management of pesticides focusing on risk reduction, protection of human and environmental health, and support for sustainable agricultural development by using pesticides in an effective manner and applying IPM strategies. Among the technical guidelines to the Code of Conduct of relevance to the AISP are the following:

• **Guidelines on Good Practice for Ground Application of Pesticides** (2001), which offer practical guidance (i.e. on decision-making, safety considerations, application procedures, etc.) to those involved in using pesticides for food and fibre production and recognizes that because pesticides may put people, other life forms and the environment at risk, the decision to use a pesticide should only be taken when all other alternative control measures have been fully considered.

• **Guidelines on Good Practice for Aerial Application of Pesticides** (2001), which offer similar practical guidance (i.e. on decision-making, safety considerations, application procedures, etc.) to those involved in applying pesticides by air and again insist that a pesticide should only be used when other alternative control measures have been fully considered and its use is part of an integrated control programme.

• **Guidelines on Organization and Operation of Training Schemes and Certification Procedures for Operators of Pesticide Application Equipment** (2001), which provide a general framework outlining the need for training and assessment and confirmation of operator competence in order to improve the safety and efficiency of pesticides in farm use, recognizing that it is essential that those who

41
apply pesticides be familiar, not only with the equipment they use, but also with the
general principles of crop protection, IPM and the pesticides they apply.

The Code of Conduct, with its emphasis on risk reduction, promotes the use of less toxic
pesticides; recommends the avoidance of pesticides whose handling and use require the use of
personal protective equipment; and advises prohibition of the importation, sale and purchase
of highly toxic and hazardous products, such as those included in the 2004 classification by
the World Health Organization (WHO) of extremely hazardous (Ia) and highly hazardous (Ib)
pesticides (see http://www.inchem.org/documents/pds/pdsother/class/pdf). The APIU will
ensure that the project complies with the FAO Code of Conduct, particularly with respect to
prohibiting the purchase or use of any extremely or highly hazardous pesticides identified by
WHO.
ANNEX D
ENVIRONMENTAL SCREENING CRITERIA

General Information:

Location: Oblast __________ Raion __________ Village __________
Type of project: Pasture infrastructure rehabilitation/construction _______
Market/processing infrastructure construction _______
Other ______
Brief description: ____________________________________________________________
__________________________________________________________________________

Estimated cost: __________

Environmental and Social Impacts:

1. Does the project involve acquisition of land or existing facilities? no ___ yes ___
   resettlement of people or loss of assets/income? no ___ yes ___
   conversion of natural areas or habitats for agriculture? no ___ yes ___
   procurement or use of pesticides or agrochemicals? no ___ yes ___
If yes to any of the above, see APIU staff about eligibility of the project and/or applicability
of other IDA safeguard policies. See Pest Management Framework in Annex C with respect
to pesticides and agrochemicals.

2. Does the project involve use, management or rehabilitation of land? no ___ yes ___
   If yes, consult APIU staff for recommended preventive actions/mitigation measures.

3. Does the project involve use, management or control of water resources? no ___ yes ___
   If yes, consult APIU staff for recommended preventive actions/mitigation measures.

4. Does the project involve management or disposal of liquid or solid wastes? no ___ yes ___
   If yes, consult APIU staff for recommended preventive actions/mitigation measures.

5. Does the project involve the use of hazardous chemicals or infectious wastes? no ___ yes ___
   If yes, consult APIU staff for recommended preventive actions/mitigation measures.

6. Does the project involve generation of air or noise pollution? no ___ yes ___
   If yes, consult APIU staff for recommended preventive actions/mitigation measures.

7. Is the project situated in or near an ecologically sensitive site? no ___ yes ___
   If yes, consult APIU staff for recommended preventive actions/mitigation measures.

8. Is the project situated in or near a population centre or settlement? no ___ yes ___
If yes, consult APIU staff for recommended preventive actions/mitigation measures.

9. Does the project require SAEPF review? no ___ yes ___
   To be determined with APIU staff.

10. Provide any additional documentation: photos, maps, etc.

    ___________________________   _____________________________
    Local Official                     APIU Staff

    Date: ___________
ANNEX E

Round Table Materials for Environmental Assessment and Management Plan

MINUTES No.1
Round table meeting with representatives of state agencies, NGOs and Local Investment Committees to discuss Environmental Assessment and Management Plan in the preparation framework of Agricultural Investments and Services Project (AISP)

Venue: ARIS Central Office, Conference Room
Date: September 14, 2007
Participants: 33 invited; 28 present.

Annex: Program of meeting; list of participants; newspaper advertisement (copy).

AGENDA

1. Presentation of Environmental Assessment and Management Plan as part of AISP

Resolution:
In their welcoming the round table participants, Executive Director of ARIS Elmira Ibraimova and APIU Director, MAWRPI Zakhifa Omorbekova briefed on AISP goals, objectives and mechanisms.

Then, national consultants Irina Gorshkova and Tatiana Volkova delivered a presentation of the Environmental Assessment and Management Plan (EAMP). The participants lively discussed key components of this document during the presentation and main aspects of each section were highlighted.

After Q&A, the floor was given to NGOs representing civil society: Kaliya Moldogazieva, Damira Tileno, Aida Gareyeva, Almanbet Kurmanaliev, CAMP “Ala-Too” consultant Innam Rahim, Chairman of Villages and Settlements Local Self Governments Association Kurmanbek Dyikanbayev and representative of Institute for Livestock, Veterinary and Pastures Professor A.Kydyrmayev.

Recommendations were made to involve local governments in environmental monitoring at local level, enhance public awareness activities, and evaluation and planning through efforts of local specialists etc.

It is resolved to deem eligible the proposed EAMP as part of the Agricultural Investments and Services Project.

Ballots:
Total voting: 28; for – 28; objection – 0; abstained – 0.

Chairperson: Elmira Ibraimova

Signature __________________

Secretary: Bekjan Supanaliev

Signature __________________

Round Table
Environmental Assessment and Management Plan
Agricultural Investments and Services Project (AISP)

September 14, 2007
2.00 – 3.30 pm

Venue: ARIS Central Office, Conference Room

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>13.30-14.00</td>
<td>Registration</td>
</tr>
<tr>
<td>14.00-14.15</td>
<td>Welcome by Elmira Ibraimova, Executive Director ARIS</td>
</tr>
<tr>
<td>14.15-14.20</td>
<td>Welcome by Zakhifa Omorova, APIU</td>
</tr>
<tr>
<td>14.20-14.50</td>
<td>Presentation of Environmental Assessment and Management Plan as part of AISP National consultants: Irina Gorshkova, Tatiana Volkova</td>
</tr>
<tr>
<td>14.50-15.20</td>
<td>Discussion, Q&amp;A, free words</td>
</tr>
<tr>
<td>15.20-15.30</td>
<td>Summary</td>
</tr>
</tbody>
</table>

Round Table Participants
Environmental Assessment and Management Plan
Agricultural Investments and Services Project

<table>
<thead>
<tr>
<th>№</th>
<th>Participant</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kalygulova R.B.</td>
<td>State Agency for Environment Protection and Forestry</td>
</tr>
<tr>
<td>2</td>
<td>Ulankadyr Orozov</td>
<td>Head of Division for Legislative Acts, State Veterinary Dept.</td>
</tr>
<tr>
<td>3</td>
<td>Abdimalik Egemberdiev</td>
<td>General Director, Dept of Pastures, MAWRPI</td>
</tr>
<tr>
<td>4</td>
<td>Anarbek Matisakov</td>
<td>Adviser, Agricultural Sector and Environment, Jogorku Kenesh</td>
</tr>
<tr>
<td>5</td>
<td>Zakhifa Omorbekova</td>
<td>Director of APIU, MAWRPI</td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>Position/Institution</td>
</tr>
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<td>-----------------------------------------------</td>
</tr>
<tr>
<td>6</td>
<td>Kurmanbek Dyikanbayev</td>
<td>Chairman of LSG Association</td>
</tr>
<tr>
<td>7</td>
<td>Adashbek Kidirmaev</td>
<td>General Director, Institute of Livestock, Veterinary and Pastures</td>
</tr>
<tr>
<td>8</td>
<td>Murat Koshoev</td>
<td>UNDP</td>
</tr>
<tr>
<td>9</td>
<td>Vetoshkin V.</td>
<td>BIOM Environmental Movement</td>
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<tr>
<td>10</td>
<td>Ustimenko R.</td>
<td>BIOM Environmental Movement</td>
</tr>
<tr>
<td>11</td>
<td>Kalia Moldogazieva</td>
<td>Civil Development Center</td>
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<tr>
<td>12</td>
<td>Aida Gareyeva</td>
<td>CAMP Ala Too</td>
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<tr>
<td>13</td>
<td>Damira Tilinova</td>
<td>NGO Tabiyat</td>
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<tr>
<td>14</td>
<td>Innam Rahim</td>
<td>International Consultant, CAMP Ala Too</td>
</tr>
<tr>
<td>15</td>
<td>Elmira Ibraimova</td>
<td>Executive Director, ARIS</td>
</tr>
<tr>
<td>16</td>
<td>Kanybek Bekiev</td>
<td>ARIS Micro Project Specialist</td>
</tr>
<tr>
<td>17</td>
<td>Eral Karypby Uulu</td>
<td>Capacity Building Specialist, ARIS</td>
</tr>
<tr>
<td>18</td>
<td>Bahtiar Kadybayev</td>
<td>Social Mobilization Specialist, ARIS</td>
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<tr>
<td>19</td>
<td>Bekjan Supanaliev</td>
<td>PR Officer, ARIS</td>
</tr>
<tr>
<td>20</td>
<td>Hamza Tenizbayev</td>
<td>LIC Chairman, Issyk Ata AK</td>
</tr>
<tr>
<td>21</td>
<td>Beksultanov S.</td>
<td>LIC Chairlady, Syntash AK</td>
</tr>
<tr>
<td>22</td>
<td>Almanbet Kurmanaliev</td>
<td>LIC Chairman, Alamudun Raion, Bakay Ata AK</td>
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<tr>
<td>23</td>
<td>Rabia Birnarzaroa</td>
<td>LIC Chairman, Alamudun Raion, Tash Dobo AK</td>
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<tr>
<td>24</td>
<td>Aitkul Jaichiev</td>
<td>LIC Chairman, Alamudun Raion, Tash Moinok AK</td>
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<tr>
<td>25</td>
<td>Kairrbubu Shermatova</td>
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<td>Irina Gorshkova</td>
<td>National Consultant</td>
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<td>Junusheva D.</td>
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