STATE AGENCY FOR ENVIRONMENTAL PROTECTION AND FORESTRY, GOVERNMENT OF KYRGYZ REPUBLIC
GLOBAL SNOW LEOPARD ECOSYSTEM PROTECTION SECRETARIAT (GSLEP)

CENTRAL TIEN SHAN LANDSCAPE MANAGEMENT PLAN

AUGUST 2017

STATE AGENCY FOR ENVIRONMENTAL PROTECTION AND FORESTRY, GOVERNMENT OF KYRGYZ REPUBLIC
GLOBAL SNOW LEOPARD ECOSYSTEM PROTECTION SECRETARIAT (GSLEP)

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Snow Leopard Trust

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FOREWORD

PREFACE

(by Working Group members)

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ABBREVIATIONS AND ACRONYMS

ACTED: Agency for Technical Cooperation and Development
ADB: Asian Development Bank
AESP: Association of Ecotourism Service Providers
ATW: Association of Trekking Workers
AKDN: Aga Khan Development Network
AO: Ayil Okmotu
ARIS: (In Russian: Агентство развития и инвестирования сообществ). The Community Development and Investment Agency
BCRLIP: Biodiversity Conservation and Rural Livelihood Improvement Program (World Bank)
CBT: Community Based Tourism
CCSR: Centre for Climate Systems Research
CDM: Clean Development Mechanism
CFCs: Cloroflorocarbons
CIS: Commonwealth of Independent States
CITES: The Convention on International Trade in Endangered Species of Wild Fauna and Flora
CSO: Civil Society Organisations
CTSL: Central Tien Shan Landscape
EMEP: European Monitoring and Evaluation Program
ESA: European Space Agency
GCF: Green Climate Fund
GDP: Gross Domestic Product
GIS: Global Information Systems
GPS: Global Positioning System
GSLEP: Global Snow Leopard and Ecosystem Protection Program
GTZ/GIZ: German Organisation for Technical Cooperation; now called: Deutsche Gesellschaft für Internationale Zusammenarbeit
HCFCs: Hydrochlorofluorocarbons
IKCDF: Issyk Kul Conservation and Development Foundation
INGO: International NGO
IPCC AR5: Intercontinental Panel on Climate Change's 5th Assessment Report
IPCC: Intercontinental Panel on Climate Change
JICA: Japan International Cooperation Agency
KATO: Kyrgyz Association of Tour Operators
KCBTA: Kyrgyz Community Based Tourism Association
KGS: Kyrgyz Som pg 70
KNOMAD: Global Knowledge Partnership on Migration and Development
KR Law: Kyrgy Law pg 73
LDCF: Least Developed Countries Fund
LRTAP: Long-range Transboundary Air Pollution
LSG: Local Self-Government
LU: Livestock Units
NABU: Nature And Biodiversity Conservation Union
NBSAP: National Biodiversity Strategy and Action Plan
NGO: Non-Government Organization
NSLEP: National Snow Leopard and Ecosystem Priorities
NTNC: National Trust for Nature Conservation (Nepal)
PC: Pasture Committee
PES: Payment for Ecosystem Services
PMP: Pasture Management Plans
POP: The Stockholm Convention on Persistent Organic Pollutants
PUA: Pasture Users Associations
REDD+: Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
SAEPF : State Agency for Environmental Protection and Forestry of the Kyrgyz Government
SDG: Sustainable Development Goals

SLF : Snow Leopard Foundation
SLWS: Snow Leopard Working Secretariat
SNP: State Nature Park
SNR: State Nature Reserve
SSR: Soviet Socialist Republic
TACIS: Technical Assistance to the Commonwealth of Independent States
TIES: The International Ecotourism Society
UNDP: United Nations Development Program
UNECE: United Nations Economic Commission for Europe
UNEP: United Nations Environment Program
UNESCO: United Nations Educational, Scientific and Cultural Organization
UNWTO: United Nations World Tourism Organization
USAID: United States Agency for International Development
WTTC: World Travel and Tourism Council
WWF: World Wildlife Fund (or Worldwide Fund for Nature)

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Working Group

EXECUTIVE SUMMARY

The Kyrgyz Republic has led the process of an alternative, participatory approach for snow leopard conservation across large landscapes – extending well beyond conventional protected area boundaries – under the Global Snow Leopard and Ecosystem Protection (GSLEP) program. The goal of GSLEP is to make secure, from the perspective of snow leopard conservation, over 20 large, ecologically important landscapes spread across 12 snow leopard range countries by 2020. The large Central Tien Shan Landscape (CTSL) ranging over c. 13,200km^2 is one of two such landscapes proposed by the Kyrgyz Republic. As the name suggests, the CTSL is a part of the Tien Shan range and is located in the eastern corner of the country, placed between Kazakhstan to the north, and China to the east and south. CTSL lies in the Issyk Kul oblast (province) and includes areas under three rayons (districts) and numerous local governments at the village cluster level (ayil okmotus). The catchment of the Ak Suu drains the bulk of the landscape, flowing south to the heavily populated Ak Suu township in China and finally into the Takla Makan Desert. Some of the mountains towards the northern part of the landscape drain into the Issyk Kul Lake, on whose eastern banks are located most of the villages that are dependent on the landscape.

Process of preparing the management plan:

The CTSL Management Plan was prepared by a Working Group designated by the State Agency for Environmental Protection and Forestry (SAEPF) of the Kyrgyz Government and comprised of 11 members drawn from the SAEPF, GSLEP Secretariat and ARIS (Community Development and Investment Agency), representing government organizations working in the two important sectors of environment and agriculture; WWF, Kyrgyzstan, Snow Leopard Foundation, Kyrgyzstan, representing expert conservation agencies, and supported by WWF and the Snow Leopard Trust. Further assistance of experts from academic institutions was obtained on some aspects of the management plan. The core group used literature survey and perusal of government data to collate and analyse information on biodiversity and socioeconomic trends in the country and the landscape. Field data were collected on these aspects with the help of rangers of the SAEPF and staff of partner agencies to model snow leopard habitat and its quality. Further, consultations and workshops with local stakeholders helped gather relevant information from them and make them aware of the management planning process. A climate vulnerability analysis was undertaken to understand the possible influences on the socio-ecological landscape under different emission scenarios and their possible effect on the management plan. The CTSL Management Plan thus uses best available information on biodiversity, human society, local institutions and threats to suggest strategies and activities for snow leopard conservation and welfare of local communities of CTSL.

The Central Tien Shan Landscape:

The CTSL probably represents the best habitat of the endangered snow leopard in Kyrgyzstan with over half of the landscape representing good or fair snow leopard habitat. Three protected areas (PA) lying within CTSL, the Sarychat Eertash State Nature Reserve (c. 1,400 km^2), the Karakol State Nature Park (c. 380 km^2) and the newly designated Khan Tengri State Nature Park (c. 2,700 km^2), together constitute over a third of the CTSL landscape. Most of the remaining area is spread over nine hunting concessions with a small proportion under other uses. There are no baselines on snow leopard population; however, the Sarychat Eertash SNR was estimated to have about 18 adult snow leopards as per a recent estimate. This PA is reported to have a rich population of the Marco Polo sheep and Asiatic ibex. The area is also known to be important for collection of medicinal plants.

Landuse changes and conservation threats:

The dominant landuse in CTSL is pastoralism, with a large livestock population of sheep-goats, cattle, yaks and horses grazing over much of the area. There have been significant transitions in pastoralism since the country's independence in 1991, which have had a significant influence on both pastoral production as well as wildlife conservation. The disintegration of the Soviet Union led to a breakdown of the 'industrial' pastoral practices where even remote corners of the country were being used for livestock production by collectives based on government supported infrastructure, welfare measures and marketing of the produce. After the break-up of the Soviet Union, there was a collapse in livestock populations from over 12 million to 5 million by the mid-1990s. There was an exodus of people from the remote collectives to the plains and urban centres that had better opportunities and facilities, leaving vast areas of the mountains almost free of grazing. The livestock population has since recovered, arguably growing to the levels of the Soviet times by 2015.
The patterns in the Issyk Kul oblast were also similar. The flux in pastoral systems after the Soviet collapse also resulted in unclear rights of the local governments, ayil okmotus, over pastures and the individual owners of livestock who had spread widely in the country. There emerged many non-resident livestock owners, who hired non-native herders, and with unclear and unmapped rights of the ayil okmotus, these changes resulted in continuing confusion in pastoral rights and practices. Importantly, this creates ambiguity identifying the community stakeholders of CTSL.
The government's effort to streamline pastoral management included a Law 'On Pastures', passed by the parliament in 2009 that aims to decentralize management of livestock grazing to Pasture User Associations and Pasture Committees within ayil okmotus, who create Pasture Management Plans (PMP). This important effort is an as yet a largely unrealized opportunity for effective livestock management within CTSL. It requires sufficient capacity and motivation among the office bearers, accurate information on livestock populations and pastoral production, and sufficient funds for effective implementation of the PMPs. It is believed that livestock grazing is intense in the lower to middle elevation pastures that were normally meant to be used only in winter, spring and autumn, but are now being used year round, while the summer pastures or jailoos are underused. With the livestock population suspected to be back to the level during the Soviet period, and yet grazing in a concentrated manner over a much smaller part of the landscape points to high intensification of livestock grazing in the lower to middle elevation pastures. The underused jailoos too are now under increasing grazing pressure, with most PMPs proposing repair or construction of infrastructure to support grazing in the remote pastures. Pastoralism is thus in a flux and being widespread, these changes can have serious implications on conservation and activities of the CTSL Management Plan.

Threats to the CTSL

A workshop was organized to understand the conservation threats facing the landscape and discuss possible options to mitigate these threats. This exercise that saw the participation of 20 organisations from the government, civil society, academics and local institutions, led to the identification of 16 threats that could be clubbed into seven categories, the first three being particularly important for the landscape:

1. Intense livestock grazing in some areas resulting in degradation of pastures, spread of animal diseases and decimation of wild ungulate populations, resulting in threats to snow leopards.
2. Human disturbance and encroachment through infrastructure projects, mineral exploration and mining, and biomass (fodder, medicinal plant, etc.) extraction that directly reduce or degrade habitat.
3. Wildlife poaching, especially of wild ungulates and snow leopard, which decimates their populations.
4. Poor governance systems and policy leading to less effective wildlife protection and control of other human disturbances to wildlife and their habitats.
5. Conflicts over depredation largely by the wolf, but also occasionally by snow leopards, which cause losses to livelihoods, negative attitudes towards conservation and persecution of the carnivores.

6. Increasing natural disasters such as flash floods, may lead to erosion of pastures and restrict access to pastures by people.
7. Poor awareness about conservation among stakeholders that leads to poorer support from local communities and other stakeholders.

It was also recognised that the intensity of these threats varies spatially within different parts of the landscape and one of the efforts of the management plan implementation should be to map this variation clearly. Climate change was identified as a crosscutting, but little understood threat.

Zonation and Priority Areas for Conservation

Zonation allows prioritization of the landscape into areas that are primarily for conservation, primarily for human use (livestock, mountaineering, tourism), and those that need to be managed for both wildlife and human use. 'Maximum Entropy' analyses based model derived from 500 locations of five radio-collared snow leopards in the landscape predicted 6,635 km^2 (50% of landscape) as potential snow leopard habitat within CTSL. Of this total snow leopard range in the CTSL, 38% (2,504km^2) was identified as 'good' and 68% (4,130km^2) as 'fair' habitat for snow leopards. Of the 'good' and 'fair' habitats, just a third was protected by the three PAs. Further analysis using a 'focal statistic tool' in Arc GIS revealed four clusters of contiguous 'good' or 'fair' habitats that can be prioritized for conservation. While this information is based on habitat quality for snow leopard, clear zonation needs to be developed after spatial data on human use, especially, livestock pressures is available. This is being suggested as part of the management planning exercise. These analyses can be used to determine corridors between the PAs and also 'quiet zones' around the PAs where hunting is not allowed. It is noted that the Khan Tengri SNP management plan already recognises zonation within the PA and suggests corridors connecting it to other PAs, but further data will help re-class some of these to make these zones more meaningful.

Stakeholder analysis and convergence

With about 25 settlements inside the CTSL, most of the landscape, including the PAs, is under different forms of human use. Apart from the government conservation agencies, there are thus numerous other stakeholders, especially those dealing with agriculture, human welfare, development and conservation NGOs that have substantial stakes in the landscape. Extensive consultations were held with 44 organizations including government line departments, local self government, national and international NGOs, academic institutions, and donor agencies active in the landscape, to understand their mandates and key activities. This process was facilitated by the Issyk Kul Governor's office. This helped document vital areas of convergence between agencies. For example better pasture management, including livestock population regulation, will be a key conservation intervention. With five specialised departments in the agriculture sector dealing with sustainable pasture management, it is critical to cooperate with them rather than build any fresh mechanism focussed primarily on conservation. The CTSL management plan considers such cooperation as a key component for enabling effective management across the entire landscape. CTSL management must be based on cooperation, coordination and convergence based partnerships among agencies.

Vision of the management plan

A well-protected Central Tien Shan Landscape where people and wildlife coexist in harmony; where populations of snow leopards and other wild species are secure; and where the entire high mountain ecosystem and the ecosystem services it provides are maintained for the benefit of humanity.

Goals and Objectives of the management plan

A set of five major goals has been identified for the CTSL management plan, which will be implemented through nine inter-related objectives. They aim to understand and mitigate threats

to conservation (Goal I), for which securing local peoples' livelihoods and wellbeing are key elements (Goal II). A high level of awareness needs to be created about the value of snow leopards and mountain ecosystems, and positive attitudes must be inculcated towards conservation amongst all key stakeholders, which is important to ensure their sustained participation and support (Goal III). Both planners and implementers of this innovative and adaptive landscape level management plan need to have adequate capacity to carry out their work (Goal IV) and appropriate governance structures must be in place to sustainably manage this large landscape as an integrated unit (Goal V).
The management plan's five goals and nine objectives are given below, and the broad activities are briefly discussed after that:

Goal I: Major threats to snow leopards, other wildlife, and their habitats are mitigated so that wildlife populations increase, or remain at desired levels. Action is needed to mitigate the threats through good understanding, participation, and innovative activities:

Objectives:

1. To understand socio-ecological systems in order to enable more informed decision-making. This includes estimation of snow leopard and prey abundance and monitoring of threats.
2. To protect wildlife in the CTSL, including snow leopards and their prey.
3. To protect ecosystem against damaging human disturbance and encroachment.

Goal II: People's livelihoods are made more secure by strengthening existing mechanisms or through innovative options for green development. Action is needed to support livelihood improvements that are less damaging to the ecosystems' goods and services:

Objectives:

4. To manage pastures sustainably for benefit of both people and wildlife in a manner that increases pastoral earnings without necessarily increasing intensity.
5. To enhance local incomes and secure agro-pastoral livelihoods through mechanisms or opportunities connected with conservation interventions and include better dairy management, production and sale of locally produced goods, community-based tourism, etc.).

Goal III: Positive attitudes are promoted among key stakeholders. Action is needed to better inform the public, officials, visitors, and businesses about the conservation and human welfare significance of CTSL, in order to strengthen positive attitudes towards conservation:

Objective:

6. To enhance awareness of conservation benefits among all stakeholders through targeted activities.

Goal IV: Professional capacities are enhanced among implementing agencies and development partners to plan and implement strategic innovative practices. Action is needed to better equip all implementing agencies and their partners to continuously adapt their approaches and practices in order to sustain landscape level conservation:

Objectives:

7. To build the capacities of SAEPF staff, other government departments and community members to engage in cooperative activities that improve livelihoods and conservation, focusing on participatory approaches, including co-management of the CTSL.
8. To minimize the impact of natural disasters on livelihoods and wildlife.

Goal V: Systems of good governance are agreed upon and strengthened at all levels. Action is needed to ensure that clear systems and structures are in place to aid multi-sectoral collaborations and to develop viable financing mechanisms:

Objective:

9. To create efficient and equitable mechanisms for governance and management in the multi-dimensional, multi-sectoral landscape to be served by the CTSL management plan, incorporating more inclusive participatory and community-led approaches.

Broad Areas of Work under the CTSL Management Plan

To fulfil the goals of the Management Plan it is critical to work with local communities and other stakeholders to better understand the relevant issues and tackle them cooperatively in a manner that both conservation and livelihood goals are served and the stakeholders maintain positive attitudes towards conservation. This can only be achieved with genuine cooperation among stakeholders and sound capacity among all implementers, thus also highlighting the importance of improved governance mechanisms. The five goals have nine objectives that can be achieved through c. 40 broad, and c. 90 specific suggested activities. These activities can be broadly clubbed into various types and include:

1. Research to obtain a more factual understanding of biodiversity status, especially snow leopard and prey species abundance, conservation and livelihood issues, and threats. Academic institutions and NGOs from the country and abroad can lead these research activities with close cooperation and support of the SAEPF and other Government agencies.

2. Community based initiatives: GSLEP perceives bottom-up planning and implementation as an appropriate and effective means for carrying out village level work as it suitably captures local community's interests, knowledge and improves chances of their continued involvement. Kyrgyzstan has already got a democratic local self-government structure going down to the ayil okmotu, a cluster of villages under a unified administration. With pastoralism and forestry use being important facets of their livelihoods, the Government has already instituted decentralized planning and implementation through the Pasture Management Planning process and Leshozes (for forestry usage, under the Forestry Code, 1999). PMPs already include activities directed at sustainable pasture management, pasture infrastructure and securing their livelihoods. In the CTSL Plan it is suggested that most community-based activities are channelled using this existing structure of the PMPs where activities would include those dealing with sustainable pasture management, increasing productivity of pastures, increasing incomes through non-consumptive wildlife based activities, improved livelihoods through community based tourism, participating in wildlife monitoring, participating in monitoring rangeland productivity, etc.

3. Departmental or sectoral works: Over 30 government organizations and 10 NGOs are active in the oblast and their work deals with development, human welfare, livestock management, forest management, business & industry, mining, national security, etc. Some of these agencies may affect conservation in either a positive or negative manner. This Management Plan hopes to cooperate with them and channelize their work in a manner that activities are carried out to benefit the people, wildlife and the agencies, while there is a dialogue to avoid or minimize the negative impacts of their activities. The idea is to develop partnerships for conservation, by encouraging convergence, while avoiding divergence of their activities.

4. Capacity of implementing agencies: Activities such as advanced tools for wildlife monitoring, participatory planning and action, community-based conservation and cooperative cross-sectoral working and fund management are important for the success of the Management Plan of CTSL. These are however dynamic fields where advancements occur at a fast pace and it is crucial for the planners and implementers to be well versed with the latest knowhow. Personnel at varying levels will thus be exposed to such newer ideas, options and advanced skills through appropriate training courses, workshops and exposure tours.

5. Develop Strategy: There are issues such as developing and managing sustainable tourism as well as sustainable pastoral practices that are crucial for the success of the CTSL Management Plan. The Plan includes some activities that can be carried out immediately towards these issues, but also suggests developing more comprehensive thematic strategies as a part of cooperative work with other agencies specialized and mandated for such works.

6. Institutional structures: The Management Plan is multi-sectoral and relies heavily on robust cooperation among various government and non-government organizations, while also ensuring effective community participation. This requires coordination among agencies and also pooling and raising funds, to be further used by cooperating agencies (ayil okmotus, SAEPF, Pasture Department, Academic Institutions, NGOs, etc.). This may not be possible through existing governmental mechanisms and new ones may be required. It is therefore suggested to set up a government supported Foundation, tentatively being called, the 'Issyk Kul Conservation and Development Foundation' (IKCDF) that can enable such cooperation and coordination while managing the funds that are generated for work in the landscape under the Management Plan (IKCDF Fund).

7. Climate change adaptation: The region is prone to the impacts of climate change that is likely to result in increased temperatures, aridity and shrinkage of permafrost areas. These are likely to have implications on pasture quality, the basis of both people's livelihoods and wildlife. While averting the impacts of climate change is beyond the scope of this management plan, it can assist in developing a better understanding of the issue and in finding ways of better climate change adaptation. Information on this aspect is rudimentary at this stage but climate change adaptation in CTSL may be a key crosscutting area of work in the future.

In this plan, the activities have been grouped according to the respective goals and objectives, listed together with the suggested lead agencies, possible collaborators, sources of possible funding, indicators of success and suggested timelines in a logframe. The context and proposed activities were presented to stakeholders in Karakol in a workshop organized by the Governor on 12 June 2017 and detailed comments were requested from over 30 line agencies, which were obtained and have been incorporated in the updated logframe. The comprehensive set of activities (logframe) under the CTSL Management Plan emphasize on sustainable development and management of the ecosystem with benefits to the local communities, while also conserving their precious wildlife heritage. The activities thus also help fulfil numerous of the country's Sustainable Development Goals.

A pilot project:

As stated earlier, the management plan lays emphasis on three aspects where local communities are key partners. It is suggested to develop a pilot project in a selected ayil okmotu using these three themes that can be used to learn from and emulate in the larger landscape:

1. Sustainable pasture management: Pastures provide the primary sustenance of the local population and also provide the basis of conservation – the sustenance of wild herbivores and snow leopard. Managing pastures for mutual benefits to both of these stakeholders is thereby crucial. Effective pasture management will involve reduction or optimisation of pressures and freeing up some areas from livestock grazing so that pastoral production is healthier and wildlife populations also recover. The value added produce has better marketing and thus results in improved earnings for the communities.

2. Sustainable tourism management: Tourism is a nascent industry in the CTS Landscape although there is considerable tourism just outside, in the Issyk Kul Lake basin. If livestock grazing has to be made more sustainable and rationalized, sustainable tourism and its related enterprises can provide a diversified source of income to part of the local population. Community based tourism enterprises could be encouraged that combine adventure and cultural experiences with wildlife viewing. Further, production and marketing of goods can add income to communities.

3. Sustainable hunting management: Trophy hunting is a remunerative industry in Kyrgyzstan, however, at the current state the benefits to local communities are limited. Developing models of community managed trophy hunting at sustainable levels can have a dual goal of providing monetary benefits to local communities and improving their attitudes towards conservation. Higher stakes in live wildlife in their areas should also lead to greater stewardship and reduced poaching.

The primary focus here is to enable robust wildlife populations in the landscape, while preserving livestock husbandry, and making wildlife a sustainable resource for local communities and other enterprises.

Coordination and Governance Mechanisms:

As alluded to above, the CTSL Management Plan lays high emphasis on participation of local communities and other stakeholders at all levels, from the village, landscape, and oblast to the federal level. In the absence of existing mechanisms for coordination and cooperation at these levels, the CTSL Management Plan has suggested such mechanisms. Various bodies are proposed that have participation of politicians, officials, civil society, village elders and experts.

The National Committee for GSLEP Coordination (NCGC) provides the policy oversight, the Issyk Kul Conservation and Development Foundation (IKCDF) provide the coordination, micro level planning, monitoring and fund management mechanisms, and is registered under Kyrgyz Laws. The Pasture User Associations (PUA) are grassroots entities established by the government to enable sustainable and decentralized pasture management, through their Pasture Management Plans (PMPs), which is a key aspect of the CTSL Management Plan too. It is thus suggested to use their existing framework by including aspects on conservation and livelihoods into the PMPs. In parallel, different government departments, NGOs and International NGOs can implement their respective mandates in the landscape in a manner independently but in a cooperative spirit or through interdepartmental MoUs or through the PMPs. The government departments, NGOs and INGOs may collaborate and support community based work too. In general planning and reporting goes up the hierarchy and funding and monitoring tasks, down it.

The CTSL Directorate, led by a Director, is suggested as a new entity that plays the lead role in the planning and implementation work by the IKCDF. It should ideally be manned by a senior officer and be based in the Governor's office to enable better convergence among departments. This office may also be merged with an upgraded Issyk Kul Biosphere Reserve Directorate.

Funding Mechanisms and Budget

The innovative management plan requires considerable funding for carrying out its diverse activities. However, a crucial aspect will also be to leverage existing sectoral funds through convergence and mainstreaming in order to fulfil goals common to organisational mandates as well as the CTSL Management Plan. For example, when sustainable pasture management is a common goal between the conservation and agriculture sectors, their resources can be combined for cooperative work under this plan that saves funds and avoids duplication or opposed activities. As stated above and in the Kyrgyz National Biodiversity Strategy & Action Plan, funds can be obtained for the CTSL Management Plan from different sources and managed in innovative legal ways. These can ideally be pooled at the level of the IKCDF where professional fund management can be done. These broadly include the development of a corpus account based on large endowments, and a functional account that runs on grants obtained for specific projects from donors. A third branch of funding can be through individual organisational budgets that are meant for specific cooperative activities under the management plan.

The potential funding sources are from the government, funds generated through offset mechanisms, especially the Issyk Kul Development Fund, locally generated revenue, national NGOs, international NGOs, academic institutions, international assistance and other innovative sustainable financing mechanisms such as Payment for Ecosystem Services (PES). The Green Climate Fund (GCF) also constitutes an important potential source of funding.

Dialogue among participating organizations is needed to estimate the budget for the numerous and diverse activities of the CTSL Management Plan. It will thus be prepared with the help of financial consultants and the core group.

Monitoring and Evaluation:

The CTSL Management Plan suggests some broad and finer level activities and their indicators. It is suggested that all activities be monitored based on their indicators on an annual cycle to identify whether the activity has taken place and if it has had the desired impact. Lessons learnt from the process need to plough back in any necessary modification of the activity in an adaptive framework.

It is suggested to undertake an evaluation of the management plan at the mid-point of 5-years and then at the completion of the 10-year period to understand the level of success and areas of improvement.

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PART A: Situation Analysis

PART A: SITUATION ANALYSIS

1. INTRODUCTION AND FRAMEWORK

1.1. Global Snow Leopard and Ecosystem Protection Program

Background

The stunning snow leopard is an integral part of the cultural history of Asia's mountains. It is valued and revered in most parts of its range. They occur in high mountains of Asia, which are considered to be the water towers of the world, supplying water to up to 60% of the world's human population. Snow leopard habitats also provide numerous other ecosystem services that have high economic and cultural value, and these mountains have regional and global relevance for the welfare of humankind (Snow Leopard Working Secretariat (SLWS), 2013).

Working group meeting with Issyk Kul Governor and stakeholders in Karakol. Photo by Ilia Domashov

Unlike many other parts of the world, it is fortunate that snow leopard landscapes have so far been spared large-scale destruction of habitats, though the pressures today are immense (SLWS 2013). We however stand at crossroads today, where the high mountain biological, economic, and cultural resources are under siege due to unsustainable exploitation. At the same time, there is an incredible opportunity to ensure wildlife conservation into perpetuity and facilitate sustainable development at unparalleled spatial scales in the Asian mountains.

In response to the conservation crisis facing the endangered snow leopard and its vast mountain habitat in South and Central Asia, political leaders of snow leopard range countries[1] endorsed the Bishkek Declaration and launched the ambitious Global Snow Leopard and Ecosystem Protection

[1] Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan and Uzbekistan

Program (GSLEP) three years ago. This program aims to secure c. 500,000 km^2 of habitat, or over a quarter of the global snow leopard range, through community-based conservation, sustainable development and anti-poaching efforts in more than 20 large landscapes, each capable of harbouring at least 100 breeding snow leopards. The program was launched in October 2013 at an event hosted by the President of the Krygyz Republic.

GSLEP recognizes that improvement in the lives and livelihoods of local communities is a critical aspect of snow leopard conservation and preservation of Asia's mountains. Ensuring that human development in snow leopard landscapes is environmentally and socially sustainable is essential. The risk of not doing so is immensely high, and evident in the increased frequency of natural disasters in mountain regions in the wake of climate change and erosion, which make it critical to ensure ecologically sensitive and socially sustainable development efforts.

Working group members training SAEPF rangers in survey techniques. Photo by Ilia Domashov

The foundation of the GSLEP program is individual National Snow Leopard and Ecosystem Priorities (NSLEPs) developed by each range country (SLWS 2013, Annexe). These NSLEPs are broadly based on the themes of community-based conservation and conflict management, managing habitat and prey, combating poaching and illegal wildlife trade, building institutional capacities, research and monitoring, strengthening of policies, engaging industry in green development, and building awareness and communication. These national priorities are buttressed by five global support components whose scopes transcend national boundaries and include issues such as addressing illegal wildlife trade, facilitating trans-boundary cooperation, enabling comprehensive scientific monitoring, knowledge sharing and institutional capacity building, and sensitizing large-scale infrastructure development towards environmentally sensitive planning.

Structure

The GSLEP program seeks strong interrelationship and collaboration. A high-level steering committee, represented by respective environment ministers of each of the 12 snow leopard range countries, oversees the operations. Currently the steering committee is headed by the Minister of Climate Change of Pakistan and co-chaired by the Director of State Agency for Environment and Protection of Forests in Kyrgyzstan. The Global Environment Facility, Snow Leopard Trust, World Wildlife Fund, NABU, United Nations Development Program and USAID serve as observers on the Steering Committee, due for a revision in 2017.

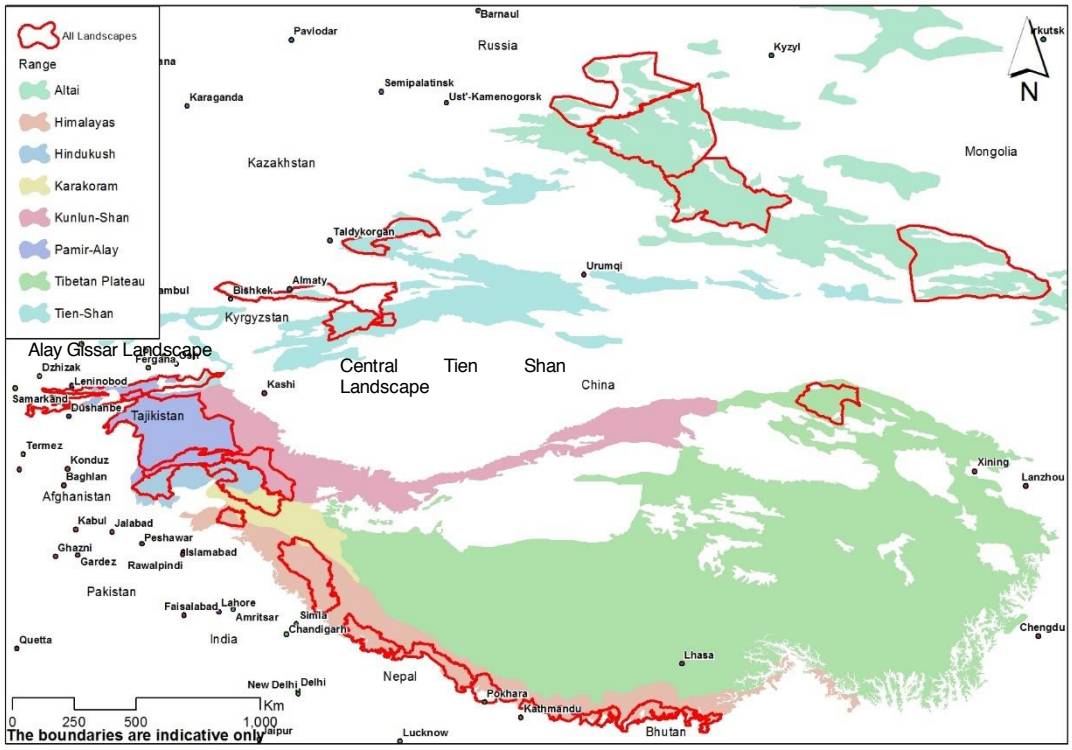
Working group members brainstorming on planning process. Photo by Ilia Domashov

A program Secretariat has been established in Bishkek for coordinating GSLEP in cooperation with the Government of the Kyrgyz Republic, and support of the snow leopard range countries, international partner organizations, universities, networks and foundations. Each country is represented in the GSLEP program through a National Focal Point. The National Focal Points in turn are connected to the provinces, local NGOs and communities involved in the identified GSLEP landscapes.

The Kyrgyz NSLEP (2013) provides an overview of snow leopard in the country, its status, PA coverage, threats, stakeholders involved and the way ahead.

Syncronized with the NSLEP, the country initiated its Snow Leopard Conservation Strategy (2013-2017) (SAEPF 2012) that outlined basic apporach to conservation of the species, the importance of participation and international cooperation to tackle threats. Two landscapes have been suggested by Kyrgyzstan, the Central Tien Shan Landscape (CTSL; 13,201 sqkm) to the east of the country and the Alay-Gissar Landscape (trans-boundary, shared with Tajikistan and Uzbekistan; total area c. 30,000 sqkm). The present management plan is for the Central Tien Shan Landscape (Figure 1).

Figure 1: The 23 GSLEP Landscapes showing the two in Kyrgyzstan.



1.2 Boundary and brief description

The CTSL landscape has been defined by enclosing the country boundary towards the east, south-east and south (Figure 2). The western boundary is defined by those of an existing hunting reserve, Sarychat Nature Reserve and Karakol Nature Reserve. The area towards the north is bounded by an existing paved road.

Rationale for selection of landscape based on GSLEP criteria:

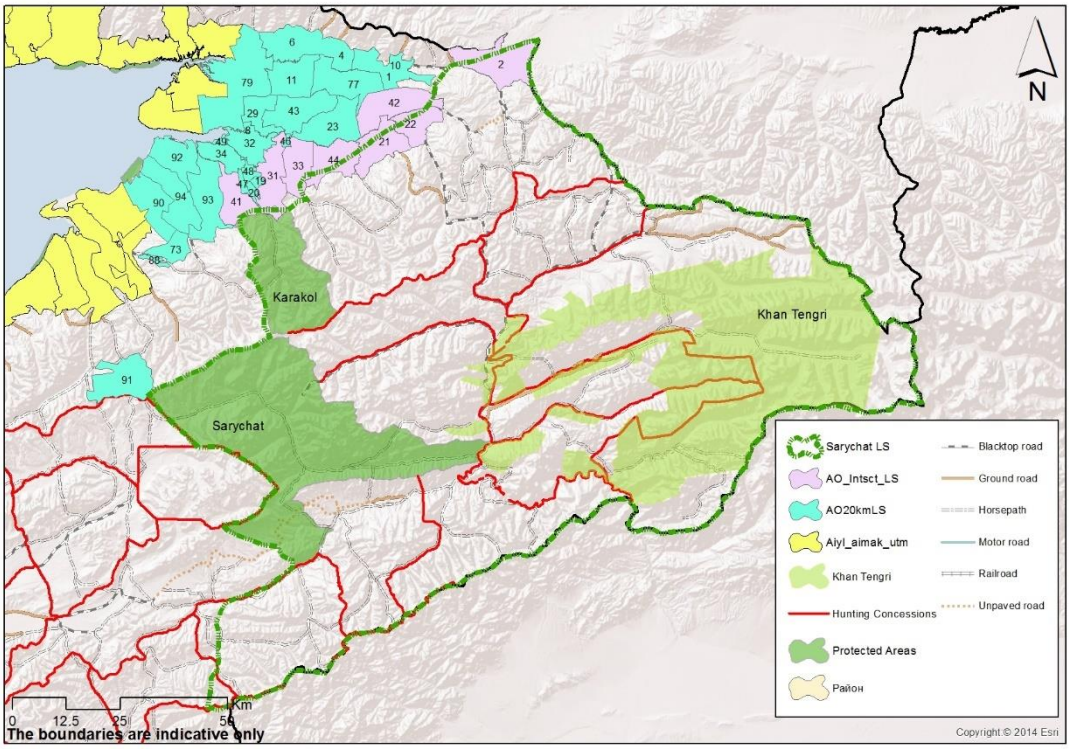
The area of snow leopard habitat, estimated using crude 1kmx1km digital elevation model, was 6,191 sq. km (47%). The landscape has been the focus of some research and conservation programs within the country. Widespread presence of snow leopard, argali, ibex, marmots, wolf, brown bear, lynx, Pallas' cat and several hundred species of birds make it an ideal landscape candidate for long-term conservation. There are relatively few settlements, and some of these have on-going community based conservation programs. A new Protected Area (Khan-Tengri) has been set up towards the east, and areas around it can potentially provide connectivity to the snow leopard and prey populations to North Tien Shan.

The CTSL is entirely within the Issyk Kul region of Kyrgyzstan. It borders Kazakhstan towards the north and China towards the South. The Sary Jaz and Sary Chat Valleys are two of the larger, of the numerous other smaller tributaries of the Ak Suu River that ultimately flows into China and the Taklamakan Desert to the south of the CTSL. There is a ridge towards the north of the CTSL that has forested slopes with streams flowing into the Issyk Kul Lake.

According to the NSLEP, the area under existing Protected Areas is 1,878 km^2 (14%). These include Sarychat Ertash Reserve and Karakol National Park. The area under the just finalized Khan Tengri National Park is 3,564 km^2 (27%). The total area protected is thus 5,442 km^2 (41%). Area under Hunting Reserves within CTSL Landscape is 6,226 km^2 (47%). Total area neither under protection, nor under hunting concessions is 1,534 km^2 (12%) (SLWS, 2013).

It may be noted that GIS assessments during the management planning exercise found slightly different figures (Chapter 6, Table 5 and 6).

Figure 2: Map of the Central Tien Shan Landscape showing the three protected areas and the Hunting Concessions



1.3. Management plan preparation process

The key aspects of this planning process included:

- Using the best available scientific information on snow leopard, its prey and the threats to device activities
- Understand stakes, roles and expectations of stakeholders, including local community, government departments, NGOs and donor agencies to develop the best possible combination of sectoral and inter-sectoral work to help conservation and people's livelihoods
- Provide for generation of more scientific information to assist better planning, implementation and monitoring in the future

The SAEPF constituted a committee comprising members from SAEPF (Rational use, PA department, GIS Department), WWF, SLF, GSLEP Secretariat and ARIS to prepare the management plan. Further, interns were either hired or volunteered to assist with steps in the process. The Primary steps were (also see Figure 3):

1.3.1. Literature review

There are not many studies on ecology of species from Kyrgyzstan, however, there have been numerous studies on aspects of pasture management. Further, developmental agencies have

conducted action research and assessments that have resulted in published and unpublished reports. Information on human population, demography, incomes, occupations, etc are available in the Government's Statistical Committee and other Websites. A key repositiory of literature from Central Asia is available in the K-Link Website, which was also utilised to access literature. Like stated above, there was much information on pasture management but very little from the CTSL. Also, information on ecology was also sparse.

1.3.2. Fieldwork and Data analyses

Since there was very poor information on the key wildlife of the CTSL an attempt was made to obtain secondary data on snow leopard and large mammal occurrences, threats, socioeconomic issues, and perception of climate change through a survey. About 20 rangers from the SAEPF were trained by the Core Group and they obtained information from 108 local inhabitants based on a questionnaire. Information on over 50 snow leopard locations was obtained but inspite of a substntial effort by the team, information on socioeconomic issues (such as livestock population changes, incomes, problems, etc) were not easily forthcoming.

SAEPF rangers conducting field survey on biodiversity and human society based on local knowledge of the pastoralists. Photo by Ilia Domashov

Information on snow leopard habitat use was obtained from 500 radio collar observation points from five snow leopards (Kachel, S. & Rosen T., Panthera 2017). These were analysed using Maxent to develop a predictive model of snow leopard distribution in the landscape and its habitat suitability (Forrest et al. 2017). Information on hydrology and climate change were also analysed using standard methods (Forrest et al. 2017).

1.3.3. Consultative workshop/meetings

Three workshops were organised in Karakol to interact with the primary stakeholders in the landscape that was facilitated by the Governor's office (Chapter 4, Appendix 9, 10, 11). The

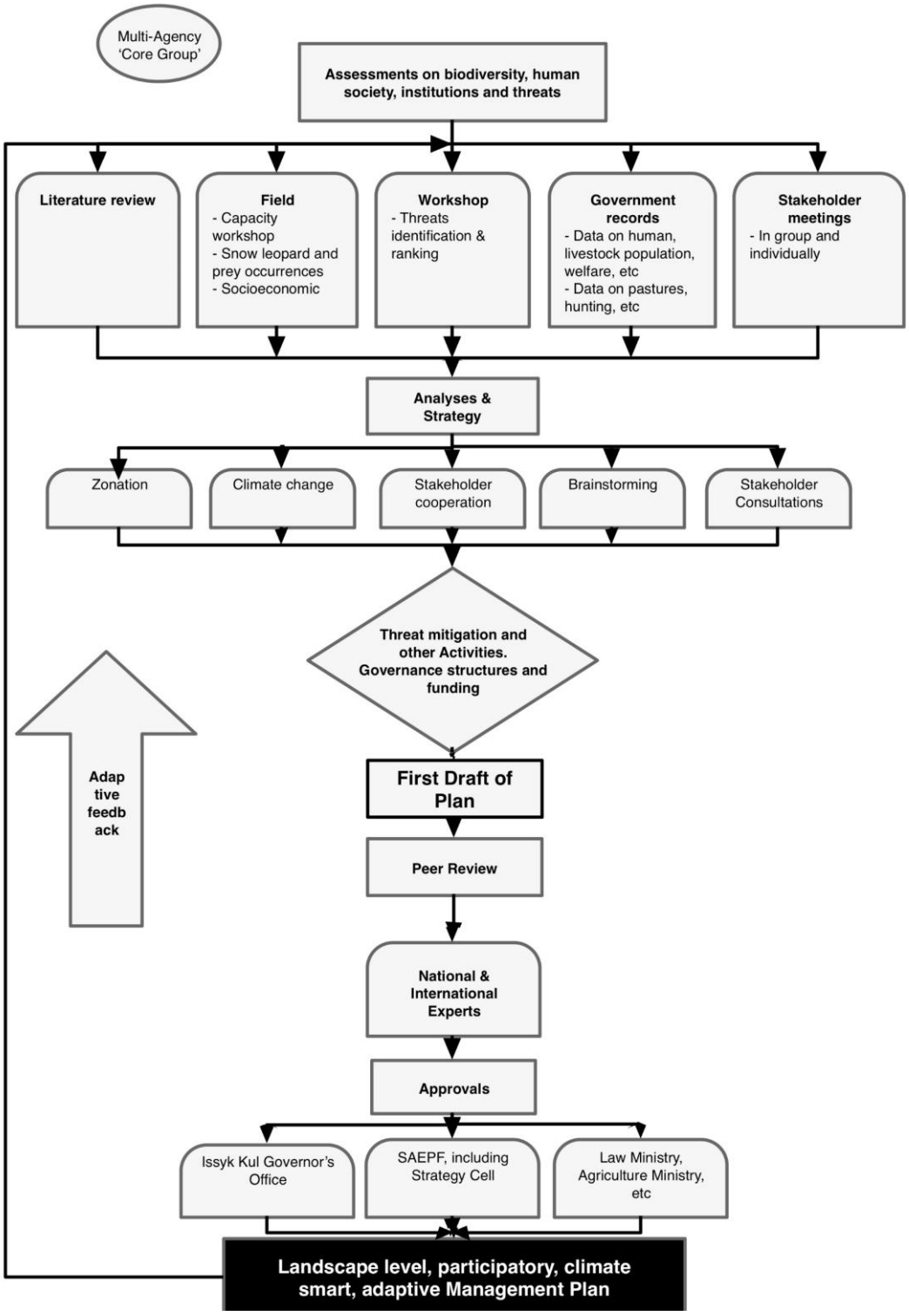
management planning team also attended two collegiums of the Issyk Kul oblast to introduce the different aspects of the management plan. These meetings, which also included one-on-one meeting with stakeholders, allowed the team to explain about the management plan and also seek information on institutional mandates, activities, and expectations as a part of the stakeholder analysis (Appendix 8). In March 2017 consultations were held with relevant stakeholders to understand and rank threats. Various strategies and alternative governance mechanisms were also discussed in these meetings.

Working group member presenting at the Collegium of departments in the Issyk Kul Governor's office, Karakol. Photo by Ilia Domashov

1.3.4. Review and Approvals

In June 2017, once the first draft of the management plan activities was prepared (Chapter 7) these were discussed with the stakeholders in the Governor's office in Karakol. Feedback was obtained in the workshop and also later through written responses from each department. The entire CTSL Management Plan has been peer reviewed by national and international experts to further improve the quality of the document. Due process has been followed to help with approvals at the Government of the Kyrgyz Republic and the Issyk Kul Oblast administration. Lessons learnt during the implementation of the management plan need to be used to revise and improve further assessments and actions in an adaptive framework (Figure 3).

Figure 3: The consultative and knowledge based process followed to prepare the CTSL Management Plan



2. BACKGROUND INFORMATION AND ATTRIBUTES OF THE CENTRAL TIEN SHAN LANDSCAPE

2.1 Geology, Geography and Soils of the Central Tien Shan Landscape[2]

2.1.1. The Tien Shan, Geography and Location

Over half (56%) of Kyrgyzstan is mountainous where the Central Tien Shan, Western Tien Shan and part of the Pamir-Alay (in the south-west) are located.

The highest elevations are marked on the Khan-Tengri massif (Pobeda Peak - 7,439m), from which mountain ranges divided by intermountain areas and extensive uplands run westward into the rest of the country. Tian Shan is north and west of the Taklamakan Desert and directly north of the Tarim Basin in the border region of Kazakhstan, Kyrgyzstan, and Xinjiang in northwest China. In the south it links up with the Pamir Mountains and to north and east it meets the Altai Mountains of Mongolia.

The jailoos or summer pastures in the CTSL. Photo by Kuban Jumabay-Uulu

The Tian Shan are a part of the Himalayan orogenic belt, which was formed by the collision of the Indian and Eurasian plates in the Cenozoic era. They are one of the longest mountain ranges in Central Asia and stretch some 2,800 kilometres (1,700 mi) eastward from Tashkent in Uzbekistan to almost Urumuchi in Xinjiang.

[2] Text in this chapter is adapted from a) http://www.geoportal-kg.org/index.php/geology/about-geology and b) https://en.wikipedia.org/wiki/Tian_Shan.

The highest peak in the Tian Shan is Jengish Chokusu (also called Victory Peak, 7,439m) and the second highest, Khan Tengri (Lord of the Spirits, 7,010m), are near the China-Kazakhstan-Kyrgyzstan border. Together, they are classed as the northernmost of the 7000m plus peaks.

The major rivers rising in the Tian Shan are the Syr Darya, the Ili River and the Tarim River. The Aksu Canyon is a notable feature in the northwestern Tian Shan and much of the CTSL is covered by this river and its tributaries.

Working group member making presentation to stakeholders in Karakol. Photo by Ilia Domashov

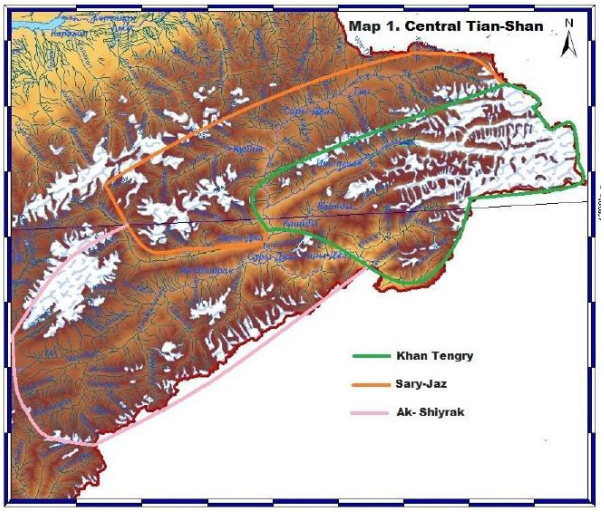
Continuous permafrost is typically found in the Tian Shan starting at the elevation of about 3,500-3,700 m above the sea level. Discontinuous alpine permafrost usually occurs down to 2,700-3,300 m, but in certain locations, due to the peculiarity of the aspect and the microclimate, it can be found at elevations as low as 2,000 m.

The main line of the Tian Shan continues as Narat Range from the base of the Borohoros west 570 km to the point where China, Kazakhstan and Kyrgyzstan meet. West of this, the Tian Shan split into an 'eye', bisected by the Issyk Kul Lake. The southern side of the lake is the Terskey Alatau and the north side the Kyungey Ala-Too (shady and sunny Ala-Too) mountian chains. North of the Kyungey Ala-Too and parallel to it is the Trans-Ili Alatau in Kazakhstan just south of Almaty. West of the Lake, the range continues 400 km as the Kyrgyz Ala-Too, separating Chui Province from Naryn Oblast and then Kazakhstan from the Talas Province.

The CTSL is comprised of several sub mountain ranges, slopes, szyrt uplands and closed intermountain valleys. Giant ridges like Coyle-Too, Sary-Jaz, Tengri-Tag, Kokshaal-Too, Ak Shiyrak, Terskey Ala-Too and others characterise this part of the country. The main area of the Central Tien Shan is located on elevations higher than 3500m and as stated above, the highest peaks - Khan Tengri and Pobeda - are located above the Enylchek Glacier in the eastern part of the CTSL. The floodplain of the Sary Jaz River marks the lowest point of the area (2500m). According to different geological and geographical characteristics like altitude, local climate,

ecosystem, degree of glaciation and geographical position the area can be divided in three different physiographic regions, which are illustrated in the map in Figure 4 (Balbakova et al. 2015).

Figure 4: Map of the Central Tien Shan with three different physiographic areas (Balbakova et al. 2015).



The Central Tien Shan offers a great variety of different landscapes and ecosystems, which are all influenced by abiotic factors, like development of different types of slope movements (e.g. landslides, avalanches, mudflows), anthropogenic impacts and seasonality. Anthropogenic impacts primarily become apparent in the form of jailoo or summer pastures for livestock rearing and various infrastructure projects. Furthermore, the availability of ancient and modern era glaciation reveal the landscape's unique environmental conditions and is also primarily responsible for the formation of the hydrographic network in this region. In combination with the presence of permafrost the glaciation influences also the development of soil processes in the Central Tien Shan.

2.1.2. Tien Shan geology overview

Geological structure of Kyrgyzstan is complex. Basement layers are formed by Archean and Proterozoic metamorphic complexes. Folded structures are formed by Paleozoic sedimentary and volcanogenic formations while the Intermountain areas are formed by Mezo-Cenozoic loose rock masses. Igneous rocks, especially the Baikal, Caledonian and Hercynian intrusions of granites and to a lesser extent bedding rocks and alkaline rocks are the dominant rock types. Like in most mountain chains of Asia, distinct tectonic zoning representing different age of the fold system. Regarding the age of basic phases of tectogenesis within the Tien Shan, there are Caledonian fold area of the Northern Tien Shan, Hercynian fold area of the Southern Tien Shan and fold area of the Middle or Central Tien Shan, where both Caledonian and Hercynian tectonic movements can be traced.

The Middle or the Central Tien Shan stretches in a sublatitudinal direction (20-100km wide) to the south of the Northern Tien Shan. Talas-Fergana transverse fault divides it to two separate parts: Naryn (eastern), which includes the CTSL, and Chatkal (western). The Nikolayev's line is its northern boundary, Atbashy-Inylchek fault (in the Naryn sector) and Kara-Suu fault (in the Chatkal sector) are its southern boundary.

The Middle Tien Shan is formed by Proterozoic metamorphic rocks, sandstones, of the Riphean-Vendian period, and terrigenous rock mass of the Lower Paleozoic period, terrigenous-carbonate sediments of the Devonian and Carbonic periods represented by tectonic blocks and plates. The rocks are breached by granitoids of the Middle and Upper Carbonic period. Granitoids of the Proterozoic and Silurian periods are developed to a lesser extent.

View of the CTSL in summer. The rugged mountains are good habitat for snow leopard and ibex. Photo by Kuban Jumabay-Uulu

Metallogeny of the Middle Tien Shan is diverse and have deposits of gold (Kumtor, Makmal), molybdenum (Molo, Chaartash), tungsten (Kensu, Kumbel), ferrum (Gava, Jetym), uranium, molybdenum and vanadium (Saryjaz), copper (Kuru-Tegerek, Bozymchak), polymetal (Sumsar), antimony (Terek, Kassan). There are also large plumbago and wollastonite deposits.

2.1.3. Soils in CTSL

The soil type in the CTSL is in the Sary-Jaz soil subprovince, but it is poorly understood. Most of this region has narrow deep gorges, with steep rocky cliffs.

Often there are remains of ancient denudation surfaces with flat tops, that have recently been freed from glaciers. Many peaks and ridges continue to be covered with permanent glaciers and snowfields, the largest of which include the Enilchek glacier, the Semenov glacier, the Mushketov glacier, and the Kaindy glacier. Due to the wide presence of these glaciers and snowfields, the distribution of permafrost and seasonal frost occurs on the territory of the Sary-Jazsky basin and glacial erosion activity is observed (Mamytov 1996, Mamytov and Roichenko, 1962).

Narrow river terraces are composed of proluvial-alluvial sediments deposited at various depths. Steep mountain slopes are composed of bedrocks that often come to the surface. These slopes are stony-gravelly, often bare, not entirely covered with vegetation. In general, the most eroded soils are distributed on more isolated slopes. Mountain soils are formed under special conditions of relief and climate. The main form of the surface in the mountains are slopes of various shapes, steepness and exposure. It is important to note that as the strongly dissected relief and energy of watercourses (including temporary ones) increases, this contributes to the erosion of the upper horizons of the soil.

Soil formation in the Sary-Jaz basin proceeds under conditions of dry continental climate similar to the conditions in rest of Central Asia. The soil cover is represented by the following soil types:

1) mountain steppe chestnut-shaped subalpine;

2) mountain meadow-steppe subalpine meadows;

3) mountain meadow-steppe Alpine;

4) high-mountain sod-polutorthyanous;

5) mountain-forest (dark-colored) soils;

6) high-mountain brown desert-steppe soils.

The name of the type of soils is given according to the "Systematic list of soils of the Kyrgyz Republic" (1995).

Snow Leopard Enterprises program of the SLF that uses the discarded wool to generate more income for local communities, especially the women. Photo by Kuban Jumabay-Uulu

2.2 Biodiversity and Values of the Kyrgyz Republic and the Central Tien Shan Landscape

2.2.1. National Biodiversity

Kyrgyzstan is a small country (c. 200,000km^2) dominated by mountains, with over 90% of the country being above 1000m. The vertical landscapes provide a large number of biomes that support a unique and diverse assemblage of plants and animals. The landlocked country is over 3000km from the nearest ocean and has a generally dry climate. The Kyrgyz Republic has a relatively high species-richness; possessing nearly 1% of all known species in just 0.13% of the world's landmass (NBSAP 1998). Since independence, the country has undergone political and economic turmoil, resulting in economic crisis. The worst was when the inflation rose above 800% in 1992. However, by 1996 the rate of GDP growth was positive for the first time since independence, and heralded a phase of slow economic recovery. The economic crises resulted in both increasing pressures on biodiversity and a reduction in the effectiveness of existing mechanisms for environmental protection.

Recently declines in many species have become evident, and 9.5% of bird species and 18% of mammal species are now considered to be at risk of extinction. A number of rare and valuable ecosystems had nearly disappeared, and forest cover had declined by over half in the 50 years preceding 1998 (NBSAP 1998).

The biological resources of the Kyrgyz Republic play an important role in the economy and traditions of the country. Many species are used directly, either for subsistence or commercial extraction. These include c. 600 species of wild plants that are used by humans. The country is a centre of origin for domesticated fruit crops, and still possesses a number of wild relatives of these, including walnuts, apples, apricots, and pistachio. Natural habitats are a vital part of many traditional land use practices, in particular, livestock grazing, which relies on healthy mountain pastures. The traditions and culture of the Kyrgyz people are tightly linked with the wildlife and landscapes of the country. The loss of biodiversity can have both a direct and indirect impact on people's welfare and quality of life, which includes changes in water quality, access to natural resources, or erosion of culture and traditions linked to biodiversity.

The recent National Biodiversity Strategy and Action Plan, NBSAP, documents 166 viruses and bacteria, 3676 species of fungi and other lower plants, 3869 of higher plants, 101 species of protophyte, 14,600 insects and other arthropods, more than 1,500 other invertebrates, 75 species of fish, 4 amphibians, 33 reptiles, 390 birds, 84 mammals in the country.

Many species of animals like dhole (Cuon alpinus), otter (Lutra lutra), goitered gazelle (Gazella subgutturosa), such birds like great bustard (Otis tarda L.), imperial eagle (*Aguila heliaca*) are practically not being registered any more. Critically endangered wild pomegranate (Punica granatum), tulips: glitter tulip (Tulipa nitida), Ostrovskiy tulip (T. ostrowskiana), pink tulip (T. rosea) are also very rare. The main reason is disturbance of habitats due to economical activity and direct extermination by human being (NBSAP 2016). Further, as a result of human activity some species have gone extinct, while others are endangered. Among large and medium-sized mammals, 3 species have become extinct and 15 species are under the threat; among birds 4 species of birds are extinct and 26 are under the threat. Among plants 56 species are considered endangered (NBSAP 2016). The Red Book of the Kyrgyz Republic includes 57 species of birds, 23 mammal, 2 amphibians, 8 reptiles, 7 species of fish, 18 arthropods, 83 higher plant species and 4 mushrooms (Shukurov, 2008).

2.2.2: Biodiversity of the CTSL

The CTSL is the highest part of the country that includes two 7000m plus peaks, high ridges, plateaus and valleys. It is located in the eastern corner of the country straddling very diverse ecosystems such as the Ramsar wetland of Issyk Kul to the northwest and the Taklamakan Desert in China to the south. With elevations between 2000m and 7000m in the landscape, it provides a diversity of biomes and habitats for species. The severe climate and rugged terrain limit the

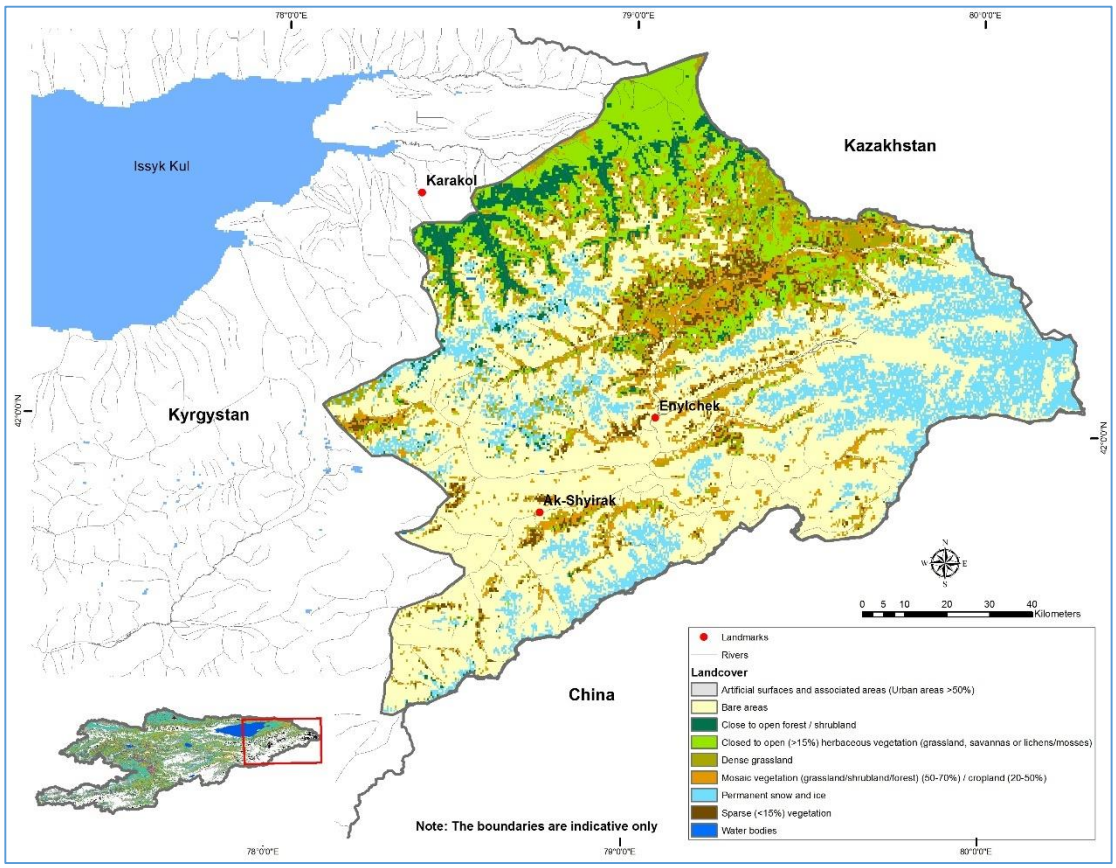
inhabitable zone for flora and fauna to less than 50% of the landscape. Very few biodiversity assessments have taken place so far in the Central Tien Shan, but some coarse assessments have taken place in the Sarychar-Eertash (Anon 2007) and the Khan Tengri protected areas (Anon 2017 (draft)). Information from these assessments is provided in Appendix 1.

2.2.3: Land cover in the CTSL

The land cover layers were downloaded from the European Space Agency (ESA) website and re-classed based on details given in the Table 1. It must be noted that these are rather coarse and may be inaccurate and need to be treated with caution. Some broad results can however be derived from this analysis (Figure 5).

Sheared wool near a village. Since this wool fetches very low prices herders often discard them. SLF uses this wool to add value and improve incomes of the herders. Photo by Kuban Jumabay-Uulu

Figure 5: Land cover map of the landscape based on data from ESA (2009)



Of the 13,227 km^2 CTSL, just about a third (35%) was vegetated. Much of the landscape constituted of bare earth (51%) and glaciers (14%), especially towards the east. Forests cover the northern slopes of the northern part of the CTSL covering only c. 4% of the area. Grasslands and steppe vegetation constituted most of the vegetated slopes with c. 27% of the area. Although not clear from the ESA data, some of the 'Bare Earth' category may have sparse vegetation that may suffice for use by wild and domestic ungulates.

Table 1: The re-classed and original landform classes with their respective area in the CTSL.

Revised Classification	Area in km^2 & (percent)	Original classes clubbed together
Artificial surfaces and associated areas (Urban areas >50%)	0.2 (0.0)	
Bare areas	6715 (51)	
Close to open forest / shrubland	587 (4)	Closed to open (>15%) grassland or woody vegetation on regularly flooded or waterlogged soil - Fresh, brackish or saline water/Closed to open (>15%) mixed broadleaved and needleleaved forest (>5m)/ Mosaic forest or shrubland (50-70%) / grassland (20-50%)/ Mosaic grassland (50-70%) / forest or

Revised Classification	Area in km^2 & (percent)	Original classes clubbed together
		shrubland (20-50%)/ Open (15-40%) needleleaved deciduous or evergreen forest (>5m)
Closed to open (>15%) herbaceous vegetation (grassland, savannas or lichens/mosses)	1623 (12)	
Dense grassland (Since croplands were absent in the CTSL, all classes with croplands were clubbed into this category as the most probable equivalent)	686 (5)	Mosaic cropland (50-70%) / vegetation (grassland/shrubland/forest) (20-50%)/ Post-flooding or irrigated croplands (or aquatic)/ Rainfed croplands
Mosaic vegetation (grassland/shrubland/forest) (50-70%) / cropland (20-50%)	1319 (10)	
Permanent snow and ice	1849 (14)	
Sparse (<15%) vegetation	443 (3)	
Water bodies	4 (0)	
Total Area	13227	

2.2.4: Snow leopard and prey

Snow leopards inhabit close to half of Kyrgyzstan (about 89,000km^2, 45%) in the North, Central, Western Tien Shan and the Pamir-Alai Ranges (NSLEP from the Snow Leopard Working Secretariat (2013), Davletbakov et al. 2017) covering most oblasts of the country. There are no national estimates of the snow leopard population as yet but 350-400 individuals are estimated through educated guesses (National Academy of Sciences, Unpublished Data, quoted from Davletbakov et al. 2017), but the populations have possibly declined from an estimated 650 in the pre-independence period.

Hybrid cow in a jailoo. Photo by Kuban Jumabay-Uulu

In the CTSL snow leopards occur in an estimated 6,635km^2, or about half of the landscape (Chapter 6). A comprehensive population survey has not taken place as yet, however, a study based on molecular analysis of snow leopard scats estimated 18 snow leopards in a 1,341km^2 study area in the Satychat Eertash Reserve (Jumabay-Uulu et al., 2013). The team has been carrying out camera trapping studies in the Satychat Eertash and the adjacent Koiluu Valley and more accurate results of snow leopard density and abundance will be available by late 2017 (Jumabay-Uulu, K., Pers. Comm.).

Little is known about snow leopard ecology from the landscape; however, an on-going radio telemetry based study by Panthera is likely to yield some new insights into the species' ranging, habitat use and diet (Rosen, T., Pers. Comm.). In fact, about 500 locations from this study provided the basis for generating the snow leopard distribution model in this management plan (Chapter 6).

Davletbakov (2010) has estimated about 47,500 Asiatic ibex and 10,500 argali in the country. The snow leopard primarily depends on these two species in the CTSL, with other prey that may include marmots, wild pig, roe deer and maral deer.

The argali present in northern Kyrgyzstan is often referred to as Ovis ammon karelini, while in the rest of the country is O a polii. However, their genetic and morphometric differences remain uncertain (Harris and Reading, 2008). Argali prefer open, high altitude rolling pastures, which

happen to have relatively easier access by livestock herders and poachers. Harris and Reading (2008) further suggest that the populations may be suffering threats such as competition with livestock; disease transfers, poaching and over-harvesting.

Livestock in an autumn pasture. Photo by Kuban Jumabay-Uulu

The Asiatic ibex (Capra sibirica) is far more abundant and widespread in the country. This is a species that prefers more rugged areas that have a combination of pastures interspersed with cliffs (Reading & Shank 2008; Bhatnagar 1997).

2.3. Water provisions and Climate Change in the CTSL

2.3.1: Ecosystem services from the Tian Shan landscape, Kyrgyzstan[3]

The Tian Shan landscape is not only important for the survival of the snow leopard but is also important for human wellbeing. These landscapes provide several ecosystem services that are of relevance at a local, regional, and global scale. Ecosystem services are defined as the outputs of ecosystems that affect human wellbeing (Haines-Young and Potschin 2012). A fundamental characteristic is that they retain a connection to the underlying ecosystem functions, processes and structures that generate them (Haines-Young and Potschin 2010). The "pathway" for the production of ecosystem services can be described through the ecosystem services cascade model. Ecological structures, give rise to processes and functions, i.e the ecosystem's capacity to deliver an ecosystem service, that then give rise to an ecosystem service in the presence of a human beneficiary. Ecosystem services provide benefits that enhance human well being. Depending on the benefits that people obtain from ecosystem services, different kinds of values, both in terms monetary terms as well as non-monetary values like spiritual and cultural, are assigned to the services. This model underscores the importance of biodiversity, ecosystem processes and functions in the provision of ecosystem services.

Ecosystem services can be categorized as 'provisioning', 'regulating', and 'cultural' services. Some of the ecosystem services provided by this landscape under each category are listed below:

Provisioning services: Provisioning services are all nutritional, material, and energetic outputs from living systems. The Tian Shan landscape provides a range of provisioning services that are relevant to the local population as well as the population living downstream. Most of the people are agro-pastoral or pastoral and depend on agriculture and livestock rearing for their livelihoods. The landscape provides grazing and fodder services to numerous households who send a large number of small-bodied livestock and large-bodied livestock to graze in the landscape for 4-6 months in the summer season. The landscape provides fuel wood for heating services, collection of wild plants such as wild onion (Allium sp.), mushrooms, rhubarb (Rheum sp.), and blackberries (Rubus sp.). There are more than 4,100 medicinal plants in the Tian Shan. Medicinal plants are collected by the local community and sometimes sold to the neighboring countries of Kazakhstan and China (Eisenman 2012). Medicinal plants are also of global conservation value.

The Tian Shan Mountains are important water catchment areas; with snow and glacier melt being an important part of the hydrological cycle. Glacier melt alone accounts for an average 10 percent of flow from mountain streams, which can increase to 20 percent during times of drought (Aizen 1997). Approximately 59,000 households live along the borders of the landscape, and use the water for agricultural and household purposes from the landscape. An economic valuation of the provisioning services from this landscape is currently under progress.

[3] Compiled by Ranjini Murali who is a doctoral student with the Nature Conservation Foundation, The Snow Leopard Trust and Manipal University. She is studying how people use and value ecosystem services from snow leopard landscapes. She conducted an economic evaluation of provisioning services from the Issykul landscape and the project findings should be available by 2018.

Livestock in a corral. Wolf and snow leopards can kill livestock in such poorly protected corrals. Photo by Kuban Jumabay-Uulu

Regulating services: Regulating services are all the ways in which living organisms can mediate or moderate the ambient environment that affects human performance. The Tian Shan landscape provides services such as gene pool protection, prevention of soil erosion, regulation of wastes, regulation of air and water flows, disease regulation, climate regulation, water purification, prevention of soil erosion, and pollination. Soil plays an important role in global carbon (C) and nitrogen (N) cycles and can buffer the rate of climate change. Based on studies done on the soil carbon sequestration potential of soils in Central Asia, the soil carbon potential in the landscape is about 10 to 22 Teragram C y^{-1}, and it represents 20 per cent of the CO_2 emissions by fossil fuel combustion (Lal et al. 2004). The economic value of regulating services are normally accounted for by calculating the loss in service provision under alternative land use scenarios such as the construction of large scale developmental projects. No such evaluation has taken place yet in the landscape.

Cultural services: Cultural services are all the non-material, and normally non-consumptive outputs of ecosystems that affect physical and mental states of people. The landscape provides services such as heritage services, aesthetic, religious, spiritual, and generates information and knowledge. The cultural history of Kyrgyzstan can be traced back to 200 B.C (Bashiri 1999). The ethnic Kyrgyz were formally nomadic pastoralists who lived in yurts and migrated seasonally with their livestock (Akmoldoeva & Sommer, 2002). They were very closely reliant on their immediate ecosystem, which helped shape many of their cultural traditions to this day. There are several sacred sites in the landscape, which are culturally and spiritually meaningful for people. These sites are protected by the local community and are often bodies of water, a single tree, or a cluster of trees. About 130 sacred sites were documented in the Issykul region (Samakov 2015). The landscape is of archealogical importance. There are petroglyps (Stobdan 2003) and ancient burial sites with glazed and ceramic pottery (Glaesser 1976). The landscape is important for tourism as it attracts many tourists who go hiking in the landscape. If further developed, the revenue from tourism alone could be greater than the revenue from trophy hunting. For example, in America,

the tourism value of a single bobcat was 1000 times greater than the value for hunting it (Elborch et al. 2017).

2.3.2: Climate Change and its Borad Impacts on the CTSL[4]

Most of the 108 respondents interviewed in the landscape accepted that climate change was happening and it was evident in the form of changed precipitation patterns, shorter winters, and early spring. They also felt that the frequency of disasters was also increasing.

The temperatures on the planet are increasing and according to the Intercontinental Panel on Climate Change's 5th Assessment Report (IPCC AR5), the global mean temperatures have increased by 0.7C between 1951 and 2012, and is likely to rise a further 0.3 to 4.8C by 2081-2100 relative to the 1986-2005 period (IPCC 2013). Climate change impacts are likely to have profound impacts on snow leopard range globally as it inhabits one of the most vulnerable ecosystems (Farrington and Li, 2017). They further evaluate influences on pastures, wetlands, permafrost and treeline shifts through increased temperature and changes in precipitation.

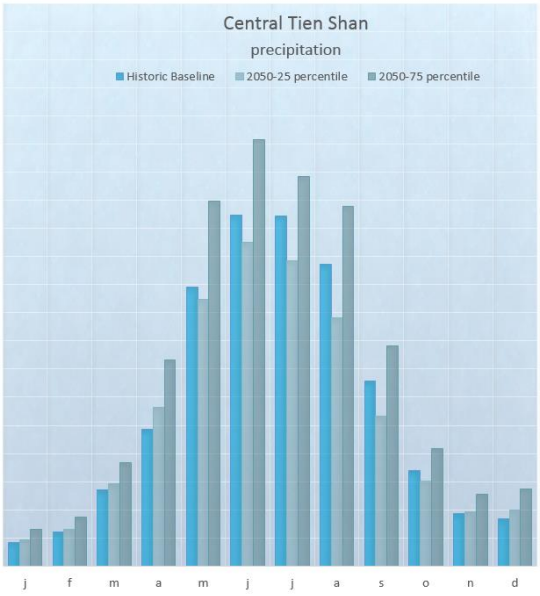
The Central Tien Shan Landscape has a continental climate where both winter and summer precipitation determines pasture quality and agriculture that affect both, wildlife conservation and local livelihoods. The area is expected to be vulnerable to the effects of climate change (Balbakova, et al. 2015). They further report an increase in temperatures, decline in glacier coverage and increase in catastrophic events related to climate (floods, landslides, etc.) in the past few decades. Their analysis further suggests that under the maximum emissions scenario (A2) the temperatures in Kyrgyzstan would increase by 1.2±0.3 by 2030, 2.3±0.6 by 2060 and 4.7±0.8 ° C by 2099.

A climate risk analysis was carried out by the Centre for Climate Systems Research (CCSR) of Columbia University in collaboration with USAID funded WWF's Asia High Mountains Project (Forrest et al. 2017), as a part of the management planning process and some of the salient findings are presented in the sections below.

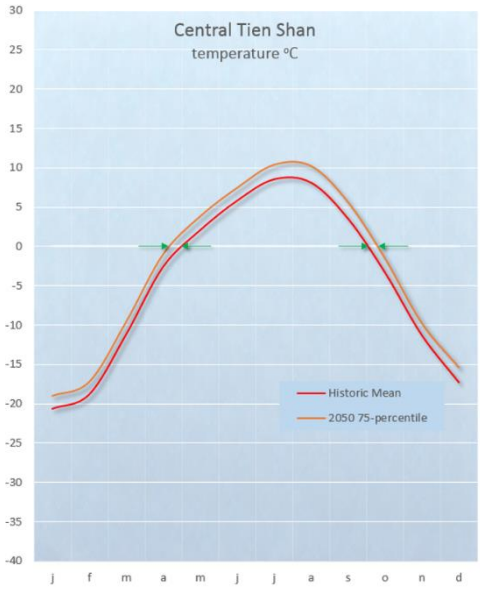
In the context of the CTSL the precipitation and temperatures are likely to increase in most months. The precipitation is likely to become more variable (Figure 6).

[4] This section is excerpted and adapted from Forrest et al. (2017)

Figure 6: Precipitation and temperature projections by 2050 (Forrest et al 2017).



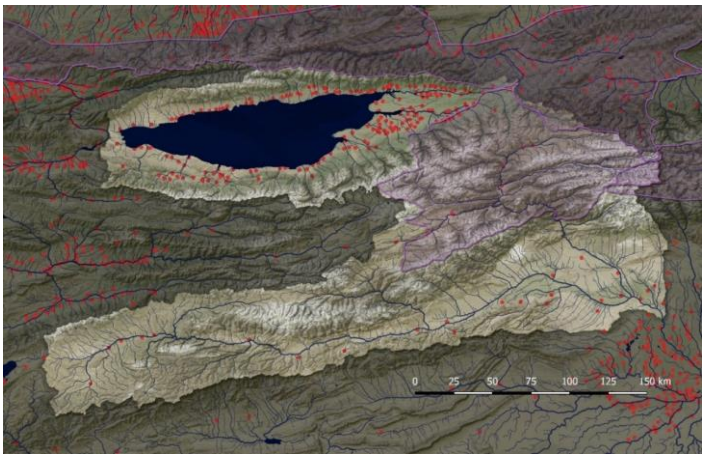
Historic precipitation compared to two projections, the minimum (25th percentile) and maximum (75th percentile) of 2050, horizontal axis crosses at 0 mm.



Historic temperature compared to the maximum projection (75th percentile) of 2050 (reference to CCSR-report, 2016)

The CTSL has a cluster of high peaks and glaciers in the eastern part that continues as a few lower snow boundranges further west in the landscape. The northern parts of the CTSL are in the Issyk Kul lake's catchment while the rest of the area is primarily constituted by the Ak Suu River and its tributaries, which ultimately flow into the China and eventually into the Takhalamkan desert (See Figure 7 for the CTSL and the larger catchments it feeds).

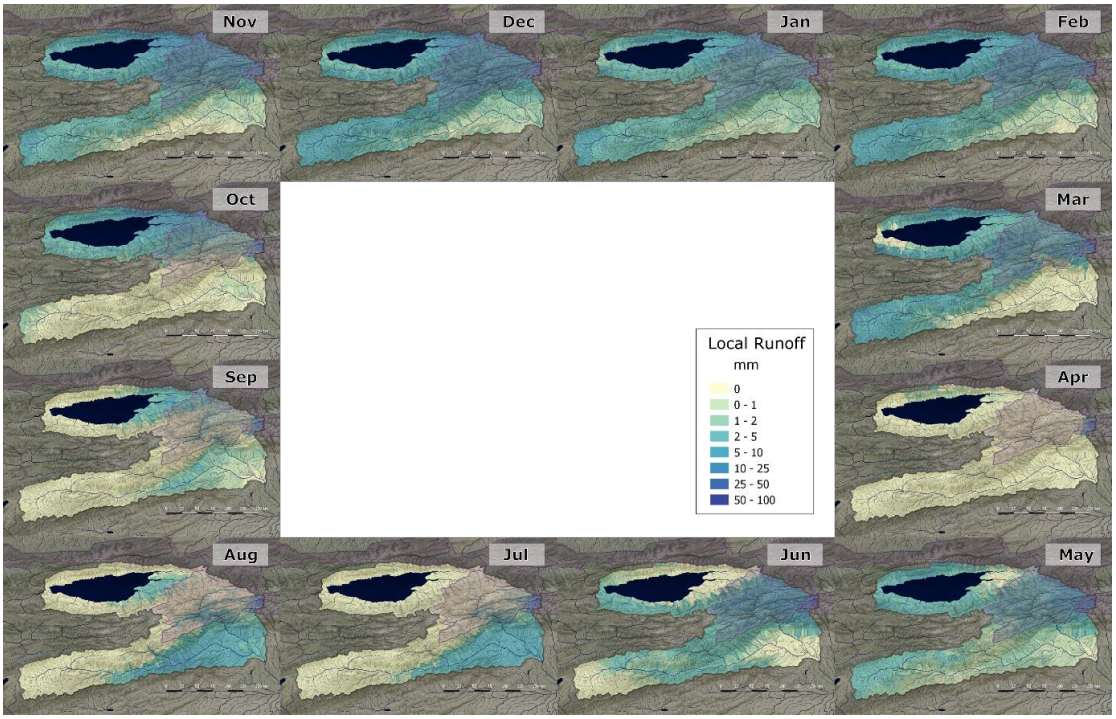
Figure 7: The Central Tien Shan Landscape (purple polygon) and the adjacent catchments to the north and south. Habitations are shown as red dots (Forrest et al 2017).

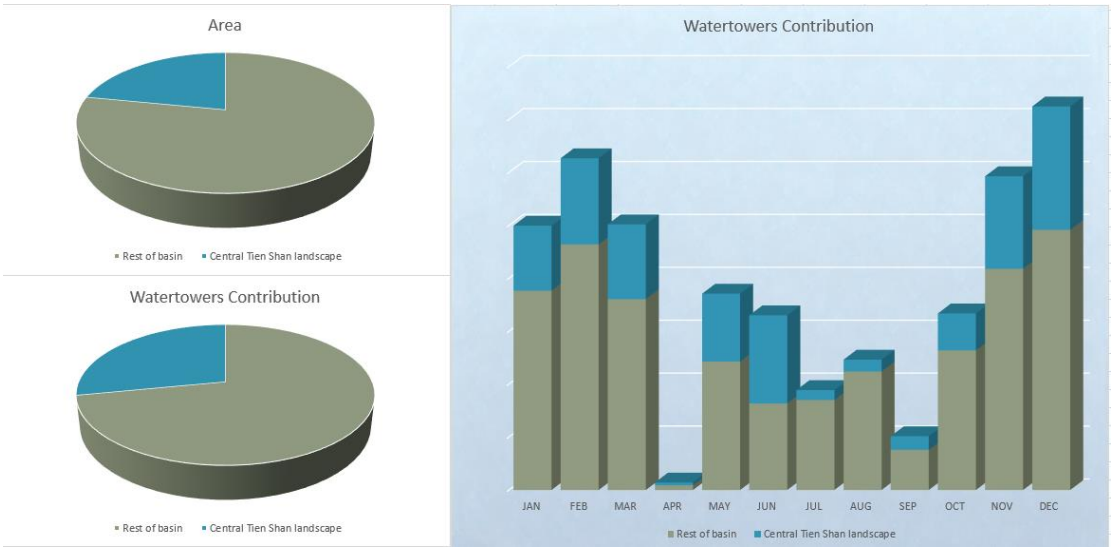


2.3.1: Water Provision

The CTSL is just under quarter of the catchment area however; its overall contribution of water runoff is slightly over 25% (Figure 8). The contribution of the CTSL and adjacent parts of the catchment to the downstream areas varies according to the month with the winter months (October to March) contributing the most. The relative contribution of the CTSL in the lean season (May-June) is relatively high. This is the season when cultivation begins in downstream areas and thus even this relatively small contribution is likely to be important for the farmers. Further modelling the runoff for climate scenarios in 2050 indicate a high level of uncertainty (Forrest et al. 2017).

Figure 8: Monthly local runoff in the CTSL (see Forrest et al 2017 for details). Water provision functions: Water towers (local runoff)



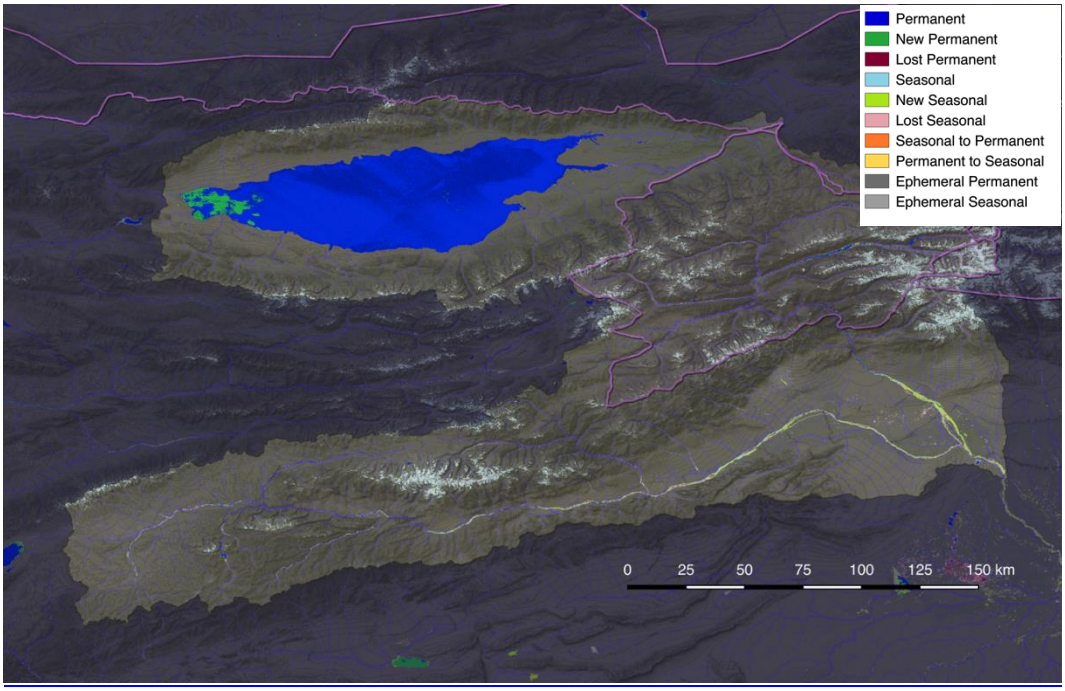


Looking at surface water, the primary forms are lakes, rivers, streams and glacial lakes. The Issyk Kul lake is a Ramsar site of globally significant biodiversity (Ramsar Site RDB Code 2KG001) and forms part of the Issyk-Kul Biosphere Reserve. Inside the landscape - according to the most recent map of global surface water (Pekel, 2016) only 0.3% is classified as open surface water; it can therefore hardly be identified in the analysis (Figure 9). The following transitions occurred between 1984 and 2015 (Forrest et al 2017):

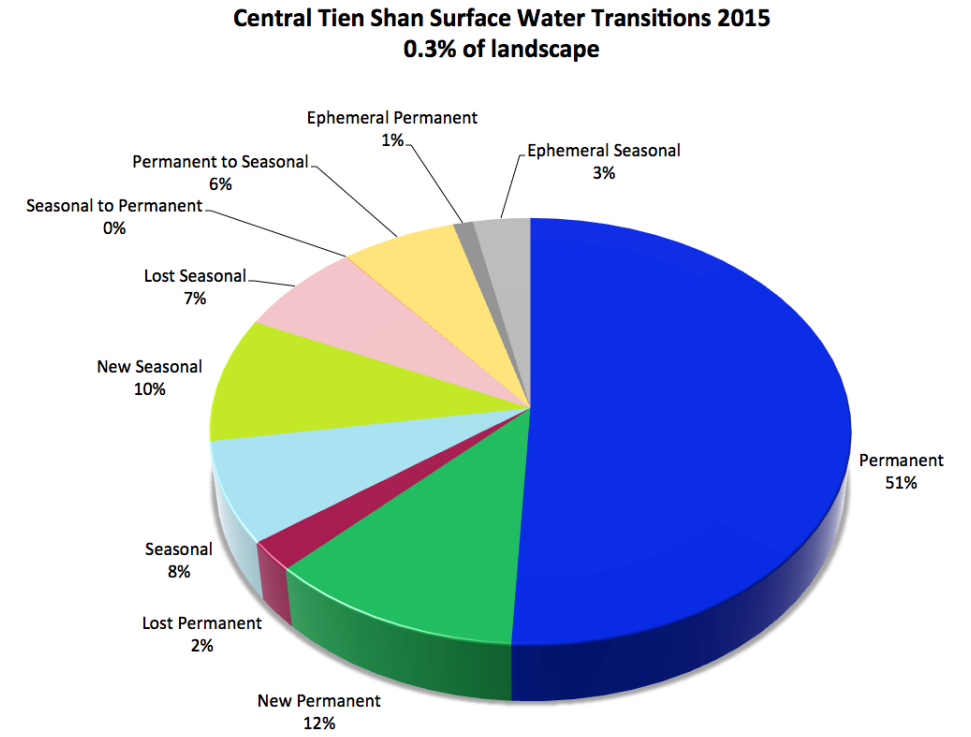
- 63% of the open water surface was stable (permanent 51 %, seasonal 8 %, ephemeral 4%)
- 9 % of the open water surface disappeared (permanent 2%, seasonal 7 %)
- 22 % classified as new surface water (permanent 12%, seasonal 12 %)
- while 6% of all open water surface changed from permanent to seasonal.

These shifts can be explained because most of the open surface waters are located around the very active floodplains that are fed mainly by snow and glacial melt.

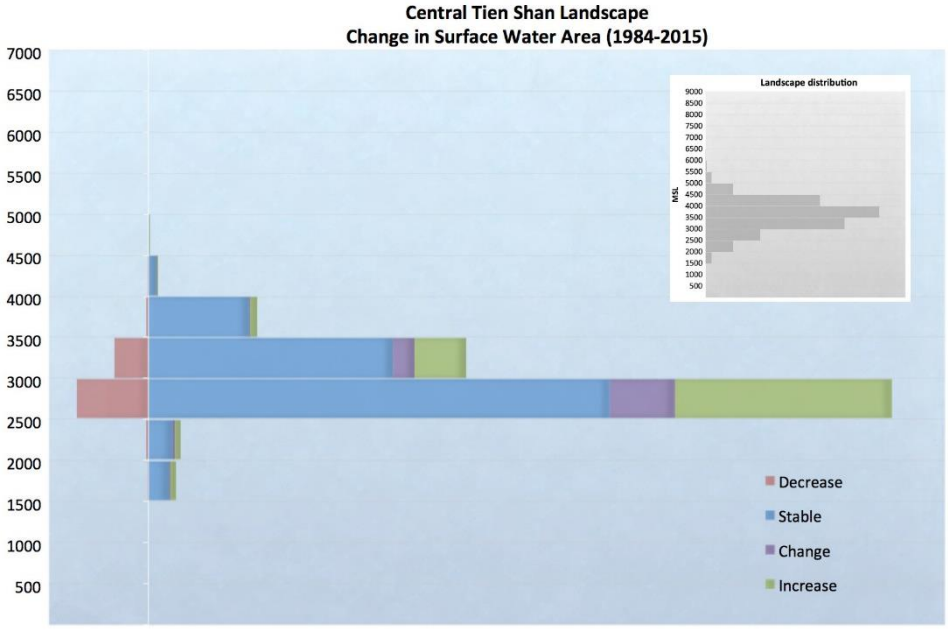
Figure 9: Water provision functions; Global surface water transitions (1984-2015) (Forrest et al. 2017)
a)



b)



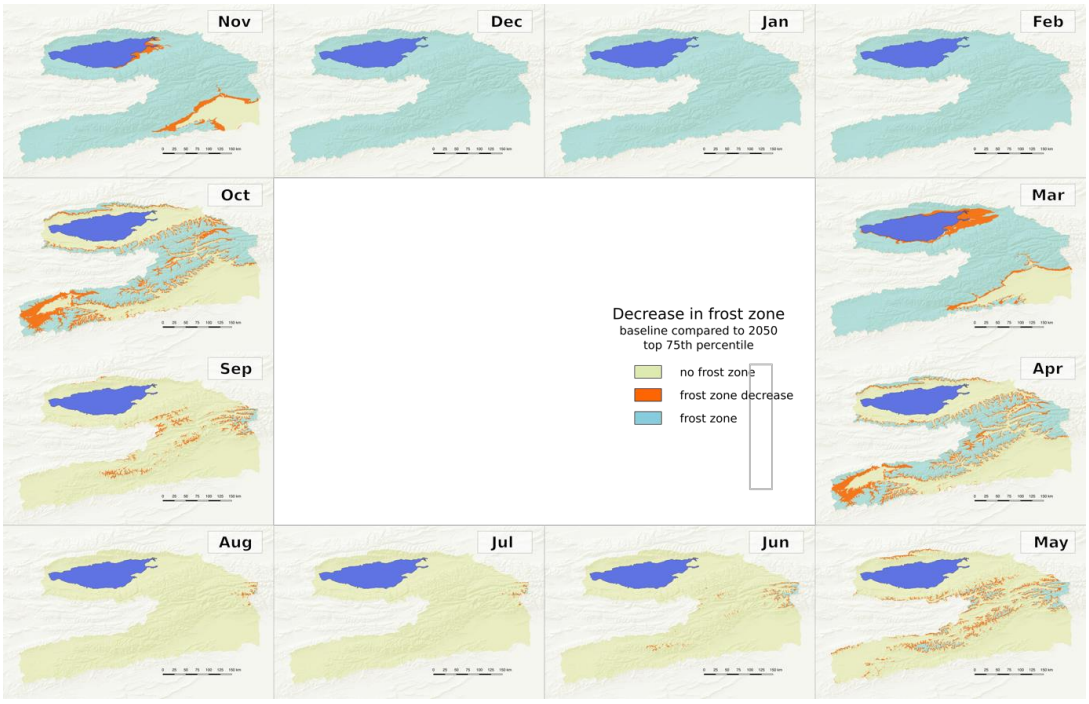
c)



2.3.2: Changes in freeze extent

Winter is prolonged in the CTSL with the elevations above 3000m being in permafrost. The ridges and mountaintops above c. 4700m often are permanently covered in snow. The top of the soil freezes and the freeze line is defined by elevation in any given season. The models predict that between spring and autumn, freezing in many of the productive areas of the CTSL may change. That is, the spring thaw is likely to come early and the autumn freeze is likely to set in late (Figure 10). This is likely to have unknown implications on forage productivity in the snow leopard range.

Figure 10: Decrease in monthly freeze extent under temperature rise (Forrest et al. 2017). a) monthly mosaic and b) loss of freeze-months
a)



b)

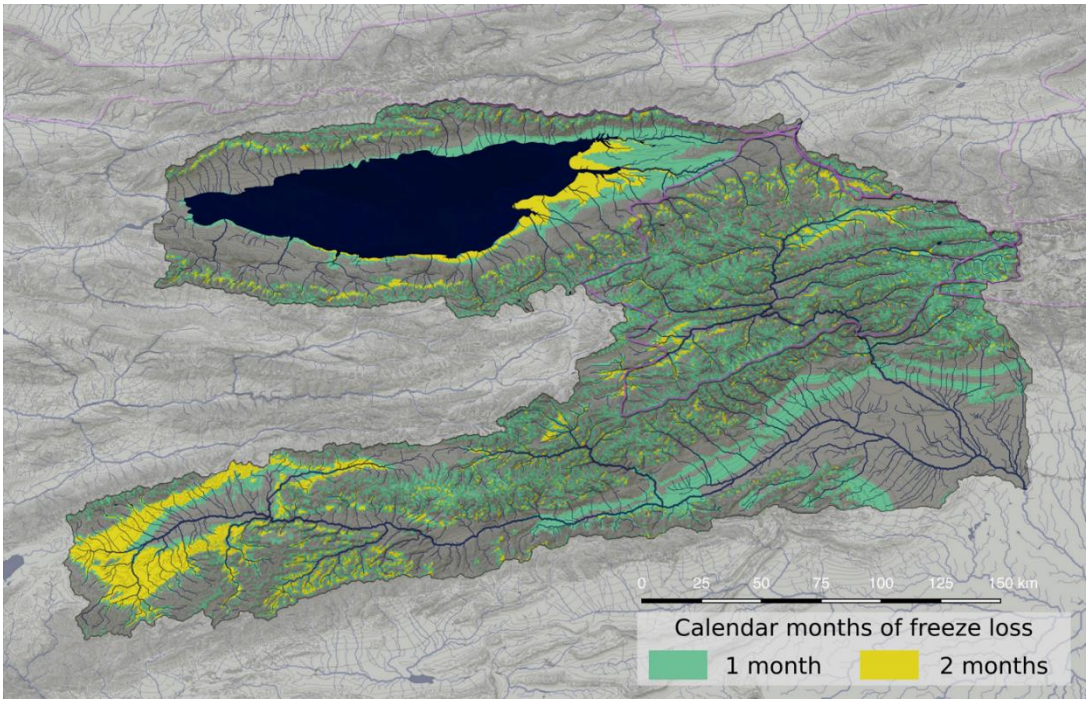
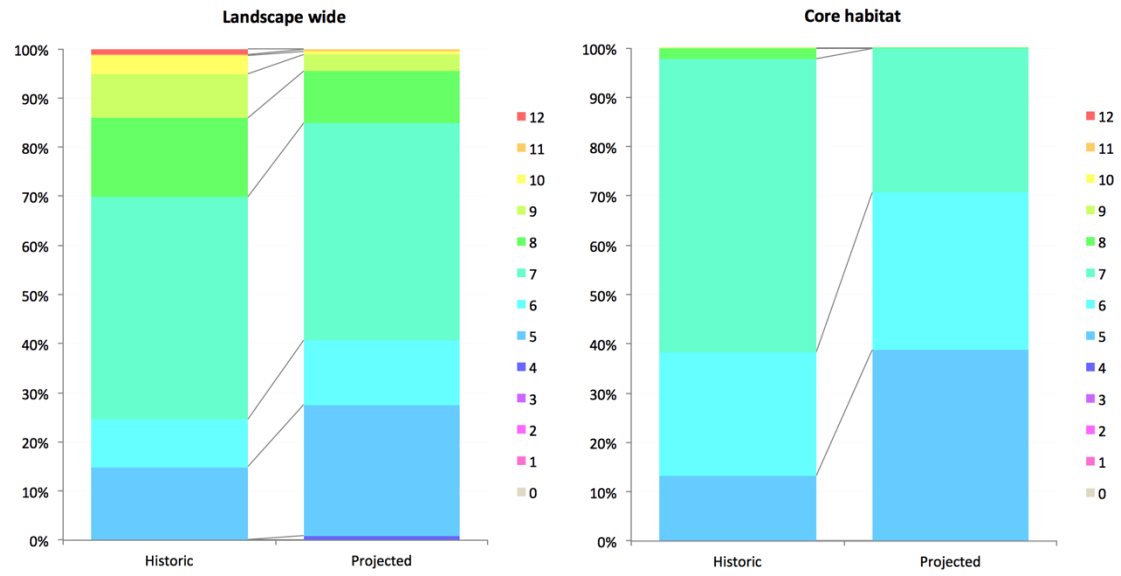


Figure 11: Overall duration of historic winter versus projected winter months (Columbia-CCSR projection 2050 top percentile).



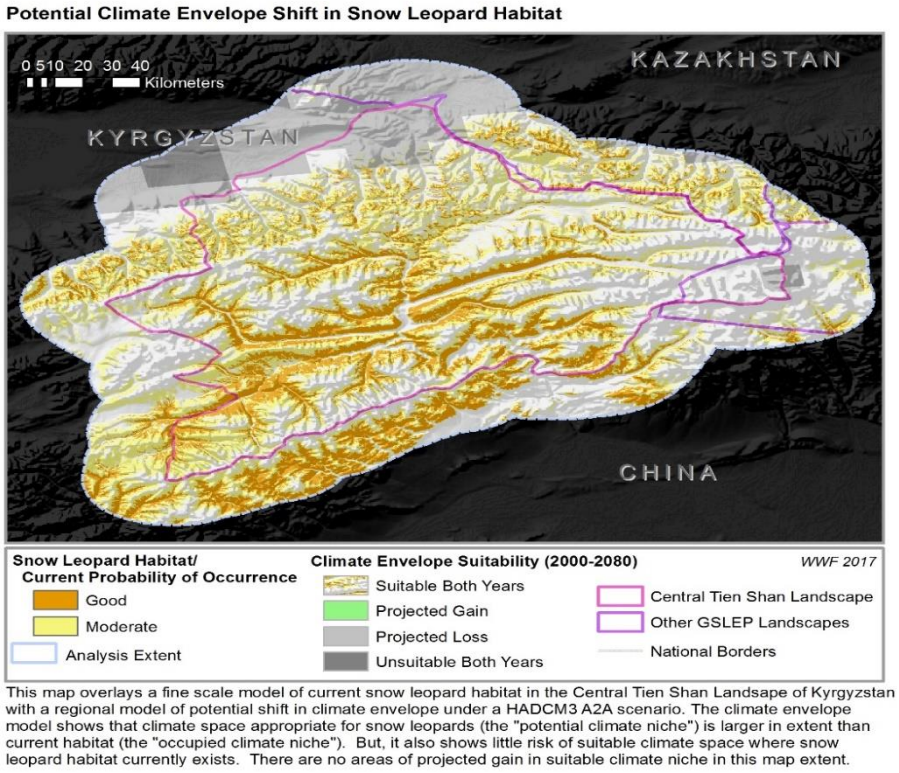
The main trends these graphs (Figure 11) show that the core snow leopard habitat (See Chapter 6) rarely contains areas with more than 8 months of winter (while this covers ~30% of the landscape historically). No part of the landscape experiences less than 5 months of freeze and under the temperature projection, this will not change. Under projected change in temperature, overall, the core habitat will experience a decrease in winter duration, but will stay within the historic upper and lower limits. Where historically the majority of the snow leopard landscape would experience 7 months of winter (~60 %), in the projections this area would halve (~30 %).

Under the projection, the area that experience 5 months of freeze (12 %) would increase to about ~40 % in the core habitat. Yet, the main change here is not only the direct link to number of freeze months, but how this transition will impact the landscape; snowfall, snowmelt, glacial melt, permafrost coverage and depths.

2.3.3: Snow leopard and climate change

Using the projected climate change scenarios on snow leopard occurrences it is seen that their habitat will have little change (Figure 12). That is, there will be almost no gain or loss to its habitat (Please see details of snow leopard habitat modelling in Chapter 6).

Figure 12: Changes in snow leopard habitat under high emission scenario (Forrest et al 2017).

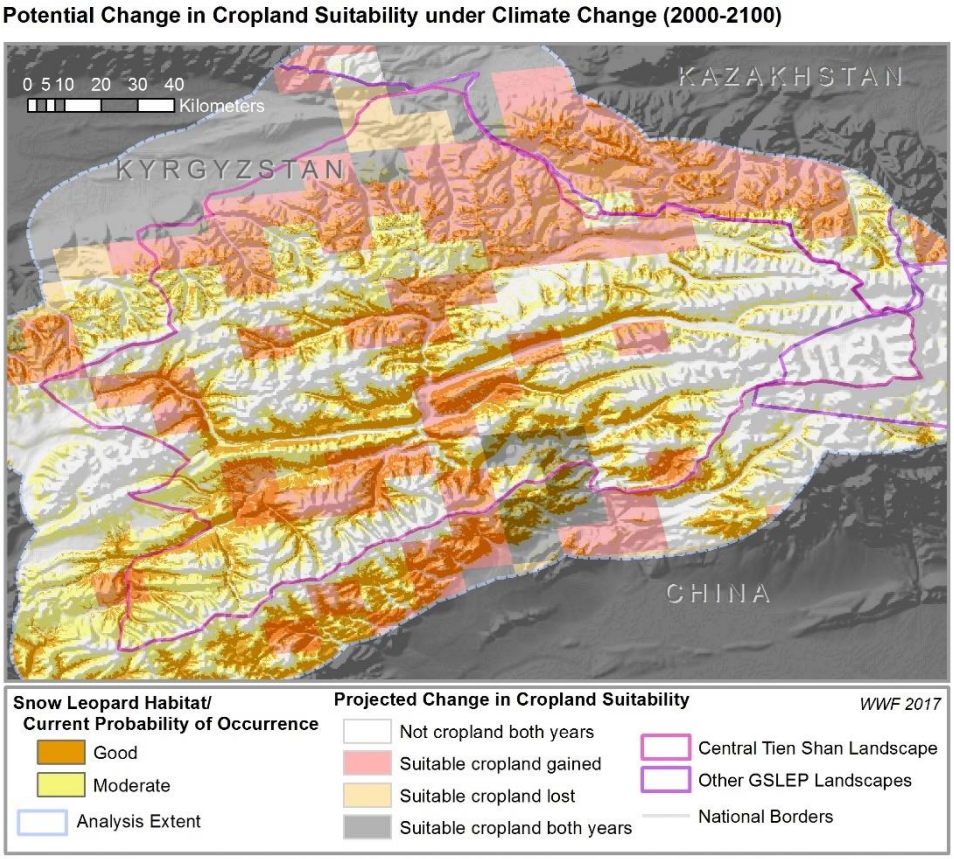


This map overlays a fine scale model of current snow leopard habitat in the Central Tien Shan Landsape of Kyrgyzstan with a regional model of potential shift in climate envelope under a HADCM3 A2A scenario. The climate envelope model shows that climate space appropriate for snow leopards (the "potential climate niche") is larger in extent than current habitat (the "occupied climate niche"). But, it also shows little risk of suitable climate space where snow leopard habitat currently exists. There are no areas of projected gain in suitable climate niche in this map extent.

2.3.4: Expansion of human imprint in snow leopard range.

This analysis shows current climate niche and potential change in the extent of the arable land (or cropland) climate envelope under a high emissions climate change scenario (Figure 13). Cropland is defined as all crops in the year 2000. The map of current arable land was drawn from a Global Arable Lands database (Ramankutty et al. 2008), and projected to the 2080's under a high emission scenario (A2A) using the HADCM3 General Circulation Model. These results suggest that in this landscape, suitable climate for arable land is likely to increase, potentially increasing habitat conversion and human wildlife conflict with snow leopards and their prey. Likewise, some areas downstream of habitat may become suitable for agriculture, which could increase pressure on water resources. These findings emphasize the need for snow-leopard friendly land use and water management planning and zoning.

Figure 13: Potential changes in croplands by the year 2100 (Forrest et al. 2017).

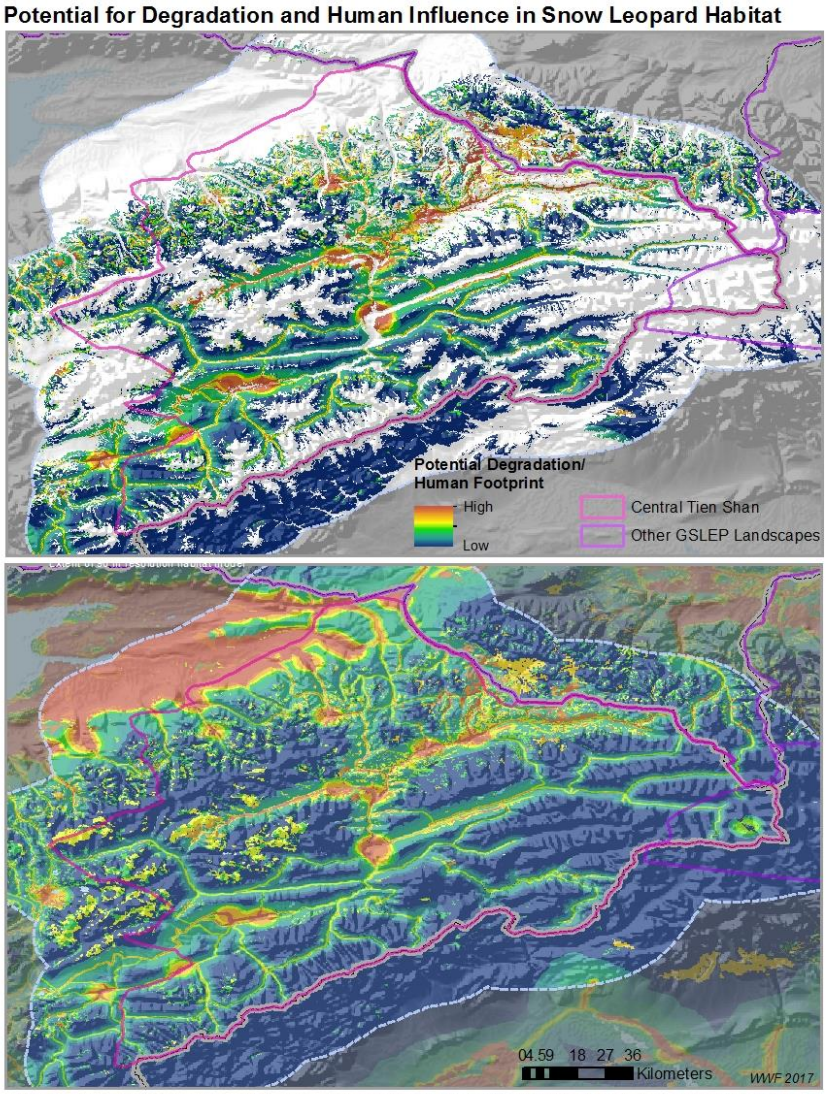


This map overlays a fine scale model of current snow leopard habitat in the Central Tien Shan Landsape of Kyrgyzstan with a regional model of potential shift in the climate envelope for cropland suitability under a HADCM3 A2A scenario to the year 2080-2100. The model predicts that the area of suitable cropland may increase and move upslope under a warming climate, potentially threatening snow leopard habitat with land use change and higher probability for human wildlife conflict.

2.3.5: Potential for degradation and human influence on snow leopard habitat

Using human habitation locations and sizes, and roads of different categories, Forrest et al. (2017) have plotted the potential zones of human disturbance. The assumption here is that areas closer to villages and road access are more vulnerable to human impacts such as biomass collection, poaching and livestock grazing. When overlaid with modelled snow leopard habitat (Figure 14), it shows zones in the north, centre and west of the CTSL where relatively high disturbances can possibly inhibit free movement of wildlife.

Figure 14: Human footprint in the CTSL. This is estimated primarily based on presence and categories of habitations and roads.



Potential degradation and human influence of snow leopard habitat is represented by current land cover and land use, cost distance to roads, and populated place density weighted by population. Map A shows potential degradation in snow leopard habitat, and Map B shows potential degradation across the entire landscape.

In summary, climate change effects in the CTSL will likely include subtle changes such as improved cropland suitability and shorter winters, accompanied by considerable uncertainty in future spring precipitation. Improved cropland suitability may cause people to immigrate to higher areas in the landscape and sow crops, thus possibly reducing habitat area and connectivity for snow leopards. Climate predictions anticipate shorter winters (and earlier springs), accompanied by high uncertainty about future spring water balances. The top 75-percentile future precipitation models indicate that spring will become the wettest season, while the lowest 25-percentile set of models indicates local runoff will remain minimal. Climate changes will upset snow- and glacial-melt water balances, as well as the coverage and depths of permafrost that occur in the mountains and high elevation valleys. Climate changes will also likely affect grassland community composition and invasive species prevalence, with unpredictable effects on snow leopard populations and their prey. Appropriate natural resource management alterations to anticipate such changes will include land use zoning, monitoring, and adaptive management.

2.4. People and Land use

2.4.1: Cultures and Ethnicities

Located in the heart of Central Asia, Kyrgyzstan is a mountainous country with total population of slightly over 6 million people (National Statistical Committee, 2016). With a presence of significant ethnic diversity, the nation's primary ethnic groups are Kyrgyz (73%), Uzbek (15%) and Russian (6%) (National Statistical Committee, 2017[5]). Other ethnicities include Ukrainians, Germans, Tatars, Kazakhs, Armenians, Tajiks, Azerbaijanis, Chechens, Belarusians, Georgians, Lithuanians, Moldavians, Latvians, Turkmens, Estonians, Uighurs, Jews, Dungan, Koreans, Turks and others. A Majority of the people are Muslims and Christians, Jews and other faiths are in a minority. There are some people who still follow ancient Shamanistic faiths in the country. It is considered that there were 40 Kyrgyz clans, which are now symbolized by the 40-rayed yellow sun in the center of the red flag. The lines inside the sun are said to represent a yurt. The dominant religion of Kyrgyzstan is Islam (91%) and most of the Russian population follow Russian Orthodox Christianity.

In the last 15 years Kyrgyzstan's total population has been steadily increasing, however, due to political, social and economic upheavals of 2005 and 2010, certain ethnic groups have shown a dramatic decline in its population. In the period from 1999 to 2009, the country's Russian population decreased by 30% and dropped by another 12% in the period from 2010 to 2016. Kyrgyzstan's population is very young, 40% of it being under the age of 19 years. There are about 470,000 people in the Issyk Kul Oblast at a density of c. 11/km^2. The decadal human population growth is at 9.2%; below the National figure, which is c. 16% (analyzed from National Statistical Committee Website). Most people in the CTSL are Kyrgyz (86%) with a small proportion of Russians (8%) and all the other ethnicities forming the remainder. Literacy in the country is high (c. 99%) and the gender ratio is marginally biased towards females. The level of unemployment in the oblast is low (c. 1%).

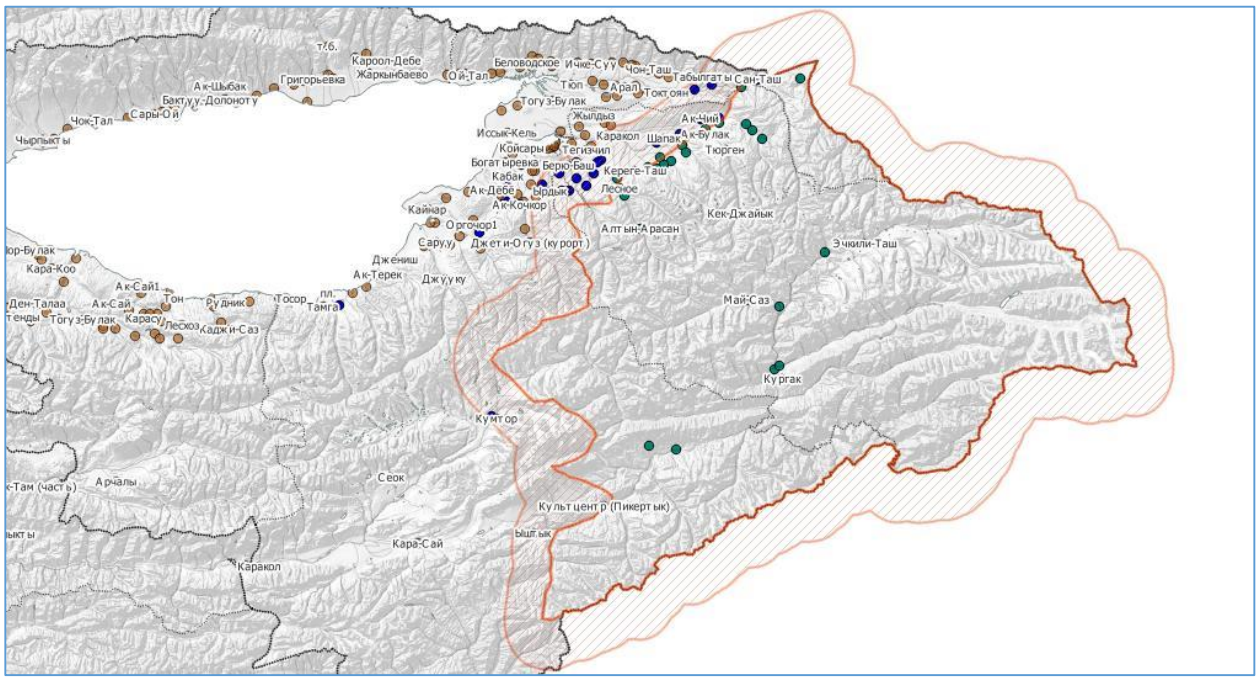
Issyk-Kul Region includes three towns, five urban-type settlements, and 175 villages. There are approximately 54 villages in the vicinity of the CTSL, mostly concentrated along the northern border and along the banks of the Issyk Kul Lake (Figure 15). Of these, 25 villages occur inside the CTSL and 29 within a buffer of 20 km from the CTSL boundary.

2.4.2: Land use

The primary land use in the landscape is pastoralism with cultivation limited to areas along the northern periphery and the villages just outside. There are three protected areas in the landscape that together occupy c. 34% of the area. Most of the remaining parts are Hunting Concessions and only 11% area is under no form of protection. There is land owned by the Forestry Fund (Goslesfund) that is managed through community-based organizations called leshozes. There are a few small game reserves that are possibly in the area but confirmation on their current status is not clear as yet. Further, the area is purported to be rich in mineral resources and mining is a potential activity that can happen inside the landscape, although there is no existing mining happening at present. It may be noted that two Soviet time townships, Enylchek and Aksharak, are also abandoned mining townships.

[5] National Statistical Committee (2017). "Total population by nationality", http://www.stat.kg/en/statistics/naselenie/, accessed June 6, 2017.

Figure 15: Human settlements in and near the CTSL



Some more details on selected types of landuse:
Pasture Use: Communities own livestock and the local self-government bodies of the government own the pastures. Villagers use pastures near their settlements during most of the year and may take them to farther pastures or jailoos during summer. The practice of pastoralism has seen substantial transformations since the Soviet times (see Section 2.6) and has in general become less organized and more intense. There is also considerable confusion in the manner in which pastures are being used at present and it includes issues such as the right holders, livestock owners, and actual herders on the ground being different people. Hence there can be a situation where there is a livestock owner from Bishkek, who has an arrangement with local pasture-right holders, and a hired herder from outside the landscape is grazing the livestock. There can be other permutations to such arrangements. This makes identifying the present stakeholders of the CTSL a very difficult task. The Kyrgyz Government and aid agencies have been continuously working to streamline systems and numerous reforms have been put in place, the primary one being the decentralization of decision making regarding pasture management (see Section 2.6).

Yaks in a in the CTSL. Photo by Kuban Jumabay-Uulu

Protected Area: Protected Areas (PA) in Kyrgyzstan are established under the Law no. 18 'On Protected Areas', 2011. This Law regulates the organization, management, protection and use, and also supervision and control over protected areas for the conservation of unique natural complexes and ecosystems, wild fauna and flora genetic resources, study of natural processes in the biosphere and control over any changes. The Act consists of 9 Sections divided into 32 articles and gives the rules and regulations for the state nature reserves, state natural parks and state wildlife sanctuaries. A separate Decree of the President of the Kyrgyz Republic governs the establishment of Biosphere Reserves ('On Biosphere Reserves in the Kyrgyz Territories', May 1999). In the CTSL there are three protected areas, the Sarychat Eertash State Nature Reserve (c. 1,490km^2; established 1998), the Karakol State Nature Park (382km^2, established 2001) and the new Khan Tengri State Nature Park (c. 2,758km^2, being established in 2017; see Figure 2, Chapter 1 for map)). Consumptive use is banned or regulated in these PAs, however, in the State Nature Park's allow regulated tourism activities. The Sarychat Eertash SNR has a 720km^2 inviolate 'core' zone and an elaborate system of zones and corridors is being established under the Khan Tengri Management Plan steered by UNDP, Kyrgyzstan.

Hunting Concessions: There are seven Hunting Concessions in the CTSL that surround the Sarichat Eertash SNR and border both the Karakol SNP and the Khan Tengri SNP. Hunting concessions are purchased on private lease from the Department of Rational Use of the SAEPF by hunting companies for a 15-year period, who then obtain licenses based on their wild ungulate populations. The primary species hunted are the Marco Polo sheep and the Asiatic ibex. The revenue generated from this activity is supposed to be shared between the government, the company and the ayil okmotu where the hunting took place (See Appendix 2 for more details on the hunting industry in the country).

Tourism is restricted to mountaineering in the eastern part of the CTSL, while other forms of tourism are negligible (Section 2.7). The Landscape has a tremendous potential for many sustainable and remunerative forms of tourism that can be encouraged and are dealt with in this Plan.

25. Economy

The conditions for the development in Kyrgyzstan after they gained independence in 1991 were primarily determined by the country's geographic location (being landlocked and basically far away from economic hubs), its natural resources and the inherited institutional and structural remnants of the Soviet Union (Mogolevsky & Omorova 2011).

Ungulate survey by researchers. Argali are visible on the plains in the background. Photo by Kuban Jumabay-Uulu

The collapse of the USSR forced Kyrgyzstan in a transitional process from a planned to a market oriented economy, leading to distinct changes in the country's economic structure. The transition in Kyrgyzstan was undertaken in the form of a rapid transition strategy, starting with large-scale reforms, including the privatization of state-owned enterprises, restructuring exchange and trade systems (introducing a liberal trade regime) as well as enterprises and financial institutions, ending price control, creating a national currency and eliminating most of the capital controls. But like in many other CIS countries, Kyrgyzstan experienced a serious economic recession in the early nineties, in the first years after gaining independence, resulting in high rates of unemployment, hyperinflation, falling wage levels and thus, increasing poverty and inequality. Between 1998-1999 the negative consequences peaked in a financial crisis, further catalysing poverty growth, macroeconomic destabilisation and external indebtedness. After that, the economy started to recover and the economic growth increased gradually since then, even though political instabilities (for instance due to the revolutions in 2005 and 2010) and external impacts let the country's economy remain vulnerable. Nevertheless, poverty could be reduced since the 2000s, thanks to annual economic growth rates averaging about 5%, basically driven by an increasing productivity in the agricultural and the service sector (International Labour Organisation 2008).

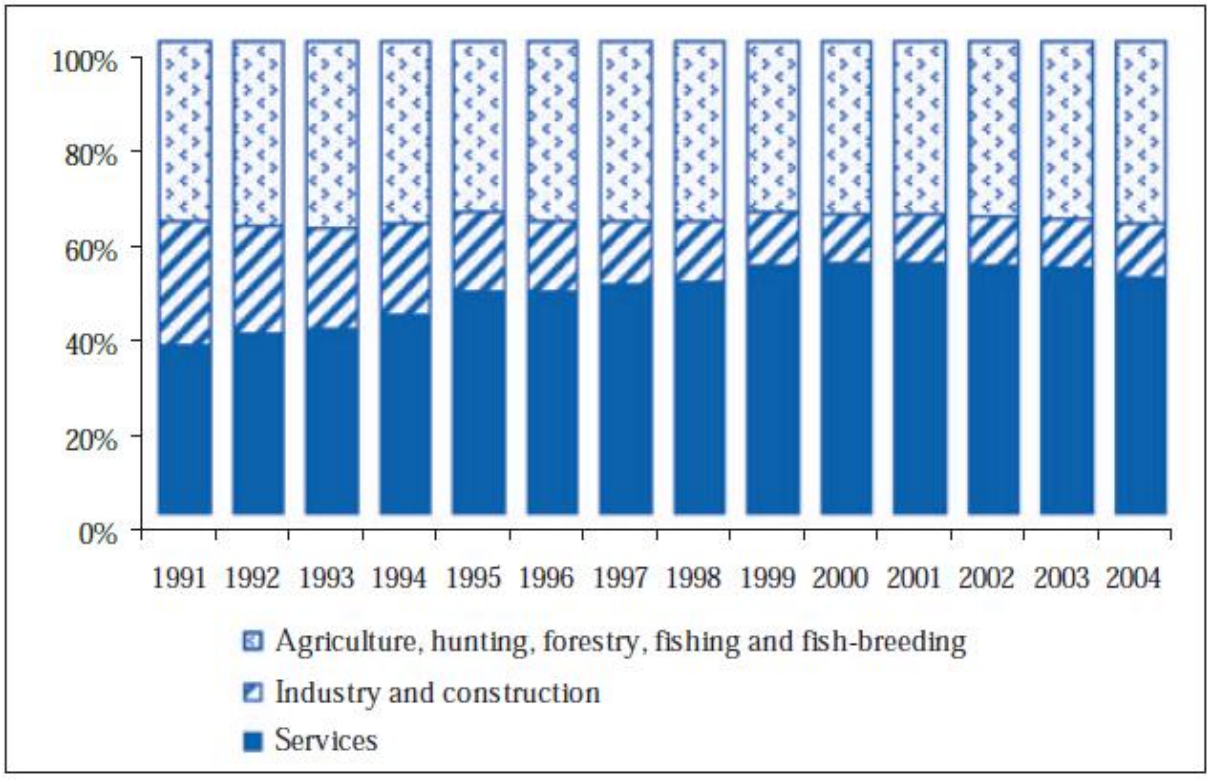
At present the GDP growth rate has decreased steadily down to 2.2% in 2016. In 2014 the unemployment rate amounted to 8% and the people living below the poverty line was estimated

at 32% in 2015. Public Debts accounted for almost 70% of the total GDP in 2016. In the same year the service sector contributed about 56% of the GDP to the national economy (tourism sector included), followed by the industry sector with 26% and the agriculture sector with 18% (CIA 2017). The Kumtor Gold Mine has to be mentioned at this point, as it is the most important stakeholder for the mining industry in Kyrgyzstan and located close to the CTSL. In contrast to the sectoral GDP distribution, the labour force distribution across the three different sectors since independence in 1991 was different (Figure 16).

The contribution of agriculture and allied has remained constant, with a recent reduction in the labour force working in industry, with a corresponding gain in the service sector.

Another important contributor to the Kyrgyz economy is made by the remittances of Kyrgyz People who work abroad. KNOMAD (Global Knowledge Partnership on Migration and Development) estimated that Kyrgyzstan was ranked the 2nd place in 2014 behind Tajikistan as Top-Remittance Country according to the share of the GDP with 30.3% (Tajikistan 41,7%) (KNOMAD 2016).

Figure 16: Labour Forces in the 3 main economic sectors between 1991 – 2004. International Labour Organisation 2008.



As can be seen, the agricultural sector is still the main source of employment for people in rural areas and also in the Issyk-Kul region it is estimated that about 50% of the working force is employed in this sector (national average has been 32% in 2016). According to Kyrgyzstan's National Sustainable Development Strategy and its National Export Strategy, the agricultural sector and the export-oriented agribusiness is highly prioritized by the government as well. Most of the products are basically exported in other CIS countries.

Due to an increasing agricultural commercialisation more foreign investors got attracted by the Issyk-Kul Oblast, seeking for partnerships with local producers and associations, even though many agricultural enterprises do still lack capacity and experience to establish themselves in the international markets. However, it has to be clarified that the foreign investment rates in Kyrgyzstan in general are low and despite that fact, further economic development is also hampered by corruption on all levels (The World Bank 2016).

Survey team in the CTSL. Photo by Kuban Jumabay-Uulu

The Central Tien Shan Area is also characterized by a dominating agricultural sector, although the service sector is also relevant to the regional economy, especially in regard to the tourism sector with places like Karakol, Jeti Oguz or Jyrgalan.

2.6. Livestock and Pastoralism in the Central Tien Shan Landscape[6]

Pastoralism is one of the primary land uses in the Central Tien Shan Landscape (CTSL). However, it is often found to be in conflict with conservation goals. The CTSL Management Plan aims to work with pastoralists to manage their lands in a manner that does not harm wildlife, that resolves conflict between local people and wildlife, and that increases economic benefits to local communities through development of existing markets as well as new ones that include value added agro-products, tourism and hunting. This chapter aims to understand the current situation regarding trends in livestock population, as well as challenges and opportunities for pastoralism in order to achieve a mutually beneficial management plan.

2.6.1. Ecological, socio-economic and cultural role of livestock and pastures in Kyrgyzstan

Pastoralism in Central Asia has been practiced for over 3000 years (Bacon, 1954). Pastoral resources and pastoralism are the core for Kyrgyz livelihoods, culture and traditions (Undeland 2005). Kyrgyz nomadic tribes keep different livestock types (horses, sheep, goats, cattle, yaks camels and donkeys) for multiple purposes like transport, wool, food (meat and milk) and materials to make the Kyrgyz mobile houses (Kyrg: boz ui), housewares and clothes. As indicators of household wealth and food security, livestock also serves as investment and capital for important family occasions (e.g. weddings and funerals).

Livestock husbandry still plays a crucial role in supporting local and national socio-economic development, even after the number of people directly engaged in herding decreased significantly due to forced settlement of Kyrgyz communities during Soviet collectivization (Undeland 2005). In spite of this, livestock husbandry remains one of the main sources of income for rural households, employing about 60% of the population of Kyrgyzstan. In 2016, the contribution of agriculture (livestock husbandry and crop production) in the GDP was 3.5 billion USD contributed 17.5% of the national GDP and 30% of labour resources (Ministry of Economy 2017).

[6] Chapter led by Zhyldyz Shigaeva, MSRI, UCA, with inputs from Yash Veer Bhatnagar and Marc Foggin

A young argali male captured on a camera trap. Photo by Kuban Jumabay-Uulu

Pasturelands are a major land use type in Kyrgyzstan, covering more than 9 million ha (c. 45% of geographical area and 85% of agricultural land) and providing various ecosystem services. Apart from providing forage to sustain livestock, the vegetation of pastures protects soil from erosion, provides habitats for wild fauna and flora, and acts as a major carbon sink. In addition, pastures have touristic and recreational value in the Tien-Shan landscape.

2.6.2. Historical perspectives on pastoralism

2.6.2.1. Pre-Soviet practices

Since ancient times, nomads were organized in nuclear families, kin and tribal groups. Tribal leaders allocated specific pasture plots to families, who were rarely allowed to operate outside of them (Undeland 2005; Jacquesson 2010).

Vast areas of pastureland were used each season when livestock was moved within and between ecological regions of different altitudes to take advantage of seasonal changes in natural vegetation from summer to winter. Transhumance patterns were generally inherited. Distances ranged from 20 to 200 km between encampments to take advantage of climatic factors, quality of pasture, water availability and type of animals (Barfield, 1993).

As a general pattern, during winter months, nomad communities stayed in winter pastures (Kyrgyz: kyshtoo) situated in lowland valleys. In the spring, families moved first to higher elevation spring pastures (Kyrgyz: jazdoo) and later to high altitude summer pastures (Kyrgyz: jailoo). In the autumn they returned back to jazdoo and then later to the winter camps (Schillhom van Veen, 1995; Farrington, 2005). Generally, the size of a herd

or flock depended on availability of winter pasture and fodder (Schillhom van Veen, 1995). Although pasturelands were common property of nomadic tribes, without individual rights of access and use, the highly decentralized decision-making processes seemed to avoid overgrazing since nomads used traditional knowledge for pasture use and management (Undeland 2005).

2.6.2.2. Soviet practices

The first significant changes in herding practices of Kyrgyz nomads came about with the arrival of Tsarist army in 1860 (Bacon 1954, Popova 1994, Schillhom van Veen 1995, Wilson 1997). Whilst some proportion of the Kyrgyz population had already settled by 1914 (Popova, 1994), it was not until Soviet collectivization in the 1930's, that mass settlement of Kyrgyz nomads took place as people were forced to work in collective/state farms and surrender their animals to the control of the state (Figure 17). Personal ownership of animals was prohibited and therefore many people slaughtered their animals in protest to collectivization policies (Barfield, 1993). In collective/state farms only herders and their families participated in seasonal livestock migration while other villagers stayed permanently in the villages. Decisions on pasture use and management were made by central government but its implementation was assigned on collective/state farms. This was an 'industrial' phase of livestock management.

The land use policy during Soviet times aimed at maximizing the agricultural production, leading to significant changes in land use practices and agriculture. By 1980, the number of sheep in the Kyrgyz Soviet Socialist Republic was 9.9 million (Encyclopedia of the Kirgiz SSR, 1982), making the region the third largest producer of meat and wool in the USSR (Wilson 1997, Farrington 2005, Ishenbekova 2010).

These land use changes included (Figure 17):

a) mechanization of transportation for livestock migration;

b) converting of some pastures to arable land for cultivation of fodder crops;

c) selection and cultivation of new breeds of livestock and crops.

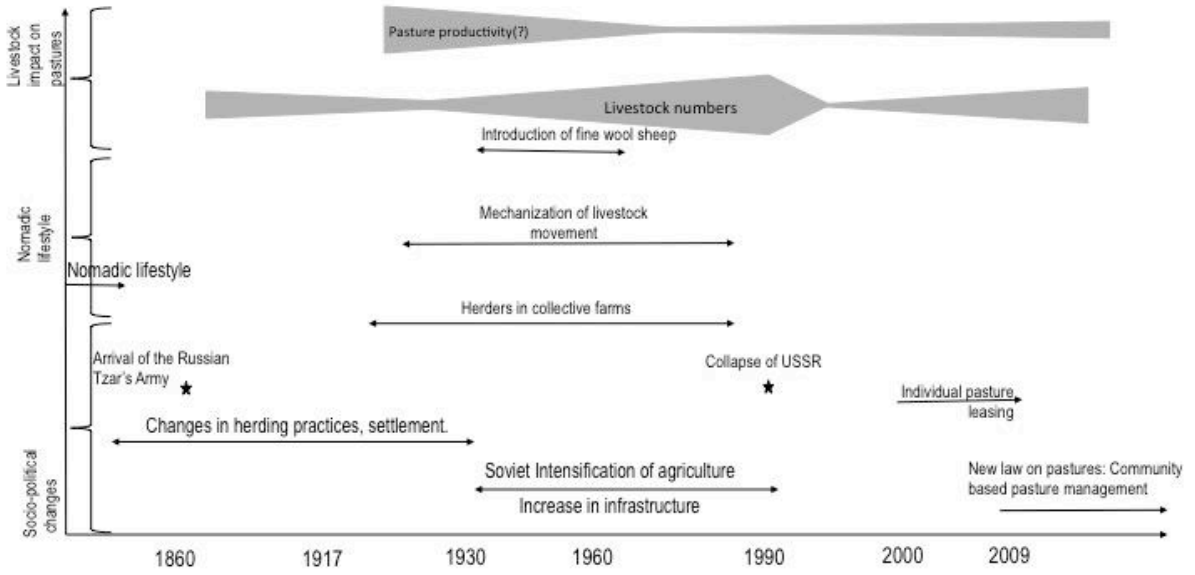
Mechanization of transportation

Collective/state farms organized vertical migration of animals. However livestock migration to distant summer pastures took place with the use of trucks (Farrington, 2005). This livestock transhumance was supported both with infrastructure (roads and bridges) and services for herders (rural medical points, winter houses at distant pastures, etc.) (Undeland 2005). Livestock could thus utilize pastures spread all through out the country, including remote mountain areas.

Converting pastures to arable land

Prior to Soviet times, herd sizes were limited by lack of fodder, especially during winter. As such, policies were implemented which transformed pastures into areas of arable land, intending to provide fodder for livestock. In addition, fodder was imported from other regions of Kyrgyzstan and even Kazakhstan. This allowed herders to maintain relatively large populations of livestock, that were earlier regulated by the severe winter season.

Figure 17: A schematic representation of pastoral history and its potential implications on conservation prepared based on recent literature. Thickness of the horizontal bars represents relative changes in pastoral production and livestock abundance.



Selection of new breeds of livestock and crops

Before 1930, the Kyrgyz fat tailed sheep was the common sheep breed, basically used for meat production. However, the priority goal of the Ministry of Agriculture of the Kyrgyz Soviet Socialist Republic (SSR) was to increase the wool production. In order to achieve this aim during the period from 1932 to 1966 new Kyrgyz Fine Wool Merino Sheep had been bred and introduced. However, the new breed required winter sheds for warmth and supplemental feed while the traditional breed could survive in harsh climate (Van Leuwenn 1994, Farrington, 2005). The Institute of Crop Farming of the Kyrgyz SSR introduced more than 70 new species of fodder, which were grown on state farms (Encyclopedia of the Kyrgyz SSR, 1982).

The cumulative effects of these Soviet policies for maximizing livestock production led to overstocking of livestock on pastures. It was estimated that livestock numbers in late Soviet era had more than twice exceeded the carrying capacity of winter, spring and autumn pastures (Fitzherbert 2000; Farrington 2005, Undeland 2005, Ishenbekova 2010). As a result of consequent degradation, the average productivity of summer pastures had decreased by 36%, spring-autumn pastures by 43% and winter pastures by 67% (Isakov and Yohanson 2016).

2.6.2.3. Post-Soviet: Individual lease pasture system

After the collapse of the Soviet Union, dramatic shifts in herding practices and institutional arrangements for managing pasture resources have taken place (Undeland 2005, Ibraimova 2009; Bichsel et al 2010, Crewett 2012).

All livestock of collective/state farms were privatized while pastures remained under state property. Due to a collapse in infrastructure, support systems and fodder supply, the herders could not maintain their stocks and many livestock were slaughtered, leading to

a sharp decline of 62 % in sheep numbers (Figure 18). Long distance livestock transhumance stopped because households couldn't afford the cost of moving to remote pastures. Roads to distant pastures were no longer maintained, leaving distant pastures inaccessible. Families could no longer rely on services provided by the state farms to mobilize herders and many people now did not wish to move away from villages in the absence of essential services in pasturelands. As a result, farmers often used the near-village pastures all year round that consequently became degraded, while remote pastures probably remained under-utilized[7].

A herd of male Asiatic ibex captured on a camera trap. Photo by Kuban Jumabay-Uulu

Many households returned to rearing Fat tailed sheep used for meat from Fine Wool Merino Sheep introduced in Soviet times, because of decreasing global market prices for wool and increasing demands for meat from urban areas of the country.

Although pastures remained under state ownership, the Land Code (1999) determined three types of pastures under a separate government authority: near-village pastures under responsibility of local authorities (ayil okmotu), intensive pastures under district (rayon) administration and remote pastures under province (oblast) administration (Giovarelli 1998; Childress et al. 2003). In 2002 legislation introduced individual pasture lease rights. According to this legislation, every local inhabitant could lease certain types

[7] This is the typical situation for Kyrgyzstan, however for CTSLS pasture use and management should be investigated as separate case study as for example such remote villagers as Ak-Shirak and Engelchek already used their remote pastures

of pastures (near-village, intensive and distant) by addressing appropriate authorities responsible. Leasing periods were 5, 10 and 49 years (Undeland 2005, Liehti 2008).

However, this leasing system was repeatedly criticized (Ludi 2003, Liehti 2008, World Bank 2008, Steimann 2011, Kerven et al 2011, Crewett 2012) for not allowing livestock transhumance, confusion for pasture users on matters of authority, sub leasing of pastures which led to conflict between different pasture users, complicated rules and procedure, bureaucratic hurdles and lack of necessary skills as well as lacking knowledge and power to properly implement the law. Such failures in pasture governance forced a shift from this individual pasture lease system to the community-based pasture management where all responsibilities for pasture management were transferred to ayil okmotu.

2.6.2.4. Post-Soviet: community based pasture management system

Following the individual pasture leasing system introduced in 2002, the National Law on Pastures was adopted in 2009 and amended in 2011, leading to the development of a decentralized, community-based pasture management system (see Figure 17). This law placed most resource management decisions at a spatial scale more suited to the socioecological context, that is, at the pasture level, rather than that of households or individuals. This realignment of governance systems and spatial aggregation of land management units reflect the biogeophysical scale at which environmental (climatic) variability occurs in mountain areas and the consequent need for livestock mobility if herders wish to respond effectively to variable pasture conditions (Jacquesson 2010; Crewett 2012; Rahimon 2012). The expectation held by the government and development donors is that these changes will lead to more effective and transparent management of pasture resources in accordance with local ecological and social realities. Yet after 5 years of implementation, decentralized/community pasture governance continues to be developed through a process of institutional bricolage (i.e step-by-step, piecemeal construction) and has yet to show sufficient tangible results to meet most people's expectations (Cleaver 2002; Sehring 2009; Shigaeva et al 2016). How implementation of new pasture law (2009) was realized in practice and current challenges of functioning of community-based pasture management will be described in greater detail in Section 2.6.4.

2.6.3. Growth in livestock populations

2.6.3.1. Trends in LS livestock population (national & Issyk Kul oblast level)

This section focuses on the analysis of trends in livestock population at country and provincial levels and the implications of uncertain livestock estimates.

Livestock dynamics from Soviet times to now

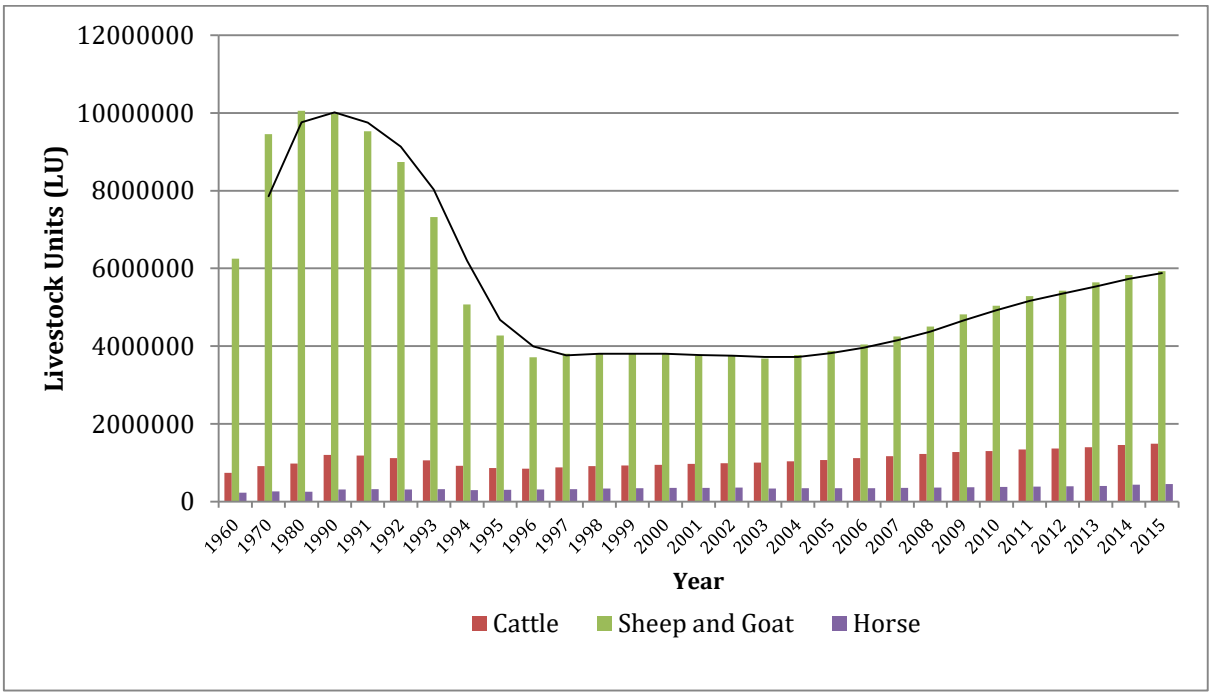
Throughout the history of animal husbandry, livestock populations have been altered due to socio-economic and institutional transformation.

The first drastic reduction of livestock occurred in 1930's because of widespread famine, collectivization and settlement of Kyrgyz communities (Popova 1994, Soucek 2000, Farrington, 2005). From 1930 to 1932 the number of sheep and goats reduced from 3.1 million to 950,000 in Kyrgyzstan, although the number of livestock did slowly increase after this sharp decline, it had not fully recovered until the 1960's (Barfield, 1993).

Analysis of official statistical data provided by National Statistical Committee (2017) showed four distinct periods in animal husbandry development.

First period (1960-1990) is characterized by rapid population growth for all types of livestock due to Soviet intensification of agriculture. At the end of 1980's the number of sheep and goats reached their peak of about 10 million heads and 1.2 million cattle or 3,511,862 livestock units[8] (see Figure 18).

Figure 18: Trends in livestock population of the Kyrgyz Republic between 1960 and 2015. National Statistical Committee 2017.



The second period (1990-1996), characterized by dramatically declining livestock numbers due to the collapse of Soviet Union and breakdown of collective/state farms. The number of sheep and goats during this period of six years reduced by 62% from 9.96 to 3.72 million heads and by 30 % from 1.2 million to 847,641 of cattle (Figure 18). However, at the same time the number of horses remained steady (around 300 thousand).

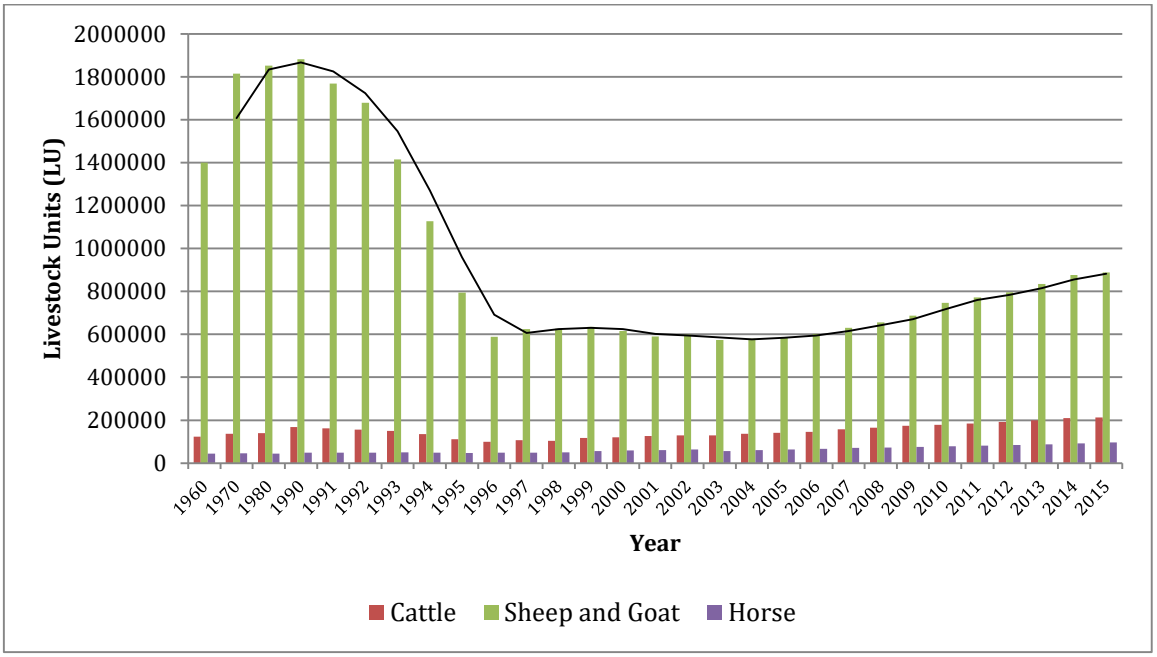
The third period (1997-2005) is a stable one for all types of livestock, while in the fourth period from 2005-2015 all types of livestock grew steadily, and by 2015 had increased by one and half times from the second period. In 2015, according to official data (National Statistical Committee, 2017), there were 5,929,529 sheep and goats, 1,492,517 cattle and 449,614 horse or 3,128,037 livestock units in Kyrgyzstan. Notably, as of 2015, the number of sheep and goats had reached levels similar to those of the 1960's, while the number of cattle and horses had doubled in comparison with 1960. Estimates by researchers suggest these modern figures may be underestimates and the values may be many times higher (Ajibekov 2014, CAMP 2016). This can be explained by an increasing reliance on rearing cattle and horses for dairy products and transportation, respectively.

Analysis of livestock trends at the Issyk Kul province level showed similar patterns with growth and falls of livestock (Figure 19). The first period of sharp increasing of small ruminants was from 1960-1990. In 1990 the number of small ruminants (sheep and

[8] Livestock unit: 1 cattle, horse and yak equal to 5 sheep and goats

goats) had reached their peak of 1,881,768 heads, 167, 901 cattle and 48,448 horses or 592,703 livestock unit (Figure 19).

Figure 19:. Trends in livestock population of Issyk-Kul Oblast. National Statistical Committee 2017.



During 1990-1996 the population of sheep and goats decreased by 69% from 1,881,768 to 589,360 heads and by 40% from 161,917 to 100,150 of cattle (Figure 19). The number of horses remained stable.

Since 1997 the number of all types of livestock has been growing steadily. In 2015, the number of sheep and goats in Issyk-Kul province reached 888,413 heads, cattle 212,816 and horses 95,730 or 486,229 livestock units. According to official statistical data (National Statistical Committee, 2017) the number of sheep and goats in Issyk-Kul province has not reached the number of 1960, while the number of cattle and horses increased by 2 and 1.7 times compared to 1960.

Thus, in Kyrgyzstan and Issyk-Kul province in particular, livestock has been increasing. According to official data, livestock units have been increasing by 37% in Kyrgyzstan and 38% in Issyk-Kul province for the last 15 years. However recent research (Ajibekov 2014, Shigaeva et al 2016) and reports (CAMP 2016) have highlighted that households have often hidden actual numbers of livestock in order to avoid paying for grazing on pastures. According to some observations (Ajibekov 2014, CAMP 2016) the real number of livestock is 30-50% higher than pointed out by households. By these estimates, the actual number of livestock in Issyk-Kul province, especially sheep and goats may be 1.15 -1.33 million - almost reaching the peak numbers of the 1990's.

Miscalculation of livestock populations is believed to have arisen due to a number of factors. These include the undocumented movement or trade of livestock between villages and areas of pastureland and the donation of livestock from, often rich and powerful, urban dwelling individuals to relatives living in rural areas.

An adult male Asiatic ibex in the CTSL. Photo by Kuban Jumabay-Uulu

Such underestimation of livestock numbers has led to a) incomplete vaccination programs and consequential spread of diseases and, b) inaccurate calculation of pasture carrying capacities.

According to official data (National Environmental Report 2012), the livestock density on pastures of Issyk-Kul province in 2010 was 1.5 livestock units per ha. However in reality livestock density can be much higher than identified, especially on near village pastures. It should be also noted that despite increasing livestock numbers, low productivity of animal husbandry still exists. Quality of livestock is also an important factor in the productivity of the industry. Reasons for low productivity possibly include insufficient amount and quality of fodder and inappropriate breeding leading to low productivity genotypes and breeds and a general lack of husbandry knowledge. Despite this, the

majority of farmers prefer to increase the number of livestock rather than bother about their productivity.

Reasons for increasing livestock

In Kyrgyzstan, livestock serves as an investment fund, whereby reproduction increases the value of this given 'fund'. Investment in livestock within the country allows quick and easy mobilization of capital. For example, if money is required for children's education, livestock is easily sold within the well-established market in the region. Additionally, livestock carries huge cultural importance, for instance they are used in different occasions (weddings, birthdays, etc.) and contribute to the maintenance of social connections between society members.

Labour migration to urban areas and abroad is also one of the reasons for increasing livestock as remittances sent back to home in rural places very often are used for investing in livestock (Schoch et al 2010). Culturally, livestock numbers also serve as an indicator of wealth.

Livestock, especially cattle, represent a fast means for increasing capital especially using the relatively cheap pastures. Some households may buy a small bull-calf in spring to sell in autumn for a profit after a summer of rearing (De la Martiniere 2012).

Increasing of number of horses can be explained by increasing demand for horse milk as well as increasing recreation places where people can ride on horses and drink mare-milk (Kyrgyz: kymyz). Besides, horses do not need much care and can be free ranging on pastures.

Increasing livestock numbers are considered as a tool for poverty mitigation. However more precise investigation into the distribution of livestock amongst households suggests that this strategy may not have the desired outcome. According Isakov and Thorsson (2015) the distribution of livestock among households are very unequal. For example, 1.1% of households in Jergetal Ayil Aimak own 16.8% or 161 livestock units (LU) per household . At the same time, over 60% of households own just 39% of livestock or 7 LU on an average. This situation seems typical for the majority of rural populations. This means that increasing livestock numbers may not necessarily lead to improve livelihoods of impoverished people but rather enhance the wealth of already rich households. Stakeholder consultations in Karakol revealed that some of the largest livestock owners are people from Bishkek. Concurrently increasing livestock numbers leads to greater pasture load, which without proper regulations and management, can lead to decreasing pasture productivity and pasture degradation, negatively impacting household incomes, especially in the long run.

2.6.3.2. Market influences in livestock population and composition

The dynamics of livestock numbers vary by season and year. In pre-Soviet times the number of livestock was generally controlled by availability of fodder; during the Soviet era numbers were controlled according to state planning and policy; whilst in post-soviet era it has been mostly market prices for fodder and meat that have controlled populations of livestock.

Currently, market demand is a key driver, encouraging the increase in livestock numbers presently being observed. As a result, common pastures are under intensive grazing pressure. Internal demand for meat stems mostly from the tourism sector of Issyk Kul province, during summer months, and from Bishkek (capital of Kyrgyzstan) and its

surrounding areas (Tilekeyev et al 2016). Over the last decade, the general trend of rising sheep production in the country has been accompanied by a rise in sheep meat prices (Tilekeyev et al 2016). However, in certain cases, the number of livestock has decreased. This is mostly due to temporary shortage of fodder in some regions. For example, in the case of drought conditions, fodder prices rise, thus negatively impacting sheep production. During such periods, farmers are often forced to sell or slaughter their flocks.

A snow leopard captured on a camera trap in the CTSL. Photo by Kuban Jumabay-Uulu

The export market is growing rapidly in Kyrgyzstan with external demand for meat coming largely from Kazakhstan, Russia and even Iran. According to USAID data (2011) export value of meat products from Kyrgyzstan increased from 93,000 USD in 2006 to 5,356,000 USD in 2010, a whopping increase of 98%. Although tourism sector is one of the meat demanders, in general meat consumption within the country has fallen since Soviet time; the National Statistic Committee[9] reported that consumption of meat in 2012 decreased to 37 kg per person per year compared with in 1990 when consumption was 54 kg per person per year. This is thought to be largely due to the growing export market and now only 20-30% of lamb produced is consumed inside the country (USAID 2011).

In Issyk-Kul province a tendency to keep cattle (bulls and dairy cows) has been observed over the last few decades. This trend may be explained by an increasing number of dairy enterprises to which households can easily sell milk. This growing trend has incurred changes in livestock composition and consequently, livestock load on intensity of use in the near village pasture's condition.

[9] http://www.24kg.org/economics/print:page,1,177287-v-kyrgyzstane-vyroslo-potreblenie-xleba-i.html

There are also seasonal variations in livestock numbers. Tilekeyev et al (2016) highlight that the number of sheep at the beginning and at the end of the year may differ by a factor as much as two. The number of livestock at the beginning of the year (mostly in February) is more than at the end of the year due to lambs being born earlier in the year. As such, up to 40% of sheep flocks often consist of gimmers under the age of a year. This season is regarded as "low" season because sheep are rarely sold during this time, and if at all, are done so to cover short-term expenses of individuals and provide for sowing crops. Therefore, prices for meat in this period are higher than in autumn.

In contrast the "high" season starts in August and September when sheep return from jailoos. Farmers try to sell adult animals and lambs up to one year of age, as long as they are in good condition after the summer. Generally, stronger animals (primarily rams) are kept for sale the next spring, when the expected prices on sheep are higher than in the autumn, due to the costs of fattening sheep. In comparison with other provinces of Kyrgyzstan, the price for lamb meat in summer remains high in Issyk-Kul, due to relatively high demand in the tourist season. Unfortunately, reliable data and research regarding horse meat production value chains is not available, although such research will be very important in understanding the current situation and forecasting future pasture loads on distant pastures.

2.6.4. Sustainability concerns

New pasture legislation (2009): mandates of main actors in community based pasture management

(This section is adapted from work by Shigaeva et al (2016) in the Naryn Oblast)

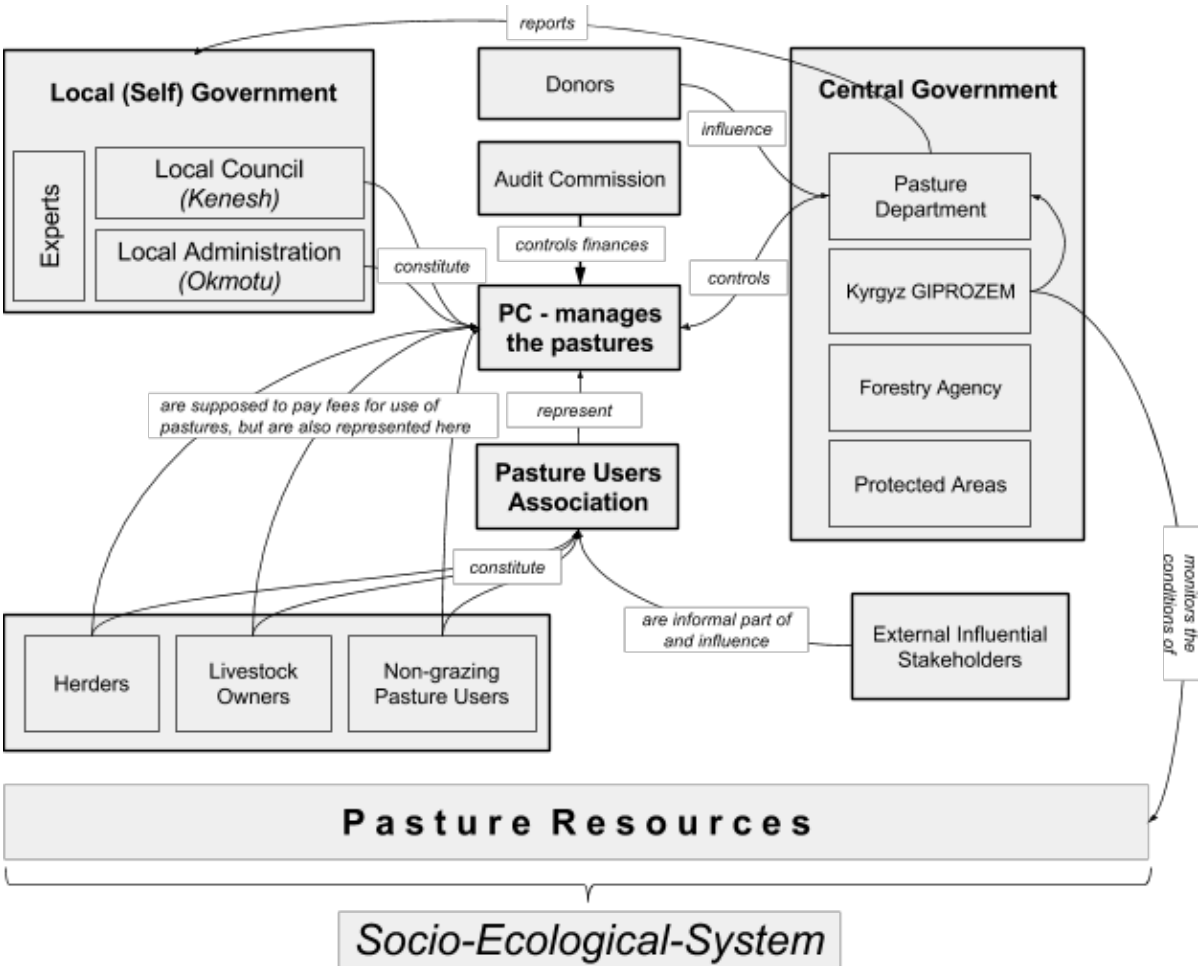
Increasing concerns about increasing degradation and the need to move towards a more sustainable pasture management regime, gave rise to the development of a new participatory Pasture Law in 2009. The Kyrgyz Government adopted a new innovative Central Asia pasture law that introduced a community-based pasture management system. This initiative aimed to devolve governance of pasture resources to local communities. Thus, it was anticipated that decisions would be made in a participatory and inclusive way, and that such a mode would lead to greater equity in access to pastures and consequently to optimal stocking rates on different pastures (Crewett 2015, Dorre 2015).

Under this system responsibility and control over all types of pastures were delegated to a newly established institution at the level of ayil aimak or (ayil okmotu), the Pasture Users Associations (PUA). According to the Pasture Law (2009) PUAs are public organizations open to all pasture users in a sub-district. Members of PUAs are local residents using pastureland for grazing livestock or for other livelihood purposes (eg. collecting herbs and berries, haymaking, tourism, recreation, hunting concessions, or beekeeping). Among those who use pastures, one can differentiate between direct and indirect users. Indirect pasture users comprise livestock owners, a category that includes almost all households in a sample of villages studied in Naryn Oblast (Shigaeva et al. 2016). Direct pasture users, namely herders, are mostly employees of the owners and a minority in each community. Livestock owners affect pastures through decisions about the number of animals to be assigned to a herder or to be sold or slaughtered. Herders, on the other hand, make a number of choices that affect pastures, including location of pasture (near the village, intensive, or remote) and the timing and duration of each stay. Thus both, the owners and herders may have differing but clear impact on livestock and pasture productivity.

Every three years at a public meeting, each PUA elects representatives to its own executive body - a Pasture Committee (PC, Kyrgyz: jait comitet). Other PC members come from the subdistrict government (the ayil kenesh or local council and ayil okmotu or local administration), others usually also present are specialists, especially in veterinary medicine or land use, who often also work in the local government administration (Figure 20). According to the Law on Pastures, the PC is responsible for developing annual utilization plans and 5-year pasture management plans (PMP). The PC decides the number of livestock that are allowed on a pasture and sets a price for that access (pasture ticket). The PC is also responsible for monitoring pasture condition, pasture use, and the use of pasture ticket revenues, which are intended to improve pasture conditions and to resolve conflicts. Financial oversight of PCs is provided by an independent Audit Commission, while the Department of Pastures monitors policy and regulatory matters and the PCs' role in pasture utilization. The KyrgyzGiprozem, a government institute, takes specific responsibility for monitoring pasture conditions, with support provided to PCs for accomplishing this work.

The Department of Pastures and KyrgyzGiprozem are under the Ministry of Agriculture, Food Processing Industry and Melioration.

Figure 20: Main actors and their mandates in pasture governance structure (from Shigaeva et al. 2016).



Other actors include the State Agency for Environmental Protection and Forestry (SAEPF) with ground-level forestry enterprises (leskhozes in Russian) and land owned under the

Forestry Fund. SAEPF administers forest and nature reserves and other protected areas. Herders can use pastures of the State Forestry Fund and for this purpose ayil okmotu has to make an agreement with the leskhoz about terms of the utilization.

Donor organisations such as ARIS support communities by investing in pasture infrastructure projects such as road and bridge maintenance, establishment of water points and canal construction, while also working towards improving their capacity to prepare the pasture management plans.

2.6.5. Pasture governance: challenges, perceptions and implementation of the pasture management plans

Pasture Management Plans (PMPs) are comprehensive documents that include information on livestock holding, pastures on which they have rights, pasture production, seasonal carrying capacity, problems they face, actions for pasture and livestock improvement, infrastructure improvement, monitoring and budgets. The primary funding for implementing the plans should come from the pasture tickets collected from the members and funds generated from some other sources such as hunting concessions.

In the project area pasture ticket price varied in different ayil aimaks: for sheep/goat 12-20 som per head, cattle 60-100 som per head, horse or yaks 60-100 som per head. If a hunting company is located on the pasture area of this ayil aimak they may be able to supplement their funds to some extent. In the landscape for example an aiyl aimak got c. 254,400 som from hunting concessions. Despite the establishment of pasture management plans for each ayil aimak, their implementation has been accompanied by different financial, legal and social challenges, as well as a lack of local capacities. Additionally, many PC's have experienced insufficient funding to properly realize pasture management plans and are therefore hampered in carrying out activities such as rehabilitation of pasture infrastructure (roads, bridges, etc.), pasture monitoring, veterinary services amongst others.

Analysis of 28 pasture management plans of PUA in the project area has shown that total pasture budget fund of these aimaks in 2015 was 10,810,566 som, averaging to an annual pasture budget fund of 386,092 som/PUA with a range from 52,950 som to 896,120 som. Pasture fund of each PUA depends on livestock numbers, pasture area and also economic ability of community members to pay for pasture tickets.

Two examples[10] of pasture fund expenses are shown in Figure 21. The first example was selected as annual average budget, while the second example was selected as the smallest pasture budget.

The largest portion of expenses (Figure 21a) covers salary of the Chair of pasture committee and accountant (30%) and social insurance fund (5%), as well expenses connected with PC activities such as travel (2%), transportation (3%), stationary (1%) and miscellaneous expenses (2%). Another large portion of expenses are due to land tax (14%) and leasing leskhoz pastures (17%). At the same time direct expenses for pastures use cover only road rehabilitation (20%) and herders' movement to pastures (6%).

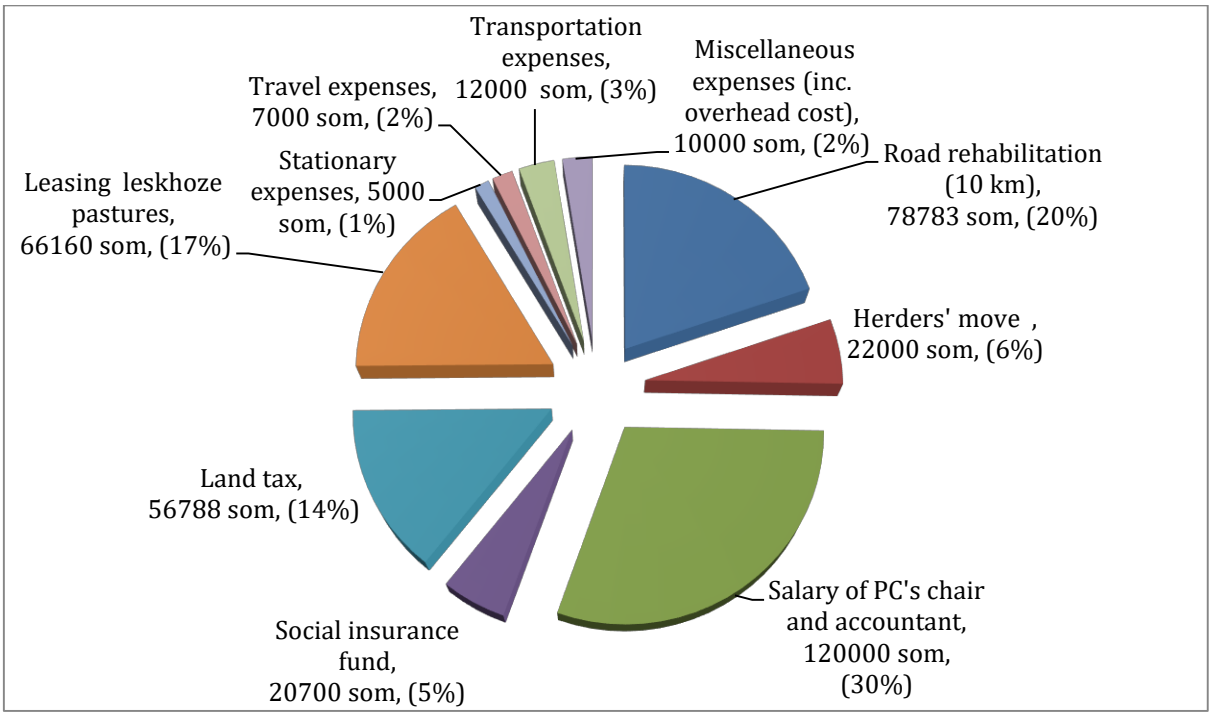
[10] Two examples of pasture budget funding are shown without pointing out actual names of ayil aimaks due to confidentiality issues

However as shown in Figures 21, some PUA's cannot afford rehabilitation of roads or financial support for herders' movement. More than half of the budget goes to salary and work of PC.

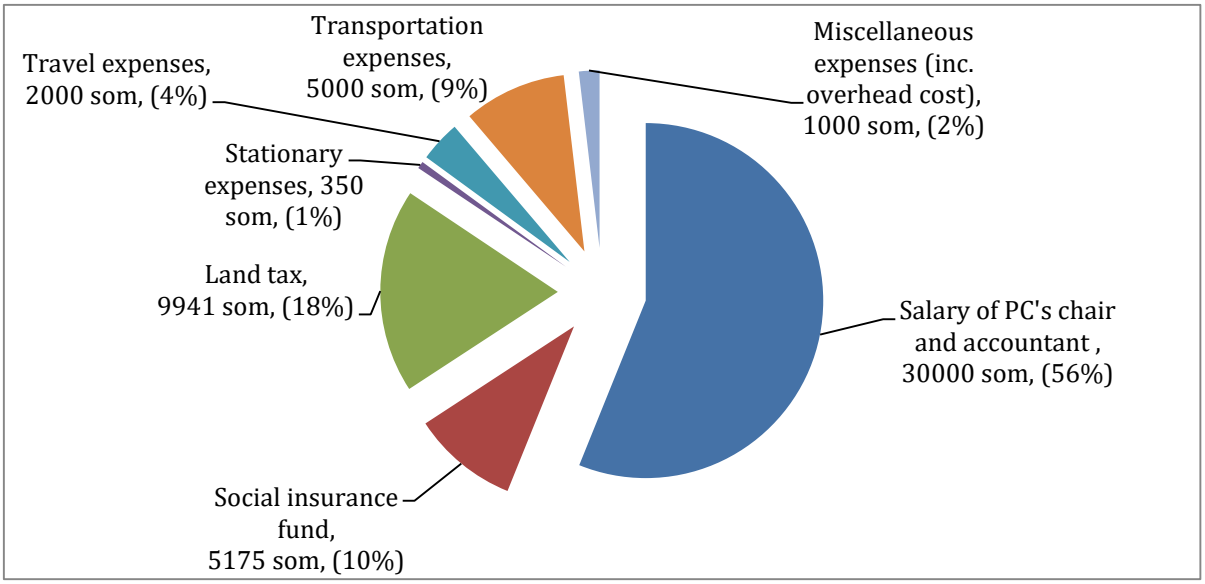
One of the reasons for some PUA's small budget is their small pasture area and low membership numbers. People have to lease pastures from leskhoz and don't pay to the PC. Another challenge for the PC is that pasture fund collected only 70-80% from planned funds as some households do not pay in time. Therefore many committees encounter problems for raising sufficient revenue to fulfil their needs.

Figure 21: Examples of Pasture User Association (PUA) annual budgets in 2015. a) A PUA with an average budget of c. 398,400 som and b) A PUA with a small budget of c. 53,500 som. (Pasture Management Plans obtained from ARIS).

a)



b)



Despite that, the salary of PC Chair and accountant consist of 30-50% from PUA's budget and is still rather low – between 3000-5000 som per month, while the work load can be very high.

Therefore, PCs have suffered from a lack of people, who are willing to work and high turnover rates of employees. Due to scarce human and financial resources, assessment and monitoring of pasture conditions is rarely conducted by the PCs and never covers all pastures each year. In addition, effective governance of the pastures to maintain ecological health requires the PC to develop management plans based on accurate numbers of livestock being grazed. However, the heads of the PC responsible for confirming and approving the number of livestock reported by each owner (mostly underreported) do not have the authority or the necessary tools and mechanisms to fulfill these institutional functions and enforce their decisions.

Since Soviet times KyrgyzGiprozem calculates seasonal carrying capacities (which are necessary for the assessment of pasture conditions) based on pasture monitoring results. In practice, however, many herders explained how they simply use the pastures that have long been used by their ancestors or based on convenience; and not because these pastures were allocated to them by PCs. Moreover, some herders admit that they have never interacted directly with PC staff. At times seasonal livestock mobility suffers the problem of unclear multi-level boundaries (boundaries between ayil aimaks, between pasture of Forest Fund and pasture of ayil aimaks, informal boundaries between different herders), which reflect not only physical delineation but also acceptance, and recognition of the rules by all involved actors. Moreover, there are no accurate maps delineating the pastures of the different subdistricts (ayil aimaks). In addition, various actors may make overlapping claims to pasture lands, including those using pastures for non-grazing activities. The KyrgyzGiprozem is tasked to delineate these maps for the entire country but are said to be facing a financial crunch at present and this task for the Issyk Kul province is likely to be completed by the end of 2017.

Although at the introduction of this new law, active participation of all members of community was expected, the level of information dissemination and awareness seems insufficient to assure the participation of all relevant stakeholders. Participation of local

state representatives in these committees is often very formal, thus weakening the reform's original objective of strengthening participatory community-based governance structures.

In addition, not all actors clearly understand the obligations, functions and accountability of the PC versus PUA. Weak information sharing has led to confusion among rural inhabitants about the status of the PC. Some local inhabitants view the pasture ticket as a tax they pay to sub-district administration (ayil okmotu). This confusion between the PC and the ayil okmotu, as well as difficulties in the differentiation between pasture tickets and a simple tax, has led to a general perception of PC's as state led organizations, and not local organizations working to advance their own interests.

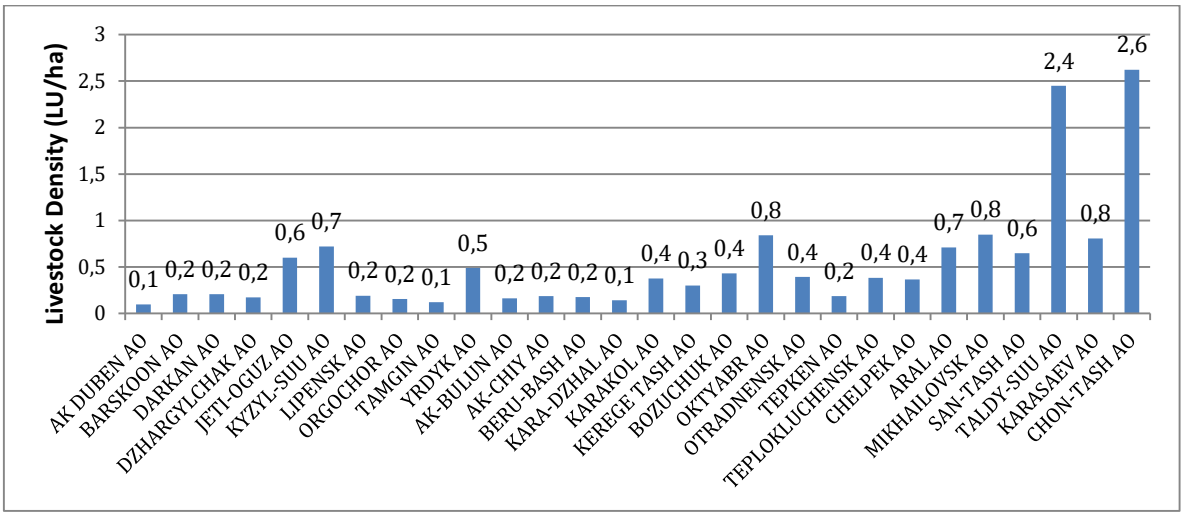
A decentralized governance approach is intended to better incorporate and represent the interests of resource users in decision-making. However, the degree of representation varies and does not include the full range of users, including those, directly involved in resource-use - that is the herders. Herders may often be poorer people who are employed by the livestock owners. Very rarely do PCs include herders as often they are temporary staff hired by the owners. However, this means that herders, the actual users of the pastures get excluded from decision-making on pasture management. Also, the herders perceive the PC as representing the government and are not interested in actively participating in PUAs. This lack of interaction between herders and the PC has resulted in the significant and ongoing efforts at de jure pasture governance not being translated into changes in the decision-making of herders themselves, who continue to graze livestock based on convenience, while PCs often submit reports on pasture management according to plans.

2.6.6. Pasture use pressure: stocking density in Ayil Aimaks

Livestock stocking density for each ayil aimak was based on calculation of livestock units located on one hectare of pastureland based on information on livestock numbers and total pasture area available in a sample of 28 PMPs obtained from ARIS (see Appendix 6.). However this section does not show actual stocking density on seasonal pastures as information on seasonal pastures and their respective livestock load was not available from the PMPs.

The largest stocking density is in Chong Tash (2.6 LU/ha) and Taldy-Suu (2.4 LU/ha) ayil okmotus due to small pasture area and relatively large number of livestock unit (Figure 22). Five ayil okmotus have 0.5-0.8 LU/ha and the rest is less than 0.5 LU/ha. Such figures reflect very small livestock grazing pressure. However, these figures may not reflect real situation on the ground because there is no reliable data how many and what type of livestock, when and where livestock is grazed in reality, even in the PMPs. Also, this analysis included only a sample of the ayil okmotu's of the oblast available from ARIS as it is still not clear which ones are dependent on the CTSL.

Figure 22: Livestock density (LU per ha) in a sample of Pasture Management Plans from 28 ayil okmotus of the Issyk Kul Oblast (obtained from ARIS)

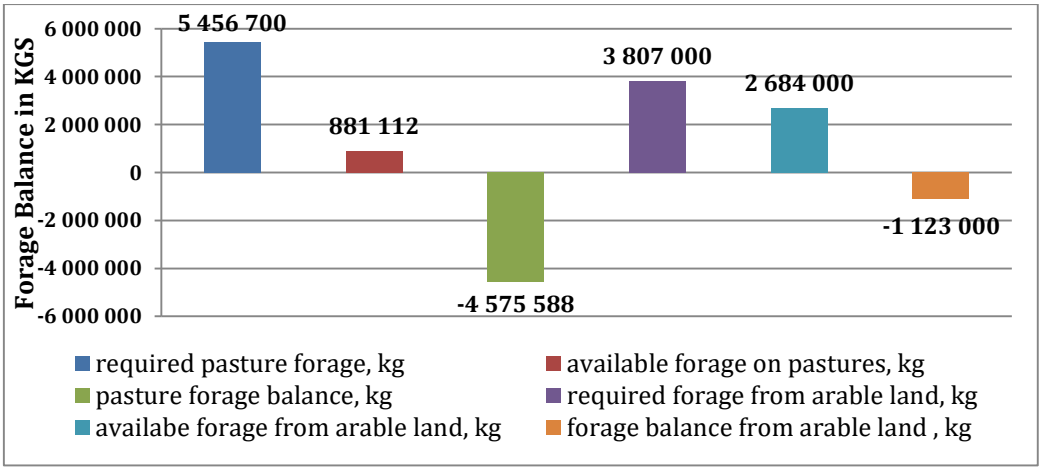


2.6.7. Forage balance

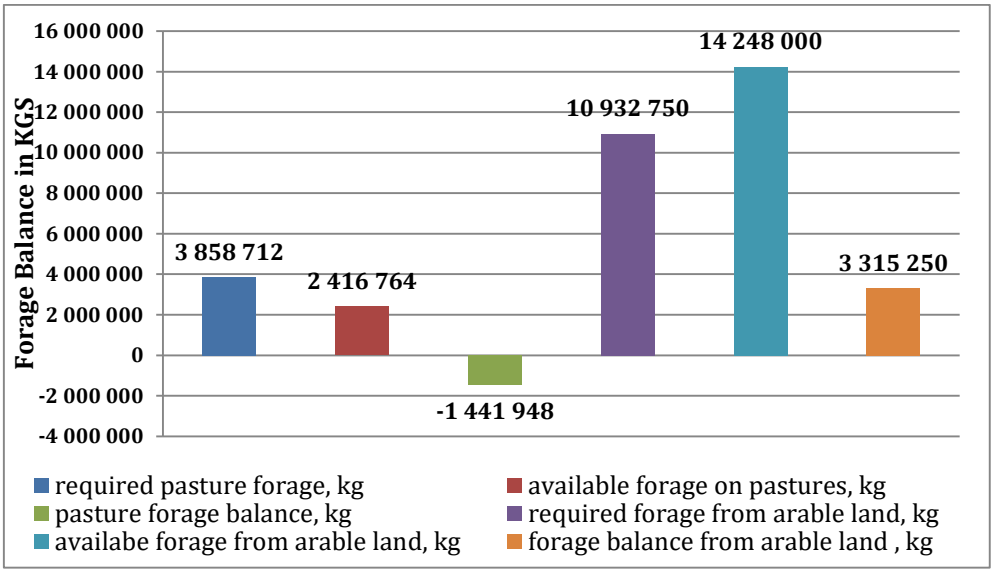
As was shown in the previous section the largest stocking density was found in the pastures of Chong-Tash and Taldy-Suu ayil aimaks. Hence, these were selected to analyse the forage balance for pasture forage and forage collected from arable land on these two ayil okmotus (Figure 23 a & b) based on their respective Pasture Management Plans. The calculation of forage needs is based on the following conditions: 1) In Chong-Tash AO in 2015 was 3384 LU; 2) dry matter intake for one LU is 7.5 kg; 3) during winter livestock stays in the stable for about 150 days, the rest 215 day livestock grazes on pastures.

Figure 23: Forage balance in KGS of a) Chong-Tash ayil okmotu and b) Taldy-Suu ayil okmotu. (Based on PMPs obtained from ARIS)

a)



b)



As per this information from its PMPs, Chong-Tash ayil okmotu had a deficit of pasture forage, which consists of 4576 tonnes or 83.8% of the required need for livestock fodder (Figure 23a.). Forage collected from the crop fields also was not enough for livestock feeding during winter (lack is 1123 tonnes or 30%). This example clearly shows that (assuming the numbers are accurate), Chong-Tash Ayil aimak is suffering a deficit the whole year both from lack of pasture fodder and fodder collected from arable land. Due to lack of pastures, herders use pastures of leskhoz. In this context sustainable pasture use and management as well as improvement of productivity of arable land are two very important issues for this area.

In Taldy-Suu ayil okmotu the situation with pasture forage is a little better – lack of forage is 1442 tonnes or 35% from total required forage (Figure 23b.). However, if it is assumed that livestock owners will not give their livestock for grazing to other ayil okmotu as it occurs now, a lack of pasture forage will be much larger in the future.

2.6.8. Pasture degradation and sustainability

Land or pasture degradation is a complex concept that integrates different aspects, including changes in soil conditions, biodiversity, productivity and socio-economic implications, compared to a reference state (Andrade et al. 2015). Reduced productivity, reduced availability of palatable biomass, and other signs such as increased barrenness and compacted patches can reflect pasture degradation.

Data accuracy about pasture degradation

The ecological status of pastures is a very important issue in Kyrgyzstan, because pastures occupy more than 85% of agricultural land and are a major income source for the rural population as well as they are important for many wild animals, including snow leopard. Despite the importance of pasturelands, data on the extent of areas suffering from degradation is contested because it varies in different sources from 12% to 38%, depending on the applied methods (Bai et al. 2008, Le et al. 2014, Khusanov et al. 2009). Various international organizations invested considerable financial and human resources in various projects, programs, secretariats, funds and databases on pasture degradation and desertification (Kerven et al. 2012) and even calculated the costs of land degradation (Mirzabaev et al. 2016, Quillérou et al. 2016).

As mentioned before, the tremendous increase in livestock population and in the intensity of use of pastures, suggest that pastures must be getting degraded at least in some patches.

As such, the CTSL Management Plan may not support any arguments for or against pasture degradation as neither official nor empirical research data were found available for Issyk-Kul region in general and for the CTSL in particular. What is however clear is the tremendous increase in livestock population in the country and the oblast levels since the early 2000's. It is important to understand these issues empirically for the landscape in order to take more reasoned decisions.

Regulation of livestock stocking on pastures

Regulation of livestock numbers on pastures is one of the key elements of their sustainable use and allows high productivity in a long-term perspective, as high numbers most likely lead to degradation. However, absence of grazing also reduces regeneration and growth of new vegetation. Based on results of pasture monitoring, Penkina (2004) described this process as follows:

"Absence of grazing during several years on pastures of upper zone leads to creation of thick layers of litter formed by Ligularia alpigena and Phlomoides oreophila which reduce regeneration and growth of new vegetation. Moderate stocking on pastures prevents formation of such layer and creates conditions that provides growth of palatable plants such as Carex stenophylloides, Carex stenocarpa, and Agrostis alba."

In order to regulate livestock numbers on pastures, there is an urgent need to know about the precise numbers of livestock for each household in the country. However such accurate data is still missing. In this connection, the national program of the Kyrgyz Republic on identification of livestock ('passports'), which started in 2016, will help to conduct an accurate inventory of livestock numbers for each ayil aimak.

This program will also provide the basis for vaccination monitoring of each animal and consequently focus on diseases, movement of livestock from farmer to seller and the possibility to export products of livestock husbandry. This governmental program is one of the implementations of the international treaty obligations after integration of the Kyrgyz Republic into the Eurasian Economic Union. The Russian Federation provided financial assistance of $ 450 thousand dollars.

Quota for livestock is one of the mechanisms for regulation of livestock numbers in the country suggested by Isakov and Thorsson (2015). As pointed out by the authors the number of livestock of each household range from 1 up to 300 livestock units. However, each household has right to graze animals on common pastures and the Kyrgyz government does not limit the numbers of livestock. Isakov and Thorsson (2015) suggest limiting the number of livestock per household and make those who exceed this limit pay additional fees. The collected revenues might help in establishing funds for pasture rehabilitation and therefore increase responsibility of each land user. Besides, large livestock owners may be encouraged to invest to other income sources that are not connected with grazing (Isakov & Thorsson 2015).

Nonetheless, before introduction of such economic measures, the socio-economic consequences need to be investigated as in future it may lead to conflicts, dissatisfaction and protests of rural inhabitants.

2.6.9. Challenges of integrated, multifunctional pasture use

Pastures are important land resources, not only for livestock but also for non-grazing land use, which includes hunting, beekeeping, collection of medical herbs, berries, mushrooms, fuel, tourism and recreation (see Article 2 of the KR Law 30 "On pastures" 2009 with amendments # 91,11 July 2011, and # 254, December 2011)

De jure, non-grazing use of pastures should be realized on the basis of agreement (Article 2 of the KR Law 30 "On pastures" 2009). This Law also prescribes the size of payment depending on the intensity of use (see article 10 of the KR Law 30 "On pastures" 2009) and pasture management plans should also take into account the use of pastures for non-grazing purposes.

However de facto, pasture management plans do not include activities connected with non-grazing pasture use which have been taking place. Soltobekov (2017) highlighted in his presentations on extended coordination meeting of CAMP, that PCs do not know what hunting companies work on their pastures and therefore they do not have information about protection zones for wildlife and plans of hunting companies. A similar situation becomes apparent with the collection of biomass, herbs and fuels that can be collected with the agreement of the PC. However in reality PCs do not have information about this alternative use of pastures.

In addition, there may be less harmonization of different laws regarding of natural resources. For example, the law "On pastures" (2009) and the law "About hunting and hunting companies" do not harmonize with each other. There is a need to establish a legal and institutional framework for better interaction and coordination among all stakeholders who use pasturelands in order to protect biodiversity and increase additional economic benefits for local communities.

Conclusion

Agriculture is an important part of the Kyrgyz economy, contributing over 20% to the national GDP and pastoralism is a key part of the country's agricultural economy. In recent decades Kyrgyz pastoralism has undergone dramatic changes in the context of lifestyle and pastoral practices, governance and impact on livestock and pasture conditions. Such changes were triggered by socio-political transformations in the last Century, notably, the Russian Empire's occupation of Kyrgyzstan, Soviet collectivization in 1930's and as consequence, settlement of Kyrgyz nomads, collapse of Soviet Union (1991), privatization and individual pasture leasing system (2002-2009) and finally community-based pasture management (2009).

Today, Kyrgyz agro-pastoralists are under the impact of global drivers (market impact, climate change, globalization) and at the same time they have to face different challenges connected with functioning of new pasture governance. Market demand and local cultural preferences push local people to increase their livestock and thus, constant growth of livestock after the drastic decline of the 1990's has been observed. The increasing livestock population may cause problems of forage depletion and degradation of pastures. As a result, competition of livestock and wild herbivores over pasture forage may threaten snow leopard's survival.

While degradation is widely perceived and spoken about, it appears that there is scarce empirical information to prove it. This is more so in the CTSL, where information on even the dependence of communities on the landscape isn't yet clear. There is a need of accurate information about spatial and temporal stocking rates on pastures as well as

additional research and long term monitoring for pasture conditions that can assist in taking reasonable management decisions.

The Kyrgyz government has made progressive changes in pasture governance since 2009 to work towards participatory sustainable pasture management. These changes require specialised planning and implementation mechanisms that need ecological information and a great amount of capacity to plan and implement activities. The issue gets complicated with some confusion in the roles of the pasture committee members, post-Soviet rights over land, ownership of livestock and hiring herders. Importantly, the seasonal pastures of the ayil okmotus are often not delineated clearly and this circumstance renders most calculations in the Pasture Management Plans redundant.

The creation of a dialogue platform between local people, the PC, leskhoz, hunting and tourist companies, collectors of berries and medical herbs should be an important step as well towards more integrated natural resource management of the pastures for protection of biodiversity and increasing economic benefits for local communities. In spite of the initial functional issues with the Pasture Management Plans, this is identified as a key tool for bottom up planning and implementation of pasture management, livelihood and even conservation works. The CTSL Management Plan thus sees the PMPs as a key tool for management.

2.7. Tourism in the Central Tian Shan Landscape [11]

2.7.1. Tourism in Kyrgyzstan

The Central Tien Shan Landscape is endowed by tremendous natural beauty, culture, and wildlife. However, up to now few direct benefits from tourism seem to have reached local communities, who therefore have limited incentive to conserve the area, especially its wildlife. Community Based Tourism (CBT), however, has a potential to directly link community benefits to conservation outcomes. Several forms of tourism (e.g. wildlife observation, recreational, mountaineering, adventure, cultural) can bring direct benefit to communities. Furthermore, the season of tourism can be extended from primarily summer to all four seasons (since winter is the best season to observe wildlife). The potential role that tourism can play to advance common purposes across a range of development sectors is also noteworthy, including poverty alleviation and strengthening community level institutions for development. This chapter reviews current patterns of tourism, especially recent efforts to promote CBT, and highlights the best niche for tourism related interventions. The activities thus proposed in the management plan aim to harmonize conservation purposes with improving people's livelihoods and wellbeing. Linking benefits from tourism to pastoralists and other mountain stakeholders in the landscape, especially through wildlife tourism, can bring positive incentives for local communities to manage livestock herds and other mountain resources more sustainably. Adopting more integrated perspectives and approaches on environmental conservation and regional tourism development may strengthen both these sectors, besides other sectors.

2.7.1.1. Introduction

Tourism is one of the largest and fastest growing industries globally, providing much needed employment and revenue through direct and secondary businesses (UNWTO 2012). In developing countries, tourism often constitutes one of the largest sources of income (UNWTO 2012) and it is an established part of many development strategies (Shokirov et al. 2014).

As a predominantly mountainous country with relatively intact natural resources and rich cultural resources, Kyrgyzstan has a latent tourism potential, which is increasingly emphasized by the government. Tourism was identified as a priority in Kyrgyzstan's National Strategy for Sustainable Development (2013). First instituted in 2012, a visa-free regime for international tourists from over 40 countries has also become a positive trademark of Kyrgyzstan in the broader Central Asia milieu (Shokirov et al. 2014).

In the present chapter, the tourism industry is reviewed with specific reference to the Central Tian Shan Landscape (CTSL) located south and east of Lake Issyk-Kul, as well as wider socio-political, economic, development and environmental contexts that, directly or indirectly, may equally impact or be affected by the emerging tourism sector in CTSL.

2.7.1.2. Tourism typology

Many different terms are used in relation to tourism. Some of these terms may relate to characteristics desired for the tourism industry, while others apply to the key attractions or objects of interest, as well as to the types of travel.

Box 2.7.1. Analysing the sustainability of Mountain Tourism through 12 fundamental aims (Shokirov et al. 2014).

Economic Viability – To ensure the viability and competitiveness of tourism destinations and enterprises, so that they are able to continue to prosper and deliver benefits in the long term. Local Prosperity – To maximise the contribution of tourism to the economic prosperity of the host destination, including the proportion of visitor spending that is retained locally.

[11] Chapter led by Marc Foggin and Steve Borchardt, MSRI, UCA,, with inputs by Yash Veer Bhatnagar

Employment Quality – To strengthen the number and quality of local jobs created and supported by tourism, including the level of pay, conditions of service and availability to all without discrimination by gender, race, disability or in other ways.

Social Equity – To seek a widespread and fair distribution of economic and social benefits from tourism throughout the recipient community, including improving opportunities, income and services available to the poor.

Visitor Fulfilment – To provide a safe, satisfying and fulfilling experience for visitors, available to all with- out discrimination by gender, race, disability or in other ways.

Local Control – To engage and empower local communities in planning and decision making about the management and future development of tourism in their area, in consultation with other stakeholders.

Community Well Being – To maintain and strengthen the quality of life in local communities, including social structures and access to resources, amenities and life support systems, avoiding any form of social degradation or exploitation.

Cultural Richness – To respect and enhance the historic heritage, authentic culture, traditions and distinctiveness of host communities.

Physical Integrity – To maintain and enhance the quality of landscapes, both urban and rural, and avoid the physical and visual degradation of the environment.

Biological Diversity – To support the conservation of natural areas, habitats and wildlife, and minimise damage to them.

Resource Efficiency – To minimise the use of scarce and non-renewable resources in the development and operation of tourism facilities and services.

Environmental Purity – To minimise the pollution of air, water and land and the generation of waste by tourism enterprises and visitors.

In regard to characteristics, one of the fundamental assumptions in this analysis and its recommendations is that tourism in the CTSL, and across Kyrgyzstan as a whole, should always strive to be sustainable. UNEP and UNWTO (2005) have offered an analytical framework for assessing the 'sustainability' of tourism, reproduced in Box 2.7.1. below.

Moreover, the natural and cultural environment of the oblast and the CTSL provide the basis on which all the key attractions or types of tourism can be based, including aspects of adventure tourism (trekking, mountaineering, horse riding, diving, rafting, skiing, paragliding), nature based tourism (wildlife, scenic areas, trophy hunting) and cultural tourism (summer pastures (jailoo), yurt and other home stays, falconry and other traditions). With respect to mainstreaming sustainable tourism, these two aspects – nature and culture – are well encompassed within the concept or approach known as ecotourism. Even though ecotourism sometimes is interpreted in different ways by different people, its standard definition is provided by The International Ecotourism Society: "Responsible travel to natural areas that conserves the environment, sustains the well-being of local people, and involves interpretation and education" (TIES 1990).

Extending this improvement of local people's well-being to a fuller involvement of local communities in tourism development, including planning and implementation, feeds into the concept of Community Based Tourism – an approach to tourism development that is recognized as having huge potential for community development, especially in sparsely populated mountain areas (Raeva 2005). CBT is broader than ecotourism, as in some instances it may not include an explicit conservation focus, however, both CBT and ecotourism should be developed with explicit consideration of the 12 fundamental aims of sustainable mountain tourism, as outlined above in Box 2.7.1.

Additional information about definitions and the main foci of different forms of tourism can be found in Appendix 3.

Recent and current forms of tourism in Kyrgyzstan, with special focus on CTSL

Three main types of tourism have been present in Kyrgyzstan during the Soviet times and over the most recent quarter century (from 1991 to present): Resort Tourism (mass tourism), Mountain Tourism and Mountaineering, Hunting Tourism, with a very small component of Community Based Tourism and Ecotourism.

Resort Tourism (mass tourism)

Lake Issyk-Kul in the north of the CTSL was a leading USSR recreation area during Soviet times, and it continues to serve as the main tourism hotspot in the country until today. The form of tourism can be characterized as highly seasonal summer beach tourism, accompanied by water-based activities such as swimming, fishing and water sports. During Soviet times tourism development focussed mainly on the north shore, which is why most of the tourism infrastructure (lakeside resorts, café s, restaurants, etc.) are found there, whereas the south shore of Lake Issyk-Kul is less developed and therefore not so distinctly affected by mass tourism (Palmer 2009). The southern shore is contiguous with the CTLS and the villages in this region are more dependent on the landscape.

Mountain Tourism and Mountaineering

Mountain tourism and especially alpinism has a long tradition in Kyrgyzstan, starting in 1945 with the establishment a tourism and alpinism department under the Republic Committee of Physical Culture and Sports. Instructors and guides were trained, infrastructure created and tourism and alpinism were promoted. The Snow Leopard award – a Soviet mountaineering award required the awarded climber to climb all five peaks of 7000m or above 7000m in the Soviet Union. This includes the Khan Tengri (6,995m) and Jengish Chokusu (or Pobeda Peak, 7,439m) in the east of Kyrgyzstan (in the CTSL) and the Lenin Peak in the south, which is why these areas gained and still gain specific interest from the mountaineering community. The Tien Shan and Pamir mountain ranges offer plenty of opportunities for mountaineering activities and some peaks can still be considered unclimbed (Shokirov et al. 2014). Mountaineering expeditions to the Jengish Chokusu, the northernmost 7000 plus meter peak and the Khan Tengri peak use the Engelchek village and valley as approach. While there are quite a few expeditions annually to this cluster of high peaks, little revenue percolates to local people in the region of the ayil okmotus having rights in the region (Anon. 2017, in prep.).

Community Based Tourism and Ecotourism

Community-Based tourism was initially developed in Kyrgyzstan with the help of the Swiss NGO Helvetas, when they launched their Community Based Tourism Support Project in 1995. Several CBT groups evolved from this initiative, which later formed the KCBTA (Kyrgyz Community Based Tourism Association) as umbrella organisation. The regional CBT groups basically promote sustainable community-based tourism services (some of which may be classified as ecotourism), offering unique experiences for the tourist while also generating income for rural families and seeking to preserve the area's cultural and natural heritage (Baktygulov & Raeva 2010). There are currently 18 CBT groups in Kyrgyzstan. Five of these CBT groups also have come together and formed an association of shepherd families offering jailoo tourism, operating all across the country.

The size of CBT groups differs significantly, depending on the extent of tourism offerings (for instance, CBT Arslanbob has around 100 member households, whereas CBT Sary-Moghul has 60-70 households). The KCBTA provides administrative and organisational support to its member groups, compiles marketing strategies for products and services, and organizes business training, seminars, and study tours.

CBT Karakol is the only CBT group operating in the CTSL. It offers horseback riding and trekking tours, especially in the Khan Tengri/Peak Pobeda Area (KCBTA 2016). As CBT groups commit to respect an Ecological Code, in theory all ecotourism principles are represented within this context (Baktygulov & Raeva 2010).

Alongside CBT groups, there are also private tour operators that offer tourism products and services comparable to those provided by the CBT groups. It is likely, however, that many operators simply label their products as ecotourism (mistakenly equating nature-based tourism with ecotourism). Therefore not all tourism that is labelled or marketed as ecotourism necessarily encompasses the concept's core principles (Palmer 2006).

Hunting Tourism

As individual and luxury type of tourism, hunting tourism is growing in Kyrgyzstan, which has particularly become a hotspot for international trophy hunting tourism (see further details in Appendix 2).

It is estimated that more than 80 tourism companies have hunting tour products in their offer. The Marco Polo Sheep, Wolves, Siberian Ibex, Wild Boar, Red Deer, Red Marmot, gazelle, antelope, Hungarian partridge, ducks and migratory geese are the most popular hunting-animals, although the Marco Polo Sheep and the Siberian Ibex are the most desired animals and a trophy license for them costs several thousands US$. Even though most of the tourists stick to the law regulations, corruption can circumvent these regulations, which leads to a booming black market for hunting tourism as well, a serious conservation threat (Laruelle & Peyrouse 2013).

2.7.1.3. Key trends since Soviet times (post-1991)

During Soviet times

As an expression of patriotism, one of the goals during the Soviet Era was to create a shared national culture, which could be achieved in part through tourism development and the common experiences and memories it can create. As such, tourism has played an integral role within socialist ideology. Soviet tourism can be characterized as state controlled, heavily structured mass tourism comprised of prescribed tourist itineraries, organised as collective or group activities (Palmer 2009).

In 1945, the Kirghiz (Kyrgyz) SSR established a tourism and alpinism department under the Republic Committee of Physical Culture and Sports to train instructors, create infrastructure, and promote tourism and alpinism. The Central Council for Tourism and Excursion, established in 1959, developed camp sites in Frunze (now Bishkek), Ulan, Kyrchyn, Issyk-Kul, Sary-Chelek, Arslanbob and Osh. In 1977, the Republic and State Tourism Federations were created, further developing mountain tourism, including water sports and speleological (cave) explorations. By 1979, over one million people had participated in tourism activities in the Kirghiz SSR (Marechek 1982).

Listed as one of the top three recreation areas in the USSR, Lake Issyk-Kul attracted most of the tourists visiting Kyrgyzstan (up to 350,000 from across USSR in the late 1980s) ranging from Communist Party cadres to high ranking members of the Soviet government and military (Palmer 2009).

Since Independence

The collapse of the Soviet Union dramatically impacted the tourism industry in newly independent Kyrgyzstan, resulting in a significant drop in annual tourist arrivals. Kyrgyzstan tried to counteract by developing national strategies on sustainable development, which included tourism, in 1999 (Shokirov et al. 2014). Additionally, tourism received international development assistance from several international donors. Most of the state-owned facilities were privatized, mainly by investors from Kazakhstan, Russia and partly Kyrgyzstan (Kloiber 2008).

As “pearl of Central Asia”, Lake Issyk-Kul could retain its national importance although comparably high prices, lower quality of services, products and infrastructure recently led to growing dissatisfaction and reduced popularity among visitors. Urgently required infrastructure investments by government, especially on the north shore, are not likely to occur in the foreseeable future as the country is facing complex economic challenges.

Nonetheless, there are estimates that over 90% of all tourism revenues are generated in Issyk-Kul. As mentioned before, the north shore is still offering the main infrastructure for recreational activities, whereas the south shore area is characterized by smaller tourism enterprises aiming for niche markets such as adventure tourism, ecotourism, and community-based tourism (Palmer 2009).

The CIS countries, mainly Kazakhstan and Russia, generate the majority of the international tourism demand although the demand for Community Based Tourism and Ecotourism products is so far primarily from western countries. However, the share of CBT in the national tourism market is relatively low, and the domestic tourism market contributes relatively little to the local and provincial economies in the CTSL region at present.

Overall, tourism in Kyrgyzstan is experiencing a gradual shift towards more sustainable forms of tourism development, as most of the external assistance is provided by international donors from industrialised countries, which operate in accordance with global western agendas (Palmer 2009).

A marmot emerging from its burrow. Photo by Kuban Jumabay-Uulu

2.7.1.4. Tourism’s current role (economic contributions) at national and provincial (Issyk Kul) levels

Since the late 1990s the tourism sector in Kyrgyzstan has consistently increased its share of GDP (except for periods marked by political instability, such as in 2005, 2010). The direct contribution of the tourism sector reached 4.8 % of GDP in 2014 compared to 14.7% for agriculture and 13.7 % for industry (NSC 2014). In 2011, the average foreign tourist spent USD 86 per day in Kyrgyzstan (SIAR Research & Consulting 2012). However, as the National Statistics Committee does not provide methods or sources for obtaining the above data, the given information should

thus be treated with some caution. The World Travel & Tourism Council also provided statistical data on tourism's contribution to the Kyrgyz economy in 2014 and forecasted contributions. In their report, tourism's total contribution to the GDP is estimated to 3.5% of GDP in 2014 (including direct, indirect and induced contributions) and is expected to grow steadily within the next decade, although the share of the GDP is about to remain on a comparable level. In addition to that, tourism directly supported 28,000 jobs in 2014 in Kyrgyzstan, which is about 1.2% of local employment, whereby forecasts are estimated to stay on a comparable level until 2025.

Moreover, the National Statistics Committee stated that more than 1.2 million people "rested" in Kyrgyzstan in 2014.

In general, the trends for tourism development indicate an increase, although this increase seems to occur slowly and on a small scale (WTTC 2015). Moreover, it is apparent that statistical data on tourism in general is lacking, which makes it difficult to properly evaluate the tourism sector's contribution to the national and provincial economy.

2.7.1.5. Regional tourism initiatives in Central Asia, with special reference to Kyrgyzstan

Kyrgyzstan is receiving a lot of external assistance by international donors interested in tourism, with a wide range of projects and initiatives driven by many different actors, at different scales, and focused on different topics. International development agencies are keen to offer assistance, including for tourism, because the barriers are less delicate as the country is assessed to be more democratic than other Central Asian countries and the government is also seeking for this assistance (Palmer 2006).

Helvetas took the first major step to support tourism development in Kyrgyzstan with their Community Based Tourism Support Project. Other development agencies followed suit, such as AKDN, JICA, GTZ, and TACIS, though most of them focussed more generally on regional development in Issyk-Kul oblast (Kloiber 2008).

A collection of initiatives on tourism development in the Issyk-Kul area is provided in the Appendix 4.

One of the major tourism initiatives that has been initiated and developed more recently is the UNESCO Silk Road Heritage Corridors Tourism Strategy project, which was launched in 2013. These heritage corridors represent the ancient Silk Road trading routes, which is why they have a great potential to economically benefit local communities and support cultural exchange through tourism development. The cultural heritages of the Silk Road create extraordinary opportunities for tourism. The foundation for developing this Silk Road Heritage Corridors Tourism Strategy was provided by UNESCO's Roadmap for development, which was titled "Heritage Conservation & Tourism: Promoting sustainable growth along the Silk Roads Heritage Corridors" and focused on two heritage corridors crossing Uzbekistan, Tajikistan, Kyrgyzstan, Kazakhstan and China. The Roadmap targeted community development, heritage conservation and management as well as sustainable growth as its main objectives (UNESCO & UNWTO 2013).

Additionally, the UNWTO recently presented the Silk Road Action Plan 2016/2017, which shall give an overview about the organisation's strategies and projects to support a sustainable, competitive and robust growth of the Silk Road tourism. The Action Plan promotes stakeholder cooperation in order to stimulate investments, reduce poverty along the Silk Road and preserve the cultural and environmental resources (UNWTO 2016).

Some private tour operators offer complete tour packages offerig Silk Road tourism products in Kyrgyzstan. The tours lead through different countries and are comprised of several activities with regard to culture, nature and adventure tourism. During Silk Road tours, at least 2 – 3 days are scheduled to stay in Kyrgyzstan, which offers opportunities for local service providers to participate in Silk Road tourism.

Silk Road tours are the most popular tour products, which tour operators offer. Tour packages range from one to four weeks and shall introduce the tourists to the rich culture and history of Central Asia along the vast network of the former Silk Road's shifting trade routes. As China and Uzbekistan might have the most important cultural sights, a connection between those countries automatically leads through Kyrgyzstan, which is why Kyrgyzstan benefits more from Silk Road tourism than for example Kazakhstan, Tajikistan or Turkmenistan (Werner 2003).

Another important regional development project, which is expected to have a strong impact on tourism development in Central Asia's future, is China's Belt and Road Initiative. It was launched in 2013 and is a very ambitious program, which tends to develop infrastructure on a large scale and thus, connect the less developed bordering regions of the country with the neighbouring countries. Central Asia plays hereby an important role, as the underdeveloped Chinese hinterland shall be connected to Europe through the Central Asian countries. The project is probably one of the largest development plans in modern history. The plan consists of two parts – the Silk Road Economic Belt and the 21st Century Maritime Silk Road (Cai 2017).

If the OBOR project can successfully manage to create such a vast network, the resulting economic growth and better access could also positively influence tourism development in Central Asia.

2.7.1.6. Current policies in support of tourism in Kyrgyzstan (especially, Issyk Kul (but differentiated between lake area and elsewhere in province, including CTSL))

As the Kyrgyz government has always recognised the importance of tourism for the economy, this sector has always been prioritised in national development strategies such as the CDS or the "National Strategy for Sustainable Development to 2017" (2013). The Kyrgyz national law 'about tourism' was passed in 1999, determining the economic, social, legal and organisational basis of tourism and all related activities. These determinations included the establishment of a convenient environment for tourism activities, securing citizens' rights to freedom of movement and recreation, regulation of the cooperation in the tourism sector in terms of financing of promising national tourism programs, coordination of all tourism activities by an authorized body, professional training for tourism specialists, support for promotion and development of international cooperation, and development of scientific research in the tourism sector. In addition, the country took significant measures to increase international visits by loosening visa restrictions.

Although the government regularly indicates intent to promote tourism, constant financial pressures and frequent institutional changes in the State Agency of Tourism hamper government's contributions to the development of the tourism sector (Palmer 2006). Moreover, inadequate regulatory frameworks, outdated laws, burdensome licensing processes and inadequate tourism regulations prevent both foreign and domestic investment and complicate development of the tourism sector.

2.7.1.7. Current tourism infrastructure in Issyk Kul area

During the Soviet era, the Issyk-Kul region was well known for high quality services at their hotels and sanatoriums. The high quality could be guaranteed then due to strict monitoring for compliance of sanitary standards and supplementary quality control requirements. After the collapse of the USSR, however, most of the resort hotels and sanatoriums were privatized or became joint-stock companies and thus lacked common control systems, which led to an incremental reduction of service and infrastructure quality (Shokirov et al. 2014).

As already mentioned, the north-shore of Lake Issyk-Kul received the greatest tourism development inputs, including development of large-scale accommodation facilities, café s, beach entertainment infrastructure, discotheques, and restaurants. The south shore was and remains less developed and more sparsely populated. However this also now provides greater opportunity to develop stronger ecotourism activities. Overall, although the lake still is recognized

as a touristic hotspot, all surrounding areas (including CTSL) are lacking tourism infrastructure (Palmer 2009).

2.7.2. Benefits to local communities

The degree to which communities are involved in assessing an area's tourism potential and related decision making, along with their level of involvement in implementation of agreed tourism activities, greatly affects the distribution of benefits and their receipt by local communities. Even privately owned local businesses can trigger indirect benefits for community members. However, without the purposeful development of community beneficial tourism, in a mainly profit-orientated free market economy it is unlikely that adequate and lasting benefits will be accrued to local communities under conventional forms of tourism development. Local mountain products, activities and experiences should therefore be sought and developed, and community enterprises and employment opportunities supported with capacity building as well as technical and financial inputs.

Revenue distribution across the region

As most tour operators operate privately and are centred in Bishkek, their activities do not bring much benefit to local communities, where the tourism product is consumed. On the other hand, such tour operators do sometimes bring indirect benefits, because they bring tourists to the communities' regions, and tourists most often consume some local products or require services provided by community members, the level of such use is proportionately very low. Infrastructure investments and improvements can also contribute to community development, if they attract more tourists to the area or contribute to them staying longer or spending more.

Analysis from other areas in Kyrgyzstan has demonstrated that CBT activities can have an enormous economic impact on participating households, even comprising up to 50 percent of some households' annual incomes (Asykulov 2012). Another report stated that privatising and denationalising tourism facilities can promote local prosperity, as private investment increases and is spread more widely in areas where the government does not invest; however, the connection between such increased investment and local prosperity is not explained in the report (Shokirov et al. 2014).

Watanabe et al (2009) specifically investigated the economic impact of trekking tourism in the Peak Lenin area of Kyrgyzstan and concluded that "tourism does not provide economic benefit to the local residents" because most of the tourists were guided by tour companies based in Uzbekistan, Russia or Kazakhstan; only 5 percent of tourists received services from companies based in Kyrgyzstan.

Community Based Tourism, on the other hand, has contributed to a wider distribution of tourism benefits amongst rural households in Kyrgyzstan, as compared to other types of tourism. But even in areas where CBT groups are present and active, communities in and near specific destination areas generally do not control and are largely uninvolved in decision-making regarding tourism development. Greater impact could be achieved with better coordination and diversification of local businesses (Shokirov et al. 2014). Beyond CBT, there has been even less study about distribution of benefits within host communities. However with benefits recognized as accruing from/through CBT in other parts of the country, this form of tourism holds great merit and its development should be further studied and pursued in the CTSL region.

2.7.3. Conclusion

The previous sections have highlighted the enormous tourism potential within the CTSL, which up to the present remains mostly untapped. Tourism is presently limited mostly to mountaineering and some trekking or horse riding activities, driven mostly by private stakeholders, which is why only limited benefit reaches the communities. The expertise of the KCBTA offers a good opportunity for community members to learn and begin to engage in Community Based Tourism,

and thus gain additional income and development benefits. The development of tourism activities and experiences related to adventure, culture and/or nature, with special emphasis on niche forms of tourism such as wildlife or sky viewing, can broaden the market scope and extend the tourism season and thus substantially increase benefits to not just local communities, but other players too. With advent of such benefits, derived largely from the extraordinary natural and social environments in CTSL, new synergies can be identified that will lead to greater levels of collaboration between competing interests of livestock husbandry, hunting concessions (companies) and wildlife conservation. Building partnerships across these sectors and stakeholders will provide a valuable foundation for long-term sustainability in the multi-use mountain systems in the CTSL.

Strong policy support and capacity building will be needed to realize more of the local tourism potential in CTSL. Additionally, pilot projects may help to evaluate the available options for tourism development. The approaches and recommendations offered in this management plan aim to initiate such conservation-friendly development interventions.

Importance of CBT for benefiting communities, also as mechanism to support processes that enhance community partnership in conservation:

All things considered, CBT appears to be the most viable form of tourism that integrates the interests of multiple sectors and stakeholders including local communities. The experiences and guidelines provided by KBCTA and the CBT Karakol group provide a foundation for future tourism development; whether or not future activities fall directly under the framework of CBT associations. Huge potential exists for further development of Community Based Tourism approaches in the area.

Several projects and initiatives in the region already show how ecotourism and Community Based Tourism can effectively promote local prosperity. The potential economic benefits of eco- and Community Based Tourism include the creation of new, local jobs and the expansion of livelihood options in rural areas beyond agriculture (ACTED 2004; Hamidova 2010; Mumini 2011; Odilova 2012; UNESCO 2003).

Specific activities have included the promotion and sale of local handicrafts, traditional cuisine, and local tours that increase the recreational use of national parks and other protected areas. This increased recreational or activity driven use can also contribute to development of community partnerships for conservation, as communities realize that only sustainable use of natural resources leads to intact nature, which attracts tourists.

Furthermore, sustained economic growth in the tourism industry depends on the ability of a complex network of tourism stakeholders to cooperate in the development, management and marketing of tourism in CTSL and the broader Issyk-Kul region.

28. Some Pertinent International Multilateral Environmental Agreements

The Kyrgyz Republic, since its independence in 1991, has been aware and conscious of its environmental obligations and has thus participated in most such conventions. These include conventions towards sustainable development, fight pollution, conduct timely and efficient environmental impact assessments, combat climate change, conserve species and curb illegal trade in wildlife. Some of these are listed in the Table 2.

Table 2: Key environmental multilateral agreements to which Kyrgyzstan is a signatory.

Year	Treaty/Agreement	Background
2015	Paris Agreement on Climate Change	The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping the global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change. To reach these ambitious goals, appropriate financial flows, a new technology framework and an enhanced capacity building framework will be put in place, thus supporting action by developing countries and the most vulnerable countries, in line with their own national objectives. The Agreement also provides for enhanced transparency of action and support through a more robust transparency framework.
2015	Transforming our world: the 2030 Agenda for Sustainable Development	This Agenda is a plan of action for people, planet and prosperity. It also seeks to strengthen universal peace in larger freedom. It recognises that eradicating poverty in all its forms and dimensions, including extreme poverty, is the greatest global challenge and an indispensable requirement for sustainable development. All countries and all stakeholders, acting in collaborative partnership, will implement this plan. It shows determination to take the bold and transformative steps, which are urgently needed to shift the world onto a sustainable and resilient path. The countries pledged that no one will be left behind. The 17 Sustainable Development Goals and 169 targets demonstrate the scale and ambition of this new universal Agenda. They seek to build on the Millennium Development Goals and complete what these did not achieve. They seek to realize the human rights of all and to achieve gender equality and the empowerment of all women and girls. They are integrated and indivisible and balance the three dimensions of sustainable development: the economic, social and environmental.

Year	Treaty/Agreement	Background
2013	Bishkek Declaration, Global Snow Leopard Ecosustem Protection (GSLEP)	This was a culmination of national consultations and consultations among the 12 snow leopard range countries to prepare a participatory, landscape based conservation strategy for conserving the snow leopard. The present management plan is being build under its initiative to secure at least 20 landscapes spread across the snow leopard range.
2006	The Stockholm Convention on Persistent Organic Pollutants (POPs)	The Stockholm Convention on Persistent Organic Pollutants (POPs) sets to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of humans and wildlife, and have harmful impacts on human health or on the environment.
2006	The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	CITES aims to ensure that international trade in specimens of wild animals and plants does not threaten their survival. It thus maintains Schedules of species based on which trade in animals, plants or their parts are regulated.
2005	The Cartagena Protocol on Biological Safety	The Cartagena Protocol on Biosafety related to the Convention on Biological Diversity aims to ensure the safe handling, transport and use of living modified organisms (LMOs) resulting from modern biotechnology that may have adverse effects on biological diversity, taking also into account risks to human health.
2003	The Kyoto Protocol	The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change, which commits its Parties by setting internationally binding emission reduction targets. The protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."
2002	The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat	The Ramsar Convention is an international treaty for the conservation and sustainable use of wetlands.
2001	Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)	The Espoo (EIA) Convention sets out the obligations of Parties to assess the environmental impact of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects under consideration that are

Year	Treaty/Agreement	Background
		likely to have a significant adverse environmental impact across boundaries.
2001	Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters (Aarhus Convention)	The Aarhus Convention establishes a number of rights of the public (individuals and their associations) with regard to the environment. The Parties to the Convention are required to make the necessary provisions so that public authorities (at national, regional or local level) will contribute to these rights to become effective. The Convention provides for the right of everyone to receive environmental information that is held by public authorities ("access to environmental information"); the right to participate in environmental decision-making; the right to review procedures to challenge public decisions that have been made without respecting the two aforementioned rights or environmental law in general.
2000	Long-range Transboundary Air Pollution (LRTAP) Convention	A convention determined to strengthen co-operation to control air pollution and its effects, including long-range transport of air pollutants, and to the development through international co-operation of an extensive program for monitoring and evaluation of long-range transport of air pollutants, starting with sulphur dioxide and with possible extension to other pollutants. It is implemented by the European Monitoring and Evaluation Program (EMEP), directed by the United Nations Economic Commission for Europe (UNECE).
2000	Vienna Convention for the Protection of the Ozone Layer	In 2009, the Vienna Convention became the first Convention of any kind to achieve universal ratification. The objectives of the Convention were for Parties to promote cooperation by means of systematic observations, research and information exchange on the effects of human activities on the ozone layer and to adopt legislative or administrative measures against activities likely to have adverse effects on the ozone layer. The Vienna Convention did not require countries to take concrete actions to control ozone-depleting substances. Instead, in accordance with the provisions of the Convention, the countries of the world agreed the Montreal Protocol on Substances that Deplete the Ozone Layer under the Convention to advance that goal.
2000	Montreal Protocol on Ozone Depleting Agents	The Montreal Protocol is widely considered as the most successful environment protection agreement. The Protocol sets out a mandatory timetable for phasing out of ozone depleting substances. The Montreal Protocol sets binding progressive phase-out obligations for developed and developing countries for all the major ozone depleting substances, including

Year	Treaty/Agreement	Background
		CFCs, halons and less damaging transitional chemicals such as HCFCs.
2000	The agreement between Kazakhstan and Kyrgyzstan On the Use of Water Management Facilities of Intergovernmental Status on the Rivers Chu and Talas	Provision for the protection of transboundary water resources.
2000	United Nations Framework Convention on Climate Change	United Nations Framework Convention on Climate Change (UNFCCC) sets to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a timeframe sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.
2000	Rotterdam Convention	The Rotterdam Convention promotes shared responsibility and cooperative efforts among Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm; contribution to the environmentally sound use of those hazardous chemicals, by facilitating information exchange about their characteristics, by providing for a national decision-making process on their import and export and by disseminating these decisions to Parties.
1996	Convention on Biological Diversity	The Convention on Biological Diversity was inspired by the world community's growing commitment to sustainable development and was a followup of the Reo Convention (1992). It represents a dramatic step forward in the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of benefits arising from the use of genetic resources.
1996	Basel Convention	The overarching objective of the Basel Convention is to protect human health and the environment against the adverse effects of hazardous wastes. Its scope of application covers a wide range of wastes defined as "hazardous wastes" based on their origin and/or composition and their characteristics, as well as two

Year	Treaty/Agreement	Background
		types of wastes defined as “other wastes” - household waste and incinerator ash.

Researchers in the CTSL. Photo by Kuban Jumabay-Uulu

3. LANDUSE CHANGES IN THE CTSL: THREATS AND OPPORTUNITIES

3.1. Background

The Central Tien Shan Landscape (CTSL) is in the eastern part of Kyrgyzstan, in the province (oblast) of Issyk Kul and is nestled between Kazakhstan in the north and China towards the east and south. Approximately 65 villages and towns, including the provincial headquarters of Karakol, are present in and around the landscape, mostly towards its northern border. Many of these depend on the landscape to differing degrees for grazing their valued livestock (Section 2.6) and collecting plant biomass for fuel, fodder and medicinal plants. Approximately 27% of this c. 13,200 km^2 landscape are pasturelands – meadows, steppes, forested tracts (Section 2.4, Table 1). These pastures are crucial for both, the resident wildlife and people dependent on the region. The entire landscape also has mineral reserves considered important for the country's economy, exemplified by the Kumtor Gold Mines that contributes on an average about 4% annually to the country's GDP (Snow Leopard Working Secretariat (SLWS) 2013; Heiner et al. 2013; Ito et al. 2013).
The human population density of the Issyk Kul province was barely 11/km^2 in 2016 and the decadal growth rate ending 2016 was 9.2%, considerably low compared to the national figure of 16% for the same period. Also, for the same period, the decadal livestock population growth rate was much higher at 49%, and has kept pace with the national rate (46%) (National Statistics Committee 2017).

3.2. A brief history of pastoralism in Kyrgyzstan:

The primary livelihood of people inhabiting the province has been pastoralism since millennia; however, the manner in which it has been practiced has undergone drastic changes with integration in the Soviet Union in the early Nineteenth Century and then after its independence, in the 1990s (Farrington, 2005; Undeland, 2005; Section 2.6). In brief, traditional pre-Soviet nomadic pastoralists in the country (as also in the CTSL) used distinct, fairly spread out seasonal pastures that were divided among the various groups or clans. Both, the human and the livestock population were considerably lower than what later ensued in the Soviet era. They mostly owned the Kyrgyz fat tailed sheep preferred for both meat and wool. With Soviet systems being put in place all the nomads were formed into collectives whereby livestock was nationalized and land was State owned.
Infrastructure (roads, bridges, veterinary and welfare support) was provided so as to spread grazing to utilize all usable corners of the country. Nomads were given targets for livestock based products and there was an assured State-controlled market.
This led to a sharp increase in livestock numbers in the Kyrgyz republic by the 1960s that peaked to over 12 million in the early 1990s, (over 2 million in Issyk Kul) (Figure 24 a,b). Grazing was thus, both spread out and intense. With the Soviet collapse and the country's independence on August 31, 1991, there was a breakdown in governance that affected the control and management of the communes for a number of years. The herders became de facto owners of the livestock and retained rights to their respective pastures. With crumbling infrastructure and support, they began to return to larger settlements with better amenities, often selling or slaughtering their livestock for varying monetary gains. This led to sharp declines in livestock holdings. From a peak of about 12 million livestock heads in 1990, it reduced by 56% in 1996 to its lowest value of about 5.4 million at national level, and in the same period, it reduced by 64% from the peak of about 2.2 million to 0.8 million in the Issyk Kul oblast (Figure 24). Livestock was now being grazed primarily near the villages while the remote pastures were mostly free of grazing. Since early 2000s however the

Kyrgyz Government has been making a series of efforts to streamline pastoralism in the country with international support, notably from GIZ and UNDP (Bussler 2010, Isakov and Thorsson 2015). With increased demand for wool, meat and milk, the population of sheep, goats, cattle and horses is seeing a steady increase (Figure 24). Like stated above, the past decade (from 1996) has thus seen a growth of 60% in the country and 64% in the Issyk Kul oblast, primarily fuelled by sheep and goat populations.

The Government of Kyrgyz Republic, with support from international developmental organizations continues attempts to streamline livestock grazing management in the country and in 2009 passed the law 'On Pastures' that mandates decentralization of pasture management to the Ayil Okmotu (AO) levels while maintaining the land ownership with the Government (including the Forestry Fund). The distant, summer pastures (jailoos) are administered by the oblast, the spring-autumn ones by the rayon administration and the pastures areound the settlements are administered by the AOs. Jeyit kenesh or the Pasture User Association (PUA) were established at each AO to prepare 5-year Pasture Management Plans (PMP) that includes sections on defining and describing their pasture areas, livestock composition and numbers, rangeland productivity, carrying capacity, pasture load, management needs, action plan, budget, etc. These specialized plans have however been difficult for the community to prepare and execute due to lack of capacity (Shigaeva et al. 2014). The complexity due to the grazing right holders now being far from their pastures, use of often inexperienced, outside hired herders, has made planned grazing rather difficult (Shigaeva et al. 2014, Section 2.6).
The pasture boundaries of the aiyl okmotu are often same as the former kolkhoz (collective farms) or sovkhoz (state farms), which may include lands such as remote jailoos, far from the village.
Organizations such as the National Pasture Users Association of Kyrgyzstan and Community Development and Investment Agency (ARIS), have taken up the task of supporting the PUAs in this endeavour through preparing manuals and hiring trained local facilitators (Chapter 4). CAMP Alatoo, a local NGO has also been conducting workshops to help communities develop skills to prepare more scientific PMPs. Like alluded to above, unlike in the immediate post-Soviet period there are now pasture right owners, livestock owners and finally, the herders on the ground, who are often different people. There are multiple scenarios that make management and decision making difficult on the ground. For example some scenarios may include:

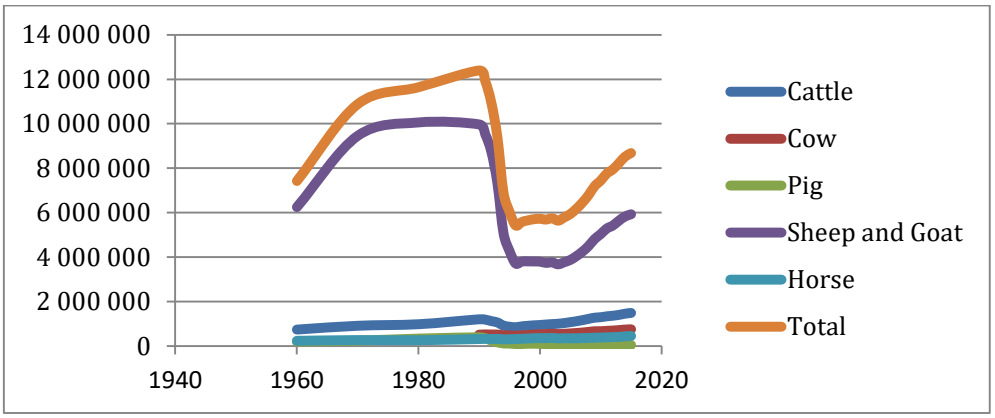
- The pasture right holder may live away from the landscape, may not have any livestock at present, and may have leased his rights to others. May not have a mechanism of monitoring use of his pastures.
- The pasture right holder may live away from the landscape, may have livestock, which he may herd himself or through hired herders. The Issyk Kul Governor's office also informed that there are often owners of large livestock holdings who are people from urban centers of the country and who hire the services of local owners and herders to herd their livestock.
- New settlements in the landscape (such as Ak Shirak and Engelchek) may not belong to any AO, but may have considerable number of livestock, often being grazed in lands belonging to PA buffer zones, Forestry Fund land and that belonging to some AOs.
- The herder on the ground may take the livestock in the designated pastures or may take them elsewhere based on convenience, as often he is not monitored. This appears to be a fairly common occurrence so far (Shigaeva et al. 2014).

3.3. Pasture degradation:

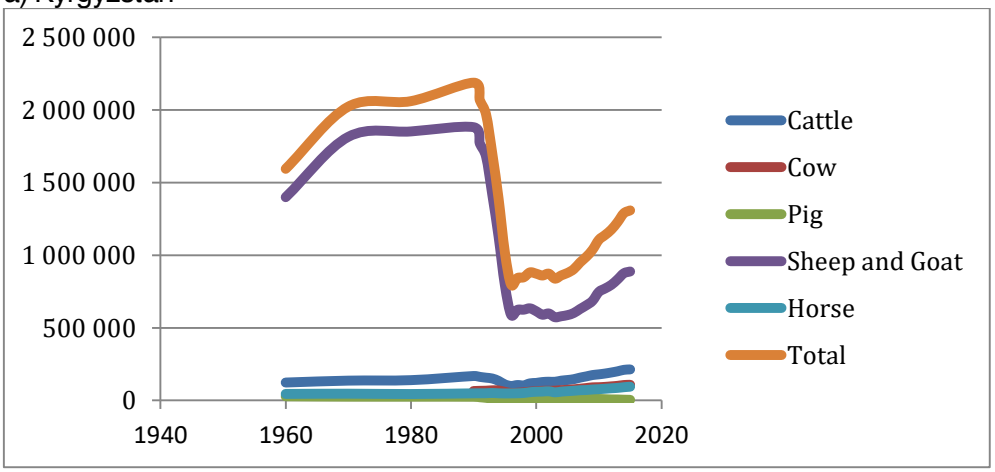
Recent literature points to a trend of most herding taking place in pastures near settlements, which tend to get overgrazed, while remote ones remained underused (Bussler 2010, Isakov and Thorsson 2015, Undeland, 2005, Section 2.6.4). Most long distance migrations of livestock happen using vehicles but roads and bridges to the far off mountain areas remain in disrepair, causing further uncertainty in pasture use.

Like pointed out by various researchers and the Kyrgyzgeprosem (Section 2.6), livestock holdings are likely underreported by as much as 30-50%. This means that the 2015 livestock of the country may be between 11.3 and 13.0 million, rather than the official figure of 8.7 million, while the same for Issyk Kul oblast may be between 1.7 and 2.0 million, instead of the official figure of 1.3 million. These figures compare to the highest livestock population the country has ever seen in the early 1990s (Figure 24) when the livestock census was more accurate. Given that the livestock grazed area is purportedly much lesser now, this means that most used pastures are being intensely overgrazed. The fear of degradation of pastures has been reported on many forums (Bussler 2010, Isakov and Thorsson 2015, Singh et al. 2015; Allsopp et al., 2007) and may be getting accentuated due to the increased aridity as a result of climate change (See also Section 2.3).

Figure 24: Livestock population since 1960 for a) Kyrgyzstan and b) Issyk Kul oblast. Note the dramatic dip in the 1990s *and subsequent increase in the late 2000's (data from National Statistical Committee Website, 2017*; data used is same as Figure 18 and 19)



a) Kyrgyzstan



b) Issyk Kul oblast, Kyrgyzstan

Most government, non-government and pasture forums express concern about sustainability and the need for more scientific practices in pasture management (Bussler 2010, Isakov and Thorsson 2015, Shigaeva et al. 2016, SLN, 2014; SLWS, 2013). The introduction of PMPs at the ayil okmotu levels is a step in this direction.

3.4. Interaction of livestock grazing and hunting:

In Soviet times livestock was spread all across the country, including the remote pastures and the level of grazing was quite intensive (Farrington 2005, Undeland 2005, Borchardt et al., 2011;

Van Veen, 1995). This was accompanied with state sponsored hunting of wild ungulates (for subsistence and sending to Moscow) (Czudek, 2005). Most wildlife thus may have been at relatively low levels of population in the country. With the Soviet collapse and consequent withdrawal and reduction of livestock from many parts of the country, especially the more remote pastures, probably allowed a recovery in wildlife populations in 2000s. However, this is also a time when poaching instances increased for mere survival, which included the live capture of snow leopards (for sale to the illegal zoo market). Data on wildlife population trends could not be obtained, but in case there was actually a population recovery in places, this would have made the option of organized trophy hunting and hunting by community more feasible; thus leading to a thriving hunting industry. However, with a tremendous rise in livestock in the past decade, which touched Soviet levels (according to some estimates) and substantial illegal and legal hunting (Devletbakov et al. 2016, NBSAP, 1998, Snow Leopard Strategy 2014, SLWS, 2013; SLN, 2014), the wildlife populations may be beginning to decline as evidenced in the Kyrgyz Alay (Taubmann et al., 2015). We may thus be on the verge of a significant wild prey decline across the country, necessitating more scientific management of wildlife, especially of legal hunting.

3.5. Mining and conservation:

Another significant issue affecting conservation and environment in the country is its considerable mineral wealth, which includes the precious metal, gold, antimony, mercury, and also coal, uranium etc. (Eisler & Wiemeyer, 2004, Renaud, 2016). This is regulated by the State Agency for Geology and Mineral Resources and the mining industry contributes over 10% of the country's GDP, with Kumtor Gold Mines itself contributing about 4% to the GDP. The industry further contributes c. 40% of its exports. Most remote corners of the country were, or are being explored and mines are being set up accompanied with necessary infrastructure in terms of roads, electricity and labour support (Renaud, 2016, Gullette 2014).
The two abandoned mining towns of Engelchek and Aksharak in the CTSL, and the Kumtor Gold mines along the western border of the CTSL are evidence of this. Further, as per local reports much of the landscape is presently being surveyed through exploration licenses issued to private companies, however we couldn't obtain any official confirmation on its extent. Various agencies have been concerned about the mining industry's impact on environment and wildlife. They directly impact wildlife through habitat conversion and degradation, as well as cause environmental pollution of air and water bodies, especially related to leakages from tailing dumps (WWF, 2000). There is also considerable concern about pollution, national good and disrupting livelihoods of the local people, which can cause conflicts between people and the companies (Gullette 2015, Moldogazieva 2015). Researchers and activists have thus raised concerns about the sustainability of this industry (Bogdetsky et al. 2001, Kronenberg, 2014, Moldogaziera 2015). However, given the importance of mining to the country's economy they suggest more stringent laws and practices to mitigate these effects.

3.6. Understanding threats to the Central Tien Shan Landscape:

In order to understand the threats facing the Central Tien Shan Landscape 23 experts representing twenty government, academic and non-government organizations were invited to list and rank each threat in the landscape in a daylong workshop in March 2017 (Appendix 12). The participants listed threats, and then ranked them based on how widespread it was in the landscape, how severe the threats were and how irreversible they were (following Margoluis and Salafsky 1998). This exercise was crucial to use collective knowledge to pinpoint the issues facing the landscape as a whole so that suitable mitigation could be developed and suggested under this Management Plan. It is recognized that for the vast landscape, such an assessment is coarse and that the presence and level of threats will differ according to the parcel of land and its legal landuse. For example, livestock grazing may not be an issue in the Sarychat Ertash Reserve, where it is successfully controlled, but may be a severe one in the adjacent valley.

The planning process in the future thus needs to use a similar approach to develop threat matrices for a PA, Hunting Concession or any other land unit being considered under an annual plan or a village level micro-plan.
The workshop identified 16 threats to the CTSL (Appendix 12), which were re-categorized into 7 broad threats and are discussed below. The participants ranked climate change as the top threat. It was however recognised that although a potential threat, it is barely understood at present and is more of a cross-cutting agent affecting many other threats and livelihood issues (pasture quality, disasters, conflicts, etc.). An important feature highlighted was that while direct impacts may be difficult to document, human adaptation to climate change could influence new threats (see also Forrest et al. 2012). For example, in the Himalaya, remote areas at higher altitudes have now opened up to cultivation, which is causing new threats such as blocked wildlife corridors and crop depredation by wild ungulates in remote parts of the snow leopard range. In the list below the threats that can be affected by climate change have been marked with an asterisk (*). The re-categorization included grouping threats together into broader categories but the rank (lower the value, higher the threat rank) for the individual threats is provided in the parenthesis. Further, the average rank of broader category is also given in italicised parenthesis alongside the broad threat category.

1. Livestock and ungulate competition (4.0): With intensification of the livestock industry, many pastures are getting overgrazed, thus threatening the livestock industry itself. The resultant degradation and spread of diseases is likely to deplete wildlife populations, as also observed in numerous other places in the snow leopard range and other rangelands (Alkemadea et al. 2013, Berger et al. 2013, SLN 2014, Eldridge et al. 2016, Briske 2017).
    1.1. Competition for pastures (3): Intense livestock grazing pressures can exclude native ungulates due to interference (direct disturbance) or exploitative competition (depleting preferred forage resources) (Namgail, Fox & Bhatnagar, 2007; Bagchi et al., 2004; Mishra et al., 2004).
    1.2. Pasture degradation* (5): Excessive and repeated livestock grazing pressures, can lead to an eventual decline in palatable species, increase in bare earth and erosion leading to an incrementally and possibly irreversible, reduction in pasture quality (Singh et al. 2015; Allsopp et al., 2007, Alkemadea et al. 2013).

    1.3. Animal disease* (4): There are numerous animal diseases prevalent in Kyrgyzstan (Depa et al., 2012; Valarcher et al., 2009). Often, with intense grazing pressures and extensive grazing practices, there can be a transfer of diseases between the domestic and wild animals, sometimes leading to catastrophic losses, as reported elsewhere in the world (Morgan et al., 2006; Lundervold, 2001). With diseases such as PPR, foot and mouth disease and lung infections fairly common in the country, their impact on wild ungulates can be severe but remains largely unknown.
2. Human disturbance and encroachment (6.5): There is a pressure on the landscape from mining industry and the expressed need of the herders to have better infrastructure to exploit far off pastures. Also, expansion of settlements and urbanization into the snow leopard habitats has accelerated in the past few decades. This, along with other mega projects for power generation and linear infrastructure (power lines, roads, canals, pipelines) are known to cause tremendous permanent damage to conservation of ecosystems and species due to habitat loss, mortality and inhibited wildlife movements (SLN, 2014; SLWS, 2013).
    2.1. Infrastructure development (2): Like stated above, large linear infrastructure, dams and urbanization can result in direct disturbance and habitat loss to species. They often lead to recurring damage in places. While the research was unable to find out any such large proposed projects, the group felt it important to flag it as a high threat given the irreversible nature of the damage.
    2.2. Damage to ecosystem by mining industry (2): Mining, especially open cast mining causes denudation of topsoil and often toxic and increased runoff. They are also often accompanied with blasting, sound pollution that can disturb wildlife. Presence of outside staff and labourers can often lead to increased poaching pressures on wildlife too. With

existing mines, abandoned and unused mining colonies and continuing prospecting for minerals in the landscape, this was considered to be a serious threat to the landscape.

2.3. Damage to wildlife by dogs (9): Free ranging dogs or those owned by rangers, villagers and herders can cause direct extermination of marmots, ungulates & cause disturbance and competition to native carnivore including snow leopard and wolf. They can often be involved in transmission of disease such as rabies and canine distemper. The issue of free-ranging dogs has become a severe issue in much of the developing world (Young et al., 2011; Hughes & Macdonald, 2013) and the Himalayan tracts (Home et al., 2017; Ghoshal et al., 2016; Suryawanshi et al., 2013). The Veterinary department is in the process of documenting each and every owned dog in the country. However, with no control on dog population and their movements, this can be a problem that can escalate in the landscape.

2.4. Border fencing (10): Fencing along the borders with China and Kazakhstan has been proposed and some of these may be along vulnerable stretches. However, if constructed, these fences can become a permanent barrier to wildlife movements and this was flagged as a potential threat to wildlife mocements in the landscape.

2.5. Insensitive Tourism (16): At present tourism is largely restricted to the Issyk Kul lake and the Karakol National Park (and ski resort) with some amount of mountaineering related tourism happening along the cluster of high peaks around Jengish Chokusu (7,439m), the highest peak in the Tien Shan, situated towards the eastern border of the landscape. It was noted that whatever little activity was happening seemed to bring very little benefits to the local people. The participants of the workshop flagged this as potential threat (encouraging local resource extraction, poaching, cultural dilution, etc) as well as an opportunity and area of intervention for livelihood generation under the management plan.

2.6. Resource extraction: People in and around the landscape depend on the region for extracting biomass that includes timber, berries, fuel, fodder, construction material and medicinal plants. This was not listed explicitly in the workshop but has been included in this list as a possible threat. This is also an area where more information is needed.

3. Wildlife poaching (9.6): While some participants expressed concerns about legal hunting, most agreed that poaching of carnivores, ungulates, birds etc., is significant in some places and may be leading to further depletion of wildlife populations. Poaching of snow leopard can be intentional but in some cases it is unintentional when it gets captured in traps or snares set up for other species. Mortality of snow leopard can happen due to poisoning of carcasses meant to kill wolf, considered to be a vermin and legally hunted. Similarly, marmot eradication programs (anti-plage operations) also may sometimes use poisons and can affect snow leopard if they scavenge these marmot carcasses. Poaching has been identified as a significant issue in the Kyrgyz Snow Leopard Strategy and NSLEP (SAEPF 2009, 2012, SLWS 2013 (Appendix 12)).

3.1. Ungulate Poaching (6): The Tien Shan argali and Asiatic ibex are sought after by poachers and the levels of hunting by some local people as well as personnel from the armed forces is reportedly substantial (SAEPF 2009, 2012, SLWS 2013 (Annex)). In the northern parts of the landscape, the maral deer and roe deer are also poached.

3.2. Snow Leopard Poaching (7): Snow leopards may be poached using different techniques, and at times may be captured alive for trade (SLN, 2014; SLWS, 2013). There is a heavy penalty on snow leopard poaching compared to other species but cases do come up in the landscape and the rest of the country.

3.3. Poor enforcement due to low staff strength and capacity (11): The area is vast and porous with international borders and numerous villages. Staff numbers and capacity influences apprehending and filing cases (see also point # 5 related to governance and implementation).

3.4. Pesticide and toxin utilization to kill marmots (12): Anti-plague action with the use of pesticides, marmot dusting lead to large scale mortality of marmots, and can lead to poisoning of other carnivores that scavenge on their carcasses.

3.5. Utilization of toxins to kill carnivores (12): This is primarily in retaliation of livestock depredation but linked to poaching too.
3.6. Kyrgyz law allows killing the grey wolf, with a system of rewards too. It was reported that under some traditional medicine practices many parts of wolf meat are now being sought after, possibly increasing the level of hunting of this species.

4. Environmental governance and policy - poor implementation of legislation and its enforcement (11.0): The Government staff, especially from the SAEPF (the PA and the Rational Use Department in particular) is the primary custodian of wildlife and are the primary implementers of this plan. It was pointed out that at present the staff might have relatively poor understanding of the wildlife laws to enforce conservation rules. Further, there are now advanced scientific protocols for monitoring wildlife, especially ungulates and large carnivores, and the staff largely lacks knowledge of these techniques. This is a key requirement for conservation monitoring. Management also requires considerable ability and capacity to engage with local communities and other stakeholders and this skill and belief system may not be developed well enough in the staff.
   A UN Economic Commission for Europe report (UNECE 2008) suggests that the position of the SAEPF as a State Agency versus a Ministry may limit ability to leverage inter-sectoral work, crucial for such plans.
5. Human-wildlife conflict – livestock depredation* (14.0): Human-wildlife conflicts here primarily refer to attacks on the livestock by wild carnivores that leads to economic loss to the community, sometimes leading to retaliatory killing of carnivores and spread of negative attitudes towards wildlife and conservation in general. Like pointed out above, utilization of toxins to kill carnivores is also prevalent, that may kill unintended carnivores such as snow leopards at times.
6. Natural Disasters and impacts on the ecosystem and local population* (14.0): Natural disasters are reportedly on the increase and relate to landslides, avalanches, flash floods and severe winter snows (UNECE 2008). These are related to climate change impacts as also unplanned or improper construction of roads.
   These disasters can affect conservation and livelihoods by loss of crucial pastures, especially in landslides and flash floods. These can in addition affect pastoralists by stopping access to important pastures.
7. Insufficient awareness among the local population and stakeholders* (15.0): The snow leopard is a part of the Kyrgyz heritage (SAEPF 2012, SLWS, 2013), however, people may lack awareness about its threats and how inadvertently they may be harming them. There is lack of awareness in varying degrees among the local people, government officials and other stakeholders such as hunters and tourists.

3.7. Landuse change and conservation opportunities:

The preceeding sections primarily discuss the threats brought about due to changing landuse and development. The Plan however recognizes that these very changes may bring about opportunities for conservation too. Development in terms of improved infrastructure and communication enable enhanced human welfare activities and opportunity for development of alternative livelihoods. For example, if roads bring in poachers into the area, it can equally well bring enforcement authorities. It can also bring in regulated tourism bringing in new opportunities to local people. Intense livestock production can be a conservation threat, but with regulated livestock composition and numbers, value added marketing of local products, and better infrastructure to transport it, it brings in a more remunerative option for the communities. This is especially so when a program such as this management plan is in place to monitor and steer the changes in a manner that minimizes environmental harm.

3.8. Conclusion:

Snow leopards are an important part of the Kyrgyz heritage and it is considered to be the mascot of the ancient national hero Manas. The Kyrgyz Government and people have thus been conscious about snow leopards conservation and the commitment reflects in numerous initiatives

such as their National Snow Leopard Strategy (2012), the Sustainable Development Strategy (Abaihanova et al. 2007), their NSLEP (2012), conservation in Protected Areas, and recently, the on-going UNDP sponsored project to delineate and conserve the Khan Thangri State National Park. With rapid socioeconomic changes happening, threats to conservation have been intensifying in numerous parts of the country. This chapter highlights some such changes and their possible consequences for snow leopard conservation. Understanding and mitigating both, existing and potential threats will thus be a key component for this Management Plan. Continuing research and monitoring is being given due importance so that the managers can proactively detect threats and deal with them using strategies outlined in this Plan, or any new approaches that emerge in due course. It is also recognized that many of the changes that are inevitable, can be leveraged as opportunities to strengthen protection and conservation of species.

View of the CTSL in summer. Well adapted plants survive in the hostile climate of the high elevations. Photo by Kuban Jumabay-Uulu

4. IDENTIFICATION AND EVALUATION OF STAKEHOLDERS AND POTENTIAL INTERACTION WITH CONSERVATION

The GSLEP landscapes are large areas that are spread across multiple land use types and involve multiple stakeholders, which include local communities, government departments, NGOs, multilateral agencies, and donor agencies. These agencies are implementing their respective mandates through their programs and projects. Their mandates include human welfare, livelihood support, animal husbandry, commercial activities, national security, environmental protection, etc.. Most of the stakeholders depend on the land and natural resources or influence them to varying degrees, either negatively or positively. The overall goal of the management plan is to ensure the continued survival of wildlife in the landscape while ensuring that human livelihoods are not obstructed, but on the contrary, are improved to the degree possible. This chapter's purpose is to understand the organizations that are active in the landscape, their mandates, key projects and ultimately understand how they contribute or can contribute to conservation and sustainable development. Based on this stakeholder analysis it is hoped to identify potential partners in conservation and their on-going works that can be included under the management plan through 'convergence' activities. This will add credit of supporting conservation to their on-going work, avoid duplication of efforts and will rationalize the use of resources. Further, it is hoped that suitable long-term partnerships will be forged between agencies so that cooperative works can be carried out on a sustained basis. It is also hoped that the partnerships and dialogues can help in avoiding activities, which might be destructive or detrimental to wildlife or the environment in general.

The Management Plan proposes to set up separate structures that facilitate such cooperation and collaboration (Chapter 9).

4.1. Governance in the Country, from National to Local Level :

Kyrgyzstan has strong democratic systems established for governance (Table 3). Below is a brief description of the governance at the level of the oblast and landscape, which is more pertinent to the Management Plan.

Oblast

The head of the oblast is the governor. On 17 July 2012, the Government of Kyrgyzstan passed a decree under which governors became known as plenipotentiaries of the Government of the Republic. Akims are the heads of districts (rayons) and mayors preside over towns.

The ayil okmotu (village council for one or more villages, depending on size) or mayor's office are the executing bodies of the local self-government (LSG) administration.

Local self-government administration

LSG administrations enjoy executive power in oblasts, districts (rayons), and towns as stipulated by the constitution and relevant laws. The main responsibilities of local government administrations are to implement Kyrgyz laws, Presidential Acts, government regulations, and the general management of organizations funded from the local budget. At least once a year, they report to the local assembly about the situation in their territory, relations with higher government organs and international relations.

The ayil okmotu is responsible for activities in one or several villages, depending on the administrative grouping of villages, and is presided over by the head of the ayil okmotu. With the power given by the relevant state authorities and approved by the village council, the ayil okmotu oversees the social and economic development of the territory. The boundaries of the ayil okmotu are sometimes founded on the former kolkhoz (collective farms) or sovkhoz (state farms), which may include lands, such as remote summer pastures (jailoos), that are not adjacent to the village.

Assembly of local representatives (or local self-government bodies)

Local self-government bodies comprise representatives elected by and accountable to the local population and work with the local administration. The head of the local Assembly (rayon kenesh) is also the head of the local self-government. These bodies confirm the local budget and account for its utilization, conduct hearings on the utilization of extra-budgetary funds, and approve acts related to their activities. Their bodies and other local organs are responsible to the government for correct implementation and application of laws. Representatives can, by a two-thirds majority, express a vote of no confidence in the head of local self-government. LSG bodies' administration is overseen by the State Agency for Local Self-Government and Interethnic Relations which seeks to implement government policy in democratic governance, by creating the necessary conditions for the development of local self-government, developing an optimal system of interaction and division of responsibilities between public authorities and local self government, improving the legal framework of local government, strengthening its financial and material base, as well as creating conditions for socio-economic development of local communities of the Kyrgyz Republic.

Other associations in ayil okmotus

Independent of local self-government bodies, there are a number of associations based in ayil okmotus. These address community issues and the use of local resources. Such associations and organizations include pasture committees (jaiit komitet), farmers' unions (fermerdik koshuun), courts of elders (aksakaldar sotu), cooperatives (jamaattar) and community prevention centers (koomduk aldyn aluu borboru). Importantly, the cooperatives deal with varied activities, including farming and handicrafts.

Table 3: A brief overview of the Government Structures from the President to the village level

Level	Position/Body	Politician/Officials
National	President	President – is elected by popular vote, for a period for 6 years.

Level	Position/Body	Politician/Officials
	Jogorku Kenesh (parliament) of Kyrgyz Republic. Deputies are electing for 5 years	Speaker of Parliament– is elected by deputies
	The Government	The Prime Minister. Elected by deputies that have more than half of the mandates, or a coalition of factions within a period 25 working days from the day of the first meeting of Jogorku Kenesh of the new convocation nominates a candidate to Prime minister.
	Ministries Regional and District Units	Ministers (At the suggestion of the Prime Minister after approval of Jogorku Kenesh is appointed by the President). Heads – are appointed by Ministers, Regional and District Directors.
	State Agencies Regional and District Units	Chairpersons of Committees – Appointed by the Prime Minister, except defense and security, who are appointed by the President, Heads – are appointed by the Chairperson.
Province/Oblast	Plenipotentiary representatives of the government Regional Oblast Keneshes	Governors are appointed by the Prime Minister. Chairmen of the Kenesh are elected by deputies.
District/Rayon	District state administrations District/Rayon Keneshs	Akims (Heads) are elected by the Prime Minister Chairpersons of the Kenesh are elected by deputies.
Villages/Ayil	Ayil Okmotu Ayil Keneshs Jayit (Pasture) Committees.	Head is elected by people. Chairperson of the Keneshs are elected by deputies The chairperson of the jayit committee is elected by a majority of votes of pasture users on the proposal of the head of the corresponding ayil aimak, or village council. Members of the jayit committee are elected at the general meeting of the association from representatives of pasture users for three years.

4.2. Stakeholders, their mandates and activities

In this section the organizations, their mandate, function, objectives, key projects/activities and funding sources have been compiled (Appendix 8). This has been accomplished by review of their respective websites, brochures and also by direct interviews with over 40 key designated politicians and officials (Appendix 8). The interviews in the oblast were facilitated by the Governor of Issyk Kul while the other organizations at the national level were either contacted directly or through a letter of introduction from the Director of the SAEPF. Further, there were three rounds of discussions and stakeholder consultations with the Governor in the oblast office (Appendix 9 to 13). The interviews were particularly important for getting a local perspective of the addressed issues and also as an outreach to the agencies, for them to learn about this management planning exercise. Most interviews were a two-way process where the officials were provided full opportunity to understand the management planning process.

Local community stakeholders: The local communities are the primary stakeholders in the landscape as they depend on it for grazing their valuable livestock and for collecting biomass. However, due to the history of rights over land by the ayil okmotus and the right holders not always using their lands, it was difficult to find the ayil okmotus and households who had a current stake in the landscape. The Kyrgyzgeprosem and Pasture Dept. are in the process of mapping ayil okmotu but they are not immediately available. The stakes and concerns of this important group of people has not been fully documented in this Plan. Further investigation on this aspect is however included in the activities under this Management Plan. There are 58 Pasture Committees in the vicinity of the CTSL and over half of them may have a stake in the landscape. The stakes by the community are complex and determining which ayil okmotus, and which households depend on the landscape has been proposed as a part of the work to be carried under the management plan (Appendix 14).

Households that were working on the pastures in Soviet times gained rights on them after independence. However, in the aftermath of the breakdown of infrastructure and support systems on independence, many of these households migrated far from their pastures, while retaining rights over them. Sometimes these pastures were being grazed by other herders with or without the knowledge of the original owners. Often the livestock owners may now be busy with other avocations and have hired herders from outside the region to graze their livestock. These herders may change often and with little monitoring the grazing may be happening in areas as a matter of convenience rather as per rights. The matter gets further unclear since the government authority mandated to document pasture boundaries (Kyrgyzgeprosem) is still working on developing these maps for the country (see section 2.6).

Other Local stakeholders: It is recognised that effective conservation under this management plan is hinged upon coexistence of people and wildlife (Chapter 5) and is rooted more in sustainable development rather than exclusive protectionist practices. The management plan thus gives utmost importance to on-going sectoral and cross-sectoral works in the landscape area and believes in forging effective partnerships with other stakeholders.

People are agro-pastoral, dependent on pastures, with cultivation primarily to support winter-spring fodder requirements. Other livelihood options for the people are limited. Summer tourism is basically widespread outside the landscape, in the north shore of the Issyk Kul Lake, whereas the south shore of the lake and the CTSL itself is comparably less and differently developed (see section on tourism Section 2.7). Mining is taking place in pockets but other industry is rare. The primary occupation of the people is still agro-pastoralism, which is therefore as well the prioritised sector by supporting stakeholders. The Kyrgyz Government thus works towards infrastructure development (roads, rail, bridges, dams) and welfare works (human health care, veterinary health care, education, agricultural support, governance). In recent decades international NGOs (INGO) and multilateral agencies have also got actively involved in development and often have a strong component for sustainable development of the country. They are primarily supporting poverty reduction, sustainable agriculture, education and health sectors. There are some local NGOs that

also have independent or collaborative programs to implement similar projects in sustainable development. Their programs include ways to maximise fodder production (winter-spring), pasture productivity, ensuring sustainable management and clarifying land rights.

Conservation is mainly carried out by the State Agency for Environmental Protection and Forestry (SAEPF). They manage the three PAs, the Forest Fund areas and the seven Hunting Concessions that support the national and local economy. The Issyk Kul Biosphere Reserve strives to integrate conservation & development and seeks to align its approaches and practices with the proposals made under this management plan and is therefore a key stakeholder. Additionally, there are a lot of overlapping activities with the upcoming management of the Khan Tengri Reserve, which is prepared by the UNDP and shall focus on conservation, tourism management and awareness generation. Furthermore, there are now a few local and INGOs that are involved in supporting conservation programs through improving science on and models of conservation practices.

Most of the agencies have programs to enhance the capacity of their staff or other stakeholders.

This management plan aims to build upon the strengths of the existing agencies and mainstream conservation goals into their working – essentially move towards sustainable development of the CTSL (& the region in general).

PART B: Management

5. VISION, GOALS AND OBJECTIVES OF MANAGING THE CTSL

The Overarching Goal of the GSLEP is for the 12 Range Countries, with support from interested organizations, to work together to identify and secure at least 20 landscapes across the cat's range with healthy populations of snow leopards by 2020, or 20 by 2020.

The three fundamental criteria for securing healthy populations of snow leopards are:

1. landscapes that include at least 100 breeding age snow leopards,
2. landscapes that include adequate and secure prey populations, and
3. landscapes with connectivity to other snow leopard populations.

The means to achieve this impressive goal is that each range country should invest in the participatory design and implementation of a scientific management plan that can aid in secure 100 breeding snow leopards. The management plan for the c. 13,200 km^2 of the Central Tien Shan Landscape (CTSL) of Kyrgyzstan aims to achieve this goal, along with adjacent GSLEP landscapes, viz. the Tuomur (2,376 km^2) and Northern Tien Shan (23,426 km^2) landscapes in China and Kazakhstan, respectively.

Under such a Global initiative, the vision of the management plan is stated as:

> A well-protected Central Tien Shan Landscape where people and wildlife coexist in harmony, where populations of snow leopards and other wild species are secure, and where the entire high mountain ecosystem and the ecosystem services it provides are maintained for the benefit of humanity.

People in the statement refers to the local communities and all other stakeholders using or affecting the landscape. To fulfil this vision a set of five goals have been identified, which will be implemented through nine inter-related objectives. The rationale for these goals is that it is crucially important to understand and mitigate threats to conservation (Goal I), for which securing local peoples' livelihoods and wellbeing are often key elements (Goal II). There also should be a high level of awareness about the value of snow leopards and mountain ecosystems, and positive attitudes towards conservation amongst all key stakeholders, which is important for their sustained support (Goal III). Both planners and implementers of this innovative and adaptive management plan need to have adequate capacity to carry out their work (Goal IV) and appropriate governance structures must be in place to sustainably manage this large landscape as an integrated unit (Goal V).

The management plan's 5 goals and 9 objectives are given below:

Goal I: Major threats to snow leopard and other wildlife are mitigated so that wildlife populations increase, or remain at desired levels. Action is needed to mitigate identified threats based on clear understanding, participation, and innovative activities:

Objective 1.1: To understand socio-ecological systems in order to enable more informed decision-making. (Focused research can lead to a better understanding and dealing with threats and challenges. This objective thus also intersects with the other goals).
Objective 1.2: To protect wildlife in the CTSL, including snow leopards and their prey.
Objective 1.3: To protect ecosystem against human disturbance and encroachment.

Goal II: People's livelihoods are made more secure by strengthening existing mechanisms or co-developing innovative options for development. Action is needed to support remunerative improvements, or alternative uses of grasslands (pastures) that are less damaging to the ecosystems' goods and services:

Objective 2.1: To manage pastures sustainably for benefit of both herders and wildlife.
Objective 2.2: To enhance local incomes and secure agro-pastoral livelihoods through mechanisms or opportunities connected with conservation interventions.

Goal III: Positive attitudes are promoted among all key stakeholders. Action is needed to better inform the attitudes of the lay public, officials, visitors, and businesses, in order to strengthen positive attitudes towards conservation:

Objective 3.1: To enhance awareness of conservation benefits among all stakeholders.

Goal IV: Professional capacities are enhanced among implementing agencies and development partners to plan and implement strategic innovative practices. Action is needed to better equip all implementing agencies and their partners to continuously adapt their approaches and practices in order to sustain landscape level conservation:

Objective 4.1: To build the capacities of SAEPF staff, other government departments and community members to engage in cooperative activities that improve livelihoods and conservation. (Focus is on participatory approaches, including co-management).
Objective 4.2: To minimize the impact of natural disasters on livelihoods and wildlife.

Goal V: Systems of good governance are agreed and strengthened at all levels based on sound planning. Action is needed to ensure clear systems and structures are in place to aid multi-sectoral collaborations and to develop viable financing mechanisms:

Objective 5.1: To create efficient and equitable mechanisms for governance (i.e. who participates in decision making) and management (i.e. what needs to be done) in the multi-dimensional, multi-sectoral landscape to be served by the CTSL management plan, incorporating more inclusive participatory and community-led approaches.

6. ZONATION OF THE CTSL FOR PRIORITIZING SNOW LEOPARD CONSERVATION

6.1. Background

In the vast CTSL landscape there are numerous types of terrain, ranging from pristine valleys, to highly disturbed, degraded ones, to complete non-habitat (permafrost and glacial areas above snowline). Parts of the landscape are also gradually sloping, thus being of a poorer habitat quality for snow leopard. The entire landscape thus may not have equally good values for snow leopard. Further, some pasture areas such as those near settlements and roads are crucial for local communities and their use in such areas is likely to grow. It is thus important to identify the areas important for both these – snow leopard and local herders and then zone them based on their conservation value.

Habitats should thus be ranked as per their conservation importance governed by both value for wildlife, value for people and trends of pressure. This can help in prioritizing action. For conservation the areas without any pressures but are good for wildlife have highest importance. These areas have and will survive most of the identified pressures; management should be aimed to preserve this status. The other areas with high human pressures are most prone to change, and management should be aimed to actively address these pressures. The areas where there is no conservation importance, but could still be considered in terms of connectivity between the other habitats may also need some management.

The broad zones in the CTSL comprise of the three PAs (35% of CTSL), that have some amount of protection and management, the seven Hunting Concessions (47%), that are used for commercial trophy hunting by companies and livestock grazing by communities, and Government land (Forest Fund and others) that also may be used for livestock grazing (12%). Like mentioned above, all these areas, even within a PA are not equally good for wildlife (Section 1.2 and Table 6.1).

6.2. Snow Leopard Habitat Suitability

Being the flagship for this management plan, a habitat suitability index for the snow leopard has been created using the Maximum Entropy modelling. For this, altitude, terrain ruggedness, land-use and slope values based on 500 snow leopard locations from five radio-collared animals (S. Kachel & T. Rosen, Panthera) were used (Figure 25) pl see Forrest et al. 2017 for further details). These however do not consider human use as yet since spatial data on this aspect is absent and is being proposed as a priority task under the management plan. The zonation suggested below is thus purely based on value to snow leopard.

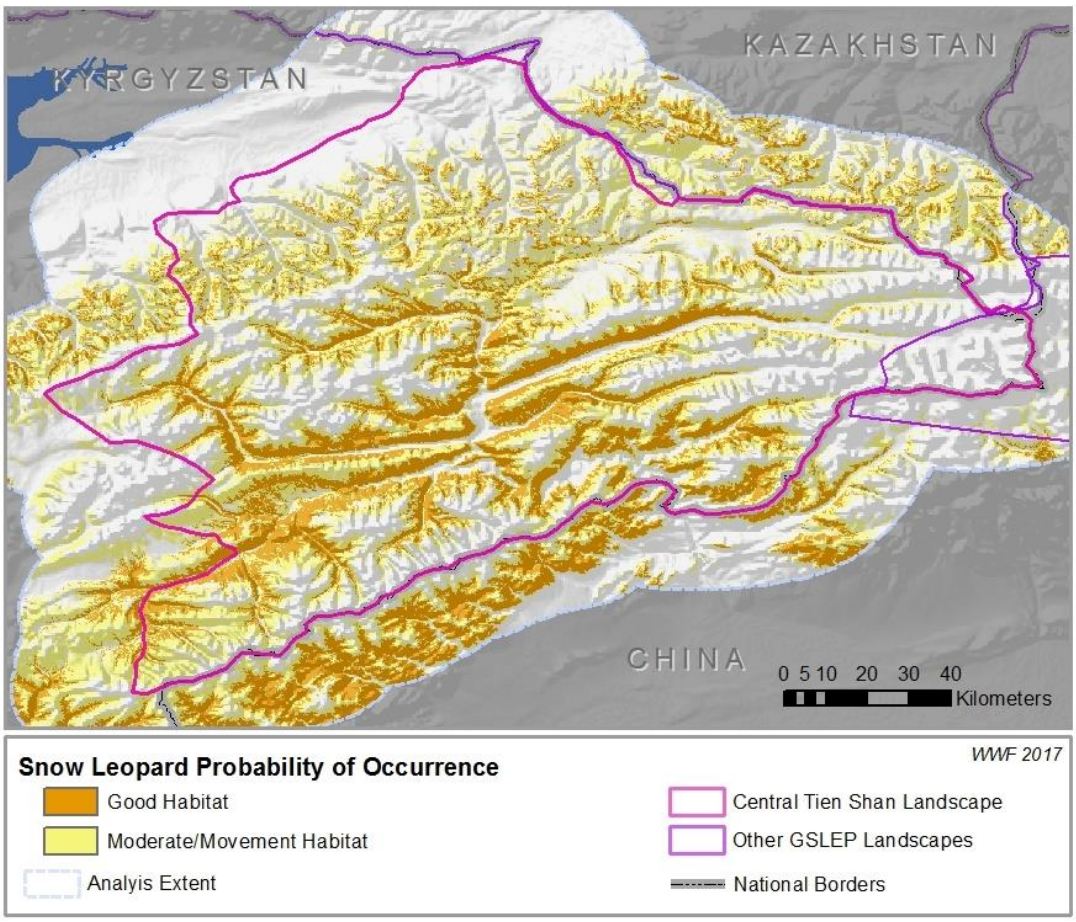
About 6,635 km^2 is estimated as the total snow leopard habitat in the landscape based on this model. Areas with high use (p>40) have been classed as 'good' habitat and those with lower use (p = 5 to 40), has been taken as 'moderate' of 'fair' habitat. 'Poor of non habitat' are primarily areas with no of very little recorded use and constitute the permanent snow in higher elevations (>5000m) or thick forests at lower elevations.

An analysis of the Maxent output suggests that the PAs cover a third of both, good and fair snow leopard habitats (Table 4). It may be noted that over half of Sarychat and Karakol were in good or fair snow leopard habitat while they had 40 and 45% respectively under poor or non-habitat, and this value in Khan Tengri is 60% (Table 4). It may also be noted that the so-called non-habitat may not have direct importance for wildlife but has ecological functions and hydrological value.

Table 4: Distribution of Habitat quality across the three protected areas in the CTSL. Percent values for PAs is based on their respective total area. This is based on the Maxent modelling output from Figure 25.

Habitat Area in Protected Areas	Sarychat-Ertash State Nature Reserve (km^2)	Karakol Nature Reserve (km^2)	Khan Tengri Proposed National Park (km^2)	Total Area Protected (km^2)	Total Habitat Area Unprotected (km^2)
Good	392 (26%)	45 (12%)	399 (15%)	837 (33%)	1667 (67%)
Moderate or fair	489 (33%)	160 (42%)	687 (25%)	1335 (32%)	2795 (67%)
Poor & Non habitat	610 (41%)	178 (46%)	1672 (61%)		
Protected Area (km^2)	1491	382	2758		

Figure 25: Potential snow leopard habitat in the CTSL based on Maxent analysis (Details in footnote below map and Forrest et al. 2017)



Potential snow leopard habitat in the Central Tien Shan Landsape, Kyrgyzstan. Model was produced in Maxent as a function of land cover (ESA 2009), elevation, terrain ruggedness index, slope (Riley et al. 1999, Lehner et al. 2008), and radio collar observation points (S. Kachel, Panthera 2017). Good habitat (p>40) correlates with a sharp increase in observations; moderate/movement habitat is p> 5 and <=40. The resulting model output had a training Area under Curve (AUC) value of 0.886, and a test AUC of 0.870., considered to be a strong predictive result.

Of the total snow leopard range (6,635km^2) in the CTSL, 38% (2,504km^2) was 'good' and 62% (4,130km^2) as 'fair' habitat for snow leopards. Of the 'good' and 'fair' habitats, just a third was protected by the three PAs.

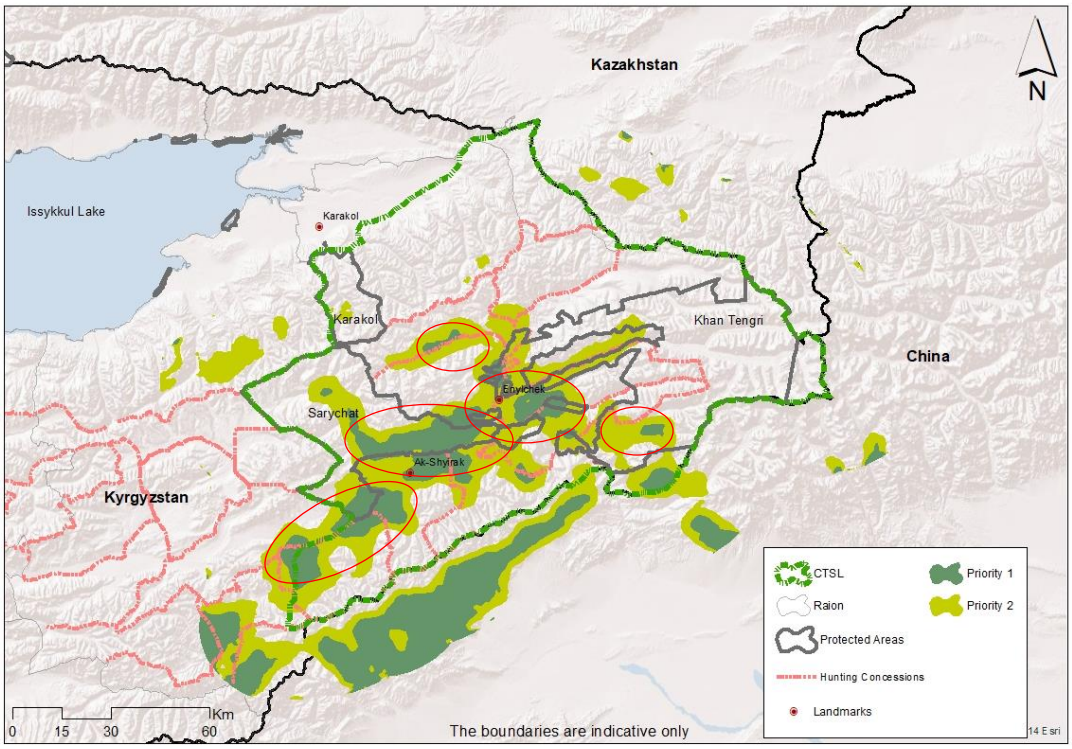
6.3. Zonation of conservation areas:

In order to obtain a more tangible output for priority conservation areas purely based on good snow leopard habitat, a further analysis on the Maxent outputs was carried out using the 'focal statistics tool'[12] in ArcGIS to estimate mean value of the habitat suitability values around a radius of 5km. The 5km radius was chosen on the basis of average home range size of female snow leopards (70-80 sq km, Johansson et al. 2016). The continuous spatial data generated by focal statistics was subjected to Jenks optimization to determine the best arrangement of values into five different classes. The method minimizes each class's average deviation from the class mean

[12] See http://desktop.arcgis.com/en/arcmap/10.3/tools/spatial-analyst-toolbox/focal-statistics.htm for further details on the rationale and use of this tool

while maximizing its deviation from the means of other groups. The top two classes are identified as priority areas for defining 'quiet zones' within the landscape (Figure 26).

Figure 26: Zonation of the CTSL based on *the 'focal tool analysis' on the Maxent output for snow leopard habitat* suitability. This map shows polygons that can be used for high conservation priority where pressures can be minimised. *These are also candidate sites for establishing 'quiet zones' w*ithin PAs and Hunting Concessions. Rough location of priority sites are shown with red ellipses



In the CTSL the largest contegous block of good habitat appears to be near the Ak Shirak village that is mostly in the Sarychat Eertash Reserve, but also includes areas just outside (Figure 26, Table 5). There is another relatively small block of good habitat just south of Enylchek on the border of the new Khan Tengri reserve. A 20km buffer was used in the analysis and this points to small extent of good and fair habitat just west of the landscape and very little area towards the north. It can be seen that there is a large chunk of contegous habitat just south of the CTSL, in China, which may be worth conserving.

This map is also useful as a tool to determine corridors between the PAs. The Khan Tengri Management Plan already suggests a corridor between this PA and the Sarychat Eertash Reserve. The present analysis can help in identifying the polygon for the same in a more objective manner. Further, the 'good' habitats just outside the PAs can be given priority for designation as 'quiet zones' under the hunting laws.

Table 5: Relative areas (km^2) *of good and fair habitats in the three primary protected areas in the CTSL. Based on 'focal tool statistics' used in ArcGIS (see text for details). Row % given in parenthesis.*

PA Name	Area	Good	Fair	Poor and Non Habitat
Sarychat	1,585	336 (21)	407 (26)	842 (53)

Khan Tengri	2,664	80 (3)	477 (18)	2107 (79)
Karakol	382	0	16 (4)	366 (96)
	4,631	416 (9)	900 (19)	3,315 (72)

It is suggested that based on these outputs and an improved 'human footprint' study (Figure 14), the management planning team should discuss and negotiate with stakeholders, primarily the Pasture Committees and the Hunting Concessions, in declaring areas for higher levels of protection or community based collaborative conservation (see Chapter 7, 8 and 9).

Livestock in an open corral. Snow leopards can kill livestock in such poorly protected corrals, especially near cliffs, their preferred stalking cover. Photo by Kuban Jumabay-Uulu

7. CENTRAL TIEN SHAN LANDSCAPE MANAGEMENT PLAN: KEY ACTIVITIES

7.1. Background

The GSLEP initiative aims to secure at least 20 landscapes spread all across snow leopard's range spanning 12 countries, with the Central Tien Shan Landscape (CTSL) being one important landscape in Kyrgyzstan. As introduced earlier, in the Chapter 5, the vision for the GSLEP initiative is -

> A well-protected Central Tien Shan Landscape where people and wildlife coexist in harmony, where populations of snow leopards and other wild species are secure, and where the entire high mountain ecosystem and the ecosystem services it provides are maintained for the benefit of humanity.

People in the statement refers to the local communities and all other stakeholders using or affecting the landscape. Further, as stated in Chapter 5, this vision can be achieved through adoption of a multi-pronged climate smart approach with a comprehensive set of inter-related goals:

Goal I: Major threats to snow leopard and other wildlife are mitigated so that wildlife populations increase, or remain at desired levels. Action is needed to mitigate identified threats based on clear understanding, participation, and innovative activities

Goal II: People's livelihoods are made more secure by strengthening existing mechanisms or co-developing innovative climate smart options for their development. Action is needed to support remunerative improvements, or alternative uses of grasslands (pastures) that are less damaging to the ecosystems' goods and services

Goal III: Positive attitudes are promoted among all key stakeholders. Action is needed to better inform the lay public, officials, visitors, and businesses, in order to strengthen positive attitudes towards conservation

Goal IV: Professional capacities are enhanced among implementing agencies and development partners to plan and implement strategic innovative practices. Action is needed to better equip all implementing agencies and their partners to continuously adapt their approaches and practices in order to sustain landscape level conservation

Goal V: Systems of good governance are agreed and strengthened at all levels based on sound planning. Action is needed to ensure that clear systems and structures are in place to aid multi-sectoral collaborations and to develop viable financing mechanisms

7.2: Broad Areas of Work under the CTSL Management Plan

The Management Plan thus aims to work with communities and other stakeholders to understand relevant issues and tackle them cooperatively in a manner that both, conservation and livelihood goals are fulfilled and all stakeholders maintain positive attitudes towards conservation. This can only be achieved with genuine cooperation among stakeholders and solid capacity among all

implementers, thus also highlighting the importance of improved governance mechanisms. These five goals have nine objectives as listed and discussed in the Appendix 14 with approximately 40 broad, and over 90 specific suggested activities. These activities can be broadly clubbed into various types and include:

8. Research to obtain a more factual understanding of biodiversity occurrences, status, conservation and livelihood issues and threats. Research is consequently a crosscutting activity across all goals. These research activities can be led by academic institutions and NGOs from the country and abroad with close cooperation and support of the SAEPF and other Government agencies.

9. Community based initiatives: GSLEP perceives bottom up planning and implementation as an appropriate and effective means for carrying out village level work as it suitably captures local community's interests, knowledge and improves chances of their continued involvement. Kyrgyzstan has already got a democratic local self-government structure going down to the Ayil Okmotu, a cluster of villages under a unified administration. With pastoralism and forestry use being important facets of their livelihoods, the Government has already instituted decentralized planning and implementation through the Pasture Management Planning process (for pasture management under the 2009 amendment to the law 'On Pastures') and Leshozes (for forestry usage, under the Forestry Code, 1999). PMPs already include activities directed at sustainable pasture management, pasture infrastructure and securing their livelihoods. In this plan it is suggested that most community-based activities are channelled using this existing structure of the PMPs where activities would include those dealing with sustainable pasture management, increasing productivity of pastures, increasing incomes through non-consumptive wildlife based activities, improved livelihoods through community based tourism, participating in wildlife monitoring, participating in monitoring rangeland productivity, etc.

10. Departmental works: Over 30 government organizations and over 10 NGOs are active in the oblast and their work deals with development, human welfare, livestock management, forest management, business & industry, mining, national security, etc. Some of these agencies may affect conservation in either a positive or negative manner (Chapter 4 and 8). This Management Plan hopes to cooperate with them and channelize their work to the best possible degree, so that activities are carried out to benefit the people, wildlife and the agencies, while there is a dialogue to avoid or minimize the negative impacts of their works. The plan is, thus to develop partnerships for conservation, by encouraging convergence, while avoiding divergence of their activities.

11. Capacity of implementing agencies: Activities such as advanced tools for wildlife monitoring, participatory planning and action, cooperative cross-sectoral working and fund management are important for the success of the Management Plan. These are however dynamic fields where advancements occur at a fast pace and it is crucial for the planners and implementers to be well versed with the latest know how. Personnel at varying levels will thus be exposed to such newer ideas, options and advanced skills through appropriate training courses, workshops and exposure tours.

12. Develop Strategy: There are issues such as developing and managing sustainable tourism as well as sustainable pastoral practices that are crucial for the success of the Management Plan, but at the same time are beyond its scope. The plan does include

some activities that can be carried out immediately towards these issues, but also suggests developing more comprehensive thematic strategies as a part of cooperative work with other agencies specialized and mandated for such works.

13. Institutional structures: The Management Plan is multi-sectoral and relies heavily on robust cooperation among various government and non-government organizations, while also ensuring effective community participation. This requires coordination among agencies for suitable works and also pooling and raising funds, to be further used by cooperating agencies (Ayil Okmotus, SAEPF, Pasture Dept., Academic Institutions, NGOs, etc). This may not be possible through existing governmental mechanisms and new ones may be required. It is therefore suggested to set up a government supported Foundation, tentatively being called, the Issyk Kul Conservation and Development Foundation (IKCDF) that can enable such cooperation and coordination while managing the funds that are generated for work in the landscape under the Management Plan (IKCDF Fund).

14. Climate change adaptation: The area is prone to the impacts of climate change that is likely to cause increased temperatures, aridity and shrinkage of permafrost areas. These are likely to have implications on pasture quality, the basis of both people's livelihoods and wildlife. While averting the impacts of climate change is beyond the scope of this management plan, it can assist in developing a clear understanding of the issue and in finding ways of adapting to the changes. Information on this aspect is rudimentary at this stage but climate change adaptation may be a key crosscutting area of work in the near future.

The activities have been grouped according to their respective goal and objective, listed together with the suggested lead agencies, likely collaborators, sources of possible funding, indicators of success and suggested timelines (Appendix 14). The context and proposed activities were presented to stakeholders in Karakol in a workshop organized by the Governor on 12 June 2017 (Appendix 13). Detailed comments were requested from over 30 line agencies, which were obtained (Appendix 15) and have been incorporated in the present logframe (Appendix 14). The comprehensive set of activities under the CTSL Management Plan (Appendix 14) emphasize on sustainable development and management of the ecosystem with benefits to both the local communities overcome their poverty, while also managing their precious wildlife heritage. The activities thus also help fulfill numerous of the country's Sustainable Development Goals as briefly discussed in the Appendix 16.

As stated earlier, the management plan lays emphasis on three aspects where communities are key partners:

4. Sustainable pasture management: Pastures provide the primary sustenance of the local population and also provide the basis of conservation – the sustenance of wild herbivores and snow leopard. Managing pastures for mutual benefits to both of these stakeholders is thereby crucial.

5. Sustainable tourism management: Tourism is a nascent industry in the CTS Landscape although there is considerable tourism just outside, in the Issyk Kul Lake basin. If livestock grazing has to be made more sustainable and rationalized, sustainable tourism and its related enterprises can provide a suitable alternative source of income to the local population.

6. Sustainable hunting management: Trophy hunting is a remunerative industry in Kyrgyzstan, however, at the current state the benefits to local communities are limited. Developing models of community managed trophy hunting can have a dual goal of providing monetary benefits to local communities and improving their attitudes towards conservation.

The CTSL Management Plan intends to integrate these activities into a larger program that is first tested in a model site. The context for the same is presented in Section 7.3. It is recommended that the Issyk Kul Conservation and Development Foundation (IKCDF; Table 7) leads the development of annual work plans with all partners based on the logframe (Appendix 14) for carrying out the works under this CTSL Management Plan.

7.3. Inter-sectoral Model Projects for Conservation and Sustainable Development under the Management Plan

While all the detailed activities described in the previous Section (Appendix 14) may appear daunting, it is suggested that the three key areas discussed above in Section 7.2, that is, pasture management, tourism management, hunting management and their integration be tried in model sites to ensure greater local benefits as well as greater and sustained local interest in conservation. A brief description of the issues is presented with the way ahead of integrated planning and management.

7.3.1. Pasture management

Issues (see also Section 2.6)

- Pastures are a common resource for livelihoods (of livestock owners) and wildlife (especially wild ungulates)
- Livestock numbers are at an all time high, especially in pastures near settlements giving rise to widespread concern for sustainability of this practice (Chapter 3 and Section 2.6.4, 2.6.8)
- Degradation can lead to lowering livestock production and poorer returns for the herding families and it also poses a serious threat to wildlife, especially argali and ibex, and thus to snow leopard too (Chapter 3)
- The issue gets complicated as there is poor level of knowledge on the pastures use:
    - For example, the spatio-temporal pressures on the pastures are not clear for the CTSL. It is unknown which ayil okmotus (and their villages) are dependent on the CTSL. Similarly, how many livestock units graze on any pasture is unknown as well for the CTSL. This problem is due to changes since Soviet times that led to significant and mostly unaccounted changes in pasture use (Section 2.6.2). Further, there are no recent maps delineating pasture boundaries of ayil okmotus and their respective PCs.
    - The official records available with the Statistical Committee are believed by many agencies to be underestimated, thus, the actual numbers of livestock and its composition are unknown for the landscape.

- Pasture Management Plans (PMP) by ayil okmotus do provide some of the details above but actual on-going and proposed grazing patterns under the Plans are different
- Distant summer pastures are believed to be underused. However, with at least two large settlements well within the landscape (Engelchek and Aksharak) these are also being used in the landscape
- Information on productivity and carrying capacity of pastures are available in the PMPs but are out-dated and may need revision

Hence, it is not possible to say who the stakeholders are and what the grazing pressures on pastures are at present. It is also unclear if and where there is any degradation problem. Without this knowledge suggesting any corrective measures is impossible.

Pasture Management in Kyrgyzstan

The Government of Kyrgyzstan is well aware of the importance of ensuring sustainability in the pasture management and it has attempted to streamline this on priority since independence through its laws and projects. Elsewhere in Kyrgyzstan pilot studies have been undertaken to understand the pasture use by communities, determine productivity of pastures, determine seasonal carrying capacity and managing pastures based on regulating its seasonal use. National and international NGOs and multi-lateral agencies have also invested considerably in improving capacity of the herding community to better manage their resources. Notable examples are given below. Please also see Appendix 8 for more details on these agencies and their activities:

- UNDP Suusamyr: Model pasture management
- GIZ-Camp Alatoo: Pasture management and livelihoods
- ARIS: Capacity improvement to prepare better PMPs
- National Pasture Users Association: Capacity and PMPs
- Kyrgyzgeprosem: Mapping pastures
- Pasture Research Institute: Research on pasture quality
- KAFLU: Pasture management and alternate energy

Way Ahead – Proposed Project

With this background it is suggested that a multi-agency project should be undertaken, especially with the involvement of the agencies that have already worked on similar projects in other oblasts of Kyrgyzstan. The following outline and lead partners are suggested for the model for improved pastoralism under the CTSL Management Plan. These works will need to be conducted under the proposed Directorate of the CTSL and the Issyk Kul Snow Leopard Conservation Foundation (See Chapter 9 for details):

- Identify stakeholders in the entire landscape. On priority for the identified model ayil okmotu (Kyrgyzgeprosem)
- Determine seasonal usage - livestock numbers and locations; calculate pressure. (Kyrgyzgeprosem, NGOs or academic institutions)

- List issues and expectations of livestock owners and herders (from PMPs)
- Pasture quality and carrying capacity assessments (based on the ARIS manual (Anon 2016))
- Improved PMP preparation (ARIS, NGOs or academic institutions):
    - Use above knowledge on seasonal productivity and carrying capacity to update pasture use practices for livestock grazing (livestock numbers, composition and grazing regime (rotation))
    - Include conservation based activities (conflict resolution, wildlife monitoring, awareness, protection) in the PMP
    - Set up community based livestock grazing-free reserves or distant pastures that are maintained grazing free over the long-term.
    - Include sections on climate change adaptation and ecosystem services in the PMP to enhance their awareness and preparedness for any eventual changes
    - Develop alternative livelihood options to ease dependence on livestock grazing
- Encourage diversification in agricultural crop cultivation and value addition in its production chain as it is an important alternative livelihood to livestock grazing, and includes (JICA and KAFLU have expertise in these activities and can be partners):
    - Cultivating fresh fruits and preparing processed fruit products (jams & preserves)
    - Cultivating high value vegetables with ready markets in urban and tourist centers
    - Processed grains (breakfast cereals, health foods)
    - Processed meat that can counter seasonal price slumps and bring greater returns to farmers
    - Value added wool products (ideally organic dyed innovative products)
    - Locally produced crafts that can engage women and other sections of society, especially at times of the year when they may have free time available

7.3.2. Sustainable Tourism management

Present Scenario (See also Section 2.7 for details)

- Existing tourism in the oblast is limited to the vicinity of the Issyk Kul Lake, especially on the northern bank
- Tourism around the lake is primarily resort based, highly seasonal (July-September) and primarily lives off traditional markets of the Russian federation
- Southern bank has ayil okmotus dependent on CTSL where very few tourism enterprises exist at present. Mountaineering takes place in eastern and southern parts of

the CTSL but is again limited in numbers and reach. Winter tourism is popular in the Karakol SNP and brings in many tourists from Russia and Kazakhstan. These are however very localized activities.

- Local benefits from tourism are very limited
- Cultural, adventure, and wildlife tourism are very small in extent, but there are some recent developments near Karakol and Jyrgalan in this regard.
- Community based tourism is in infancy in the Issyk Kul oblast, although organizations such as KCBTA have initiated CBT programs in Issyk Kul – CBT Karakol, CBT Bakonbaevo (south shore) and CBT Tamchy (north shore).

Alternate Scenario and the Way Ahead – Proposed Project (with MSRI-UCA, NGOs, Tourism Dept., KCBTA, KATO)

The broad activities and their possible lead partners are mentioned below:

- The alternate scenario looks at a comprehensive strategy for 'Destination Tourism' that helps to diversify tourism options (including resort, culture, adventure, wildlife, hunting), adds newer destinations, including far-flung communities, and expands the tourist season.
- Suitable programs for trekking, culture tourism and especially, wildlife tourism need to be developed using community based tourism (CBT) approaches (Namgail et al. 2016).
- Crafts and other local agro-based products for tourists need to be developed to boost local incomes and complement other sources of marketing these products (Agvaantseren et al. 2016).
- Develop CBT marketing, certification and guide training programs
- Integrate suitable CBT activities in the PMPs
- Benefits to Community
    - More remunerative livelihood options, more employment
    - Increased length of engagement in a prolonged tourist season. Importantly, development of wildlife tourism, which is best in winter. Adventure and cultural tourism can be conducted through out the year, while wildlife tourism may be most popular in winter, when chances of sighting snow leopard and other wildlife are better. Resort based tourism may remain seasonal and at specific locations. Any strategy should also work towards making these more sustainable.
    - These non-consumptive, wildlife-based incomes will help to generate better attitudes and support towards conservation and also provide suitable alternatives to intensive livestock grazing

7.3.3. Community based hunting management

Present scenario (also see Section 2.4 & Appendix 2)

There are nine hunting concessions in the CTSL that primarily allow hunting the argali and ibex. The national economy of about 1.6 million USD per year for argali alone (Turdumambetov, 2011, Nordbo et al. 2017). The existing model of hunting is commercial where hunting companies first bid for concessions for a period of 10 years, and then annually buy a certain number of licenses from the Rational Use Department based on the trophy animal's population in their concession. They host foreign or domestic hunters to hunt in their leased concessions at very high costs (c. USD 15,000 for argali and slightly lesser for ibex). About 25% of this amount is shared with the ayil okmotus who can use it for community and pasture development. It is however widely accepted that the system is not efficient and the funds may not reach the beneficiaries in the community, often causing resentment among villagers (Nordbo et al. 2017).

View of the CTSL in summer. Some valleys are wide and flanked with rugged high mountians. Photo by Kuban Jumabay-Uulu

Community based hunting has been successful in snow leopard range. In Pakistan communities manage the enterprises with support of government agencies and conservation organizations and keep over 80% of the trophy amount that ranges to more than USD 80,000 per markhor (Capra falconeri) (Ali Nawaz et al. 2017). Tajikistan is also experimenting with similar models. The conservation organisation, Panthera, is also trying a community-based approach in Kyrgyzstan (Michel and Rosen 2017).

Under the CTSL Management Plan thus, it is proposed to experiment with an adaptation of a similar community-based approach to manage hunting.

7.3.4. Integrated Model for conservation

The three pillars of the community-based work under the management plan relate to the three potential livelihood options that are either already prevalent in the CTSL or are proposed to be developed further (Figure 27). Like discussed above, these relate to co-management using:

- Sustainable pasture management
- Developing tourism, crafts and agro based enterprises, and
- Equitable and more sustainable hunting revenue sharing

The stakeholders include, but are not limited to, local communities and ayil okmotus in all cases; KCBTA, KATO, Culture Dept., UCA, NGOs for tourism based activities; the Pasture Dept., ARIS, Kyrgyzgeprosem, research institutes, CAMP Alatoo, other NGOs, for pasture management; and the Rational Use Dept., Hunting Companies for hunting based activities. Conservation NGOs such as SLF, Panthera and WWF can provide technical backup and can help catalyse the plan. An important related stakeholder is the management of the Khan Tengri Reserve (being prepared simultaneously by UNDP) that have a key focus on conservation, tourism management and awareness generation. Similarly, the management of the Issyk Kul Biosphere Reserve have numerous overlapping activities and are a key stakeholder.

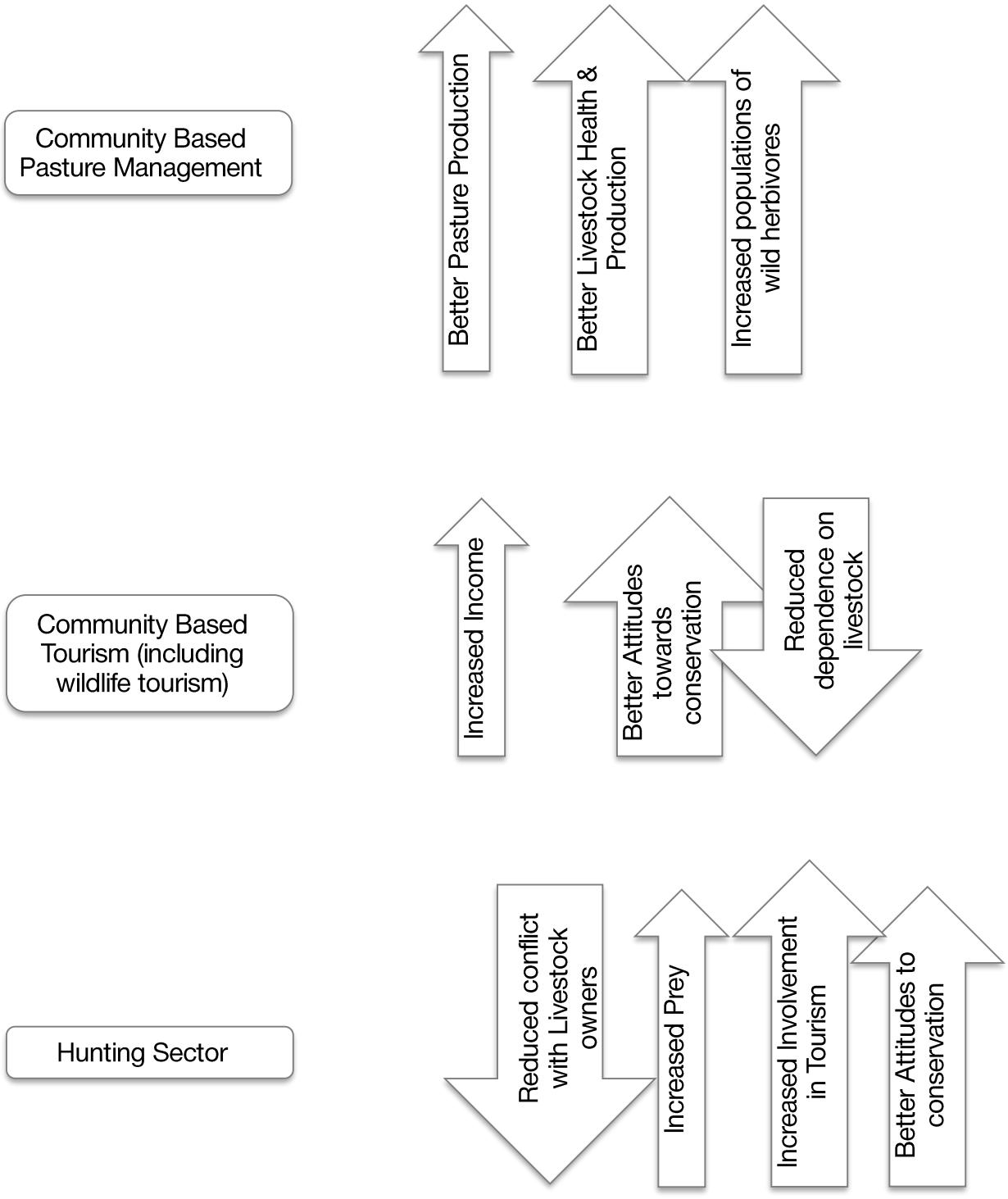
It is suggested that the SAEPF constitutes a working group of experts and community members to develop a proposal for integrated conservation in a pilot site of the CTSL. The broad steps are:

1. SAEPF constitutes a working group with experts and community members to develop a proposal
2. This group consults with rayon and ayil okmotu administrations to select a pilot site
3. Based on the brief description given in Sections 7.3.1 to 7.3.3, suitable activities can be developed in the proposal

As conceptually depicted in the Figure 27, better and more sustained pasture management will be beneficial for livestock production itself, integration of the local communities' roles in sustainable tourism management will help them derive direct benefits from conserving the area and its ecosystem. This can get even stronger if they have a greater stake in managing the highly remunerative hunting business. The processes are briefly given below:

1. Reduction in livestock: Better and more sustainable pasture management can lead to rationalization of livestock numbers and its composition to make it more conductive to optimising its own production
2. Spatial spread of grazing pressures: Better pasture management can also include more judicious use of different parts of the landscape for livestock grazing based on scientific recommendations. Some areas can be maintained as 'grazing-free reserves', managed by the community
3. Wild prey recovery: The above measures, along with others such as protection against poaching, can help wild herbivores recover and increase in numbers. This can thus help with a healthier ecosystem and in turn can help the local communities derive greater benefits from wildlife based tourism as also can help hunting communities with their resource
4. Better attitudes: Thus with better management of pasture use and integration with tourism and hunting, all stakeholders can benefit and can have a long term interest in sustained conservation of the pastures and its wildlife.

Figure 27: Depiction of an integrated model for conservation of wildlife and improved livelihoods in the Central Tien Shan Landscape.



8. FRAMEWORK FOR MULTIPLE STAKEHOLDER INVOLVEMENT FOR CONSERVATION AND DEVELOPMENT IN THE CTSL

The vast Central Tien Shan Landscape encompasses numerous stakeholders that include local communities, wildlife protected area management, hunting concessions, welfare and development departments of the Kyrgyz Government, as also NGOs. Conservation of wildlife is mandated to various departments under the SAEPF but all the other stakeholders, numbering over 50 entities, have their individually mandated activities and interdependencies in the landscape (see Chapter 4). Their activities may sometimes complement conservation but sometimes may conflict it. From a conservation viewpoint, most of these stakeholders influence the use of natural resources in some manner or another, thus impacting wildlife. Therefore, it is extremely important to understand their mandates and note how they may be positively influencing conservation (convergence) or may cause damage (divergence). In this chapter, we explore the possibilities of leveraging convergences that give credit to the other agency and avoid duplication of effort that can save scarce conservation funds (Table 6). In Chapter 9, suggestions are made regarding governance structures that facilitate formal partnerships among stakeholders to plan and implement activities regarding conservation and sustainable development. Such partnerships can also help avoid activities harmful to wildlife. The conservation and sustainable development of the CTSL using an inter-sectoral, cooperative approach is the cornerstone of this Management Plan.

Table 6: Sectoral convergence for conservation in the Central Tien Shan Landscape based on mandates and thrust areas noted in interviews and by analysis of organizational websites (Appendix 8). *'Convergence' here refers to the* possibilities of using departmental mandates for wildlife conservation.

Key Sectors	Comments on Convergence or Divergence
Conservation & Environment	• The SAEPF (and its various departments) is the primary agency responsible for conservation in the country and as such it is involved in the protection and conservation of forests, wildlife and environment • Importantly, they are mandated to conserve wildlife in the various categories of the protected areas and to regulate its rational use. • The Issyk Kul Biosphere Reserve is an existing setup mandated for landscape level, sustainable development and conservation in the entire Issyk Kul oblast and has a complete overlap in goals with this management plan's approach and activities and is therefore a key stakeholder. • The management of the Khan Tengri Reserve, which is being prepared simultaneously by the UNDP and will focus on conservation, tourism development and awareness generation in a significant part of the CTSL • Numerous NGOs, INGOs and aid agencies assist the SAEPF or have independent programs for research, conservation, awareness generation and management of wildlife. These include WWF, SLF, Panthera, GIZ, UNDP • SAEPF is the lead agency for designing and implementing this Management Plan

Key Sectors	Comments on Convergence or Divergence
Agriculture, Animal Husbandry & allied	• This sector is important as the source of the primary livelihoods of the local communities - be it in agricultural production, animal production or food processing. Traditional and alternative livelihood options that can bring human prosperity in a sustainable manner are thus primarily possible through this sector. • The Ministry of Agriculture and Melioration is the primary authority to promote sustainable practices in agriculture and animal husbandry in the country. • The various departments under this ministry are mandated to ensure a solid scientific basis for maximizing the production of agriculture crops, orchards, fodder and for animal based products • The Department of Pastures is especially important as it is mandated to help managing the pastures, a resource common between the agriculture sector and wildlife. They are also mandated to ensure that the pastures do not get degraded. They also set policies to maximize production, even so in a sustainable manner • Agencies such as ARIS help communities in better management of pastures and in setting up village level enterprises. A crucial role is to help in better implementation of the Pasture Management Plans, a measure to implement decentralized and participatory pasture management at the level of ayil okmotus. • Decentralized participatory pasture management requires considerable multidimensional information for determining community use boundaries, pasture quality, livestock load, carrying capacity, seasonal rotation, pasture augmentation, etc. It is positive that numerous agencies, government, NGO and international aid agencies are putting in resources regarding this. Some of the key agencies thus are: Kyrgyzgeprosem, Pasture Research Institute, Dept. of Pastures, ARIS, KAFLU, National Pasture Users Association, Camp Alatoo, GIZ, UNDP, World Bank, Asian Development Bank, FAO. • The Pasture Management Plans are a key means for pasture management and this CTSL Management Plan is working with ARIS to include a clearer role of conservation, climate change adaptation and highlighting ecosystem services in the manuals, which can then ensure continuity of this practice • The various departments of veterinary health deal with understanding and controlling disease outbreaks in livestock; better management of livestock diseases is a crucial step towards conserving wildlife by preventing transmission of diseases to wildlife • The Ministry of Economics helps with interdepartmental coordination, funding and the sustainable development strategy in Issyk Kul. The State Financing and Economic Development Fund helps in providing funds. • Academic organizations such as the UCA and the Agrarian Univ. assist in providing scientific information
Tourism	• Agriculture is a sector that is already being harnessed for helping community economy and sustainable development in the region. However, tourism is another crucial sector that can help in not just promoting local economy but bring Kyrgyzstan firmly on the world map

Key Sectors	Comments on Convergence or Divergence
	of tourism destinations, thus bringing considerable benefits to local communities as well. • This resource is largely untapped with limited reach of benefits to local communities (See Section 2.7). • The Dept. of Tourism under the Ministry of Culture is the primary agency to develop this sector on a national and global scale. • The Tourism and Investment Sector is mandated to help with development of this sector at local levels and helps with programs for producing locally made products including crafts. • The KATO is helping in organizing the tour operators together for delivering tourism products and to lobby the country's tourism development. They are a key association that can help spread sustainable tourism options to the community and the region in general. • The KCBTA was started to help promote community-based tourism in the country and can greatly help in promoting and marketing this option for the CTSL to maximize benefits to local communities. • Various agencies such as Helvetas (see Section 2.7) can help in enhancing capacity of Gov. staff, NGOs and local communities in getting the best practices adopted in the region
Energy	• Remote villages have a shortage of energy and it is a crucial sector for most other works, be it tourism, enterprise, education or human welfare in general. It also can help in saving crucial forest biomass. Organizations such as KAFLU and Camp Alatoo are helping communities to use solar technologies in enhancing agricultural production and improving livelihoods
Alternative livelihood options	• Crafts, food processing and export by JICA, KAFLU, SLF and the Agriculture Ministry. All these organizations involve local people in producing specialized products and they provide assured markets. For example, JICA has encouraged over 1000 persons in Issyk Kul to produce wool based products and sell it to tourists visiting the country; SLF has organized communities to produce felt based souvenirs primarily for export • Like mentioned above, tourism, especially community based tourism can generate substantial incomes
Education	• Good education provides local youth with options for continuing with livestock husbandry or get employed or begin something new within or outside the landscape. This can benefit the communities and ultimately be positive for conservation
Disaster	• Landslides and avalanches can cause damage to pastures and limit access to them as well. The department of disaster management thus is helpful for local communities. Stabilizing slopes and maintaining infrastructure can help conservation too.
Cooperatives and Industry	• Industry is a source of employment and economic benefits to local communities. Cooperatives provide better planning and marketing for local production and can help minimizing negative environmental impacts of the industry sector

Key Sectors	Comments on Convergence or Divergence
Welfare	• The health, education, infrastructure departments are important for human welfare and carry out their respective tasks • Infrastructure is crucial for development but can cause tremendous harm to environment too. It is thus important to partner with these agencies to help minimize their impacts
Governance	• The country has a fast developing system of democratic governance, especially at the grassroots level of ayil okmotu. The Management Plan will use the opportunities provided by the Pasture Management Plans that are produced by the Pasture Committees at the AO level to leverage items related to conservation, energy security and improving livelihoods.
Infrastructure	• Infrastructure, which includes roads, power lines, dams, buildings, urbanization, etc. are important for the country's economy and people's welfare. Most of these however, have a negative environmental impact. The management plan hopes to have such coordination mechanisms between the departments, that minimizes these impacts.

The key stakeholders, namely the Pasture Department, under the Ministry of Agriculture and the Tourism Department, under the Ministry of Culture, already have an MoU with the SAEPF for cooperative work that was facilitated by the UNDP under its project on preparing a management plan for the Khan Tengri State Nature Park (Appendix 17). They have further floated another MoU among over 10 organizations and discussions are on-going. The Management Plan will use the mechanisms under these MoUs to further help with cooperation and convergences under its planned activities (Chapter 8). Further, the governance mechanisms proposed in Chapter 9 should also help in streamlining these cooperative works.
It is proposed that based on the activities suggested in Chapter 7 the parties develop annual work plans under the above MoUs, secure funds and approvals and carry out the works.

9. GOVERNANCE MECHANISM AT VARIOUS LEVELS

9.1. Background

The key areas of work under the CTSL Management Plan deal with effective sustainable pasture management, strengthening and promoting alternative and sustainable livelihood options as well as protection of wildlife and improving its habitat and connectivity. Thus, the proposed work is highly intersectoral (Chapter 4 and 8), involving not just the conservation agencies, but also many other government departments, NGOs, International NGOs and multilateral agencies. Such a need has been recognised by the Krygyz Government in the act promulgated for the formation of the Issyk Kul Biosphere Reserve under the UNESCOs Man & Biosphere Reserve Program. While the intent is clear, the actual implementation of such intersectoral planning and work remains a challenge not just in Kyrgyzstan, but world wide. This is mostly because of sectoral mandates, priorities and actual or perceived conflicts. Emphasising such intersectoral cooperation will be critical for the success of the CTSL Management Plan. There is an obvious need to setup mechanisms to coordinate, cooperate and converge activities through effective partnerships based on respective organisational strengths and mutual understanding.

9.2. Potential Structures for Effective Management Plan Implementation

Based on the need for partnerships and effective planning and implementation, it is important to adopt new policies or structures within the government to enable such innovative arrangements at the national, oblast, landscape, rayon and ayil okmotu levels and also within the PAs and hunting concessions. The management plan proposes to capitalise on existing structures and create new structures where they are needed.

An overview of suggested structures for the implementation of the management plan is given in Table 7.

Table 7: Hierarchy of existing and new suggested structures from the grassroots to the national level for more effective planning and implementation of conservation and sustainable development under the CTSL Management Plan.

Level	Description
1. National Committee for GSLEP Implementation (NCGI)	General: Helps with policy and streamlining cooperation at the level of ministry or department headquarters. Can play a role in larger fundraising efforts. The GSLEP National Focal Point should be a functionary here. National level political buy-in can be an important outcome of this structure. Role: The NCGI is the apex body chaired by the Director of the SAEPF and represented by wide range of relevant government, non-government, academic institutions and independent experts. It is envisaged that NCGI will undertake overall supervision of the CTSL Management Plan implementation and provide policy

Level	Description
	directives at the national level. In particular, it will support and monitor the functioning of the oblast/landscape level body, the Issyk Kul Snow Leopard Conservation Foundation (see # 2 below). It is suggested that on these lines an intersectoral senior team of the government can fix the terms of reference for this committee. Suggested members: 1. Deputy PM or his representative (Chairperson) 2. Director SAEPF or his nominee 3. Minister of Agriculture or his nominee 4. Minister of Culture and Tourism 5. Minister of Economic Affairs 6. Director of Geology and Mineral resources Agency 7. Minister for Education and Science 8. Governor of Issyk Kul or his nominee 9. 'Secretaries' or Deputies of above Ministries 10. Head of Rational Use Department 11. Nominee from the SAEPF 12. National Focal Point, GSLEP 13. Head of each Rayon 14. Head ARIS 15. Head Kyrgyzgeprosem 16. Head Pasture Department 17. Head Veterinary and Phytosanitary Department 18. Vice Chancellor of Agrarian University 19. International NGOs (up to 3 NGOs) 20. UNDP (1 member) 21. FAO (1 member) 22. National NGOs (up to 3 NGOs) 23. Director, CTSL (Secretary)[13]
2. Provincial Level: Landscape Level Foundation - Issyk Kul Conservation & Development Foundation (IKCDF)	General: This is a Foundation, Society or NGO registered and set up under appropriate law with a formal set of constituents (relevant stakeholders) and constitution and with the purpose of supporting the management plan implementation. Led by the implementing agency (SAEPF), this organisation can raise funds from both government and non-government sources, including international agencies, and revenues collected or generated based on government's approval. They can approve and source funds to partners based on agreed annual plans. The accounts and works should be audited as per country's laws. It can hire staff for administration, accounting and day to day oversight of work. Governance should be aided by MoUs among stakeholders (see # 5 below). Role: It is suggested that an intersectoral senior team of the Government fixes the terms of reference for this committee. More specific roles may include:

[13] See Section 10.3 for details on the suggested new position of the Director of the CTSL

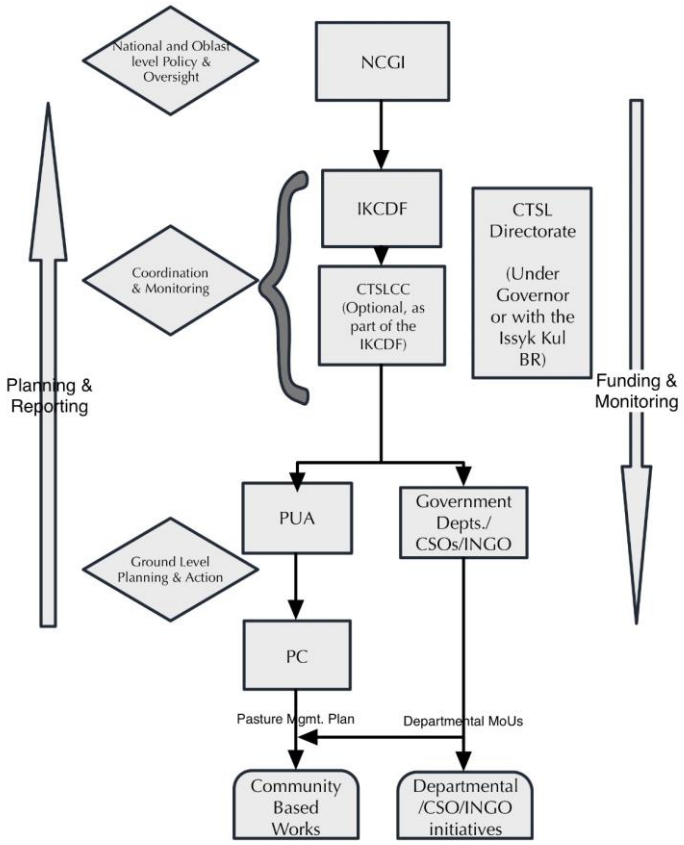
Level	Description
	• Engage with international organisations, donors for technical and financial assistance based on proposals. • Coordination among stakeholders at local level (within oblast down to the level of Pasture Committees) • Review and approve annual workplans, budgets and provide strategic directions. Community based works are proposed primarily under the existing Pasture Management Plans (PMP) coordinated by the ARIS (see # 5 below). The review and approvals of the integrated plans thus need close coordination between the IKCDF and ARIS. • Communication and outreach about the landscape management planning – its goals, activities, challenges and areas for further support. • Provide guidance to sectoral departments and local government and non-government bodies including PUAs and PCs (see # 5) to ensure an integrated landscape planning and program implementation • Monitor the work in the landscape under the plans. • Discuss areas of conflict and resolve them amicably Constituents: 1. Governor, Issyk Kul Oblast (Patron) 2. Director of the Central Tien Shan Landscape (or Issyk Kul BR) (Chairperson) 3. Head of the Forestry Fund, Issyk Kul (SAEPF) 4. Directors of the Sarychat Eertash Nature Reserve, Khan Tengri Nature Park and Karakol National Park 5. Representative from Rational Use Department 6. Head of each Rayon 7. Pasture Department 8. Representative from ARIS 9. Representative from the National Pasture User Association 10. Representative from Kyrgyzgiprosem 11. Representative from Pasture Department 12. Representative from Veterinary and Phytosanitary Department 13. Representative from Agrarian University 14. International NGOs (up to 3 NGOs) 15. UNDP (1 member) 16. FAO (1 member) 17. National NGOs (up to 3 NGOs) 18. At least four representatives from the Pasture Committees. These members can be selected on a rotation basis from the ayil okmotus dependent on the landscape. The selected ayil okmotus can nominate a member annually 19. Village elders (at most 4 members) nominated by the ayil okmotu 20. Representative of the association of hunting concessions 21. Representative from tour operators (KOTA) 22. Representative from KCBTA
3. Provincial Level:	General: A Coordination Committee typically has members of stakeholders, including government departments, NGOs and

Level	Description
CTSL - Landscape level Coordination Committee (CTSLCC). (While this is proposed as a body under the IKCDF, its functions can be performed by the CTSL Directorate too)	community members and is useful for planning, direction setting and monitoring implementation by partners. Governance is aided by MoUs among stakeholders (see below). The CTSLCC is proposed to be a sub-group of the IKCDF that meets at least quarterly for coordination and monitoring. It is recommended that the Directorate of the CTSL Management Plan take a lead role in this initiative. Role: Closer coordination and cooperation of works under the management plan. Constituents: 1. Director, CTSL Management Plan 2. Senior, local officials from the Agriculture, Pasture, Tourism, SAEPF, rayon administration 3. At least four members from the ayil okmotus 4. Members from selected locally active NGOs
4. Inter-departmental MoUs	General: Stakeholders may have disparate mandates that may converge or diverge with conservation goals. While the mechanisms mentioned above may help in coordination and cooperation, it is suggested that bilateral, or in some cases multi-lateral, agreements (MoUs) among stakeholders that clarify reasons for coming together, individual mandates, strengths, roles and responsibilities, work plans, funding, credit sharing, reporting, etc. be worked out. The MoUs can be overarching departmental frameworks that can have separate more specific terms of reference for specific tasks. Under the UNDP program to set up the Khan Tengri Nature Park and its management plan, an MoU between the SAEPF, Tourism and Pasture Departments is already signed (Appendix 17) while another among over 10 government agencies is being negotiated. It is proposed to fully understand and utilize the provisions under these MoUs and sign any additional ones as per need.
5. Village Level Committees Pasture User Associations	General: Committees are established or recognised by the management plan for the purpose of village level planning and implementation of activities. It is best to have committed individuals, but ideally this body should be democratically formed. These committees may facilitate local level planning and assist with implementation. They may receive funds and ensure their effective use and timely reporting. In Kyrgyzstan there are over 400 ayil okmotus, where villagers become members of the Pasture User Association (PUA). The PUA elects an executive body, Pasture Committee (PC) or the jait comitet (Kyrgyz). Some PC members are from the subdistrict government (the ayil kenesh or local council and ayil okmotu or local administration), other members in this committee are specialists, especially from veterinary medicine and land use, who often also work in the local government administration. There are over 40 such committees in the Issyk Kul oblast. These PCs are managing their pastures under the provisions of the 'On Pastures' Act 2009 & amended in 2011 (See Section 2.6, Figure 17) and are mandated with preparing and implementing Pasture Management Plans

Level	Description
	(PMPs), a process in which ARIS and the National Pasture Association assist by providing capacity inputs and part funding. The Kyrgyzgeprosem helps the PCs with scientific data on pasture productivity. The PCs include all the villagers involved with use of the pastures and forests and the PMPs have a fairly well established format of planning, receiving funds, executing the works and reporting back. The CTSL Management Plan thus plans to use this established setup for enabling its grassroots planning and implementation. Efforts to further streamline their functioning is already underway by ARIS and other agencies but they remain the best option for the management plan to work at the grassroots level. It may be noted that, most activities of the Pasture Management Plans already involve sustainable pasture use. It also includes items on improving pasture infrastructure, livelihood and veterinary support. These activities are also important under the CTSL Management Plan. There is thus complete convergence between the CTSL Management Plan and the PMPs. Furthermore, with the help of ARIS, items on conservation, climate change adaptation and documenting ecosystem services will be included in the PMP manual, for which an MoU between the SAEPF and ARIS is being developed. This way there can be a unified and comprehensive effort to work effectively at the grassroots level.
6. Agency responsible for capacity enhancement	General: All the work mentioned above may have newer concepts of participation and equity, which may require capacity often lacking at present. It will be ideal to collaborate with national or regional organisations of repute that can help with periodic capacity enhancement of personnel involved at different levels.
7. Agency responsible for monitoring & evaluation	M&E ideally needs to be conducted by an independent entity. These may be academic organisations and NGOs recognised and mandated by the government with the task of annual and 5-yearly M&E of the works of the above bodies.

A summary of the structure is illustrated in Figure 28. The National Committee for GSLEP Coordination (NCGC) provides the policy oversight, the Issyk Kul Conservation Foundation and Development Foundation (IKCDF) and Central Tien Shan Landscape Coordination Committee (CTSLCC) provide the coordination, micro level planning, monitoring and fund management mechanisms, and the Pasture User Associations (PUA) and their respective Pasture Committees (PCs) act on the ground through their Pasture Management Plans (PMPs). In parallel, different government departments, Civil Society Organisations (CSO) and INGOs implement their respective mandates in the landscape in a manner that damaging works are avoided and converging tasks are carried out independently or through interdepartmental MoUs or through the PMPs. The government departments, CSOs and INGOs may collaborate and support community based works too. In general planning and reporting goes up the chart and funding and monitoring tasks, down the chart. The CTSL Directorate (see Section 9.3) plays the lead role in the IKCDF and CTSLCC.

Figure 28: Flowchart depicting the suggested governance structure in the Central Tien Shan Landscape. See text and Table 7 above for explanation and abbreviations.



9.3. Directorate of the Central Tien Shan Landscape

Apart from larger policy and strategy aspects of this management plan, there are multiple day-to-day management aspects that are critical for its success. It is thus suggested that there is a senior level Directorate for the exclusive purpose of managing the CTSL. This Directorate will need to participate and coordinate with all above structures for planning, funding, fund management and implementation.

It is suggested that a senior officer of the SAEPF be appointed as the Director, CTSL. The Directorate can be either housed in the a) Governor's office as an officer on deputation or b) can be merged with the Issyk Kul Biosphere Reserve (Table 8), but with additional mechanisms of coordination and management - primarily, an intersectoral executive body, the IKCDF and support structures outlined in this chapter (Table 7). Under the existing provisions of the Biosphere Reserve Law, 'On Biosphere Territories of the Kyrgyz Republic' (13 May 1999) amended in 'On the biosphere territory of Isik-Kol' (As amended by decree of Government of the Kyrgyz Republic of November 5, 2002, June 28, 2005 # 263, September 19, 2006, # 682, March 13, 2013 #131, May 23, 2013, # 279), an advisory body is recommended. However, in this plan the intersectoral body (IKCDF) is envisaged as an advisory cum executive body. This law further provides principles and practices relating to participation, research and intersectoral work also embodied in this CTSL

Management Plan. There is thus a strong existing provision envisaged for the Issyk Kul BR that can also be used or be merged for works of the CTSL Management Plan.

Table 8: Options for the Central Tien Shan Landscape Directorate.

Option 1	Option 2
• Governor of the Issyk Kul oblast • Director (on deputation?) in office directly under the Governor of the Issyk Kul oblast • Executive Body for coordination, planning, implementation & fund management (IKCDF) • Members of IKCDF include sectors: Agriculture, Tourism, PA Directors, Hunting Concessions, Rational Use Dept., oblast and rayon administration NGOs, Elders, AO heads	• Governor of the Issyk Kul oblast • BR cum CTSL Directorate present in the Issyk Kul Province but directly under the Federal Government • Executive Body for coordination, planning, implementation & fund management (IKCDF) • Members of IKCDF include sectors: Agriculture, Tourism, PA Directors, Hunting Concessions, Rational Use Dept., oblast and rayon administration NGOs, Elders, AO heads

While all attempts may be made to deliberate and put in place these structures at the beginning of the CTSL Management Plan implementation, these are issues that may require substantial tweaking to meet the realities and needs of the situation in Kyrgyzstan. It is thus suggested that a mixed group of officials, NGO and community members make exposure visits to other areas in Kyrgyzstan and in other parts of the snow leopard range where these participatory structures are already in place. Notable among these are the National Trust for Nature Conservation and the various 'Conservation Area Projects' under their management as also foundations such as the Periyar Tiger Reserve in India, that also houses a learning centre of the World Banks 'Biodiversity Conservation and Rural Livelihoods Improvement' Program (See also Appendix 14, logframe activities 7.3 and 9.3 in Chapter 7).

In conclusion, it is emphasised that a management effort of the magnitude envisaged in the GSLEP landscape of the CTSL, requires building on existing strengths in innovative systems for cooperation and coordination among organisations and to set up new ones, to ensure effective convergence and partnerships.

9.4. Funding mechanism

The innovative management plan will require considerable funding for carrying out its activities outlined in Appendix 14. However, a crucial aspect will also be to leverage existing sectoral funds through convergence and mainstreaming in order to fulfil goals common to organisational mandates as well as the CTSL Management Plan. As an example many activities dealing with sustainable pasture management can be accomplished by the agricultural sector (Pasture Department, ARIS) but the activities can be in tune with conservation goals of optimising livestock density and avoiding the use of priority conservation sites. Similarly, efforts of developmental agencies such as JICA, KAFLU and others can be leveraged for livelihood improvements and energy security in the larger landscape by expanding on their tested models. All these activities can be strengthened with additional resources and expertise from international donors such as UNDP and FAO under the aegis of the IKCDF.

9.4.1. Fund requirements

[This inter-sectoral plan and its activities require considerable funds for its activities and commitments from stakeholders. Due to the vastness and complex nature of activities the SAEPF

is taking the services of financial consultants to carry out these assessments. This section will be completed after they analyse and determine the costs for activities and the sectoral allocations]

A sum of USD XXX million has been estimated as the cost of implementation of the CTSL Management Plan over the 10-year period (2018-2027). More detailed cost estimate (Appendix 18) was obtained through calculation of costs for activities defined in the logframe. It needs to be noted that the costing was done as per current assessments in August 2017 and is expected to change with inflation over the course of implementation. The approximate sectoral allocation of budgets is shown in Figure 29.

Figure 29: Approximate allocation of budget to different sectors under the CTSL Management Plan

XXX

9.4.2. Funding Sources

Like stated above and the country's NBSAP (NBSAP 2016), funds can be obtained for the CTSL Management Plan from different sources and managed in innovative legal ways. These can ideally be pooled at the level of the IKCDF where professional fund management can be done. These broadly include the development of a corpus account based on large endowments, and a functional account that runs on grants obtained for specific projects from donors. A third branch of funding can be through individual organisational budgets that are meant for specific cooperative activities under the management plan and may be sourced either through the IKCDF or directly by the organisation.

The potential funding sources are:

1. Government sources: Government sources are likely to contribute a major part of the funding. The administrative expenditure such as staff salaries, benefits and permanent infrastructure form a crucial and large proportion of the funding. The Government will largely fund this. Further, as most activities under this management plan (Appendix 14) closely align with those of the government line agencies and the country's commitments to the Sustainable Development Goals (2030), the development expenditures are expected to be partially covered by incorporating the activities of this management plan into the annual workplans of the oblast, rayon and local self government level agencies. Such 'convergence' based activities contribute a substantial part of the management plan. It thus doesn't rely on conservation money alone but leverages ongoing and new departmental initiatives and their funds into the larger goals of the Management Plan.
2. Funds generated through offset mechanisms: The Local and Republic Nature Conservation Fund (www.extwprlegs1.fao.org/docs/texts/kyr16669.doc) is a fund generated from offsets obtained from the industry and businesses and other 'nature users' and administered by the State Committee of Nature Conservation of the Republic of Kyrgyzstan (or Goskompriroda). These may be used for a variety of nature conservation works by organisations and individuals based on annual plans. These activities include research, capacity enhancement, awareness raising and propaganda as well as bonuses and incentives for nature conservation.
   The Issyk Kul Development Fund runs on a budget of over 400 million KGS obtained as 2% of the profits of the Kumtor Gold Mines. This fund is to be used for conservation sustainable development and community welfare in the Issyk Kul oblast.
   It is suggested that the two above funds be tapped to generate part funding for the corpus and part for management activities.

3. Locally generated revenue: Locally generated revenues can be comprised of cess collected from tourism (trekking fee, park entry fee, etc.) sector. At present there is no provision of collecting such a tax or cess but there was a provision for this in the past for the Issyk Kul Biosphere Reserve. It is suggested that any lacunae in the previous arrangement can be corrected and the system can be reintroduced with improvements. This can provide a substantial and sustained source of funding for the CTSL Management Plan.
4. Civil Society Organisations (CSOs): CSOs primarily include national NGOs, international NGOs, academic institutions, community based organisations, etc. The CSOs are important partners in the CTSL Management Plan implementation and can bring in substantial resources from their own funding and technical expertise.
5. International assistance: The GSLEP initiative has kindled the interest among numerous international agencies to support snow leopard conservation efforts. This management plan sets well-defined commitments, priorities and activities that have clear conservation benefits and can be supported. These are thus safe investments for the donors and even the country's core conservation commitments as well as realizing their global pledges to the CBD, SDG, Climate Finance, etc. In this regard, grants and loans from these multilateral agreements, funding assistance from international NGOs, Intergovernmental agencies, government aid agencies and multinational corporate donors can constitute a significant source of funding for the CTSL Management Plan.
6. Innovative sustainable financing mechanisms: Financing mechanisms based on ecosystem services, natural capital and public-private partnership offer a significant potential to secure funds needed to implement the CTSL management plan on a sustainable basis. Innovative concepts such as Payment for Ecosystem Services (PES), Clean Development Mechanism (CDM), and Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+) can be linked to the snow leopard's conservation. The Green Climate Fund (GCF) also constitutes an important potential source of funding.

10. BUDGET

Potential sources of funding and fund management are given in Section 9.4. Activities proposed under the management plan are detailed in Chapter 7 and Appendix 14 in a logframe. The Kyrgyz Government is consulting legal, financial experts and relevant agencies to develop detailed budget estimates for each activity and its annual outlay.

Free-ranging dogs near a habitation in the landscape. Photo by Kuban Jumabay-Uulu

11. CRITERIA FOR EVALUATING OUTCOMES AND OUTPUTS

The ultimate success of the CTSL Management Plan will depend achieving the stated vision and goals (Chapter 5), and on the ability to measure the impact of the implementation of strategies and activities towards achieving these. Thus a monitoring and evaluation plan is proposed as a part of the management planning process and is presented below.

11.1 Monitoring[14]

Monitoring involves analysing the current situation in order to improve the existing program (Sutherland 2000). The CTSL Management Plan (CTSL MP) proposes over 90 actions that vary from simple ones to more complex ones, involving many stakeholders. Many of these are novel with little or no prior testing. While broad indicators of success are given in the logframe (Appendix 14), it is important to monitor them, learn and adapt lessons to make the conservation actions more effective. It is thus proposed to use an adaptive framework for the planning process. Monitoring of program activities thus importantly constitutes a continuous process of timely collecting, analyzing and reporting information to measure the progress towards expected outcomes; modify if needed and adapt the actions for future interventions.

Due to the cross-sectoral nature of most activities it is important to include relevant specialists and interest groups in the monitoring team that can be constituted by the IKCDF. For this purpose, the CTSL MP lays significant emphasis on creating and improving capacity among these stakeholders (Appendix 14) and identifying an in-country institution (ideally inder-disciplinary academic institution) to coordinate this activity.

The Planning process had frequent consultations with local stakeholders to inform them and elicit their cooperation. Continuing this approach during the implementation phase is a must for the success of the program and the new governance structures suggested in Chapter 9 will assist in this process. A cooperative process to implementation and monitoring can enhance the quality of information and ownership of the achievements, or lack of it.
Monitoring will be used to (Sutherland 2000):

1. Determine if the planned activities have taken place (e.g. training workshop held).
2. Determine if these activities have resulted in the expected outputs (e.g. 20 rangers trained in better enforcement).
3. Determine if the outputs have had the expected consequences (e.g. increase in instances of successful arrest of offenders).
4. Determine if the main conservation goal is being achieved (e.g. increased abundance of argali).
5. Determine if the project has other negative impacts (e.g. harassment of local herders).
6. Determine if other factors have influenced the situation (e.g. increased quota for legal hunting).
7. Answer research questions (e.g. change in ranger's attitudes towards their job)
8. Provide information to convince others, such as policy makers (e.g. increase in revenue from fines and increase in population of target species)

Given the vast area and scope of the CTSL MP, it is possible that some of the activities and their indicators may be broad (Appendix 14). It is thus suggested that the management planning team of the IKCDF prepares an annual work plan based on the logframe suggested in this CTSL MP with more specific annual activities and their indicators.

[14] Parts of this section are adapted from Nepal's Eastern Himalaya Landscape, draft GSLEP Management Plan 2017

Activity monitoring:
The activity monitoring is geared towards assessing the technical progress of the activities against the annual workplan. An indicative list of monitoring indicators is provided in the log frame (Appendix 14). It may be noted that the baseline against which the progress can be monitored is largely lacking for most of the interventions. Towards this end most activities suggest assessment of the current situation as one of the activities. Also, a standardized monitoring format needs to be developed to bring about consistency among a diverse group of implementing agencies. Some basic tools for monitoring comprise direct observation, interview of beneficiaries/users, examination of physical progress against expenditures, and public auditing. Table 9 provides a few key aspects of monitoring that needs to be considered during the monitoring process.

Impact monitoring:
Outcomes and impact monitoring is required to see if the implementation of management plan is consistent with the CTSL goals and vision. It thus constitutes a higher-level task normally carried out after the completion of project implementation. Table 9 provides indicative list of elements for output/impact monitoring.

Table 9: A list of important elements to be considered during the monitoring of activities/outputs and outcomes/impacts in the CTSL MP (Adapted from the *Eastern Himalaya Landscape, Nepal's draft GSLEP Management Plan*, 2017)

Monitoring elements	Activity and output monitoring	Outcome monitoring
Indicators	• Annual workplans/ CTSL logframe/ Baseline to compare needs to be updated from field surveys	• CTSL logframe
Timing	• Ideally during the implementation of the activities	• After the implementation of activities
Scope	• Activity undertaken, technical progress, physical outputs, resources used (time, funds and labour)	• Changes/modifications in the annual plans/logframe
Implementation procedure	• Consistency with approved technical, social and financial norms	• Consistency with approved technical, social and financial norms
Recommendations	• Adaptive measures for on-going and forthcoming activities • Resource optimization • Results for action learning	• Adaptive measures for the next project cycle (Reinvention or continuation of the programme strategies/ implementation mechanism, etc.) • Resource optimization • Lessons (best practices, pitfalls) for sharing
Monitoring tools	• Field observation • Progress reports • Direct interactions/consultative meetings with the relevant stakeholders/ beneficiaries/users	• Field observation • Management effectiveness analyses • Measurement of outcomes/impacts • Interview with relevant stakeholders

Monitoring elements	Activity and output monitoring	Outcome monitoring
	• Visual data (Photographs, video, etc.) • Public auditing and public hearing	
Responsibility	Implementing agencies: • Protected Area Offices • Rayon Line Agencies • Local Government Offices • Community Based Organisations, including Pasture Committees	• Regional Directorates • Central level agencies (Monitoring and Evaluation Division of SAEPF, Academic agencies and departments) • Technical NGOs
Information sharing	• Annual report • Annual planning process • Output level monitoring team • Line agencies across the landscape • Database management units	• Project planning and adaptive management teams • Fund raising team • Global forums • Management Information Systems

11.2 Evaluation

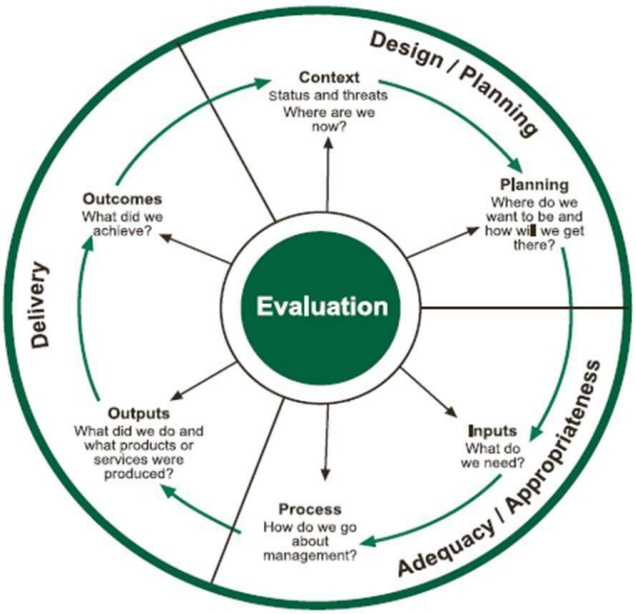
An overall performance of the CTSL management intervention is assessed through project evaluation at the end of the 5-year (2022-23) and 10-year (2027-28) period of the CTSL MPs implementation.

The evaluation team will be comprised by external international experts representing donors, advocacy groups, academia, etc. Appendix 14 provides a schedule for CTSL management plan implementation.

It is proposed that the IUCN World Commission on Protected Areas (WCPA) Framework for Assessing Management Effectiveness be used for the process (Hockings et al. 2006). A uniform theme has been provided to these assessments by the WCPA Framework for Assessing the Management Effectiveness of Protected Areas (see Figure 30 for more information), which aims both to give overall guidance in the development of assessment systems and to encourage basic standards for assessment and reporting for the Management Effectiveness Evaluation (MEE). The WCPA Framework for assessing Management Effectiveness is a system for designing PA management effectiveness evaluations with six elements: context, planning, inputs, processes, outputs and outcomes. It is not a specific methodology but is a guide for developing assessment systems and can be adapted for large GSLEP landscapes. The WCPA Framework sees management as a process or cycle with six distinct stages, or elements:

- It begins with establishing the context of existing values and threats,
- Progresses through planning and
- Allocation of resources (inputs)
- As a result of management actions (process) and
- Eventually produces outputs
- That result in impacts or outcomes.

Figure 30: The WCPA Framework for Assessing Management Effectiveness (from Hockings et al. 2006).



Of these elements, the outcomes most clearly indicate whether the site is maintaining its core values, but the outcomes can also be the most difficult element to measure accurately. However, the other elements of the framework are also important for helping identify particular areas where management might need to be adapted or improved.

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Survey party scanning for wildlife in the CTSL. Photo by Kuban Jumabay-Uulu

APPENDIX

Appendix 1: Information on flora and fauna from the management plans of the Sarychat Eertash (Anon 2007) and Khan Tengri (Anon 2017 (draft)) Protected Areas.

Altitude zones in the CTSL

The high-mountainous ecosystem of the CTSL can be divided into 5 high-altitude belts. The Sarychat Eertash Reserve is characterized by 4 high-altitude belts (barring the subalpine zone), which include 30 elementary plant communities (see table below).

Flora:

Semidesert belt - (2300 - 3400 m) • Sagebrush Deserts from Artemisia rhodantha • Sagebrush Deserts from Artemisia rutifolia • Deserts with Saussurea leucophylla • Deserts with Salsola passerin	Steppe belt - (2800 - 3900 m.) • Type Steppes from Festuca sulcata • Type Steppes from Festuca sryloviana • Steppes with Stipa subsessiliflora • Steppes with Stipa Caucasica • Steppes with Arenochloa (Arenastrum) desertorum • Steppe with Elymus Dasystachis • Barley Steppes from Hordeum Turkestanicum

Alpine belt - (3100 - 4100 m)
• Oatmeal Meadow-steppe with Festuca tianschanica
• Grass feather Steppes from Stipa (Ptilagrostis) mongolica
• Kobresia Steppes from Kobresia humilis
• Meadows :
  • Kobresia Meadows with Kobresia sapilliformis
  • Sedge Meadows with Carex melanocephala
  • Bluegrass Meadows with Poa alpina
  • Meadows with sedge floodplain Carex spp.
  • Floodplain Meadows with Festuca orientalis
  • Floodplain Meadows with Calamagrostis epigeios
  • Floodplain Meadows from Elytrigia batalinii
	Nival belt - (3750 - 5000 m.)
	Rocks populated mainly with crustose lichens. In places where the accumulation of fine earth appear lithophile mosses.

Bog communities are also found on the reserve in all altitudinal zones and include:

- Moss bogs
- Marshes with Different Sedge types of sedges - Carex (the the C . Melanatha , the the C . Of The the pseudo - foetida , the the C . Of The the orbicularis and others)
- Shrubs: Zalesova bushes (Comarum salesovianum) and Myricaria alopecuroides, bottomland shrubs with willow (Salix alatarica , S . Caprea), sea buckthorn (Hippophae rhamnoides) and Caragana jubata.

In the lower reaches of rivers Uch- Kul birch forests are found on alluvial fans, flood terraces and along temporary streams. Without anthropogenic pressure in lowland territory on the border of landscape, the area covered by forests can be larger (Sukurov and Domashov 2011).

Fauna

The reserve belongs to the Palaearctic region and part of the South Palaearctic subregion.

Mammals

26 species of mammals, and possibly 6 more occur in the CTSL belonging to 5 orders, 11 families and 18 genera. Prominent among these are snow leopard (Panthera uncia), manul (Otocolobus manul), the wolf (Canis lupus), Red fox (Vulpes vulpes) , brown bear (Ursus arctos) , stone marten (Martes foina) , Solongo (Mustela altaica) , weasels (Mustela nivalis) , ermine (Mustela erminea), steppe ferret (Mustela eversmanni) , Asiatic ibex (Capra sibirica), Marco polo sheep or argali (Ovis ammon), gray marmot (Marmota baibacina), boar (Sus scrofa), Tien Shan birch mouse (Sicista tianschanica), gray hamster (Cricetulus mi gratorius) , silver vole (Alticola argentatus (roylei), Kyrgyz vole (Microtus kirgisorum), narrow-skulled vole (Microtus gregalis), hare-sandstone (Lepus capensis), pika (Ochotona roylei) and others. The snow a leopard, brown bear, Pallas' cat, stone marten and argali are included in the Kyrgyz Red Book. Further, two species of bats (Chiroptera) are also recorded from the area.

Fish

Poorly studied taxa, but these two are likely - Tien-Shan flake maculatus (Diptychus gymnogaster Kessler) and Tibetan char (Nemachilus stoliczkai Stein-dachner) .

Amphibians and Reptiles

Only one species - the green toad (Bufo viridis) recorded from the region.

Invertebrates

Endangered species Swallowtail (Papilio machaon) and Tien Shan Apollo (Parnassius tianshanicus). Butterflies are a priority for research and monitoring , as they serve as excellent indicators of ecology and the environment, and many endemic species have been identified in the mountains of Central Asia. Subsequent studies of invertebrates are a priority for the future.

Birds

In the Sarychat Eertash reserve 92 species of birds, including 31 species of permanent inhabitants and 61 species are found temporarily or on migration. Raptors includes the golden eagle (Aquila chrysaetos), bearded vulture (vulture) (Gypaetus barbatus), the Himalayan vulture (Kumai, snow vulture) (Gyps himalayensis), Eurasian vulture (Gyps fulvus), black vulture (Aegypius monachus) and Falcon Falcon Saker (Falco cherrug). Among the quails there are Himalayan snowcock (Tetraogallus himalayensis), stone or chukar partridge (Alectoris chukar) and Chil partridge(Perdix dauuricae). The Ogar (Tadorna ferruginea) and Mongolian Plover Charadrius mongolus) are seen near the mountain ponds. Other birds include chough (Pyrrhocorax pyrrhocorax), Alpine daw (Pyrrhocorax graculus), bovine Lark (Eremophila alpestris), Pearl Reel (Leucosticte brandti), Himalayan reel (Leucosticte nemoricola) and lycidae stenolaz (Tichodroma muraria) among other species. Eight endangered species in the are include: golden eagle, lammergeyer, Himalayan

vulture, Eurasian vulture, black vulture, falcon, owl (Bubo bubo) and ibisbill (Ibidorhyncha struthersii).

Further, checklists of flora and fauna and lists of endangered species for the country and for parts of the CTSL are available in USAID (2001) and Anon (2017).

Appendix 2: Management of Trophy Hunting in Kyrgyzstan

Hunting tradition in Kyrgyzstan and emergence of sport hunting: Hunter-gatherers and nomadic people have inhabited Kyrgyzstan since prehistoric times. The nation had a rich heritage of hunting game for food often using the famous Taigan breed of dogs, golden eagles and other birds of prey. It is believed that these traditions included rules that regulated hunting in spring season and prohibited hunting of pregnant females. Hunting any animal with white on its body was also considered to be taboo. Thus, with the relatively low human population density, the practice is likely to have been sustainable. However, with the availability of small arms around the 1930s, some of these practices began to have a greater impact. Capture of live snow leopards for zoos in the West was a relatively common practice. During the Soviet times there was some degree of regulated hunting and strong controls on poaching. However, this got diluted after independence.

Hunting Rules as per Law 'On Hunting & Hunting Economy: A formal trophy-hunting program was initiated in the late 1990s and over 70 private companies developed businesses around this field. With increasing conflicts and fears of mismanagement (little community involvement, reduction in hunting resources, fragmentation of habitat) the Government began to work on reforms since 2009 with the help of international agencies such as GIZ and IUCN for a more sustainable hunting law, that led to the formulation of the law 'On Hunting and Hunting Economy' in 2014[15] and its latest amendment in 2016. This Law stressed on sustainable use, rights of citizens, involvement of local communities, formulating better systems and caring for social and economic interests.

Assignment of hunting grounds to hunting providers is carried out by an authorized body (Department of Rational Use of Natural Resources (DRUNR) or commission, to the hunting provider/company for a term of 15 years. Hunting management plans are evaluated in a competition by the commission that comprises of: scientific institutions, Hunting Management Association, environmental NGOs, and representatives of the ayil okmotus, and the selection is based on the knowledge, experience, quality and content of documents provided by candidates. The minimum areas for argali is 70,000 hectares and ibex/roe deer is 20,000 hectares. Clear borders, clear rights and obligations of the parties is recognised.

Hunting enterprise planning and internal planning are done through a 1) strategic plan of hunting management activities; and 2) the annual plan of hunting management activities. The Strategic plan for the period of the Agreement is prepared and funded by the hunting company and includes:

1) Basic information about the assigned territory and hunting resources;
2) Evaluation of the species composition, and the number and age-sex composition of the target trophy species
3) Outline of the main activities
4) Scheme of high-importance hunting zones

Hunted species can be of two types - 'Limited Type Species' where limits are prescribed by the Commission and Authority, based on annual monitoring and has a license/permission slip issued for each animal provied to the hunting company/provider who in turn provides it to the hunter. The result of the hunting operation is conveyed back to the Authority. The other is the 'Un Limited Type Species' that are monitored through a simple process of regulations and where the hunting companies directly support the hunters and report back to the authority.

The hunting companies pay fees in full upon the receipt of the permission. The amount of fee is

[15] Presentation entitled 'Experience of the Kyrgyz Republic in the development of legislative framework to regulate and conserve hunting resources' by A. Musaev, SAEPF, International Conference Regional Practice on Sustainable Use in Hunting Territories and Protection of wildlife. September 1-3, 2015. Ashgabat, Turkmenistan . http://slideplayer.com/slide/10712044/

distributed as follows:
1) 25% goes to budgets of local self-governments (ayil okmotus)
2) 40% goes to protection and reproduction back to the hunting company
3) 35% goes to the Authorized body (DRUNR) to conduct inter-ground hunting management, monitoring, to implement control functions, provide advice and methodical support to legal entities on hunting management.

The DRUNR monitors the activities of the hunting companies based on their reports and ground checks. The hunting provider is responsible to protect the area against poachers and their employees can detain suspects. The DRUNR has an overarching authority to detect poaching cases while the public too can notify them on any cases. As a positive incentive the person(s) helping with the detection of cases of poaching can receive 30% of the fined amount.

The Law has improved clarity and brought about benefits to all stakeholders (adapted from A. Musaev's 2015 presentation):

Benefits of the new Law to the country:

1. The stable flow of funds from fees for management and conservation of wild animals. This includes taxes from hunting providers and other persons engaged in tourism
2. The reduction of government role by transferring their functions to the private sector and experts
3. Strengthened state control in specific areas of monitoring and regulation
4. The hunting season has also been rationalised to a shorter period in August-last Sunday of November, instead of lingering on till January. This can help reduce disturbance to the wildlife, especially to the ungulates during their rut in December-January.
5. Participation of NGOs and expert organizations in wildlife census and monitoring will improve the quality of data and its interpretations

Benefits of the Law to the Community:

1. The stable flow of financial resources to local budgets from fees for the use of wild animals - about 10 million soms
2. Involvement of local communities in the management of hunting resources by providing them the right to conduct hunting management activities
3. Maintaining national hunting traditions
4. Participation in the commissions on limits and quotas and distribution of hunting grounds

Benefits of the Law to the Hunting Company/Providers:

1. Extending the term of agreements on hunting management up to 15 years.
2. Establishing harvest limits for hunting animals (commission).
3. Significant simplification of hunting management planning procedures.
4. Giving hunting providers more powers to combat poaching.
5. Participation in commission on limits and quotas and distribution of hunting grounds.
6. An important change that was brought about was to consolidate the hunting concessions into fewer, but larger entities, which led to the establishment of 40 such companies.

An important issue is that of monitoring the target trophy species. There are clear improvements in the information based on a wider participation of expert organisations but the exact formula or rationale used to decide quotas remains unclear. Further, the monitoring is typically done in autumn, immediately after the end of the hunting season. The figures thus obtained are used to decide the quota for the next hunting season almost 8-10 months later. This is a rather long period when considerable mortality can take place, especially since the resource-poor winter season, when heavy mortality of young ones and large males can take place, comes in between.

Areas and Zonation of Hunting Concessions: The CTSL has nine hunting concessions run by seven hunting companies (see Table). They cover an estimated area of 5,994 km^2. As per law these companies are supposed to zone and maintain undisturbed areas within their leased property that are set aside for species' reproduction and conservation. This is supposed to be carried out through biotechnical activities, details of which are not immediately available. It appears that these may include activities such as forming salt licks.

Establishment of conservation zones for species of wild animals, the allocation of reproduction areas are taken into account in inter-farm and intra-farm hunting; If necessary, they are limited to certain types of economic activities (agricultural and other) in accordance with Articles 13 and 21 of this Law and limited to the implementation of hunting. On the lands located within the landscape, it was not possible to obtain maps of conservation areas, reproductive areas as these are being established after the reorganization was completed a few years ago. The overall zonation in the landscape is suggested in Chapter 6 of the Management Plan.

Table: Hunting companies and their respective leased areas in the CTSL.

The name of the hunting company inside the CTSL	Area (ha)
Ashuu-Tor and Co..	66042
Central Asian Safari Club	58705
Central Asian Safari Club	74884
The site of the Department (before the competition is out hunting)	82365
Khan-Tengri Tour	50538
Issyk-Kul Intur	48276
Fortune Travel	72456
MK Travel	72156
Diana Travel	74005
Total area:	599,427 (5,994.2 square kilometers)

Interaction with PAs: The Hunting Concessions are spread out through out the CTSL and the three PAs, Khan Tengri SNP, Sarychat Eertash SNR and Karakol SNP, have borders with many of these hunting concessions. Presence of better-conserved areas (PAs) acts as a source population for the trophy species and thus the concessions benefit from their presence. However, in some cases reports of conflicts have come up (Nordbo et al. 2017). These relate in terms of some hunting inside the PAs and differing interpretation of borders. The difficult terrain and remoteness make monitoring these activities difficult and can result in malpractices. The issue can be more important in the newly established Khan Tengri SNP as its borders intersperse in between hunting concessions.

Interaction with local communities: So far there is very little local involvement in the hunting industry. As a result this huge commercial industry that survives off the local land and pasture resources contributes little to the local economy. Local people may be employed as guides or some menial jobs, and most companies prefer to get their own staff (eg. cooks, interpreters, horsemen, caretakers) from outside to support the hunters. Often, local communities have no or little idea of the hunting operations in the region (Nordbo et al. 2017). As per the Law, 25% of the funds generated are to be used by the ayil okmotu (AO), however, there are complaints from them that these funds may not reach them. Sometimes of a concessions is spread over more than one AO, it is not clear which AO the actual hunt took place. It may be better to consider ways of sharing this resource equitably between all AOs in the area. Since the livestock population is increasing and there is an increased threat of competition between them and wild ungulates, the

primary target of the trophy hunters, the companies often want to restrict the livestock and its movements. This may cause conflicts with the pastoralists. Further, some recent AOs such as Enylchek and Aksharak, that are completely on the CTSL, do not have any land of their own and graze their livestock in PA buffer zones and land belonging to other AOs. They thus cannot reap any benefits from the hunting happening all around them.

Yurt and livestock in a jailoo. Photo by Kuban Jumabay-Uulu

Hunting & tourism: Hunting is a form of tourism and because the primary resources used are wild animals and Nature, it has a significant overlap with tourism. Unfortunately, tourism in the landscape is limited in both extent and reach to local communities (Section 2.7). There is some amount of mountaineering taking place in the warm season in the eastern part of the landscape and hunting in autumn. As mentioned above, local communities have only limited gains from either of these. This CTSL Management Plan recognises the importance of these activities in the landscape and has suggested some integrated mechanisms for benefits to all stakeholders (Chapter 7). It is suggested that advantage can be obtained due to the presence of hunting camp infrastructure in remote parts of the CTSL, the hunting company's staff and marketing abilities and the local ayil okmotos stake in livestock grazing to expand the options for tourism to cover most of the year in the form of adventure and wildlife tourism. This is an option where both local communities and hunting companies stand to gain.

Appendix 3: Key Terms in tourism typology.

1. Tourism
2. Sustainable Tourism
3. Community Based Tourism
4. Nature Based Tourism
5. Ecotourism
6. Mountain tourism

1. Tourism:

"Tourism is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/ professional purposes. These people are called visitors (which may be either tourists or excursionists; residents or non-residents) and tourism has to do with their activities, some of which imply tourism expenditure." (UNWTO 2005)

2. Sustainable Tourism:

UNWTO defines sustainable tourism as "Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" (UNEP & WTO 2005). Sustainable tourism is not defined as a particular type of tourism (e.g. eco-tourism) or a particular scale of tourism (e.g. small scale or community-level). Our discussions, therefore, do not focus on determining what is or is not sustainable. Instead, we adopt the premise promoted by Clarke (1997), which emphasizes that all types and scales of tourism can be made more sustainable (Shokirov et al. 2014).

3. Community Based Tourism

Key Principles of CBT's (Tö nisson & Yassin 2015):

1. involvement of the appreciation for indigenous cultures
2. education and interpretation as part of the tourism experience
3. mostly organised for small tourist groups
4. minimising the impacts on the environment and the socio-cultural context of the locality
5. generation of economic livelihoods to protect the local environment and managers of natural areas
6. provide an alternative income and employment for local communities
7. increasing local and visitor awareness for conservation

4. Nature Based Tourism

Leisure travel undertaken largely or solely for the purpose of enjoying natural attractions and engaging in a variety of outdoor activities. Bird watching, hiking, fishing, and beachcombing are all examples of nature-based tourism (http://www.travel-industry-dictionary.com/nature-based-tourism.html). (The Intrepid Traveler 2013). It should be noted that this definition and its practice often does not include the idea of sustainability or benefits to local communities.

5. Mountain Tourism

As a sub form of nature based tourism mountain tourism refers to all kinds of tourism activities, which take place in mountain environments.

6. Ecotourism:
“Responsible travel to natural areas that conserves the environment, sustains the well-being of the local people, and involves interpretation and education” (TIES 1990).

Appendix 4: A collection of initiatives on tourism development in Issyk-Kul (changed after Kloiber 2008).

Year	Important Steps of tourism development with an impact on Issyk-Kul	Involved Stakeholder
1995	Foundation of the Kyrgyz Association of Tour Operators KATO	GTZ - CIM
1999-2005	Business Promotion and Community Based Tourism Support Program (CBTSP), supporting tourism business start-ups in selected rural areas	Helvetas
2000	Study on Sustainable Tourism Development in the Issyk-Kul region (Presentation on Kyrgyzstan Tourism Development Framework - regional development plan for Issyk-Kul Oblast)	AKDN/ERA GTZ
2001	Declaration of the "Year of Tourism"	GKR
2001	Recognition of the Issyk-Kul Biosphere Reserve	UNESCO/GTZ
2002	Promotion of a "Tourism Investment Manual for a sustainable tourism development in the Issyk-Kul region	GTZ
2003	Foundation of the Kyrgyz Community Based Tourism Association (KCBTA)	Helvetas & CBT Groups
2003	Follow Up Seminar on integrated tourism development in Kyrgyzstan with special focus on the Issyk-Kul region	AKDN / ERA
2003	Elaboration of a “Marketing Strategy for Sustainable Development of the Tourist Industry in the Kyrgyz Republic till the year 2010 ‘Hospitality Kyrgyzstan’	SOROS Foundation SAT
2003 - 2005	“Issyk Kul Integrated Development Project”, including the establishment of the Issyk Kul Association of Service Providers and Tourist Information Centres (TICs)	EU - TACIS
2004	Resolution No.734 on Marketing Strategy for Sustainable Development of the Tourism Industry of the Kyrgyz Republic up to 2010 “Hospitable Kyrgyzstan”.	GKR
2004	Study on integrated development plan of the Issyk Kul zone in the Kyrgyz Republic, finalized in December 2004	JICA
2004	Conference on ‘Development of Sustainable Tourism in the Issyk Kul resort area’ including an approval of an organizational structure for the development and implementation of a master plan for tourism development in the Issyk Kul region	SAT - GKR JICA
2004 - 2007	Program for the Development of Cultural Eco-tourism in Issyk Kul area including the establishment of an Association of ecotourism service providers and an Association of trekking workers	UNESCO NOVINOMAD

2005 - 2008	Destination Marketing Organisation Project including the establishment of a Destination Marketing Organization and its executive Association (DMA)	Helvetas
2006	Market Research "The Tourism Market in Kyrgyzstan"	MSB / DMA
2007 - 2010	Country Development Strategy for 2007 – 2010. Manifesting "Tourism" as a priority sector for economical development with a major focus given to the Issyk Kul resort area	GKR
2008	Concept note on a "Issyk Kul Sustainable Development Project"	ADB
2008	Small scale programs aiming at good governance / community empowerment through the promotion Eco tourism and CBT	JICA/KCBTA Leader
2007 - 2011	Community Empowerment Project in Issyk Kul Oblast - OneVillageOneProduct Project	JICA
2009	Issyk Kul Sustainable Development Project	ADB
2010 - 2014	Project for improvement of the equipment for road maintenance in Issyk Kul and Chui Oblasts	JICA
2012 - 2017	Conservation and Adaptation in Asia's High Mountain Landscapes and Communities Project (focussed on high mountain areas in Issyk-Kul oblast)	USAID
2013	Silk Road Heritage Corridors Tourism Strategy project	UNESCO
2013	Global Snow Leopard Conservation Forum in Bishkek	UNDP / GEF
2013	Community Development and Knowledge Management for the Satoyama Initiative project (COMDEKS) around coastal zone of Lake Issyk Kul	JBF / UNDP
2014 - 2018	Business Growth Initiative (BGI) influence in Issyk Kul by promoting tourism and training guides in Karakol	USAID
2014 - 2017	Promotion of Sustainable Economic Development program (Issyk Kul as one pilot region)	GIZ
2016 - 2017	Silk Road Action Plan 2016/2017	UNESCO / UNWTO

Appendix 5a: Information access on pasture use and ownership & Appendix 5b: List of Actions Related to Pasture Management Plans

Obtaining pasture ownership and boundary information in Issyk-Kul in digital format posed a significant challenge to the landscape management plan. To begin with, the state project institute for land development "Kyrgyzgiprozem" under the Ministry of Agriculture and Melioration of the country is a sole

implementer of a range of design, land survey and land cadastral work and sole depository of information on land management throughout the country regardless of the form of ownership.

Each district/oblast in Kyrgyzstan is divided into zones (rayons) with boundaries defined and established by the institute, in addition to the country's external and internal boundaries. Most recent boundary delineation was carried out in 2010 at the country level that included the establishment of aiyl okmotu boundaries. As per the Land Code of the Kyrgyz Republic, there are 8 land categories in Kyrgyzstan.

On March 3, 2013, the Government of the Kyrgyz Republic issued a decree mandating a fresh inventory of its land currently being carried out by Kyrgyzgiprozem. This is the first inventory to take place after 1991-1994 land inventory. However, inventory of land in the Issyk-Kul region was commenced only this year and has been paused due to lack of funds to complete it. Currently, digitization of aiyl okmotu boundaries and agriculture land is completed using old hard copy agriculture base maps that were developed in 1991-1994. The pasture boundaries however are yet to be surveyed and digitised. Absence of this information has hindered the team's ability to identify the community stakeholders using the CTSL. The important issue of calculating pasture load (livestock units/ha) for the pastureland inside the landscape was also not possible due to this reason. Given these limitations, inventory of all land categories in Issyk-Kul and digitization of administrative boundaries is outlined as a priority in the landscape management plan.

Appendix 5b: List of Actions Related to Pasture Management Plans

Various activities are proposed under the Pasture Management Plans created at the Ayil Okmotu level. This table compiles this information from 28 Pasture Management Plans, Issyk Kul Oblast. In addition, items suggested under the CTSL management plan are given in italics. The broad activities are prioritized based on the frequency with which they appear in the PMPs and expert knowledge within the team.

Actions	Priority
1. Improvement of pasture infrastructure ✓ Repair or build bridges connecting to pastures ✓ Road rehabilitation/repairs ✓ Organizing watering points for livestock ✓ Repair of ground-water tapping ✓ Cleaning of irrigation canals ✓ Repair of water drill hole ✓ Building of Beccari pit to dispose off and recycle animal carcasses ✓ Building of burial sites for livestock ✓ Creation of bio-utilizers (composition of specific bacteria which allows to decontaminate organic waste and recover soil drainage) ✓ Building of fenced passageway for examination and re-count of sheep and goats ✓ Organization of houses for herders on pastures	*****
2. Improvement of processing of agricultural production ✓ Creation of meat processing enterprises	*****

✓ Creation of milk processing enterprises ✓ Building of slaughterhouse ✓ Creation of feed-milling establishment ✓ Acquisition of shearing devices ✓ Creation/procurement of transportable shearing device ✓ Creation of fruit and vegetable preservation facility ✓ Fruit and vegetable drying facilities ✓ Marketing support for agricultural products	
3. Capacity building ✓ To organize participation of very active herders leaders on workshop, training and exchange of experience at local, regional and international levels ✓ To provide villagers with new books, videos on livestock husbandry and crop production ✓ Establishment of different types of group of women on milk processing ✓ Engagement of women into pasture committee for more sustainable use of pasture resources ✓ Upgrade qualification of private veterinarians so that they can identify and treat diseases ✓ Better capacity building of sub-committee on protection of livestock health ✓ Organize courses on accounting ✓ To develop various modules (different forms: bulletin, books, video, internet resource, mobile app on the following topic: - development and planning of pasture use and management (plant indicators of degradation, assessment of pasture capacity, pasture rotations, improvement and rehabilitation of pastures) - balance feeding of livestock (development of diet, compilation of nutritious composition of fodder) - disease of livestock (prophylactic measures, virtual diagnostic, etc.) - planning and development of budget in livestock husbandry - adaptation of animal husbandry and crop production to climate change - irrigation technologies - soil and water conservation technologies	*****

✓ To organize summer field school for herders and livestock owners on summer pastures ✓ Capacity building of key facilitators in conservation aspects, climate change and ecosystem services so that they can assist PMPs incorporate these aspects ✓ Capacity of local villagers in crafts and tourism management ✓ Capacity of local villagers in agricultural marketing	
4. Conducting monitoring in the following aspects: ✓ Status of pasture plan implementation ✓ Ecological pasture state (productivity, weed spreading, erosion, landslides, etc) ✓ Assessment of available resources for sanitary measures (availability of Beccari pits, fridges, disinfectant) and realization of sanitary activities ✓ Long term monitoring of impact of climate change on pastures of different elevations ✓ Training to identify clearly identifiable indicators of success	*****
5. Conducting research on the following topics: ✓ Ecological assessment of remote pastures and its carrying capacity ✓ Pasture governance: institutional and social barriers towards sustainable pasture management ✓ Investigation of different options for pasture rehabilitation through creation of pasture experimental and demonstration sites ✓ Assessment of the potential for developing additional household income sources (bee-keeping, tourism, crafts, collection of medicinal herbs, etc) ✓ Assessment of chain of horse and yaks meat production value chains ✓ Experiments, demonstration and research with different types of innovative irrigation (drip irrigation , sprinkle irrigation on pastures) ✓ Creation of demonstration plots with cultural pastures (highly productive pastures with irrigation and places for livestock rest and veterinary examination and rotational grazing)	*****

6. Mapping of pasture lands of ayial aimaks and make it available for pasture committee and each land users. Maps should have: ✓ Ecological status of each types of pastures (productivity, weeds and bushes, erosion, location of animal burials, disaster risks, etc.) ✓ Possible pasture load ✓ Problems with pasture infrastructure (broken roads and bridges, etc) ✓ Clear boundary demarcations of the entire pasture as also for all seasonal pastures along with their livestock numbers and approximate duration of stay at each pasture	*****
7. Improvement of agricultural methods for increasing forage productivity (irrigation, manuring, better variety of crop) ✓ To organize watering of hay lands and fertilizer treatment for increasing of winter forage production ✓ To improve quality of forage seeds in order to increase winter forage productivity ✓ To improve technical facilities using innovative agricultural machinery ✓ To increase irrigated area through creation of basin of daily regulation ✓ Pasture seeding with native seeds	****
8. Increasing awareness of local population: ✓ Increasing of awareness on pasture committee activities and mandates among local population with the help of mass media ✓ To increase participation of vulnerable groups in management of pasture resources ✓ Increasing of awareness on vaccination for livestock ✓ To provide information to farmers on processing of agricultural products, livestock and marketing channels ✓ Increasing awareness among herding community for sustainability, wildlife conservation and climate change. Also inform people about the ecosystem services values of their area being offered to local people as well as the country. This will be done through targeted posters, pamphlets, popular talks and nature camps	****
9. Improvement of veterinary services	**

✓ To build facility for livestock dipping washing to cure for ecto-parasites ✓ To buy fridges for veterinarians to store medicines and samples ✓ Organization of dispensaries of veterinary medicine	
10. Improvement of livestock breeding ✓ To organize artificial insemination station ✓ To identify best livestock types and their breeds based on marketability of their produce	*

Appendix 6: Ayil Okmotus in the Issyk Kul oblast that may have a stake in the Central Tien Shan Landscape. Figure a): Total Livestock Population based on Pasture Management Plans obtained from ARIS.

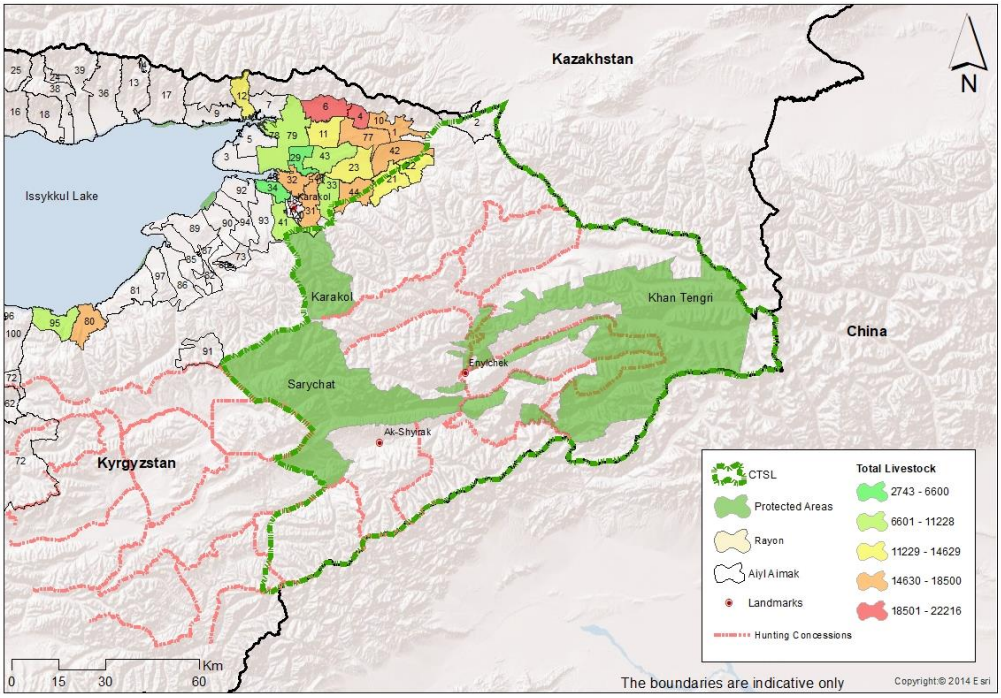
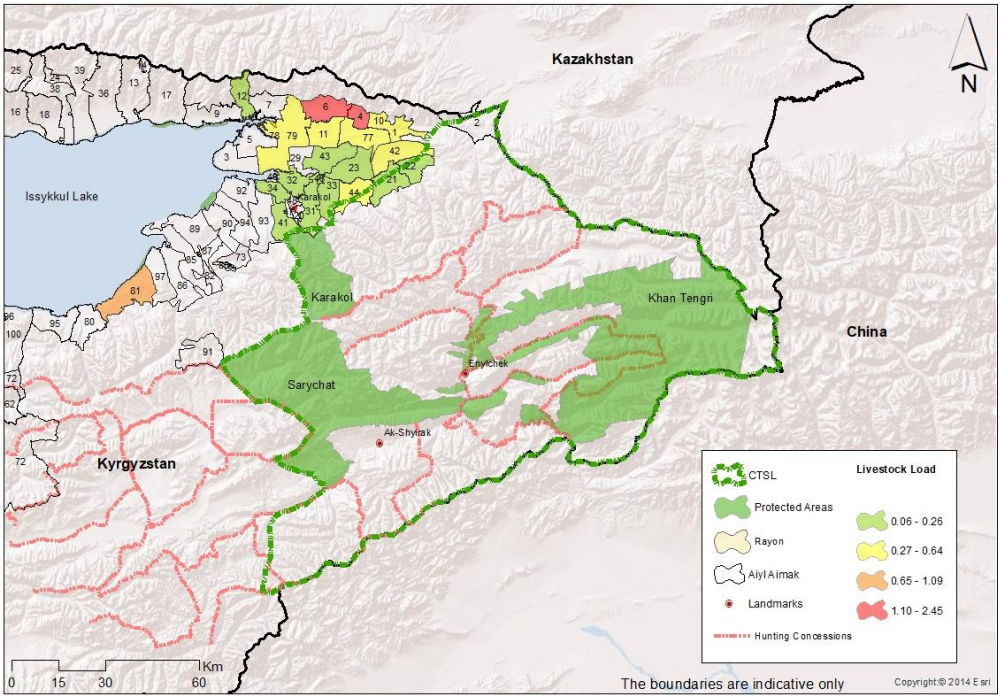


Figure b): Livestock load (LU/ha) based on Pasture Management Plans obtained from ARIS.



Index of Ayil Okmotus on the Map

Sr.No.	Ayil Okmotu Name	Sr.No.	Ayil Okmotu Name
1	SAN-TASH	35	CHON-SARY-OY
2	SAN-TASH	36	ANANEOVO
3	ISSYK-KUL	37	BOSTERI

4	CHON-TASH	38	SADYR AKE
5	TOGUZ-BULAK	39	SEMENOVKA
6	TALDY-SUU	41	CHELPEK
7	SARY-BULAK	42	AK-CHIY
8	MIHAILOVKA	43	KARAKOL
9	KUTURGU	44	KEREGE-TASH
10	KARASAEV	46	KARA-ZHAL
11	ARAL	60	BOLOT MAMBETOV
12	AK-BULUN	61	KEK-MOINOK
13	ABDRAHMANOV	62	TON
14	ABDRAHMANOV	63	TON
15	KARA-OY	64	ULAKOL
16	KUM-BEL	65	ULAKOL
17	ORYUKTYU	66	ULAKOL
18	TEMIR	67	ULAKOL
21	BOZ-UCHUK	68	ULAKOL
22	AK-BULUN	69	ULAKOL
23	OTRADNOE	70	ULAKOL
27	CHON-SARY-OY	76	KEK-MOINOK
24	TEMIR	77	KARASAEV
25	TEMIR	78	TYUP
26	TORU-AYGYR	79	MIHAILOVKA
28	CHON-SARY-OY	80	BARSKOON
29	TEPKEN	81	DZHARGYLCHAK
30	CHON-SARY-OY	83	KARA-OY
31	OKTYABR	95	TAMGA
32	KARA-ZHAL	99	CHOLPON-ATA
33	TEPLOKLYUCHENKO	109	BALYKCHY CITI
34	BERYU-BASH		

Appendix 7: Brief review of literature on degradation

Bai et al (2008) gave an interesting coarse level analysis of global degradation patterns, which was done within FAO program "Land Degradation Assessment in Drylands" (LADA). The Kyrgyz statistic according to them: 23,189 km2 degraded during 1981- 2003, which is 11.7% of country's area. Further, over 680,000 persons (13%) of the Kyrgyz population are affected. According the results of Le et al (2014) who used the normalized difference vegetation index (NDVI) the share of degradation in Kyrgyzstan is 38% of total area, while Khusanov et al (2009) estimated this as 25% of total area.

In addition, debates about criteria of pasture degradation in Kyrgyz society are still taking place. As highlighted by Kerven et al (2012) degree, criteria and reasons of pasture degradation can be based more on orthodoxies than on empirical research data.

According official data (Penkina 2004) total area of degraded pastures (weeded, eroded in different degree) was 32,220 sqkm or 29% of the total area. However Robinson (2016) contested the accuracy of this data, arguing that these are overestimated.

It is further noted that different user groups – researchers, livestock owners, pasture committees and herders – may hold differing views on whether degradation is taking place or not (Liechti 2012, Levine et al 2017).

A young ibex male in the CTSL. Photo by Kuban Jumabay-Uulu

Appendix 8: Mandates and key activities of selected stakeholders in the Central Tien Shan Landscape.

This information is based on stakeholder's official websites, brochures and personal interviews with designated officials. It may be noted that some of this information such as objectives or key projects/activities were not available on the websites or through the interviews. In some cases the activities and functions were similar. Aspects that are relevant to conservation and livelihoods in the context of this Management Plan have been underlined.

Key Government Agencies:

1. State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic (nature.kg)

Mandate: Ensuring the implementation of a unified policy in the field of environmental protection, biodiversity conservation, rational nature management, development of forestry and hunting economy and ensuring environmental safety of the state within the limits of the delegated authority

Objective (s)

- Preservation of the unique ecosystems in Kyrgyzstan, also for future generations

Function (s)

- Legislative recommendations, filing of protocols and acts for environmental protection, biodiversity safety and use of natural resources (including hunting) and lifting of contradictory decisions in environmental legislation
- Based on ecological expertise, regulate construction, reconstruction, expansion of facilities and other works carried out in violation of environmental legislation, standards, norms and rules
- Revoke permits for importation, as well as transit of environmentally hazardous goods, wastes and raw materials carried out in violation of environmental norms and regulations
- revoke, upon agreement with scientific organizations, permits for import, export, release, resettlement and acclimatization of animals and plants that may threaten the animal and plant life in the country
- Receive statistical information, on the state of the environment from other Ministries
- Receive urgent communications from businesses and other entities on emergency environment protection situations
- Organize scientific and technical, expert councils, groups and commissions to solve complex environmental tasks and develop measures for the protection and rational use of natural resources, conduct state environmental review of the most complex facilities
- Attract scientific research institutes and other higher educational institutions for scientific research in environmental topics
- Utilise republican and local funds for nature conservation and development of the forestry sector
- Charge fees for the use of natural resources, trophies of wild animals for foreign hunters, discharges, emissions of pollutants and waste disposal

- Conduct inspection, detain documents in cases of violation of nature protection legislation

Projects/Activities
The following are some of the projects launched in 2012 with support from the GEF:
- Sustainable management of forest and land resources in Kyrgyzstan in the wake of climate change (FAO, $5.5 million).

- Improvement of capacity and effective management of security systems for protected areas in Central Tien Shan, UNDP ($1.1 million).

- Third National Message on climate change, UNEP ($500K). Update of the National Action Plan based on the Desertification Convention (World Bank, $150K).

- National Strategy and Action Plan on Biodiversity (UNEP, $220K).

- Promoting sustainability of water supply in Kyrgyzstan due to climate change (EBRD, $5 million). A draft concept, "Nur" has been developed which includes a long-term action plan to decrease greenhouse emissions by 2050.

2. The Department of Protection and Use of Natural Resources of the State Agency for Environmental Protection and Forestry (SAEPF) under the Government of the Kyrgyz Republic; (fauna.kg)

Mandate:
Provision of conservation, reproduction and rational use of resources of flora and fauna in the Kyrgyz Republic
Objective (s)
- Provision of conservation, reproduction and rational use floral and faunal resources in the Kyrgyz Republic.

Function (s)
- Implementation of a unified state policy in environmental protection and nature resource management

- Organization and implementation of scientific research in the field of assessing the status and abundance of species of the animal and floral world

- Promoting organized forms of hunting and fishing, tourism and taxidermy activities

- Creation of an effective system of environmental protection

- Participation in the development and implementation of national and international projects and programs, treaties and agreements in the field of nature conservation and sustainable use of natural resources

- Raising awareness about the state of the environment

Funding Sources
The government of Kyrgyzstan
3. The Department of Forest Ecosystem Development of the State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic (aka PA Department)

Mandate: Ensuring development and conservation of forest ecosystems and rational forest management in the Kyrgyz Republic in order to increase the forest covered area.
Objective (s)

- Implementation of a unified state policy in the fields of sustainable development and conservation of forest ecosystems
- Facilitation of reforestation, afforestation and protection of forests on the territory of the State Forest Fund, increasing productivity and their rational use;
- Facilitation and enforcement of forest management activities

Functions (s)

- Study of forest resources and development of regulatory documents on their effective use
- Development of projects and modern methods in the field of forest management, conservation, reproduction and rational use of forest resources
- Development of modern methods of forest management oriented toward increasing productivity and quality of the forest fund and its protection;
- Making proposals for the improvement of economic mechanisms for the use of natural resources;
- Proposals for entering agreements with international organizations and foreign countries geared toward conservation of forest ecosystems and finding solutions to issues in the forest industry
- Facilitating research on pests and forest diseases along with the development of measures for combatting them
- Coordination and supervision of forest management activities by its structural units and other legal entities
- Organization and regulation of logging activities
- Identification and preservation of plantation relic and gene pool, organization of forest seed production, selection and creation of industrial plantations
- Organization of rational forest management and recommendations for enterprises and organizations
- Rendering of paid services to the department's structural divisions
- Provision of biotechnical measures to maintain the fauna of forest ecosystems
- Collection and exchange of information within the state, regional and interstate environmental information systems
- Facilitation of ecotourism through organization of tourist trails in forested areas
- Joint training and professional development of the department's employees and employees of its structural units
- Raising awareness on preservation and rational use of forests

4. Issyk Kul Regional branch of the Department of Environmental Protection

Mandate: Ensuring the implementation of a unified policy in the field of environmental protection, biodiversity conservation, rational nature management, development of forestry and hunting economy and ensuring environmental safety of the state within the limits of the delegated authority

Objective (s)

Preservation of the unique ecosystems in Kyrgyzstan, also for future generations

Function (s)

- Issuance of permits for deforestation activity, (Ak-Suu, Tup on the periphery), water runoff from factory activities, nature conservation.

Projects/Activities

- Monitoring impacts from the proposed ore extractions in Enelchek, coal mining in Zhyrgalan, gold mining in Kumtor

5. The Department of Ecological and Technical Inspection (Jeti-Oguz, Ak-Suu, Karakol); (geti.gov.kg)

Existing issues: Issues with hunting concessions in the landscape. Goals and objectives outlined in their mandate were said to be less relevant and therefore, not implemented (example salt licks, registration of violations, lack of monitoring). Enelchek and Ak-Shyirak *don't know where their land is, therefore, difficulty reporting on land user fees. Enelchek* has some manufacturing business; not clear as to what it may be (sporadic activity).

Objective (s)

- Control and supervision of 10 areas: construction, fire, energy, manufacturing, mountain supervision, water, land use, employment, ecology, radiation.

Function (s)

- Supervision and control over legislative conformity on occupational health and safety, environmental protection and use of natural resources

- Compliance supervision of environmental legislation and the requirements for environmental protection and industrial safety in activities such as road construction, manufacturing, management of hazardous products

Funding Sources

Project donors: IFC, BRDO, USAID, MOT, Ростехнадзор, Магатэ

6. The Ministry of Agriculture, Food Industry and Melioration of the Kyrgyz Republic; (agroprod.kg)

Mandate: Provision of food security, development of agricultural production and food industry

Objective (s)

- Development and implementation of unified state policy in the field of agriculture, food and processing industry, fisheries, as well as in the field of veterinary and sanitary, phitosanitary safety and safe handling of pesticides and agrochemicals, veterinary medicinal products

- Ensurance of domestic needs of the country in agricultural products and increase of country's export potential in the sphere of agricultural production

- Development of progressive innovative technologies in the field of agricultural production, promotion of science and technology in production

- Planning of interstate distribution of water resources and regulation of interstate water relations and provision of water resources for all water users

- Protection of land and soil from degradation, adjustment of land user boundary

Function(s)
- Development and implementation of policies in the field of agriculture, food processing industry, rational and effective use of land, water resources, public water infrastructure

- identification of priority areas of scientific research in the field of agriculture

- Systematic analysis of the economic state of agriculture, water management, food and processing industry, export-import of agricultural products for identification of strategic development direction

- Identification, evaluation and management of veterinary, sanitary and phitosanitary risks

- Development of long-term, short-term economic forecast indicators of agricultural production, food and processing industry

- Proposals for quarantine issues with pests of plants

- Provision of consulting and information services to producers and processors of agricultural products, as well as industry associations

- Cooperation and coordination of activities with other government agencies, international donor organizations, international financial organizations, partner countries, including within the framework of integration associations, investors to implement investment programs and projects in the field of agriculture, and also monitoring of implementation

Projects/Activities
- National Water Resources Management Project – 1

Funding Sources
World Bank

7. Community Development and Investment Agency, ARIS; (aris.kg)

Mandate: Alleviation of rural poverty by strengthening access and provision of essential community infrastructure services, support of private enterprises at the village level, governance improvement at the local level
Objective (s)
- Assistance and support of communities and local authorities in working together

- Building capacity and sustainable processes and institutions for regional development

Function (s)
- Channelling of grant finances to community groups

- Ensuring compliance of environmental and social safeguard measures in micro-project cycles

Projects/Activities
- Village Investment Project (VIP)

- Small Towns Infrastructure and Capacity Building Project STICBP

- Agricultural Investments and Services Project

- Bishkek and Osh Urban Infrastructure Project

- Debt Swap II – Communal Infrastructure

Funding Sources
- The World Bank, The Government of Japan, Government of the Kyrgyz Republic, Government of Germany, Japanese Foundation for Poverty Reduction (JFPR), The Asia Development Fund

8. *National Pasture User's Association of Kyrgyzstan "Kyrgyz Jayiti"*

Mandate: Representation of pasture user rights and interests.
Objective (s)
- Increasing the potential of pasture committees, protection of pasture user rights and interests

- Development of human capacity

Projects/Activities
- Collaborated in E-pasture committee in Suusamyr and Khan-Tengri Park Management Plan.

Points of convergence:
- The association conducts close work with pasture committee in plan development and business proposals. One project focused on determining/finalizing AO boundaries as part of the process that could be prioritized in the SL landscape.

Funding Sources
- IFAD, GIZ, World Bank, FAO, UNDP

9. The State Inspectorate for Veterinary and Phytosanitary Security under the Government of the Kyrgyz Republic; (gvfi.gov.kg)

Mandate: The supervision and control of the safety of life and health of people, animals and plants
Objective (s)
- Prevention, detection and preclusion of violations committed by individuals and legal entities in the area of veterinary medicine,

- Prevention and preclusion of violations of mandatory conformity assessment of products

- Protection of consumer rights of supervised products

- Protection of the country from the introduction and / or spread of contagious animal diseases on its territory.

Function (s)
- Carrying out veterinary and phytosanitary measures to clear out identified violations

- Suspend the operation of facilities, regardless of the form of ownership, with the threat of the occurrence or spread of infectious animal or plant diseases

- Control financial and economic activities of subordinate organizations

- Enforcement of mandatory instructions for elimination of identified violations of veterinary and phytosanitary security requirements to the state bodies, local self-government bodies, legal entities and individuals, irrespective of the form of ownership
- Make proposals to local state administrations and local authorities for consideration of relevant issues in emergency commissions
- Organize interdepartmental specialized experts work groups
- Ban import, export and transit of goods subject to veterinary control in the Kyrgyz Republic
- Attract funds from international organizations and institutions, donor grants for the implementation of assigned tasks
- Host competitions, seminars and conferences
- Involve specialists for carrying out independent examinations

10. The Department of Pastures under the Ministry of Agriculture and Melioration of the Kyrgyz Republic; (agroprod.kg)

Mandate:
Conservation and improvement of pasture ecosystems and their infrastructure, animal genetic resources and the development of aquaculture and fisheries for addressing food security problems of the Kyrgyz Republic
Objective (s)
- Organization and enforcement of state control over the use of pastures and pasture management
- Organization of sustainable management and effective use of pastures, based on active involvement of local communities.

Function (s)
- Involve employees of other divisions of the Ministry, scientific research and other institutions of the republic in dealing with issues related to the use of pastures
- Involve representatives of international organizations in the development and consideration of certain issues and problems of the Department
- Receive grants and technical assistance from international organizations and donor countries
- Develop and make proposals on strategies for the development of pasture economy

Projects/Activities
- Agricultural investment and services project that focuses on the development of legal and regulatory frameworks for management and use of pastures
- Dissemination of information on policies and legal framework for the management and use of pastures
- Training on the legal framework for community management of pasture resources
- Raising the level of public awareness about sustainable management of pasture resources

- Assistance in the identification and establishment of pasture boundaries

- Improvement of pasture infrastructure.

Funding Sources
State Budget and other resources allowed by the government, World Bank

11. State Project Institute for Land Management under the Ministry of Agriculture *and Melioration of the Kyrgyz Republic "Kyrgyzgiprozem"*

Mandate: Execution as assigned by the Ministry to design and survey land management and land-cadastral work across the whole country
Objective (s)
- Implementation of complex country-wide land management projects regardless of land ownership types and in direct contract with individuals and legal entities.

Function (s)
- Identify and deliniate different types of land as per ownership and landuse type

- Make proposals to the Ministry on the establishment of subordinate organizations, branches, expeditions, departments, sectors, groups and representations of the Institute

- Submit for consideration to the Ministry drafts of normative legal acts within the limits of their competence

- Carry out foreign economic activities and international cooperation in the field of land management, make contracts and agreements

- Make proposals for attracting investments and advanced technologies for land management

- Carry out publishing and other activities in accordance with the procedure established by law

- Provide paid services in the established order.

Funding Sources
The government of the Kyrgyz Republic and other sources

12. The Issyk-Kul Department of Architecture and Urban Planning

Mandate:
Improvement of living conditions in the region
Objective (s)
- Development and implementation of a unified state policy in the field of architectural and urban development

- Implementation of inter-sectoral coordination and regulation in the development of state technical regulations, development and approval of building codes and regulations in the field of architecture

Function (s)
- Issuance of permits for construction

Projects/Activities
- Assisting infrastructure for SAEPF works and staff:

- Cooperation with the Khan-Tengri park on improving living conditions for rangers

- Construction of a guard post in Enelchek Nature Reserve
- Installation of water supply in Enelchek
- Cooperation with border patrol posts
- Development of architectural planning management for Kumtor
- Enelchek expansion plan
- Future projects include: construction of a (Indian/Kyrgyz) cardiologic science lab in Sook (Jeti-Oguz region), mineral extraction projects in Ak-Shyirak (next 10 years), tin mining with investment potential.

13. The Ministry of Economics of the Kyrgyz Republic; (mineconom.gov.kg)

Mandate: Ensuring social and economic progress and sustainable development of the Kyrgyz Republic

Objective (s)

- Development of the State economic policy
- Establishment of priorities for the country's economic development
- Increase in investment attractiveness of the country and creation of favorable conditions for doing business.

Function (s)

- Submit to the Government of the Kyrgyz Republic proposals on the main areas of state policy within the Ministry's sphere of activities
- Submit proposals to the Government on the establishment of intergovernmental commissions for cooperation with foreign states in the areas of trade, economics, science, technology, culture and humanities
- Submit proposals on the creation of the accreditation council and assessment bodies
- Signing on behalf of the Kyrgyz Republic bilateral or multilateral agreements and treaties
- Request and receive information pertinent to the Ministry's area of expertise, from state bodies and local self-government bodies, organizations, enterprises and individuals
- Establish coordinating and advisory bodies (councils, commissions, groups)
- Participate in the work of international institutions, commissions, expert groups, ad hoc working groups on issues pertinent to the work of the Ministry
- Attract funds from international organizations and institutions, grants from donor countries for the implementation of the state policy

Projects/Activities

Main funder and initiator of the project: "Agriculture Financing-4". Main goal of the project is to provide monetary subsidies to farmers and business entities to incentivize timely spring field work and further development of animal husbandry and crop production at 10% interest rate for the duration of 36 months.

14. The Issyk-Kul Oblast Department of the Ministry of Economy under the Government of the Kyrgyz Republic

Mandate: Ensuring social and economic progress and sustainable development of the Kyrgyz Republic, especially the Issyk Kul oblast

Function (s)

- Analysis of the socio-economic situation of the region, implementation of the sustainable development strategy for Issyk-Kul.

Projects/Activities

- Implementation of the Issyk Kul Sustainable Development Strategy

15. Department of Tourism under the Ministry of Culture, Information and Tourism; (deptourism.gov.kg)

Mandate: Provision and implementation of the state policy in the tourism industry, creation of favorable conditions for the development of the tourism industry, development of a positive image of the country

Objective (s)

- Implementation of citizen rights to rest, leisure and business development.

Function (s)

- Development of tourism as a priority sector of the country's economy
- Provision of citizen rights to rest, freedom of movement
- Regulation of financial and currency relations in the sphere of tourism
- Financing of prospective state programs for the development of tourism
- Coordination of activities in the sphere of tourism
- Development and improvement of the legal framework in the field of tourism
- Assistance in the development of international cooperation and professional training of specialists in the field of tourism and development of scientific research in the field of tourism.

16. Tourism and investment sector of the authorized representative of the Government of the Kyrgyz Republic in Issyk-Kul

Objective (s)

- Stimulate tourism and investment growth in the Issyk-Kul region

Projects/Activities

- Promotion of locally made natural products, internship opportunities for tourism major students (for service quality improvement).

17. The Issyk-Kul Development Fund

Mandate: Promotion of socio-economic development of Issyk-Kul oblast, stimulation of priority sectors of the region's economy, rational use and effective management of the Fund's resources. Infrastructure improvement across entire region, establishment of sustainable financial basis.

Objective (s)

- Fund activities on Nature conservation, Regeneration of natural resources, Rehabilitation and use of the natural territories, prevention and mitigation of environmental consequences of catastrophes
- Support of the long-term, sustainable economic and social development in the region, including their recreational use
- Long-term environmental control, monitoring and environmental research
- Environmental education and awareness of regional population
- Training and qualification development for employees of Nature Protection units in Issyk Kul

Function (s)

- Targeted use of special purpose funds, which are used to strengthen the material and technical base of educational institutions, healthcare, environment, social protection, culture and sport, law enforcement, defense bodies, local state administrations and local self-government
- Development of general plans for resort complexes, projects of detailed planning, city planning documentation, provision of environmental safety
- Land improvement and repair, restoration of the irrigation system, provision of agro technical measures for land improvement
- Accumulation of partial extra-budgetary special funds of the Issyk-Kul regional local fund for nature protection and the general directorate of the "Issyk-Kul" biosphere territory
- Stake sharing in the development and implementation of regional and republican programs on nature conservation
- Financing of construction, reconstruction and overhaul renovation of regional level environmental objects, financing of implementation activities of resource-saving and environmentally friendly technologies, financing of restoration activities of damaged natural objects as a result economic activity and production, protection and restoration of flora and fauna and financing of activities promoting environmental knowledge, competitions, seminars, conferences and meetings on nature conservation
- Monitoring of accounting accuracy, collection of cash at ecological posts, timely and complete transfer of resources to the Fund's account, compliance with rules for drafting payment agreements for polluting natural environment (emissions, waste discharges and as well as collection of fees from car owners).
- Attraction of financial and technical assistance, investment and grants
- Development of information and analytical material on the Fund activities.

Projects/ Activities

In the future, the fund envisions applying the biosphere territory concept throughout the entire Issyk Kul oblast. In addition, fulfilling a Kumtor funding funneling mechanism that will generate 400 million KGS annually, after the mining company has ceased their

business in the country (by about 2025). Other plans for future development in the region include forest plantation on degraded pasture land owned by Forestry Department and aiyl okmotu.

Funding Sources

- Funds are comprised of 1% of Kumtor's gross annual profits
- Local Environment Conservation Trust

18. State Financing and Economic Development Fund

Function (s)

- Giving out commodity credits to purchase wheat, barley, potato seeds (every fall and spring)
- Signing the commodity loan agreements
- Tracking appropriate use of funds
- Ensuring the return of loans.

Projects/Activities

- USAID: heavy equipment, state grants for sheep breeding and farming.

19. State Committee for Mineral Reserves of the Kyrgyz Republic

Objective(s)

- Testing for determination of mineral raw materials required for calculation of mineral reserves in subsoil and provision of full, complex and efficient use of the mineral resources base of the country
- Expert evaluation of materials submitted to the Committee regarding calculation and testing of mineral reserves at different stages of exploration, providing a basis for construction and improvement of mining companies as well as for perspective plans of mining industry development

Function(s)

- Carrying out state expert evaluation reports

20. Kyrgyz State Geological Fund

Objective(s)

- Implementation of recording and analysis of the results of all geological works produced in the Kyrgyz Republic, collection and centralized storage of geological materials
- Registration of all types of geological works carried out in the Kyrgyz Republic

Function(s)

- Recording of all occurrences of commercial minerals and natural groundwater
- Recording of the drillholes, wells and mine workings, intersecting subterranean water
- Collection, filing and archiving of geological reports and other geological materials related to all types of work in the Kyrgyz Republic

- Management of geological materials use by concerned agencies, enterprises and institutions

21. Republic Center of Quarantine and Especially Dangerous Infections Ministry of Health of the Kyrgyz Republic.

    Mandate:
    To monitor the size and activity of the epizootic among marmots -The main carriers of the plague in the highland areas of natural foci of plague of the Tien Shan and Pamir-Alai, preventive measures to reduce their infectivity by disinfestation deep burrows marmots, using environmentally friendly insecticides, as well as study migration routes of insecticide marmot colonies in the environment

    Objective:
    To monitor the number of marmots as the environmental sustainability indicators highland ecosystems seats spread range leopards;

    - to examine migration routes used in the insecticides into the environment and the safety of their reproductive marmots as a possible cause indirect effects on the population of leopards.

National Government Organizations based in Issyk Kul

22. The Regional Pasture Committee

Mandate: Management of current activities of Pasture User Association (PUA)
Existing infrastructure: 58 pasture committees in Issyk-Kul, about 32 in the project landscape
Issues: poaching, pasture overuse, avoidance of payments, lack of clear allocation of duties between pasture committees, aiyl okmotu and pasture users
Mitigation of existing conflicts studied by USAID: improving cooperation between local self governments and pasture committees; reinforcement of pasture committee's status and authority; establishment of an MoU between the SAEPF and the Pasture Department for use of pastures on the territory of forestry; establishment of joint pasture management between pasture committees and PAs; raising awareness and potential among pasture committees about secondary use of pastures by enterprises; agreement development for use of pastures in borderline areas; testing of joint management approach to managing natural resources at the level of water basins.
Objective (s)
- Representation of interests of pasture users in relation to the use of pastures

Function (s)
- Implementation of decisions of the general meeting of pasture users
- Development of community pasture management plans
- Development of an annual pasture use plan
- Implementation of the provisions of community pasture plans and annual pasture use plan
- Pasture condition monitoring
- Issuance of pasture tickets in accordance with the annual pasture use plan

- Establishment and collection of fees for pasture use with mandatory approval by local village council
- Resolution of conflicts concerning the use of pastures, within its legal power
- Management of received funds for the use of pastures and other resources toward pasture infrastructure, its maintenance, management and improvement

Projects/Activities
- With ARIS (Pasture Management Planning) support

Funding Sources
- Deductions from hunting concessions (doesn't apply to all)
- Pasture use tickets

23. State Project Institute for Land Development "Kyrgyzgiprozem" under the Ministry of Agriculture and Melioration of the KR (local office in Karakol)

Mandate: Execution of complex land management and land-cadastral work
Existing Issues:
Based on the Government Resolution dated 03/03/2013, an inventory of all land in Kyrgyzstan is currently taking place in the country. Last land inventory completed was in the period from 1991-1994. Regional offices in Issyk Kul are currently doing inventory of Issyk-Kul. Any land work/mapping is based on the aiyl okmotu base maps developed in 1991-1994.
Points of convergence:
Knowing the stakeholders and their dependence is crucial for the success of the CTSL Management Plan. This plan could suggest prioritization of aiyl okmotu boundary update/delineation in the landscape, with pasture committee maps being updated by Kyrgyzgiprosem.
Objective (s)
- Execution of complex land management and land-cadastral work

Function (s)
- Land surveying, topographical and cadastral work
- Development of state and regional programs, projects and forecasts for the use and protection of land resources
- Project development and establishment of land boundaries, owners and users
- Development of project for reclamation of low-productive agricultural lands
- Preparation of low productivity statements of land plots
- Participation in consolidation of urban community and rural settlement boundaries
- Inventory of all land categories within administrative territories
- Preparation of cadastral, thematic maps and atlases of the state of use of land resources (also with the help of Geo Information Systems)
- Systematization and storage of cartographic materials in accordance with established rules.

Projects/Activities
- Implementation of a range of land management and land cadastral work throughout the country

24. Agriculture Sector of the Regional Development Department of the authorized representative of the Government of the Kyrgyz Republic in Issyk-Kul

Mandate: Food security, development of agricultural production and food industry
Objective (s)
- Coordination of hunting concessions, agriculture and forestry, waterworks, as well as ecology per federal mandate.

25. Industrial road management

Infrastructure:
Bituminous base in Balykchi (old) and concrete-mixing plant in Barskoon. Existing infrastructure provides material for road construction in the area.
Function (s)
- Coordination of the road operation enterprise
- Acceptance of completed work and reports
- Technical monitoring.

26. *The "Issyk-Kul" Biosph*ere Territory

Mandate: Conservation, restoration and use of natural territories with a rich natural and cultural heritage
Infrastructure:
An education center that helps reach out to the public including the local newspaper "Ak-Kuu".
Existing issues:
No transportation, no monitoring equipment.
Points of convergence:
Numerous areas of overlap and convergence with the CTSL Plan. Scientists interviewed showed concern for lack of communication between different agencies.
Objective (s)
- Conservation, restoration and use of natural territories with a rich natural and cultural heritage
- Support of a long-term, sustainable economic and social development of territories, including recreational use in accordance with conservation and restoration of natural resources
- Long-term environmental monitoring and environmental research
- Environmental education of stakeholders and public
- Development and improvement of planning and coordination of the management system for environmental protection and control of the region
- Provision of harmonious coexistence and interaction between stakeholders
- Implementation and development of practical models for environmentally-oriented land use in traditional types of management

- Ensuring cooperation with local and national organizations in the field of planning and management of use of natural resources to create an enabling environment for livelihoods

- Development and implementation of environmentally promising and locally sensitive innovative technologies for the use of natural resources to ensure harmonious coexistence of nature and man

- Assistance and participation of local residents and representatives of interested groups in the adoption of environmental decisions in the field of environmental planning and management and economic development

- Attraction of investments and grants for realization of scientific-well-founded projects of social and economic development on the basis of environmental criteria

- Development of the basis for interdisciplinary research, especially on rehabilitation of destroyed ecosystems, soil and water protection

- Participation in information exchange and international programs of the World network of biosphere reserves

- Mobilization of private funds, public and non-governmental organizations to support the biosphere reserve.

Function (s)
- Coordination of forest management and hunting grounds

- Conservation of natural landscapes, ecosystems, species and genetic diversity

- Assistance of the economic and cultural development of the region

- Long-term research and monitoring

- Environmental education, training of specialists - managers on nature management

- Approbation, standardization and transfer of new technologies in the region.

27. Representative Office of the Ministry of Culture and Tourism of the Kyrgyz Republic in Issyk-Kul

Mandate: Same as# 15 above.
Infrastructure:
114 houses of culture, 154 libraries, 9 music schools, 1 post graduate (professional) school of music, 1 drama theater, and 1 national TV channel across Issyk-Kul.
Points of convergence:
Establishment of information corners in each of the libraries about wildlife and snow leopard conservation; facilitation of series of seminars about snow leopard conservation via a cross country/region competition among activity groups (10-15 people). Liaison with print and electronic media.
Function (s)
- Coordination of all regional structures, analysis and monthly activity reporting to the Ministry of Culture.

National NGOs

28. *"CAMP Ala-Too" Mountain Development NGO*, (camp.kg)

Mission:
Sustainable development using integrated approaches to natural resource management in its identified fields of work.
Function (s)
- Improvement of lives of communities in Central Asia based on integrated management of natural resources, through the development, adaptation and implementation of global and local experience.

Projects/Activities
- Sustainable Rangeland Management. Along with the GIZ (see below), CAMP Alatoo has been in the forefront of creating practical models for pasture management in the country
- Sustainable water management
- Soil and water-saving technologies
- Integrated Disaster Risk Management
- Adaptation to climate change
- Managing conflicts over natural resources
- Energy conservation and efficient use of energy

29. Kyrgyz Association of Forest and Land Users (KAFLU), (landuse-association.kg)

Mission:
Promotion of initiatives and protection of interests of members of the Association and local communities for the poverty reduction and increased sustainability of rural development.
Objective (s)
- Ensure equitable conservation and development of forest and land resources
- Protection, representation and lobbying of rights and interests of members of the Association in state, private, public and international organizations of the Kyrgyz Republic and other states
- Improvement of policy and regulatory framework for regulating forest and land relations
- Coordination of business, forestry, agricultural, tourist and other activities by members
- Attraction of intellectual, financial, organizational and other resources for the sustainable development of local communities through participation in national, regional and international projects and programs
- Provision of technical information and other support to enhance the capacity of its members and rural communities

Function (s)
- Working with members to develop regional offices and provide supervisory advice through partnerships and cooperation
- Pasture management and Integrated water resources management at the community level

- Improvement of the breed of public herd and veterinary medicine
- Cultivation of medicinal herbs
- Implementation of a responsible CFM in pilot forest areas
- Creation of nurseries and reforestation
- Inventory of leased forest plots; Processing of non-timber forest products;
- Vulnerability assessment at the community level
- Development of community adaptation plans and sectoral adaptation programs.

Projects/Activities
- Institutional development for the promotion of interests of members and communities
- Sustainable agriculture and forest management
- Climate change adaptation
- "Silk Road Taste"— the official brand of the Association of Forest and Land Users of Kyrgyzstan.
- "Silk Road Herbs"—created to restore the production of medicinal herbs
- Geno Global AS – cow breeding for better living. The Association of Forest and Land Users serves as an official distributor of the Norwegian Red breed of cows in Kyrgyzstan.
- Voluntary forest and ecosystem service certification in Kyrgyzstan.

Funding Sources
- Norwegian Forestry Group
- "Geno Global AS"
- FSC Russia

30. Kyrgyz Community Based Tourism Association (KCBTA), (cbtkyrgyzstan.kg)

Mission: Representing member interests in national policy development and negotiations within the mainstream tourism industry.
Objective (s)
- Improvement of living conditions of people in remote mountain regions by developing rural tourism without harming the natural environment and culture of local people.

Function (s)
- Balancing marketing strategy for local and international segments while fostering communication on new projects, activities and opportunities to its rural chapters
- Encouragement of rational and responsible natural resource use through training on environmental protection, ecology, cooperation and heritage sites to local members of rural communities

- Provision of support to member organizations by marketing their services and products, providing business training, supporting organizational capacity building and organizing training, seminars and study tours

- Finding consistent service and price policies as a strategy for creating the most benefit for consumers and the rural tourism sector together.

Projects/Activities
- "Hospitality Kyrgyzstan" -- promoting an active educational policy among its members (regional Community Based Tourism Groups) and rural population of Kyrgyzstan since 2000.

Partners:
- Helvetas, Swiss Association for International Cooperation

- State Committee for Tourism

31. The Kyrgyz Association of Tour Operators, KATO

Mission: To create a favorable environment for the tourist industry, which is based upon global standards and principles that will facilitate further economic growth and prosperity of regions
Objective (s)
- Transformation of tourism into the leading economic sector of the Kyrgyz Republic

- Creation of favorable conditions for tourists by involving the local population and the creation of conditions to revive and sustain the uniqueness of cultural identity and traditions

- Simplification of visa and other formalities.

Function (s)
- Protection of interests of its members and the rights of clients it serves.

Funding Sources
- BGI (USAID)

International NGOS

32. Snow Leopard Conservancy; (snowleopardconservancy.org)

Mission: Ensuring snow leopard survival and conserving mountain landscapes by expanding environmental awareness and sharing innovative practices through community stewardship and partnerships
Objective (s)
- Transformation of snow leopards from being perceived as pests by herders into assets valued more alive than dead

Function (s)
- Creation of innovative, highly participatory, self-governing community-based conservation programs that serve as models for best practices

- Building in-country capacity of individuals and organizations for snow leopard conservation, research and education

Projects/Activities

- Community based conservation action

Funding Sources
- Several donors and partners spread across Europe, America and snow leopard range countries

33. Panthera Foundation in the Kyrgyz Republic; (panthera.kg)

Mission: Preservation of wildlife, facilitation of scientific research and carrying out of educational and outreach activities in the field of preservation of natural heritage.
Objective (s)
- Preservation of rare and endangered animal species and plants of Kyrgyzstan through educational, charitable, cultural, informational, research and other socially useful activities.

Function (s)
- Assistance in improving Kyrgyz Republic's legislation and other environmental regulatory documents in the field of nature protection
- Carrying out of science, research, information, and implementation work related to ecology
- Expansion of partnership network and cooperation with individuals and organizations to solve environmental issues within the Kyrgyz Republic and abroad
- Organizing and participating in the international environmental movement, facilitation of exchange of visits experience, information, conferences, meetings, symposiums and other events
- Organization of educational events for public media and carrying out of publishing and advertising activities
- Assistance in organizing natural reserves, nurseries, wildlife sanctuaries and other forms of protection and restoration of natural objects
- Organization of ecological forms of recreation, including eco-tourism and eco-villages

Projects/Activities
- "Dog's project" for the protection of wild animals in partnership with the Center for Professional Training and Canine Customs service of the Kyrgyz Republic that helps control illegal trade in wildlife
- Community-based conservancy "Shumkar-Tor", "Jamaat Min Teke", "Jamaat Bek Tosot" "Jamaat Janaydar" and "Chunkur-Tor" aimed at preserving rare animal species

Partners
GSLEP, SLT, SLF, Union for Conservation of Nature Germany (NABU), SAEPF, State Customs Service, National Academy of Science, Kyrgyz Research Institute of Veterinary Medicine named after Arstanbek Duysheeva.

34. Snow Leopard Foundation-Kyrgyzstan, SLF; (snowleopard.org)

Mission: To protect the endangered snow leopard through community-based conservation projects that are based on an improved scientific understanding of snow leopard behavior, needs, habitats and threats.
Objective (s)
- Community based conservation

- Science and research

Function (s)
- Co-operation with communities in snow leopard range countries on community-based conservation.

Projects/Activities
- Snow Leopard Enterprises
- Conservation Education Programs
- Annual Eco-Camps
- Snow leopard monitoring based on advanced tools (Research Camera) & snow leopard ecology studies
- Anti-Poaching / Ranger Rewards Program
- Management of Shamshy Wildlife Sanctuary

Partners
- NABU, Snow Leopard Conservancy, Global Environment Facility, USAID, WWF International, World Bank, UNDP, David Shepherd Wildlife Foundation, Panthera Foundation in Kyrgyzstan.

35. Central Asian Econet (GEF-UNEP-WWF)

(Information collected from http://www.wwf.ru/about/where_we_work/asia/closed/Econet/eng in January 2017. Site closed now)
Mission: Creation of effective protected area systems, preservation of natural complexes in general and rare species in particular.
Objective (s)
- Establishment of a strategy and action plan for creating and managing the Econet in the participating countries
- Drafting of legal and other documents dealing with environmental protection management
- Territorial planning for general and specific aspects of regional socio-economic development
- Territorial planning and decision making related to environmental protection and use of natural resources
- Restoration of renewable natural resources and provision of their sustainable use
- Provision of ecological education
- Monitoring of the environment and production of information that enables long-term, sustainable use of the environment
- Creation of recreational areas for human comfort
- Provision of balance between biodiversity protection and provision of economic development of regions.

Function (s)
- Establishment of land use regulations for all Econet elements
- Development of mechanisms and methods for planning, managing and monitoring Econet
- Recognition of necessity to conduct EIAs in case of area reductions, changing of borders and/or demotion of status of Econet elements
- Facilitation of agreements between countries that share one ecoregion

Projects/Activities
- Development of the Econet for long-term conservation of biodiversity in the Central Asia Ecoregions

36. World Wildlife Fund-Kyrgyzstan, WWF; (worldwildlife.org, wwf.ru)

Mission: *To stop the degradation of the planet's natural environ*ment and to build a future in which humans live in harmony with Nature.
Objective (s)
- Securing transformative change at all levels of government globally
- Partnering with governments and international institutions to protect wildlife and their habitats.

Function(s)
- Collaborations for further conservation through legislative and regulatory approaches
- Implementation of programs that support healthy ecosystems and the sustainable use of natural resources
- Informing policy makers about the most effective and efficient ways to protect species and places
- Collaboration with business leaders and other non-governmental organizations to ensure policymakers understand conservation issues from several perspectives
- Gaining better understanding of global conservation problems and provision of new tools to help policymakers solve them;
- Partnering with the Global Environment Facility to protect the environment Worldwide;

Projects/Activities
- WWF Asia High Mountains Project
- Supporting rangers
- Econet

Funding Sources
- Global Environment Facility, numerous others

International Aid Agencies

37. Deutsche Gesellschaft f*ü* r Internationale Zusammenarbeit (GIZ) (English: German Corporation for International Cooperation GmbH); (giz.de)

Mission: International cooperation for sustainable development.
Objective (s)
- Development and integration of different forms of land use, such as pasture and forest management, and their economic valuation at both macro and micro levels in Central Asia.

Function (s)
- Enabling land users, government agencies and the private sector in Central Asia to adopt integrated, economically and ecologically sustainable forms of land use, taking into account climate change.

Projects/Activities
- Biodiversity Conservation and Poverty Reduction through Community-Based Management of Walnut Forests and Pastures
- Strengthening of Livelihoods through Climate Change Adaptation in Kyrgyzstan and Tajikistan
- Regional program for sustainable and climate sensitive land use for economic development in Central Asia
- Transboundary water management in Central Asia
- Mineral resources for development

38. Japan International Cooperation Agency (JICA); (https://www.jica.go.jp)

Mission: Inclusion and dynamic sustainable development
Objective (s)
- Reduction of poverty trough equitable growth
- Governance improvement
- Achievement of human security
- Integrated and seamless assistance
- Promotion of development partnerships
- Research enhancement, knowledge sharing

Function (s)
- Integrated management of three modalities of assistance—technical cooperation, ODA loans, and grant aid
- Provide assistance spanning a wide variety of sectors from prevention of armed conflict and natural disasters to emergency aid following a conflict or disaster, assistance for prompt recovery, and mid- to long-term development assistance
- Promotion of public-private partnerships, pooling experience, technologies, and resources of local governments, universities, nongovernmental organizations, and other actors. In addition, strengthening partnerships with international organizations and other donor institutions, leading to the creation of a broad framework for development assistance in a global community

- Enhancement of research and knowledge-sharing capacities; carrying out surveys and research grounded in actual assistance projects

Projects/Activities
- The Project for Development of the Rural Business with Forest Products in the Kyrgyz Republic, 2015-2019

- Community Empowerment Project through Small Business Promotion by One Village One Product (OVOP) Approach in Issyk-Kul region, 2012-2017

- Project for Capacity Development for Road Disaster Prevention Management, 2016-2019

- Project for Human Resource Development for Diversification of Economic Sectors through the Kyrgyz Republic-Japan Center for Human Development, 2016-2021.

39. United Nations Development Program; (kg.undp.org)

Mission: Advocating for change and connecting countries to knowledge, experience and resources to help people build a better life.
Objective (s)
- Focusing on key areas including poverty alleviation, democratic governance and peacebuilding, combating climate change, disaster risk mitigation and addressing economic inequality.

- Provision of support to governments to integrate the sustainable development goals (SDGs) into their national development plans and policies.

Function (s)
- Acceleration of pro-poor development, good governance and environmental sustainability in Kyrgyzstan in partnership with government, civil society, mass media, the UN system, private sector and donors.

- Raising awareness and capacity in cross-cutting themes such as conflict prevention, disaster risk reduction, gender equality and respect for human rights.

Projects/Activities
- Socio-economic development

- Democratic governance

- Crisis prevention and recovery

- HIV, TB, Malaria

- Women's Empowerment

- Environment and Energy

- Khan Thangri State Nature Park demarcation and management

Funding Sources
- Management Plan for the Khan Tengri National Park

40. Food and Agriculture Organization of the United Nations, FAO; (fao.org)

Mission: Achieving food security for all, eradication of hunger, malnutrition and poverty.

Objective (s)

- Elimination of poverty and the driving forward of economic and social progress for all
- Sustainable management and utilization of natural resources for the benefit of present and future generations
- Addressing the challenges and opportunities of Kyrgyzstan's agricultural sector for achieving its national development objectives.

Function (s)

- Enhancing capacities to assess, plan and implement action for achieving sustainable food and nutrition security
- Strengthening professional and institutional capacities, legal framework and support services for sustainable use of natural resources for agricultural productivity growth, effective inclusive agricultural value chains, and increased rural income
- Improving resilience to climate change, crises and disasters
- Enhancing capacities for strengthening a socially sensitive market economy to reduce rural poverty, especially among women-headed households.

Projects/Activities

- Support the Elaboration and Alignment of Forest Policy and Action Plan to SDGs and Climate Change Agenda (2017-2019)
- Support for improvement of the legal framework and institutional capacity to promote organic agriculture in Kyrgyzstan (2016-2017)
- Support in set up and launch of the Strategic Plan for Development of Veterinary Services (2017 -2021)
- Establishment of the Kyrgyz Veterinary Association (2015-2017)
- Enhancing aquaculture production for food security and rural development through improved feed value chain, production and use (2017)
- Sustainable Agricultural Development of Issyk-Kul region (with a special focus on rural women) (2015-2018)
- Sustainable management of mountainous forest and land resources under climate change conditions (FSP) (2014-2018)
- Towards Sustainable Aquaculture and Fisheries Development in the Kyrgyz Republic (2014-2017)
- Cross-border Cooperation for Sustainable Peace and Development (Kyrgyzstan) (2015-2017);
- Accelerating Progress towards the Economic Empowerment of Rural Women (RWEE) in the Kyrgyz Republic (2014-2017).

Partners:

- ASFRD-WG, DPCC, World Bank, IFAD, WFP, UN Women

41. The World Bank Group Kyrgyzstan; (worldbank.org)

Mission: Achieving the twin goals of ending extreme poverty and building shared prosperity.

Objective (s)

- Ending extreme poverty by decreasing the percentage of people living on less than $1.90 a day to no more than 3%
- Promotion of shared prosperity by fostering the income growth of the bottom 40% for every country.

Function (s)

- Provision of low-interest loans, zero to low-interest credits, and grants to developing countries
- Provision or facilitation of financing through trust fund partnerships with bilateral and multilateral donors;
- Offer support to developing countries through policy advice, research and analysis, and technical assistance
- Support for capacity development in the countries
- Sponsorship, hosting, or participation in many conferences and forums on issues of development, often in collaboration with partners.

Projects/Activities

- Sustainable Rural Water Supply and Sanitation Project
- Health and Social Protection Project
- Kyrgyz Global Partnership for Education
- Developmental grants through the Global Environment Facility

42. Asian Development Bank, ADB; (adb.org)

Mission: Helping developing member countries to reduce poverty and improve the quality of life of their people.

Objective (s)

- Provision of loans, technical assistance, grants, and equity investments to promote social and economic development.

Function (s)

- Support of inclusive growth, environmentally sustainable growth and regional integration
- Provision of loans, technical assistance and grants
- Provision of direct assistance to private enterprises of developing member countries through equity investment and loans

Projects/Activities

- Second Issyk-Kul sustainable development project
- Uch-Kurgan Hydropower Plant Modernization
- Skilling and entrepreneurship for inclusive growth sector development program

- Central Asia Regional Economic cooperation corridors 1 and 3 connector road project

Funding Sources
- Bond issues on the World's capital markets
- Members' contributions
- Retained earnings from lending operations.

Partners
- World Bank, Asian Infrastructure Investment Bank (AIIB), European Bank for Reconstruction and Development (EBRD), Corporacion Andina de Fomento, European Investment Bank (EIB), Inter-American Development Bank (IDB), New Development Bank (NDB), Global Environment Facility (GEF), Organization for Economic Co-operation and Development (OECD), World Health Organization (WHO), World Trade Organization (WTO), Association of Southeast Asian Nations (ASEAN), South Asian Association for Regional Cooperation (SAARC).

National & International Academic Institutions

43. The Kyrgyz Scientific Institute of Animal Industries and Pastures (Kyrgyz National Agrarian University after Skryabin); (knau.kg)

Objective (s)
Development of scientific basics for the improvement of livestock sectors

Projects/Activities
- Preservation of genetic resources of domestic breeds of animals, development of scientific bases for improvement, rational use of genetic resources and creation of new breeds and types of animals, technology for feeding animals
- Development of techniques and technologies for improvement of natural pastures, farming techniques for cultivating new high-yielding varieties of fodder crops, organization of primary seed production and their reproduction
- Promulgation and implementation of zoocultural and agrarian science achievements into agricultural practice, organization of consultation services
- Publication of scientific research and recommendations on relevant subjects
- Cooperation with international scientific centers on the development, implementation of joint investment programs and projects on fodder production issues

Funding Sources
- ICARDA, ISTC, Sida, The Swiss Research Station Agroskop Shonzha Vadensvil, The World Bank, The International Fund for Agricultural Development.

41. The Kyrgyz Scientific Research Institute of Veterinary Science after A. Duysheev; (knau.kg)

Function (s)
- Working on issues of health protection for animal and bird species
- Ensuring food, biological and environmental security of the country.

Projects/Activities

- Epizootological monitoring of infectious and invasive diseases of agricultural and domestic animals;

- Development and improvement of biotechnology of diagnostics, monitoring, specific prevention and treatment of infectious and invasive diseases among agriculture animals, birds and honey bees

- Isolation and typing of pathogens based on deep molecular biological studies using new advanced tools for the design of domestic highly effective vaccines and diagnostic drugs;

- Introduction of scientific achievements and best practices into veterinary practice, provision of scientific and methodological advice to agricultural workers, training of farmers, veterinary specialist on the new strategy of vet services for agriculture animals.

Funding Sources
- International Science and Technology Center

- Science Centers in Canada, USA, Switzerland and Russia

42. University of Central Asia-Kyrgyzstan, UCA; (ucentralasia.org)

Mission: To promote the social and economic development of Central Asia, particularly its mountain societies, while helping the different people of the region to preserve and draw upon their rich cultural traditions and heritage as assets for the future.
Objective (s)
Contribution of leadership, ideas and innovations to the transitioning economies and communities of the region through modern educational and vigorous research programs
Function (s)
- Provision of internationally recognized standard of higher education in Central Asia.

Projects/Activities
- Mountain Societies Research Institute, MSRI is a leader in knowledge generation

- The Aga Khan Humanities Project.

Partners:
- Aga Khan Development Network, Asian Development Bank, Asian Institute of Technology, British Council, BMZ, Canadian International Development Agency, Carleton University, Certified International Professional Accountant Examination Network (CIPA-EN), Cornell University, DAMU National Enterprise Development Foundation, Department of Environment, Food and Rural Affairs (UK), DAAD, European Commission, Flora and Fauna International, GTZ, JICA, Open Society Institute, Peace Corps, Swiss Agency for Development and Cooperation, World Bank, USAID.

43. American University of Central Asia, AUCA; (auca.kg)

Mission: To develop enlightened and impassioned leaders for the transformation of Central Asia.
Objective (s)
- Provision of information resources necessary for learning, to broaden the multicultural perspective needed for the transformation of the region

- Enhancement of academic excellence that will guide the work of the University

Function (s)
Provision of US accredited degrees in liberal arts programs through a partnership with Bard College in the United States.
Funding Sources
- AUCA Endowment, Open Society Foundation, USAID, Dordoi Football Club, Kumtor Operating Company.

Table: List of officials interviewed during the process of stakeholder assessments

Last Name	First Name	Middle Name	Organization	Title
KYDYKBAEV	Adis	Arankaevich	Emergency Management	Deputy Head
KAZAKPAEV	Askat	Kamchybekovich	Emergency Management	Operations Officer
MURADYLOV	Ulan	Zhaparakunovich	Regional Department of the Ministry of Economics	Head of the Department
SHARAPOV	Bakyt	Doolosovich	Regional Phyto and Vet Inspection	Head of the Department
ISMAILOV	Erkinbek	Toktosunovich	Ministry of Culture, Information and Tourism in Issyk-Kul	Regional Representative
KYDYRMYSHEV	Abdrasul	Sadybakasovich	Regional Waterworks Department	Deputy Director
TOIGONALIEV	Aldayarbek	Stanbekovich	Capital Construction Management	Head
SULAIMANBEKOV	Ernest	Kubanychbekovich	Regional Registration Services in Karakol	Head
MAMBETOV	Talantbek	Temirkulovich	Land Registry	Specialist
TURDALIEV	Klim	Imanturovich	Regional Management Sector for State Ecological and Technical Inspection	Head of the Sector
MAIRYKOV	Aibek	Mairykovich	State Agency for Interethnic Relations	Representative of the Regional Office
MUSAEV	Maksatbek	Omurbekovich	Sector for Tourism and Investment under the KG Government	Head of the Sector
SAGYNBEKOV	Erkinbek	Tungatarovich	Regional Development Department under the KG Government	Main Agriculture and Regional Development Specialist
MUSAEV	Mukhtar	Musaevich	Sarychat-Ertash Nature Reserve	Head of the Nature Reserve
USENBAEV	Tologon	Okenovich	Department for Rational Use of Natural Resources in Issyk-Kul	Main Specialist and Administrator
TOKTOBEKOV	Nurlan	Muslimovich	Regional Pasture Committee	Main Specialist and Administrator
MAMBETKULOV/SADYRALIEV	Taalaibek/Rustambek	Zhenishovich/Kadyralievich	Issyk-Kul Development Fund	Director

Last Name	First Name	Middle Name	Organization	Title
BAKYTOV	Adilet	Bakytovich	Issyk-Kul Development Fund	Head of the Department
ISKATOV	Ulan	Tukashovich	Regional Statistics Department	Head
OROZOBAEV	Nurbek	Duishekeevich	Territorial Department for Environmental Protection	Specialist
IMANBAEV	Duishenkul	Satybaldievich	Regional Achitecture and Urban Planning Department	Head of the Monitoring Department
KAZAKBAEV	Tynchbek	Sharipaevich	Regional Association of Water Users	Head
ABDYRAKUNOV	Omurbek	Sabyrovich	State Financing and Economic Development Fund	Head
KALMAKIEV	Kanybek	Tursunalievich	Issyk-Kul Microcredit Agency	Director
SAMAKOV	Taalaibek	Sharsheevich	The Roads Production Line Management #4	Head of the production department
VERESHAGIN	Alexander	Petrovich	Issyk-Kul Biosphere Territory, Sarychat-Ertash Nature Reserve	Main Specialist of the Biosphere and Scientific Research Administrator at Sarychat-Ertash
EGENBERDIEV	Akylbek	Sharipovich	Issyk-Kul Biosphere Territory, Sarychat-Ertash Nature Reserve	Main Specialist
SHARSHENBAEV	Aibek		The Council for Business Development and Attracting Investment	Council Secretary
SEIDIMATOVA	Chinara	Moldosanovna	State Archive in Issyk Kul Oblast	Director
SHARAPOVA	Nurgul	Dolosovna	Regional Education Institute in Issyk-Kul	Deputy Director
KALDABAEV	Bakyt	Kadyrbekovich	State University after Tynystanov	Dean of the Natural Sciences Department
ZHANALIEVA	Sheishekan	Basekenovna	Issyk-Kul News Newspaper (KYR)	Deputy Editor
GREKAPOV	Igor	Valeryevich	Issyk-Kul News Newspaper (RUS)	Chief Correspondent
SHAIKOVA	Cholpon		Issyk-Kul TV Station	Director
OSKOMBAEV	Turumbek	Sagynovich	State Agency for Environmental Protection and Forestry in Issyk-Kul (SAEPF)	Head
EGEMBERDIEV	Abdymalik	Abdykaarovich	National Pasture User's Association of Kyrgyzstan "Kyrgyz Jayity"	General Director

Last Name	First Name	Middle Name	Organization	Title
KOICHUMANOVA	Gulnur	Temirbekovna	State Project Institute for Land Development "Kyrgyzgiprozem" under the Ministry of Agriculture and Melioration of the KR	Head of the GIS Department
BARAKANOVA	Natalia	Iosifovna	Kyrgyz Republic's Community Development and Investment Agency, ARIS	Pasture Development Specialist
BAYALIEV	Mairambek	Emelbekovich	Kyrgyz Republic's Community Development and Investment Agency, ARIS	Project Coordinator
OZUBEKOV	Myrzabek		Kyrgyz Community Based Tourism Association, KCBTA	Tour Manager, "Hospitality Kyrgyzstan"
JACKSON	Rodney		Snow Leopard Conservancy	Founder, Director, Leading expert on wild snow leopards and their habitat
RAJIEV	Asylbek		Kyrgyz Association of Tour Operators, KATO	President
ZHAMANKULOV	Azamat	Kaparovich	The Ministry of Culture, Information and Tourism of the Kyrgyz Republic	Deputy Minister

CTSL in winter where snowy conditions can last for up to 6 months. Photo by Kuban Jumabay-Uulu

Appendix 9: Report Minutes Meeting October 7th 2016.

ИНФОРМАЦИЯ О ВСТРЕЧЕ В КОМАНДЫ РАЗРАБОТКИ ПЛАНА УПРАВЛЕНИЯ ПИЛОТНЫМ ЛАНДШАФТОМ ЦЕНТРАЛЬНЫЙ ТЯНЬ-ШАНЬ С КОМАНДОЙ ГУБЕРНАТОРА ИССЫК-КУЛЬСКОЙ ОБЛАСТИ И ПОДВЕДОМСТВЕННЫХ ОРГАНИЗАЦИЙ

Дата: 7 октября 2016
Время: 17:00
Место: Областная государственная администрация. г. Каракол

Общая информация

В рамках встречи проведено информирование заместителя, советника губернатора, представителей региональных управлений о работе Секретариата, глобальной программы сохранения снежного барса и его экосистем. Кроме того на мероприятии была представлена информация по достижению общей цели Глобальной программы по сохранению снежного барса и его экосистем GSLEP а именно «Обезопасить 20 ландшафтов обитания снежного к 2020 году».

Кроме того, для участников мероприятия была представлена информация о общих принципах плана управления ландшафта, о механизмах сбора необходимой информации, а также процедурах и предварительного анализа собранной информации (Обработка и сбор данных с использованием GPS оборудования, анкетирование) для разработки ландшафтного Плана управления для пилотной территории Центрального Тянь Шаня.

Участники предложили расширить работу по ландшафту и выразили готовность обеспечить сбор необходимой информации для разработки данного плана управления.

По завершению мероприятия было предложено разработать и подписать меморандум о взаимопонимании и конкретный план шагов по сбору информации.

В рамках мероприятия участники комментировали данные представленные в презентации и задавали следующие вопросы:

Вопрос: Будет ли данный план дублировать существующие планы реализуемые на данной территории?

Ответ: Нет. План управления ландшафтом направлен на учет существующих планов и их увязывание в единую систему с учетом сохранения и устойчивого использования природных ресурсов.

Вопрос: Будет ли в рамках плана управления предусматриваться отчуждение земель, в первую очередь высокогорных пастбищ, для сохранения снежного барса?

Ответ: Нет. Вся работа по плану будет реализовываться в рамках существующей структуры землепользования.

Вопрос: Как дальше будет разворачиваться работа в рамках данного плана правления?

Ответ: После подготовки и утверждении плана на высоком уровне будет организована работа по поиску его финансирования силами международных фондов и др. финансовых институтов.

Participants (**ПРИЛОЖЕНИЕ**)
Список участников мероприятия

№	ФИО	Позиция
1.	Яш Вир	Международный эксперт Секретариата. SLT
2.	Мамбеталиев Кумар	Департамент рационального использования природных ресурсов при ГАООСиЛХ
3.	Турдуматова Айгуль	департамент лесных экосистем и ООПТ при ГАООСиЛХ
4.	Абдрасулов Азамат	департамент лесохотустройства при ГАООСиЛХ
5.	Домашов Илья	эксперт по полевым исследованиям Секретариата Глобальной программы по сохранению снежного барса и его экосистем
6.	Пакиров Ильяз	Советник по экономике
7.	Ибраимов Канат Абдукалыкович	Тюпский УАР
8.	Бейшекеев Алдлярбек Айылчиевич	Ак-Суйский УАР
9.	Исанов Токтобет Астинович	Иссык-Кульский РУАР
10.	Тукомбаев Туратбек Асанбекович	Тонский УАР, начальник
11.	Аширов Кубан Кенешович	Аграрный отдел Жети-Огузского района
12.	Усонбаев Тологой Оkенович	Жаратлыш ресурстарын сарамжалдуу пайдалануу департаментин Ыссык-Кул окулучунун башкы адиси
13.	Суюнбаев Эрлан	Зам генерального директора

Appendix 10: Meeting Minutes Stakeholder Meeting October 7th 2016.

Meeting Minutes – Central Tien Shan Landscape Management Plan, Stakeholder Meeting

Location: Issyk-Kul Regional Administration (Karakol, Kyrgyzstan)

Date: October 7, 2016

Time: 5 pm, GMT/Karakol, Kyrgyzstan

Agenda Items:

- ✓ General Information on the Central Tien Shan Management Plan
- ✓ Agreeing on a suitable process for stakeholder engagement and consultations
- ✓ Questions and Answers

Action Items:

In the framework of the first stakeholder meeting, a general informative session was held with members of the Issyk-Kul Regional Administration, the Deputy Governor, Advisor to the Governor and representatives of local municipalities to introduce them to the work of the Secretariat of the Global Snow Leopard and Ecosystem Protection Program (GSLEP). In addition, attendants of the stakeholder meeting learned about the overarching goal of the GSLEP to protect 20 snow leopard landscape habitats by 2020 and the leadership being provided by the President of the Kyrgyz Republic in this effort.
Moreover, information regarding basic landscape management plan principles, data collection and analysis using advanced tools and surveying mechanisms, as well as procedures and preliminary data evaluation for the purpose of Central Tian Shan landscape management plan development was shared with meeting participants. Ilia Domashov made a 15 minute presentation explain the above followed by interaction of the officers with the management planning team. Meeting participants offered to expand the scope of the project landscape and offered their support in collecting all of the necessary information for the development of the landscape management plan. The meeting concluded with a suggestion to develop and sign a memorandum of understanding along with a specific work plan for further collection of necessary information.
During the meeting, some questions were raised and discussed in more detail and some of them are given below:
Q: Will the current plan repeat existing plans already in place on this territory?
A: No. The main goal of the landscape management plan is to account for and tie together existing plans into a cohesive system with a purpose of conservation and sustainable use of natural resources. We will bring in some focus on wildlife conservation where appropriate
Q: Will the development of the landscape management plan result in expropriation of land, particularly, high altitude pastures for the protection of snow leopards?
A: No. All work pertinent to the development of the plan will be realized within the framework of existing land use.
Q: What are the next steps of the plan development process?
A: We have completed surveys in the landscape for a better understanding of its biodiversity, human society and local institutions. Through the present consultations at the Oblast and Raion levels are trying to understand the mandate and key projects of Government and Business Stakeholders. This will be used to highlight clearly areas of cooperation in implementing the management plan. We will produce our recommendations to mitigate threats and improve people's livelihoods based on an integrated understanding of the landscape.

After the plan has been developed and approved at the administrative level, further steps will be taken to identify financing mechanisms using government, international funds and other financial institutions.

Meeting participants:

1. Deputy Governor
2. Pakirov Iliaz, Advisor on Economics
3. Ibraimov Kanat Abdukalykovich, Tup UAR
4. Beishekeev Aldlarbek Aiylchievich, Ak-Suu UAR
5. Isanov Toktobet Astinovich, Issyk-Kul RUAR
6. Tukombaev Turatbek Asanbekovich, Head of the Ton UAR
7. Ashirov Kuban Keneshovich, Jeti-Oguz Agriculture Department
8. Usonbaev Tologoi Okenovich, Department?
9. Suyunbaev Erlan. Deputy Director, Issyk Kul Biosphere Reserve
10. Yash Veer Bhatnagar, International Expert, SLT & GSLEP
11. Mambetaliev Kumar, The State Department of Rational Use of Natural Resources
12. Turdumatova Aigul, The Department of Forest Ecosystems
13. Abdrasulov Azamat, Department of Forestry
14. Domashov Ilia, Field Expert under the Secretariat of the Global Snow Leopard and Ecosystem Protection Program

Appendix 11: Meeting Minutes Meeting with the Governor October 26th 2016.

Meeting Minutes – Central Tien Shan Landscape Management Plan, Work Plan Approval

Location: Issyk-Kul Regional Administration (Karakol, Kyrgyzstan)

Date: October 26, 2016

Time: 1 pm, GMT/Karakol, Kyrgyzstan

Attendance: Ashat Akibaevich Akibaev, Ilia Domashov, Kumar Mambetaliev, Iliaz Pakirov, Pakiza Shirinova

Agenda Items:

- ✓ Work Plan Approval
- ✓ Snow Leopard Trust Presentation
- ✓ Meeting with the Governor

Action Items:

Work Plan Finalization and Approval:

Ilia has shared the first draft of the work plan with the advisor to the Governor of the Issyk-Kul region, Iliaz Pakirov to collect final comments and discuss further steps for plan approval.
Iliaz had no further comments, except revising the annex of the work plan to assign a specific contact person to each regional agency to ensure more structure and accountability of the responsible person to assist in data collection, as needed for the landscape management plan. Iliaz Pakirov has also agreed to provide an updated list of villages/towns of the Issyk-Kul region to help us with the update of our current list. Even though the list will include villages in all of Issyk-Kul region, we will have to map out villages pertinent to the landscape area, only (with Koustubh's help). Iliaz Pakirov offered support and help in reaching out to the villages in the landscape area for data collection (by Pakiza) and suggesting moving forward with the approval of the work of the plan at the governor level.

Road to Enylchek inside the CTSL in winter. Photo by Kuban Jumabay-Uulu

Project landscape area:

Following the Snow Leopard Trust presentation, the governor Mr. Akimbaev expressed interest in expanding the landscape area to include all of Issyk-Kul region, including Terskey and Kungey Ala Too Mountain ranges in the north. He noted that photo camera trap installations in the landscape area have been crucial in battling poaching and suggested widening the scope/area for camera trap installations to extend its positive impact in other regions, as well. He pointed out that unsanctioned hunting of argali and ibex is underestimated and is significantly affecting the snow leopard food base. He believes illegal hunting takes place in the North, as well. Overall, the governor demonstrated big interest and offered his full support in preserving the snow leopard population, protecting its ecosystems and carrying out the objectives of the landscape management plan. The GSLEP team welcomed the Governor's keen interest and appreciated his support. It was noted that extending the boundary of the GSLEP landscape to the entire Oblast may be difficult at this stage, however the GSLEP partners comprising of Government and non-Government organizations will surely take up studies and activities in the entire oblast in a phased manner.
In addition, Kumar Mambetaliev suggested taking a comprehensive approach to protecting the snow leopard population and its ecosystems by expanding hunting bans (region by region) and restricting livestock grazing in the snow leopard landscape. The exact nature of these interventions will emerge from the ongoing analysis and consultations with stakeholders.

Argali herd in the CTSL. Photo by Kuban Jumabay-Uulu

Appendix 12: Outputs from the Threat Analysis Workshop, March 13, The Central Tian Shan Landscape Management Plan

(Please see end of document for rank definitions. Higher values of Scope, Severity and Irreversibility mean higher threat ranking. Similarly, a high total of the Overall Score denotes a higher threat)

Threat	Scope	Severity	Irreversibility	Overall Score	Subcategories
1. *Climate change leading to impacts on ecosystem and people's livelihoods	4	4	4	12	Serious threat, more so as an agent with impacts on many other threats and livelihood problems (pasture quality, natural disasters, conflicts, etc.). It was however, a contested issue. Few participants felt it was exaggerated, hard to measure. Participants also offered to separate natural disasters from climate change, as former have more tangible impact on the locality of snow leopard habitat, and latter having an overall/global impact across entire landscape, across multiple threats. It was identified that other threats, such as pasture degradation and conflicts may also be impacted by climate change, including human livelihood and the need to adapt to the changes. It was felt that this is a 'threat' where little can be done for mitigation under this management plan, however being conscious of its impacts is important. Adaptation for both human and wildlife's survival is the key.
2. Infrastructure development and mining industry impacting wildlife habitat and connectivity	3	4	4	11	Threat includes urbanization, encroachment, hydropower projects, roads and mining exploration. These projects often lead to habitat destruction and barriers to free wildlife movements. Such activities may also contribute to natural disasters.
3. Livestock and wild prey competition leading to wildlife population declines	4	4	3	11	Livestock increase often leads to competition with wild prey of snow leopard, thus leading to their population declines. Continued high intensity livestock grazing may also lead to degrading the pastures, at times causing permanent damage (related to # 5 below).
4. Animal Disease transfers leading to declines in wildlife populations	4	4	2	10	This was recognised as an important, yet little known threat. It includes - nonspecific prevention of plague in the highlands. Vulnerability of the snow leopard to existing and new diseases. Transmission of livestock disease threatening the populations of snow leopard food base.
5. Pasture Degradation leading to poor forage	3	4	3	10	Primarily revolving around unregulated grazing and irrational use of pastures, decrease in pasture productivity exacerbated by climate change. There was wide acceptance that

Threat	Scope	Severity	Irreversibility	Overall Score	Subcategories
for wildlife and livestock					livestock numbers are increasing and the magnitude of increase is not yet clear due to inaccurate livestock census so far. This is, however, likely to improve with the 'passport' system for livestock where each animal will be duly recorded by government agencies for taxation and welfare purposes.
6. Ungulate Poaching leading to direct declines in their populations as also that of the wild carnivores	2	4	2	8	It was suggested to separate out poaching of the snow leopard and poaching other wildlife. All poaching comes under the same article of the Law though with varying degree of financial penalty. Poaching of the snow leopard appears to be more strongly regulated as opposed to other wildlife poaching.
7. Snow Leopard Poaching leading to direct declines in their populations	1	4	1	6	Illegal guns and snares pose the greatest threat to the snow leopard. The quantum of illegal trade of snow leopards, its purpose and market links remain unclear. It is also uncertain to what extent live animals are captured and traded.
8. Utilization of toxins in retaliation for livestock depredation by wild carnivores that kill carnivores	1	3	2	6	Use of toxins in retaliation against wolf and other predator species (jackal, fox) that prey on livestock. The kills can be poisoned with pesticides and other chemicals.
9. Dogs killing or disturbing livestock and wildlife, thus affecting their populations	3	4	1	8	Dogs are a growing and significant threat to wildlife species. The participant's opinion differed on the significance of the issue. Ranger and herder dogs are growing in numbers posing a threat to livestock and wildlife due to limited adequate feeding of the dogs, which then resort to hunting in the mountains. Spread of human and animal parasitic disease.
10. Border Fencing causing barriers to animal movements	1	3	3	7	In the context of international border fencing, particularly with China, the issue may pose a significant challenge to animal movements. It is believed that China never removes its border fences and negotiations may take a long time.
11. Poor Environmental Governance leading to poor enforcement of laws	2	3	2	7	This threat focuses on inefficient legislative implementation and lack of governmental enforcement. This is a crosscutting issue and includes livestock grazing management, resource extraction, hunting, poaching, illegal tourism, punishment for offenders, etc. Some participants also voiced concern over overemphasizing this issue merely to seek more governmental action. Participants felt that the government has sufficient laws in

Threat	Scope	Severity	Irreversibility	Overall Score	Subcategories
					place to help mitigate the problem with enough time in the future. However, better enforcement may need more and better-trained and equipped staff. The management plan can address this issue.
12. Pesticide and Toxin Utilization leading to pollution of environment and poisoning of endangered wildlife	1	3	1	5	Different from earlier use of toxins against prey species, the use of pesticides and chemicals is widely used to rid of marmots as a bubonic plague prevention measure. This action may impact a large population of marmots at a time and thus snow leopard too, for which marmots are important part of diet in summer. Consuming poisoned marmots can cause mortality to snow leopards too.
13. Natural Disasters leading to habitat loss	1	3	1	5	Pertinent to the landscape locality and decided to be separate from overall climate change, natural disasters include avalanches, landslides, flash floods, cave-ins and earthquakes. These calamities can remove habitat of wildlife and pastures for livestock and also cause problems with mobility of livestock.
14. Insufficient awareness of the local population leading to poor support for conservation	1	2	1	4	General consensus was that the public is quite aware of the snow leopard and icons of wildlife (ibex and argali) in general. However, the local population may not be aware of some of the threats and existing environmental concerns.
15. Human-Wildlife Conflict leading to economic losses to pastoralists and increase in negative attitudes towards conservation	1	1	1	3	This leads to economic loss to herding families and negative attitudes toward wildlife conservation. Can also lead to retaliatory killing of wild carnivores.
16. Insensitive Tourism leading to habitat losses and low benefits to local communities	1	1	1	3	Unregulated and intense tourism activity (trekking, horseback riding and hiking in the valleys, etc.) can lead to other damaging activities such as extraction of fuel, littering, fires, and poaching.

Списокок участников

1. АЙДРАЛИЕВ, Орозбек Кенешович, АграрныйУниверситет
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3. ДАВЛЕТБАКОВ, Аскар, Академия Наук КР
4. ДУЙШО УУЛУ, Черикчи, Ассоциация охотопользователей, Председатель
5. ИБРАГИМОВ, Е., РЦК
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12. УСУБАЛИЕВ, Байбек Сабыркулович, Ассоциатион "Кыргыз Жаиыты", Специалист по менеджменту
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14. ШУКУРОВ, Емиль Джапарович, Академик
15. ШУКУРОВ, Эрик Эмильевич, Экологическое движение "Алейне вперед", Председатель
16. Бхатнагар, Яш Веер, NCF, GSLEP
17. Шарма, Коустубх, GSLEP
18. Жумабай, Кубаныч, SLF
19. Мамбеталиев, Кумар, ГАООСЛХ
20. Ширинова, Пакиза, GSLEP, SLF, MSRI
21. Домашов, Илья, ГАООСЛХ
22. Турдуматова, Айгуль, Кыргыз Лесохотустройство
23. Абдырасулов, Азамат, Кыргыз Лесохотустройство

Participant's List

1. AIDRALIEV, Orozbek Keneshovich, Agrarian University
2. ALAPAEV, Kubatbek, ARIS, Specialist
3. DAVLETBAKOV, Askar, Academy of Sciences of the KR
4. DUISHO UULU, Cheriqi, Association of Hunting Users, Chairman
5. IBRAGIMOV, E., RCC
6. KUBANYCHBEKOV, Zairbek, Panthera KR, Director
7. KULAGIN, Sergey, Kyrgyz Association for the Protection of Wildlife, Director
8. KULIKOV, Maxim, Flora Fauna International, Project Coordinator
9. ПЕНКИНА, Людмила Микхаиловна, КыргызГипрозем, The administrator on monitoring of pastures
10. SOUPATAEV, Turdaly Abdykasymovich, National University
11. TURDUMATOV, Talent, Department of Uses of Resources
12. USUBALIEV, Baybek Sabyrkulovich, Association "Kyrgyz Zhaiyty", Specialist in Management
13. SHIGAEVA, Jyldyz, Institute for Mountain Research, University of Central Asia, Researcher
14. SHUKUROV, Emil Japarovic, Academician
15. SHUKUROV, Eric Emilievich, Ecological Movement "Aleine Forward", Chairman

16. BHATNAGAR, Yash Veer, NCF, GSLEP
17. SHARMA, Koustubh, GSLEP
18. ZHUMABAY, Kubanych, SLF
19. MAMBETALIEV, Kumar, SAEPF
20. SHIRINOVA, Pakise, GSLEP, SLF, MSRI
21. DOMASHOV, Ilya, SAEPF
22. TURDUMATOVA, Aigul, Kyrgyz Forestry
23. ABDYRASULOV, Azamat, Kyrgyz Forestry

Annex 1: Threat Rating Criteria and Tables

Scope - Most commonly defined spatially as the proportion of the snow leopard (or prey) population that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends.

Very High: The threat is likely to be pervasive in its scope, affecting the target across all or most (71-100%) of its occurrence/population.

High: The threat is likely to be widespread in its scope, affecting the target across much (31-70%) of its occurrence/population.

Medium: The threat is likely to be restricted in its scope, affecting the target across some (11-30%) of its occurrence/population.

Low: The threat is likely to be very narrow in its scope, affecting the target across a small proportion (1-10%) of its occurrence/population.

Severity - Within the scope, the level of damage to the snow leopard (or prey) population from the threat that can reasonably be expected given the continuation of current circumstances and trends.

Very High: Within the scope, the threat is likely to destroy or eliminate the target, or reduce its population by 71-100% within ten years or three generations.

High: Within the scope, the threat is likely to seriously degrade/reduce the target or reduce its population by 31-70% within ten years or three generations.

Medium: Within the scope, the threat is likely to moderately degrade/reduce the target or reduce its population by 11-30% within ten years or three generations.

Low: Within the scope, the threat is likely to only slightly degrade/reduce the target or reduce its population by 1-10% within ten years or three generations.

Irreversibility (Permanence) - The degree to which the effects of a threat can be reversed and the snow leopard (or prey) restored.

Very High: The effects of the threat cannot be reversed and it is very unlikely the target can be restored, and/or it would take more than 100 years to achieve this (e.g., wetlands converted to a shopping center).

High: The effects of the threat can technically be reversed and the target restored, but it is not practically affordable and/or it would take 21-100 years to achieve this (e.g., wetland converted to agriculture).

Medium: The effects of the threat can be reversed and the target restored with a reasonable commitment of resources and/or within 6-20 years (e.g., ditching and draining of wetland).

Low: The effects of the threat are easily reversible and the target can be easily restored at a relatively low cost and/or within 0-5 years (e.g., off-road vehicles trespassing in wetland).

Appendix 13: Meeting Minutes Meeting with the Governor June 12, 2017.

Stakeholder Meeting Minutes

GSLEP Central Tian Shan Landscape Management Plan Presentation in Issyk-Kul

Location: Governor's Office (Karakol, Kyrgyzstan)

Date: June 12, 2017

Time: 3:00 pm – 5:00 pm

Present:

Mr. Uzarbek Zhylkybaev (Governor)

Dshudeev Kalysbek (head of Jeti-Oguz district)

Maksat (Governor's office)

Tumenbaev Beishenbek (Jeti-Oguz Hunting management)

Oskombaev Turumbek (SAEPF in Issyk-Kul)

Ismailov Sovetbek (head of Tyup district)

Ryspaev Maksat (Tyup forest management director)

Baigazakov Turatbek (Jeti-Oguz forest service engineer)

Ibraimov Kanat (Tyup Agrarian Development Management)

Beishekeev Aldaiarbek (Agrarian Development Management)

Amankulov Mirslav (Issyk Kul Biosphere Directorate)

Dokonbaev Ulan (head of Ak-Suu district)

Yash Veer Bhatnagar, Pakiza Shirinova, Steve Borchardt (GSLEP)

Agenda Items:

- ✓ Landscape management plan presentation, logframe discussion, stakeholder review of proposed activities.

Action Items:

In light of its completion of the Central Tian Shan Management Plan, the first draft of the landscape management plan was presented to the Governor of Issyk-Kul oblast, Mr Zhylkybaev Uzarbek, on June 12th in the Governor's office in the presence of key stakeholders. The presentation was delivered by Pakiza Shirinova, from the GSLEP Secretariat, who gave an overview of the GSLEP initiative and its vision; landscape characteristics in Central Tian Shan, goals of the management plan, measures to mitigate identified threats to the snow leopard and its ecosystem and proposed governance structures. The Governor and each stakeholder present at the meeting received a copy of the translated log frame in Russian with instructions to provide feedback

(recommendations, suggestions, additions) within 10 workdays from the day of the presentation. Thirty additional copies of the document were left with the Governor's assistant to disseminate to 25 stakeholders in Issyk-Kul oblast that were part of the one-on-one stakeholder interviews conducted by Pakiza Shirinova in December 2016. After the presentation, the Governor and other participants were invited to ask questions. Discussion points included existing cultural aspects and their consideration in plan implementation, organizational issues and others. A full list of points raised presented in detail below:

Governor:

The Governor welcomed the initiative and offered his support. He notes that alternative means of livelihood presented in the management plan are important but should be adaptable. In addition, the Governor pointed out that as part of the culture, even if local population will have other sources of income, they will continue to utilize pastures for grazing. Lastly, he noted that local population owns small livestock herds, the biggest livestock owners are from Bishkek/Chui Oblast.

Dr Bhatnagar clarified that the goal of the plan is not to exclude livestock grazing completely but primarily rationalize it in light of the widespread concerns about degradation. Alternative livelihoods can help in this regard. Identifying local stakeholders has been an issue that the planning team has struggled with and the honorable Governor has corroborated that concern with information that there are herders with large livestock holdings from outside Issyk Kul.

Issyk-Kul Biosphere:

The Biosphere territory is currently understaffed with across the board staff downsizing brought on by structural reorganization taking place across the country. This is putting pressure on current staff. Also, a map of the Biosphere Territory will be ready before the end of the year that should help in identifying pasture pressures. The Director of the Biosphere Reserve offered his support to the Plan.

Head of Zheti-Oguz District:

The plan should keep in mind the nomadic culture of the Kyrgyz people in proposing alternative livelihood options. He also felt that pasture degradation is not a prominent problem in many areas as far out pastures are under-utilized.

Head of Ak-Suu District:

Head of the Ak-Suu district pointed out the importance of eco-education and eco-training at the high school level.

The head of the Forestry wing of the SAEPF made some supportive comments on the management plan's process and proposed work.

Mr Maksat later brought up the issue of the existing MoU between the Governor's office, GSLEP Secretariat and SLF. He noted that the scope of the MoU was to facilitate Plan preparation and it will be important for us to revise the MoU to include Plan implementation.

Overall, the presentation and landscape management plan were received very positively. In his concluding remarks, the Governor thanked the GSLEP team for their efforts and work toward preserving the natural resources for future generations. He also urged the stakeholders to review the log frame and provide their feedback within 10 workdays, as requested by GSLEP officials.

Appendix 14: Activities to be carried under the CTSL Management Plan in a Logical Framework. Most of the activities need to be carried out collaboratively between agencies and this is highlighted in the table. The Issyk Kul Conservation and Development Foundation (IKCDF) is a new organization suggested under this management plan to coordinate and manage its works (Chapter 9). It is recommended that the IKCDF and its partners develop annual work plans based on these activities.

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
Goal I: Major threats to snow leopard and other wildlife are mitigated so that wildlife populations increase, or remain at desired levels. Action is needed to mitigate identified threats based on clear understanding, participation, and innovative activities: (These are based on threats identified from literature and consultative workshop – see Chapter 3)				
1. Threat: Knowledge gaps in understanding the socio-ecological system/ ***Objective: To understand socio-ecological systems in order to enable more informed decision making. (Focused research can lead to a better understanding and dealing with threats and challenges. This objective thus also intersects with the other goals).***				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
1.1 Determine snow leopard occurrences, abundance and 'good areas' or priority conservation sites. (examples of such sites for Jeti-Oguz has been given in Appendix 15, point # 1) Set baseline abundance of snow leopard and improve zonation of the landscape over the suggestions already made in Chapter 6. There is a provision under Kyrgyz law to designate 'quiet zones' or inviolate areas and this exercise will help with this objective. Designating a strip of such a quiet zone around the existing PAs such as the Sarychat Eertash reserve is particularly important to buffer it from possible overexploitation from adjacent hunting concessions.	SAEPF, IKCDF, GSLEP Secretariat, NGOs	SAEPF, International Donors, IKCDF Fund	Distribution maps with good snow leopard areas and abundance (density) information collected every 3rd year	2018-2020
1.2. Understand snow leopard ecology, especially with regard to movements, ranging, habitat use and diets.	Panthera/SLF, Academic organizations, NGOs, SAEPF, IKCDF	International donors, IKCDF Fund	Habitat suitability; important zones; movement corridors (Reports and peer reviewed publications)	Ongoing. Continue till 2025

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
1.3. Determine snow leopard wild prey (ungulates and marmots) abundance. This will also require good surveying equipments (see itm 2.3.1)	SLF, Panthera, WWF, Academic organizations, NGOs, SAEPF, IKCDF	International donors, IKCDF Fund	Density of snow leopard, co-predators and prey from majority of the landscape available; Trends over time; Habitat preferences and important areas available (Reports and peer reviewed publications)	2018-2022
1.4. Understand threats and their impacts in snow leopard landscapes (existing threats and potential ones; this activity also relates to most other activities below)	SLF, Panthera, WWF, Academic organizations, NGOs, SAEPF, IKCDF	International donors, IKCDF Fund	The causes and consequences of all threats understood on a continuing basis (Reports and peer reviewed publications)	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
1.5. Understand past, present and potential future trends of human dependence on landscape, especially the complexity related to the use of pasturelands for livestock grazing by local communities (see details in Section 2.6 and Chapter 3.0 and specific activities in Appendix 5b based on actions given in Pasture Management Plans (PMP) from the CTSL). A crucial step in the plan is to understand who the local stakeholders are, something that remains unclear (Appendix 5a). This exercise will thus also help with clarifying this important issue. Stakeholder assessment, study of resource governance and management, traditional knowledge systems, case studies of community conserved areas, income generation including value chains, ecosystem services provided by the mountain landscapes, etc.	Kyrgyzgeprosym with support from State Registration and Services Dept. (Cadaster) Academic organizations, NGOs, SAEPF, IKCDF, UCA	International donors, IKCDF Fund	Thematic reports and papers available to managers	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
1.6. Functional mechanism of threat monitoring - (threats are often dynamic and need to be regularly monitored. Annual cycle of monitoring is recommended) Use new/innovative IT and data collection tools and approaches, including field-based 'citizen science,' as well as GIS/RS monitoring systems	IKCDF, Academic organizations, NGOs, SAEPF	International donors, IKCDF Fund	Thematic reports and papers available to managers	2018-2027
1.7. Identify innovations in agriculture sector dealing with cash crops (including fruits and floriculture, medicinal or 'niche market' plants), food processing (including meat products), etc.	Agrarian university, supported by Academic organizations, NGOs, SAEPF, IKCDF	International donors, IKCDF Fund	Thematic reports and papers available to managers	2018-2027
2. Threat: Poaching of wildlife leading to wildlife decimation, and losses to trophy hunting industry ***Objective: To protect wildlife in the CTSL, including snow leopards and their prey.***				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
2.1. Strengthening laws against poaching and extraction of endangered species of animals and plants (it is noted that vide notification XXX the fines on all poaching cases has already been increased)				
2.1.1. Initiate study to understand the areas of improvement in the current laws for curbing poaching and illegal extraction of biomass.	Academic organizations, NGOs, IKCDF, supported by SAEPF	Existing Kyrgyz Govt. funds	Study report with clear recommendations	2020-2022
2.1.2. Regulate extraction of endangered plants. List endangered plants and make booklet with clear illustrations and description.	SAEPF and its rangers, Academic organizations, Ayil Okmotu, NGOs, IKCDF	Existing Kyrgyz Govt. funds	Booklet available with rangers and local pasture users	2020-2022
2.1.3. Better coordination among agencies within SAEPF (PA Dept. and Rational Use Dept.) and enforcement agencies (see also points on capacity enhancement 2.2 below). Activate the National Environment Security Task Force (NEST)	SAEPF with enforcement agencies, IKCDF, Ayil Okmotu	Existing Kyrgyz Govt. funds	Coordination mechanisms in place	2018-2020
2.2. Improve staff capacity in apprehending and filing poaching cases				
2.2.1. Assessment of SAEPF staff strength and increase in their numbers if needed. The Rational Use Dept. has only about 10 staff, which needs to be doubled as per some officials	SAEPF	Kyrgyz Government, International donors	Report ready. Terms of hiring additional personnel (if needed)	2018-2020

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
2.2.2. SAEPF staff training for ensuring better enforcement. At least one, or ideally two workshops per year. Ideally with participation of other enforcement agencies	SAEPF, SLF with other NGOs, IKCDF, Snow Leopard and Wildlife Enforcement Network (SLAWEN)	Kyrgyz Government, International donors	Workshop module ready and delivered annually	Every year from 2018 to 2027
2.2.3. Better capacity of police and border staff in apprehending and filing cases against offenders	SAEPF, SLF with other NGOs. Enforcement agencies	Kyrgyz Government, International donors	Workshop module ready and delivered annually	Every year from 2018 to 2027
2.3. Staff welfare & motivation				
2.3.1. Better facilities (accommodation, uniforms, walkitalkies, dearness allowance and transport (including snow-mobiles)) and equipment (binoculars, spotting scopes with tripods, GPS, etc) for SAEPF staff	SAEPF, IKCDF, SLF with other NGOs.	Kyrgyz Government, International donors	Physical infrastructure and facilities available. Incentives in place	2018-2022
2.3.2. Put in place welfare measures for field staff of SAEPF (insurance, health care)	SAEPF, IKCDF, SLF with other NGOs.	Kyrgyz Government, International donors	Clear programs for insurance and health benefits to all staff	2018-2022
2.3.3. Establish a transparent Rangers Rewards Program for the CTSL Staff on lines of SLF-SAEPF initiative. More financial incentives for rangers who detect and file successful cases of poaching should be worked out	SAEPF, IKCDF, SLF with other NGOs.	Kyrgyz Government, International donors	Program in place and rangers being rewarded annually	2018-2027
2.4. Control other kinds of killing of wildlife				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
2.4.1. Using ecologically safe insecticides for plague prevention among marmot to deal with their specific ectoparasites, which can lead to pollution of the environment and the food chain negatively impact reproductive leopards. (some insecticides, especially DDT has a negative impact on the reproductive function of animals)	SAEPF, State Inspectorate for Veterinary and Phytosanitary Security (SIVPS), NGOs, Republic Center of Quarantine and Especially Dangerous Infections Ministry of Health of the Kyrgyz Republic, Ayil Okmotu (AO) Pasture Committee (PC) and their Pasture Management Plan (PMP), IKCDF	Kyrgyz govt., Oblast administration	Ban put in place and implemented	2018-2027
2.4.2. Use scientific means to study incidence of bubonic plague and design control mechanisms without the use of poisoning	Agrarian University, SIVPS, Academic organizations	National Government funding, International Donors	Report and peer review publications	2018-2020
2.4.3. Complete ban on using poison to kill wolves involved in livestock depredation cases as snow leopard may also feed on the poisoned carcass. Encourage other practices such as use of guns to kill wolves during daytime. Complete ban on night shooting for wolf as occasionally snow leopards get targeted.	SAEPF, AO PMP, IKCDF	Kyrgyz govt., Oblast administration	Ban in place and continues support from herders, work progress report from stakeholders	2018-2027
2.4.4. Outreach and awareness program towards community and government agencies encouraging these practices	SAEPF, SIVPS, AO PMP, IKCDF	Kyrgyz govt., Oblast administration	Ban in place and continues support from herders	2018-2027
2.5. Curb illegal trade in endangered Red Book listed wildlife.				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
2.5.1. Understand demand and markets for wildlife and wildlife products	SLF, SAEPF, INTERPOL, SLAWEN	Kyrgyz Govt. and International donors	Report available specific to Kyrgyzstan and the landscape in particular	2018-2022
2.5.2. Support database on wildlife crimes and offenders. A poacher's database exists with the SAEPF (MERGEN) that needs to be supported and developed further, especially with better capacity of regional experts	SAEPF, NGOs, SLAWEN	Kyrgyz Govt. and International donors	Continuous support available. Number of cases updated in the database	2018-2027
2.5.3. Border trade control using dogs (ongoing with help of Panthera). Also, introduce inside landscape checkpoints (eg. in Sarychat SNR, Sary-Jazz and Ottuk River junction)	SAEPF, Border Control, Panthera	Kyrgyz Govt., International Donors	Number of dogs trained, numbers deployed and number of cases apprehended	2018-2027
2.5.4. Support local intelligence network (inspectors) to detect illegal trade	SAEPF, NGOs	Kyrgyz Govt. and International donors	Number of cases apprehended	2018-2027
2.5.5. Capacity enhancement of enforcement agencies (SAEPF, Police, Border, Customs) in detecting (intelligence, crime scene investigation, wildlife forensics) and dealing with cases	SAEPF, INTERPOL, NGOs, SLAWEN, enforcement agencies	Kyrgyz Govt. and International donors	Annual workshops in place and numbers trained annually	2018-2027
2.5.6. Use national and international provisions in laws and treaties to effectively curb this trade	SAEPF, INTERPOL, NGOs, SLAWEN, enforcement agencies	Kyrgyz Govt. and International donors	Number of cases apprehended.	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
3. Threat: Human disturbance & encroachment leading to degradation of habitat and decimation of wildlife ***Objective: To protect ecosystem against human disturbance and encroachment.***				
3.1. Avert or minimize environmental damage due to infrastructure development (especially large and medium hydro electric projects and linear infrastructure) harming wildlife movements and habitats. It is recognized that these projects are usually of national importance. The approach in the management plan is to primarily foresee any upcoming projects and help them become more environment-friendly. Also, to provide more factual information about the wildlife values that can help companies plan and avoid environmental damage.				
3.1.1. Produce effective maps and spatial data on wildlife occurrences in the landscape showing the 'good' snow leopard areas (see Zonation (1.1) above). This can enable better planning by infrastructure companies and help them avoid important wildlife areas during the planning phase itself	Management Plan (SAEPF), SLF, NGOs, IKCDF	Kyrgyz Govt., International Donors, infrastructure companies under clear MoUs	High quality digital maps available for users.	2018-2022

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
3.1.2. Proactively work with development agencies to identify any potentially damaging projects and assist with factual information on biodiversity (especially spatial information) for the Environmental Impact Assessment (EIA) (scoping, planning & implementation).	SAEPF (especially Dept. of Ecological & Technical Inspection (DETI)), SLF, NGOs, IKCDF, Academic Organizations (for studies & EIA), Roads Production Line Management	Kyrgyz Govt., International Donors, infrastructure companies under clear MoUs	Sound EIAs for all projects	2018-2027
3.1.3. Work with implementing agencies to mitigate impacts through use of wildlife friendly options	SAEPF (especially DETI), SLF, NGOs, IKCDF	Kyrgyz Govt., International Donors, infrastructure companies under clear MoUs	List of negative impacts to wildlife that were averted	2018-2027
3.1.4. Set up offset mechanisms that clearly help with conservation funds for management plan implementation, including community and SAEPF staff welfare	SAEPF, IKCDF and Issyk Kul Development Fund (IKDF)	Supported by Kyrgyz Govt.	Mechanism in place and funds generated annually	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
3.2. Avert or minimize damage to ecosystem by mining industry. It is recognized that these projects are usually of national importance. The approach in the management plan is to primarily foresee any upcoming projects and help them become more environment-friendly. Also, to provide more factual information about the wildlife values that can help companies plan and avoid environmental damage. Connect with 'certificate program' on mining policy at the UCA. http://www.ucentralasia.org/Resources/Item/1208				
3.2.1. Produce effective maps and spatial data on wildlife occurrences in the landscape showing the 'good' snow leopard areas (see Zonation (1.1) above). This can enable detect overlaps with mineral deposits and enable better planning by mining companies to ultimately help them avoid important wildlife areas during the mineral exploration phase itself	SAEPF (especially DETI), SLF, NGOs, IKCDF	Kyrgyz Govt., International Donors, infrastructure companies under clear MoUs	High quality digital maps available for users.	2018-2022
3.2.2. Proactively work with mining organizations to identify any such mining project and assist with factual information on wildlife for conducting robust EIAs	SAEPF (especially DETI), SLF, NGOs, IKCDF	Kyrgyz Govt., International Donors, infrastructure companies under clear MoUs	Database on mining projects – ongoing and proposed available	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
3.2.3. Independent monitoring mechanism to detect any pollution and violation of environmental laws. Assist the International Institute for Transparency in Mining Companies to monitor activities in the CTSL.	SAEPF (especially DETI), SLF, IKCDF, NGOs (especially International Institute for Transparency in Mining Companies). Also http://prizmasolutions.com/who-we-are/	Kyrgyz Govt, International Donors	Reports and Number of cases documented	2018-2027
3.2.4. Law: Clear commitment of companies towards land reclamation while providing any license for exploration and or mining operation. Need to see what the current rules say	SAEPF (especially DETI), SLF, NGOs, IKCDF	Mining companies	Number of sites taken up for reclamation (for both exploration and exploitation)	2018-2027
3.2.5. Set up offset mechanisms that clearly help with conservation funds for management plan implementation, including community and SAEPF staff welfare (see also 3.1.4)	SAEPF, IKCDF and Issyk Kul Development Fund (IKDF)	Supported by Kyrgyz Govt.	Mechanism in place and funds generated annually	2018-2027
3.3. Avoid harmful effects of any existing or planned border fencing/trenches				
3.3.1. Explore proposals for fencing and possibility for avoiding fencing in any important wildlife areas/corridors and complement it with other mechanisms for avoiding infiltration (e.g.. stronger border patrolling and posts)	SAEPF, IKCDF and Border Forces	Supported by Kyrgyz Govt.	Any fencing proposal detected and avoided	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
3.4. Establish environment and culturally sensitive tourism practices (This section deals with tourism as a threat but tourism as an opportunity for livelihood improvement is detailed in Section 5.2 below)				
3.4.1. Appropriate rules and enforcement plans to help direct and regulate tourism in across the landscape. This will include issues such as biomass extraction (for fuel, fodder), poaching, containment of human disturbance through better placement of camping sites and trails, quotas (numbers and timing/seasons of visits), and/or other activities that can harm wildlife and pastures	Culture Ministry, SAEPF, NGOs, KCBTA, Rayon and Ayil Okmotu administration	Kyrgyz Govt., IKCDF Funds.	Rules are formulated approved and information is disseminated to stakeholders	2018-2020
3.5. Damage to wildlife by dogs (free ranging and owned)				
3.5.1. Clear census and database of dogs as per ownership types (including free-ranging dogs). Support activity by State Inspection on Veterinary and Phytosanitary Safety (SIVPS) to identify and tag each dog in the landscape	SIVPS, SAEPF, NGOs	SIVPS, Kyrgyz Govt., IKCDF Funds	Dog numbers and ownership database prepared and updated annually. Report with abundance and ownership information	2020-2022
3.5.2. Identify areas with high conflicts dealing with losses of livestock and/or to wildlife	Academic organizations, SIVPS, SAEPF, NGOs	International Donors	Report available	2018-2020

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
3.5.3. Clear multipronged activity in problem areas that include: -Clear norms enforced for ownership and care of dogs so that they are not left to fend for themselves - Animal Birth Control (ABC) or humane culling program for any unclaimed dogs to control population - Vaccination of dogs and livestock against Rabies, Canine Distemper and other infectious diseases	SIVPS, SAEPF, NGOs	Kyrgyz Govt., IKCDF Funds, International Donors	Report on dog vaccinations from SIVPS. Dog population under control as monitored through 3.5.1	2018-2027
3.6. Unsustainable resource extraction				
3.6.1. Understand dependence of communities in terms of localities, type, time, quantity of biomass required for fuel, fodder, medicinal plants and construction material	Academic Organizations, NGOs	Academic Organizations, IKCDF Funds, International Donors	Reports available	2018-2024
3.6.2. Develop participatory mechanisms to minimize extraction related damaging activities: Build into Pasture Management Plans (PMP) or other suitable mechanisms	ARIS, IKCDF	IKCDF Funds, International Donors	Suitable items incorporated in the PMPs	2020-2024
3.6.3. Coordinate with Forestry wing and forestry committees to undertake afforestation programs using suitable species. Care should be taken to limit this activity only to the degraded forest areas and not pasture lands	SAEPF, Ayil Okmotu	IKCDF Funds, International Donors	Area brought under afforestation	2020-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
Goal II: People's livelihoods are made more secure by strengthening existing mechanisms or co-developing innovative climate smart options for their development. Action is needed to support remunerative improvements, or alternative uses of grasslands (pastures) that are less damaging to the ecosystems' goods and services				
4. Threat: Livestock husbandry unsustainable and increased competition with wildlife ***Objective: To manage pastures sustainably for benefit of both herders and wildlife.***				
4.1. Initiate studies to understand grazing and its impacts in the CTSL. It is realized that the issue of current levels of pressure, degradation of pastures and changes in pasture use are not clear (Section 2.6). There is thus a need to prioritize good quality research to help with pasture management in the CTSL				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
4.1.1. Determine pasture use patterns and pressures based on mapping AO wise seasonal livestock movements and use of pastures	Kyrgyzgeprosem, IKCDF, Academic Organizations, Pasture Committees, and NGOs	Kyrgyz Govt., IKCDF & International Donors	Maps available for entire CTSL	2018-2020
4.1.2. Studies to define degradation in terms of forage species biomass, erosion and compaction, and areas (locations) affected by this. Study changes in rangeland productivity based on remote sensing tools. (The fact that degradation is happening is often repeated in literature, however evidences of this are rarely presented. For the CTSL thus this is an aspect that needs to be urgently understood for better planning and management of pastures)	Kyrgyzgeprosem, IKCDF, Academic Organizations, Pasture Committees, and NGOs	Kyrgyz Govt., IKCDF & International Donors	Reports and maps available for entire CTSL	2018-2020
4.1.3. Initiate studies on climate change impacts on pasture production and other elements of mountain social-ecological systems (including ecosystem services) - through the use of remote sensing tools, vegetation studies and community interviews. Set up a network of automated meteorological stations to improve long-term climatic data	Kyrgyzgeprosem, IKCDF, Academic Organizations, WWF, Pasture Committees, and NGOs	Kyrgyz Govt., IKCDF & International Donors	Reports and maps available for entire CTSL	2018-2020
4.2. Community based pasture management (CBPM). Develop partnership and incentive programs for community to participate in conservation activities under the existing Pasture Management Plans (PMPs).				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
4.2.1. ARIS includes conservation, climate change and ecosystem services items in the 'Pasture Management Plans' of the Pasture Committees mandated under 'On Pastures' 2009 Note: The PMPs are mandated under the 2009 *amendment to the 'On Pastures' act dealing with* pasture management. The management of pastures has been decentralized with the Pasture Committees in Ayil Okmutus empowered to prepare these plans. The PMPs include information on their pasture and livestock resources, areas under their control, and propose a 5-year plan to improve infrastructure and productivity in the pastures. The Community Development & Investment Agency (ARIS) and Pasture User Association assist the Pasture Committees in preparing and implementing the plans. The PMP is a powerful mechanism that is still in the process of being developed and implemented countrywide. There is a need to build in greater thrust on environment, wildlife, climate change and sustainability into these plans. The management plan sees this as a important area of convergence of proposed work with existing mechanisms	ARIS, IKCDF, National Pasture Users Association, NGOs	Kyrgyz Govt., Issyk Kul Development Fund, International Donors	Suitable items included in the PMP Manual and all Pasture Committees have capacity to include relevant items	2018-2020

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
4.2.2. Community based pasture management (CBPM) to ensure better income for pasture users. See activities under # 5 dealing with poverty alleviation and Appendix 5b. The PMPs can include incentives to: - Reducing livestock pressure - Increasing productivity of pastures - Value addition of local products - Increasing incomes through non-consumptive wildlife based activities - Participating in conservation initiatives - Participating in wildlife monitoring - Participating in monitoring rangeland productivity - Addressing human-wildlife conflicts - Improved livelihoods through community based tourism, crafts and other programs - Managing dog populations See 7.2 below for capacity enhancement of users and facilitators	IKCDF, INGOs, NGOs, Academic organizations (GIZ and UNDP with local organizations such as Camp Alatoo have been leaders in this work and their assistance will be crucial)	IKCDF Funds, Existing funds from respective Govt. dept. through convergence (eg. from SIVPS for dog management; from Culture Dept. for tourism, etc.)	Suitable activities incorporated and implemented through the PMPs (this is a broad level indicator as the specific indicator will depend on the activity)	2018-2027
4.3. Help communities decide the best livestock composition based on ecological and market based advice				
4.3.1. Encourage increased incomes from livestock species such as yaks and fine-wool sheep that may have a higher value and lower environmental impact on an experimental basis. Link with value added wool and meat processing based products.	IKCDF, JICA, SLF, WWF, other NGOs	IKCDF, NGOs, International Donors	New products are marketed and amount of profits earned	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
4.3.2. Explore efficacy of WWF Kyrgyzstan's initiative on Yak Herding by local rangers to complement a more sustainable option for livestock ownership as well as for improving ranger's incomes. Replicate based on findings. This should include medium to long term studies on vegetation and incomes	WWF, SAEPF, NGOs, Academic Organizations	SAEPF, International Donors	Program understood and replicated based on findings	2018-2020
4.4. Understand and manage livestock, wildlife and human diseases				
4.4.1. Compile all information on outbreaks and epidemics in the CTSL as of 2017	SIVPS, Agrarian Univ., Academic Organizations, NGOs, Pasture Committees	Kyrgyz Govt., International Donors, IKCDF Funds, Academic Organizations	Clear information and data available in database and reports	2018-2027
4.4.2. Initiate epidemiological studies to proactively identify veterinary diseases in livestock and wildlife	SIVPS, Agrarian Univ., Academic Organizations, NGOs, Pasture Committees	Kyrgyz Govt., International Donors, IKCDF Funds, Academic Organizations	Clear information and data available in database and reports	2018-2027
4.4.3. Develop prophylactic practices to manage extant diseases (eg. vaccination, quarantine, culling)	SIVPS, Agrarian Univ., Academic Organizations, NGOs, Pasture Committees	Kyrgyz Govt., International Donors, IKCDF Funds, Academic Organizations	Clear information and data available in database and reports	2018-2027
4.5. Minimizing human-wildlife conflicts leading to economic loss and poor attitudes among people				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
4.5.1. Understand the occurrences of livestock losses and people's perceptions. Caution should be kept to understand the losses to wild carnivores, but relative to other causes such as disease and losses in harsh winters	NGOs, SAEPF, Academic Organizations	Kyrgyz Govt., International Donors, IKCDF Funds, Academic Organizations	Clear patterns of livestock mortality and contribution by wild carnivores in reports	Continuous monitoring from 2018 to 2027
4.5.2. Implement multipronged activities in affected communities that include - Prevention: Where necessary, prevent of losses through predator-proof corrals as is being piloted by SLF, or employ improved herding practices ensuring better protection of livestock; Compensation programs (e.g.. community based insurance, compensation through corpus, etc.); and Awareness program directed at improving peoples attitudes towards wildlife, wherever needed	NGOs, SAEPF, Academic Organizations	Kyrgyz Govt., International Donors, IKCDF Funds, Academic Organizations	Conflict cases minimized due to effective implementation of suitable multipronged activities	Continuous monitoring from 2018 to 2027
5. Threat: Poverty and lack of alternative livelihood options ***Objective: To enhance local incomes and secure agro-pastoral livelihoods through mechanisms or opportunities connected with conservation interventions.***				
5.1. Create new and value add local products with the aim to reach maximum benefits to the local community				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
5.1.1. Develop and replicate JICAs & Snow Leopard Foundation's (SLF) ongoing initiative on local livelihood improvements through innovative products (wool based crafts, agricultural products (based on crops and milk), honey, and souvenirs) in the CTSL so that the benefits from sale within country and exports, reach the entire dependent population.	JICA, SLF, IKCDF, ARIS	State Financing and Economic Development Fund, The Issyk-Kul Microcredit Agency, Kyrgyz Govt. (convergence from respective department), International Donors, IKCDF Funds	Number of villages, number of people participating, amount of additional income generated due to these activities	2018-2027
5.1.2. Work with Agriculture Ministry for value addition in the processed meat sector. This includes overall survey, pilot study, and implementation program	IKCDF, ARIS, Ministry of Agriculture	State Financing and Economic Development Fund, The Issyk-Kul Microcredit Agency, Kyrgyz Govt., International Donors, IKCDF Funds	Suitable options explored and presented in report.	2020-2027
5.1.3. Work with the Ministry of Agriculture in order to increase the production of milk including the breeding of high-yielding breeds of cows. (In 2017, the export of milk products from Issyk-Kul to Russia and KZ have increased 15 fold. There are two major milk-processing plants in Issyk-Kul (Ak-Zhalga and Sut-Bulak). In addition, several small milk-processing plants are located in Karakol that procure milk from the local population. In the last 5 years, the price on milk increased by over 35%.)	IKCDF, ARIS, Ministry of Agriculture	State Financing and Economic Development Fund, The Issyk-Kul Microcredit Agency, Kyrgyz Govt., International Donors, IKCDF Funds	Suitable options explored and presented in report.	2020-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
5.1.4. Work with Agriculture Ministry for development of the floriculture sector. This includes overall survey, pilot study, and implementation program to identify ornamental species or varieties of tulips, poppy, propagate and market it with community involvement.	IKCDF, ARIS, Ministry of Agriculture	State Financing and Economic Development Fund, The Issyk-Kul Microcredit Agency, Kyrgyz Govt., International Donors, IKCDF Funds	Suitable options explored and presented in report.	2020-2027
5.2. Develop community managed tourism enterprises (see also Section 3.4 above)				
5.2.1. Establish a destination marketing strategy that promotes the CTSL as a whole, with a DMO (Destination Management Organisation), to highlight the Central Tien Shan region as a destination 'brand'	Academic organizations (UCA), KCBTA, NGOs, Culture Ministry (Tourism Dept.)	Kyrgyz Govt., Academic Organizations, International Donors	Strategy that incorporates strong components of community based conservation and tourism developed	2018-2020

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
5.2.2. Develop a strategy through participatory means for promoting community-based tourism in the CTSL that integrates different forms of tourism (eg. adventure, cultural, wildlife) with trophy hunting and pasture management. Critical factor is that such tourism development should bring benefit directly to communities, who also should be involved in design and planning as well as implementation. Draw lessons from earlier initiatives, e.g. The International Ecotourism Society (TIES) as well as the Association of Ecotourism Service Providers (AESP) & Association of Trekking Workers (ATW) (Novinomad-UNESCO 2004-07); Destination Marketing Organization (Helvetas, 2005-08); study on tourism marketing in Kyrgyzstan (by MSB, DMA 2006); Country Development Strategy (GKR, 2007-08) and Good Governance and Community Empowerment program (JICA and Kyrgyz Community Based Tourism Association (KCBTA)	Academic organizations (UCA), KCBTA, NGOs, Culture Ministry (Tourism Dept.)	Kyrgyz Govt., Academic Organizations, International Donors	Strategy that incorporates strong components of community based conservation and tourism developed	2018-2020
5.2.3. Set up pilot sites with Community Based Reserves managed by Pasture Committees or their representatives. Ensure there is effective partnership between Pasture Committee, Tourism Dept., and Rational Use Dept. (SAEPF), along with NGOs. This should be done under the tri-partite MoU facilitated under the UNDP Khan Thangri project in 2016. See Chapter 9 for more details on this. Options in Ak Suu and Jatey Oguz need to be explored	SAEPF, Panthera, KCBTA, JICA, AESP, ATW, NGOs	Kyrgyz Govt., IKCDF Funds	At least one model program is set up	2018-2020

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
5.2.4. Ease and rationalize restrictions related to Border Permits for tourists to visit the landscape (Much of the CTLS is in the restricted zone where foreigners and nationals from outside the region need to obtain a Border Permit. This can restrict number of tourists and thus the possible incomes to communities.)	Kyrgyz Govt. (especially SAEPF, PMs office, Defence Ministry)	Supported by Kyrgyz Govt.	Restrictions are eased so that tourists can visit most areas within the landscape	By 2018-20
5.2.5. Improve the quality of the overall tourism experience (including activities, services, and products) – through training and capacity building of local guides, entreprises, other service providers. Also should develop and implement standard certification systems for 'ecotourism' experiences/companies, and also more generally for accommodation facilities. Along with stand-alone individual training sessions for guides, should also develop training programs (e.g. supported / delivered through UCA's SPCE), eventually to be offered as an accredited certificate or degree program. Also should develop wider range of community-based tourism activities, with appropriate support trainings and if necessary seed funds to trial and launch.				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
5.3. Provide renewable energy options in all villages to ensure 24X7 power supply, thus improving living conditions and reducing pressure on local fuel and making these communities more carbon-neutral. Effective implementation of this mechanism contributes to the country's commitments towards the Paris Climate Agreement 2015 and the Sustainable Development Goals 2030 too				
5.3.1. Solar efficient lighting, room and water heating. Explore 'passive solar' housing in the landscape. Options of exposure visits to study this in other parts of the world (See activity 7.3)	NGOs, IKCDF, Academic Organizations, Ayil Okmotu administration	Kyrgyz Govt., International Donors	Feasibility report ready	2020-2022
5.3.2. Study the need and feasibility of micro-hydro projects in remote villages with streams Options of exposure visits to study this in other parts of the world (See activity 7.3)	NGOs, IKCDF, Academic Organizations, Ayil Okmotu administration	Kyrgyz Govt., International Donors	Feasibility report ready	2020-2022
Goal III: Positive attitudes are promoted among all key stakeholders. Action is needed to better inform the lay public, officials, visitors, and businesses, in order to strengthen positive attitudes towards conservation				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
6. Threat: Poor awareness about conservation issues among some stakeholders ***Objective: To enhance awareness of conservation benefits among all stakeholders.***				
6.1. 'Snow Leopard Corner' developed and operational in all libraries run by the Culture Dept. in the Issyk Kul Oblast (School student specific)				
6.1.1. Develop interesting informative educational material with help of organizations such as SLF and WWF and implement the same in schools	SLF, WWF, NGOs, Culture Dept., Education Dept., Issyk Kul Biosphere Reserve Directorate	IKCDF Funds, NGO funds, International Donors	Materials ready for wide dissemination; number of information corners developed	2018-2027
6.1.2. Train Culture Dept. staff in use of educational material (At least one workshop per year. It is expected that there will be some change in staff and newer messages and tools may be available. Hence, the need to have annual workshops)	SLF, WWF, NGOs, Culture Dept., Education Dept.	IKCDF Funds, NGO funds, International Donors	All village staff are trained	2018-2022
6.1.3. Carry out educational activities for school children on a regular basis (at least once a month)	By trained staff of the Culture Dept. and NGOs, Issyk Kul Biosphere Reserve Directorate,	IKCDF Funds, NGO funds, International Donors	Number of activities held, number of schools and number of children who participated	2018-2022

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
6.2. Nature club activities in schools to inculcate greater value of Nature, especially ecosystem services and role of snow leopard in the ecosystem and biodiversity values in general (School and College students). These need to be at least once a year for each school				
6.2.1. Thematic camping in identified wilderness areas (eg. Karakol NP) aimed at improving values towards Nature	SLF, WWF, NGOs, Culture Dept., Education Dept., Issyk Kul Biosphere Reserve Directorate,	IKCDF Funds, NGO funds, International Donors	Camps taking place covering all relevant villages. Number of camps held, number of schools and number of children who participated	2018-2027
6.2.2. Short excursions to areas of environmental interest such as the Przewalski Museum, near Karakol, the three wildlife protected areas, any pasture areas identified as well managed	SLF, WWF, NGOs, Culture Dept., Education Dept., Issyk Kul Biosphere Reserve Directorate	IKCDF Funds, NGO funds, International Donors	Number of activities taking place covering all relevant villages. Number of activities held, number of schools and number of children who participated	2018-2027
6.2.3. Thematic painting competitions organized on Global Snow Leopard Day, World Environment Day, etc	SLF, WWF, NGOs, Culture Dept., Education Dept., Issyk Kul Biosphere Reserve Directorate	IKCDF Funds, NGO funds, International Donors	Number of activities taking place covering all relevant villages. Number of activities held, number of schools and number of children who participated	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
6.2.4. Regular talks and presentations by experts dealing with conservation issues in school/college functions	SLF, WWF, NGOs, Culture Dept., Education Dept., Issyk Kul Biosphere Reserve Directorate	IKCDF Funds, NGO funds, International Donors	Number of talks held covering all relevant villages. Number of activities held, number of schools/collages and number of students who participated	2018-2027
6.3. Develop and conduct conservation-based skits and plays in local functions and on local media (especially channels run by the Culture Dept.) (by children and youth and targeted at larger population of the Issyk Kul Oblast)				
6.3.1. Develop interesting themes and scripts for plays and skits. Explore and include indigenous cultural and heritage linkages.	Culture Dept., NGOs (especially SLF, SLC, WWF), Indigenous cultural practitioners, The Issyk-Kul News Newspaper, The Issyk-Kul TV, TV Channel, Issyk Kul Biosphere Reserve Directorate	Kyrgyz Govt., International Donors	Number of programs developed. Number of performances	2018-2022

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
6.3.2. Regular programs developed and broadcast on TV channels and shown on college or school functions. Articles written in local newspapers. This will involve training local children and youth in acting and creative expression.	Culture Dept., NGOs (especially SLF, SLC, WWF), Indigenous cultural practitioners, The Issyk-Kul News Newspaper, The Issyk-Kul TV, TV Channel, Issyk Kul Biosphere Reserve Directorate	Kyrgyz Govt., International Donors	Number of programs developed. Number of broadcasts	2018-2027
6.4. Develop and display high quality educational material as a part of public awareness and outreach for larger population, tourists and other stakeholders. Distribute and display at all prominent places				
6.4.1. Develop thematic posters depicting wildlife and ecosystem values of the CTSL. Display at all prominent places in the Issyk Kul oblast (hotels, offices, etc)	Culture Dept., NGOs (especially SLF, SLC, WWF), Indigenous cultural practitioners, Issyk Kul Biosphere Reserve Directorate	Kyrgyz Govt., NGO funds, International Donors, IKCDF Funds	Number of posters developed, number of places displayed and feedback obtained from target audience (local people, tourists, etc)	2018-2027
6.4.2. Develop informative and attractive pamphlets about the CTSL, including the landscape, geography, climate, wildlife, plants, people and culture, with other useful information on trekking routes and camping sites	Culture Dept., NGOs (especially SLF, SLC, WWF), Indigenous cultural practitioners, Issyk Kul Biosphere Reserve Directorate	Kyrgyz Govt., NGO funds, International Donors, IKCDF Funds	Number of thematic pamphlets developed, feedback obtained from target audience (local people, tourists, etc)	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
6.4.3. Develop a Website with information on the landscape that includes information on geography, climate, wildlife, plants, people and culture, with other useful information on trekking routes and camping sites	Culture Dept., NGOs (especially SLF, SLC, WWF), Indigenous cultural practitioners	Kyrgyz Govt., NGO funds, International Donors, IKCDF Funds	Comprehensive multilingual Website available, Usage statistic. Feedback obtained from target audience (local people, tourists, etc)	Develop 2018-2020; maintain thereafter
6.5. Develop a strategy for conservation education and outreach for all sections of society				
6.5.1. Develop a strategy to understand all stakeholders, the key messages for them, the ideal tools for expression, training needs, funding and activities to carry out the works. The activities listed above can be taken up immediately but such a strategy will help in the long run, especially to engage other stakeholders such as tourists, government officials from other parts of the country and businesses.	NGOs, Cultural Dept. Academic Organizations	IKCDF Funds, NGO funds	Comprehensive strategy developed	2020-2022
6.6. Make a documentary on wildlife and culture of the CTSL for wider broadcasting	SAEPF, Oblast Admin., NGOs, respected filming company	IKCDF Funds, SAEPF, raise grants	Film produced; number of areas broadcast	2019-2020

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
Goal IV: Professional capacities are enhanced among implementing agencies and development partners to plan and implement strategic innovative practices. Action is needed to better equip all implementing agencies and their partners to continuously adapt their approaches and practices in order to sustain landscape level conservation				
7. Threat: Poor capacity among SAEPF, Pasture dept., other government agencies and local communities for participatory planning and action ***Objective: To build the capacities of SAEPF staff, other government departments and community members to engage in cooperative activities that improve livelihoods and conservation. (Focus is on participatory approaches, including co-management).***				
7.1. Develop a concept for supporting training institutions (national or at oblast level).				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
7.1.1. Develop concept to help with comprehensive capacity enhancement of all frontline staff in wildlife law and enforcement, natural history and wildlife monitoring, participatory planning and action. Support the Centre for Education for Forest Rangers, in XXX. This will require a brief engagement of a consultant and 2-3 workshops.	SAEPF, IKCDF with Centre for Education for Forest Rangers, in XXX. (supported by KOEKA, the South Korean aid agency) and explore possibility of housing this in a local university or one such as the University of Central Asia/American University of Central Asia/Agrarian Univ./Academy of Sciences	Government Funding, International Donors, IKCDF Funds	Comprehensive concept paper developed	2018-2020
7.1.2. Develop a module on participation in conservation and livelihoods and train related faculty in imparting these modules in respective organizations. Conduct periodic workshops based on above to ensure all SAEPF staff and partners in implementation have attended these courses	SAEPF, IKCDF with Academic Organizations, Ayil Okmotu, others (listed above in 7.1.1)	Government Funding, International Donors, IKCDF Funds	Comprehensive modules developed & annual programs for imparting the training held	2018-2027
7.2. Enhance community capacity in planning and implementation of conservation related activities through their Pasture Management Plans (PMPs) at the Ayil Okmotus level so that they can deliver better on works under pasture management (Section 4.2 above)				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
7.2.1. Develop a module for participation in conservation works for members of the community. Collaborate with the ARIS and National Pasture User Association (NPUA) to institutionalize this training and ensure that activities related to sustainable development and wildlife conservation are incorporated in the Pasture Management Plans prepared by the Ayil Okmotus	IKCDF, NGOs, ARIS, NPUA, Pasture Committees, Ayil Okmotu	Kyrgyz Govt., IKCDF Funds	Module developed and incorporated in regular training of facilitators for preparing PMPs. Number of workshops and number of trainees every year as % of population	2018-2022; workshops to continue thereafter
7.3. Exposure visits of mixed groups of SAEPF staff and local community leaders to study best practices in conservation in other sites in Kyrgyzstan and other snow leopard range countries.				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
7.3.1. Tour to community reserves being run by Panthera to understand its functioning and benefit sharing mechanisms 7.3.2. Tours to successful Joint Forest management sites in Kyrgyzstan 7.3.3. Tour to community managed snow leopard based winter tourism sites in Ladakh, India to understand its functioning and benefit sharing mechanisms 7.3.4. Tour to Annapoorna Conservation Area, Nepal to understand participatory management of landscapes 7.3.5. Tour for officers of SAEPF to Nepal to study national and local structures for ensuring sustained participatory planning and action 7.3.6. Tour to Russia to study snow leopard monitoring programs 7.3.7. Tour to Pakistan and Tajikistan to study their successful community based trophy hunting program	IKCDF, NGOs, International Partners, GSLEP Secretariat, Oblast, Rayon and Ayil Okmotu officials	IKCDF Funds, International Donors, GSLEP partners and host countries	Number of tours, cross section of personnel and number of personnel exposed	Especially during 2018-2024, and thereafter too

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
8. Threat: Natural disasters negatively affecting livelihoods and local natural resources ***Objective: To minimize the impact of natural disasters on livelihoods and wildlife.***				
8.1. Coordinate with Regional Emergency Management Agency (REMA) to avert or minimize damage				
8.1.1. Suitable slope stabilization work carried out in avalanche and erosion prone areas and wherever infrastructure development is taking place. Will help with securing pasture infrastructure too	IKCDF, REMA, Pasture Dept., Pasture Committee (PMP)	IKCDF Funds, REMA, Ayil Okmotu budget	Number of works carried out. Monitor how long these measures survive in the area	2018-2027
8.1.2. Connectivity maintained in areas vulnerable to flash floods and erosion through suitable roads and bridges	IKCDF, REMA, Pasture Dept., Pasture Committee (PMP)	IKCDF Funds, REMA, Ayil Okmotu budget	Number of works carried out. Monitor how long these measures survive in the area	2018-2027
8.1.3. Communication network to inform Disaster Management Dept. about any event	IKCDF, REMA, Pasture Dept., Pasture Committee (PMP), Oblast/Rayon administration	IKCDF Funds, REMA, Ayil Okmotu budget	Number of communication points created. Monitor how long these measures survive in the area	2018-2027

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
8.2. Understand and mitigate effects of climate change on disasters				
8.2.1. Commission study to document patterns of disasters in the landscape in the past two decades and their possible link to natural, man made or climate change related causes	IKCDF, WWF, Academic Organizations	IKCDF Funds, International Donors	Reports and peer reviewed papers with clearer idea for climate change and its impacts	2020-2024
8.2.2. Map areas vulnerable to climatic disasters and develop adaptation strategies	IKCDF, WWF, Academic Organizations	IKCDF Funds, International Donors	Reports and peer reviewed papers with clearer idea for climate change and its impacts	2020-2024
Goal V: Systems of good governance are agreed and strengthened at all levels based on sound planning. Action is needed to ensure clear systems and structures are in place to aid multi-sectoral collaborations and to develop viable financing mechanisms.				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
9. Need for integrated governance and management mechanism ***Objective: To create efficient and equitable mechanisms for governance (i.e. who participates in decision making) and management (i.e. what needs to be done) in the multi-dimensional, multi-sectoral landscape to be served by the CTSL management plan, incorporating more inclusive participatory and community-led approaches.*** (More detail in Chapter 8 and 9)				
9.1. Effective and new management structure of the CTSL Landscape. Eg. A senior level Director in Oblast Governor's Office helping with the annual planning, implementation and monitoring of the CTSL management plan. OR Strengthening and integrating with the Biosphere Reserve Management structure	Kyrgyz Govt. with support from NGOs and INGOs	Kyrgyz Govt., International Donors	Effective structure is set up with due approvals	2017-2020
Note: This should be completed during the management-planning phase itself. However, if not, this will be key activity for the first year of the management plan implementation				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
9.2. Set up new participatory Foundation to enable effective representation of important government and non-government stakeholders, annual planning, funding and fund disbursement (Establishment of the Issyk Kul Conservation and Development Foundation or IKCDF)	Kyrgyz Govt. with support from NGOs and INGOs	Kyrgyz Govt., International Donors	Effective structure is set up with due approvals	2017-2020
Note: This should be completed during the management-planning phase itself. However, if not, this will be key activity for the first year of the management plan implementation				

Goal/Threat/Objective/Activities	Lead and collaborators	Funding sources	Indicators	Timelines
9.3. Exposure tours of functionaries (Governor's office, Government Departments, Rayon and Ayil Okmotu administration), to other areas where such participatory structures have been functioning for over two decades (e.g. National Trust for Nature Conservation (NTNC), Nepal and the Biodiversity Conservation and Rural Livelihood Improvement Program in the Periyar Tiger Reserve, India). This is similar to the exposure tours suggested for staff (7.3) but is primarily directed at policy makers.	Kyrgyz Govt. with support from NGOs and INGOs	Kyrgyz Govt., International Donors, Host Government (GSLEP Secretariat facilitated)	Number of officers and decision makers exposed to well established participatory frameworks	2017-2020

Appendix 15: Feedback on the proposed activities received from line agencies active in the Central Tien Shan Landscape. The logframe was provided to all the line agencies from the office of the Governor of the Issyk Kul oblast. Please see text for details on process and Appendix 14 for the logframe.

AGENCY/DEPARTMENT	CONTACT NAME	FEEDBACK CONTENT

1. Глава областного департамента охоты/HUNTING DEPARTMENT	(Усенбаев Т.О.) 78_maksat@mail.ru (Maksat Dunganaev)	1.1: Areas with big ibex populations in Jeti-Oguz district: Baraobas, Minteke, Carabel, Pickertik, Kaicha, Jangart; in Ak-Suu district: Zhergalan, Turgen, Almalau, Arashan, Mola, Koilu, Kichi Taldy-Suu, Chon-Taldy-Suu, Enilchek, Kaindy, Terekty, Koikap. 1.2: Facilitation of educational seminars with the involvement of international and local experts on in-depth study of snow leopards. 1.3: The Issyk-Kul agency conducts annual wildlife surveys in the snow leopard habitat; however, available optical devices (binoculars, cameras) do not have quality surveying capabilities. There is a strong need in modern and high quality optical devices (binoculars, cameras and cameras); monitoring of health conditions, in case of epizootic events, facilitation of culling and purging of deceased animals to stop infection of healthy animals. 1.4: Suggested threats to the snow leopard: natural disasters, possibility of lack of food base, limiting livestock grazing to the borders of ibex and snow leopard habitat. 1.5: More rational use of pastures. Pasture grazing schedules need reinforcement to mitigate the threat of pasture degradation. 1.6: Allocation of more funds and time to monitoring. 2.1.1: Raise tariffs for fees and lawsuits for poaching. Encourage courts to make fair and correct decisions on facts of poaching. Rangers who reveal poaching incidents should be distinguished with 30% of the lawsuit cost, paid out by the government. To make anti-poaching more effective, we suggest increasing the reward to 50% (30% coming from the lawsuit, 20% from international donors and ИКФОСБ). 2.1.2: Increase staffing capacity of rangers and hunters in the Issyk-Kul department from 10 to 20 people. Provide a booklet containing quality images and description of endangered plants. 2.1.3: Facilitation of weekly meetings with law enforcement and SAEPF employees. Exchange information, facilitate joined raids. 2.2.1: To make the work of the Issyk-Kul office more effective, increase hunting and ranger staff to 20 units. In addition, a provision of transportation, horses, snowmobiles, radios, gas, uniforms (summer and winter), binoculars (with night vision), video cameras, government issued weapons. 2.2.2: Facilitation of seminars and trainings for SAEPF staff members at least twice a

		year. 2.3.1: Requesting to expand the timeframe of this line item to 2027. 2.4.2: Annual regulation of marmot population by catching (snares) and shooting. 2.4.4: facilitate discussions with the local population. 2.5.2: Training of regional specialists on maintaining the “Mergen” database. 2.5.3: Consider installation of an eco-post at the “Sary-Jazz” and “”Ottuk river junction (former border post). 2.5.4: Allocation of funds to encourage intelligence service. 3.1.2: SAEPF staff in Issyk-Kul is always ready to offer support and information on wild life for the assessment of planning and biodiversity conservation project implementation. 3.1.3: Make a proposal to prohibit livestock grazing at elevations higher than 2,800 meters about sea level to the borders of the snow leopard and ibex habitat. 3.5.1: There is a need to carry out an inventory of dogs (stray and owned) in the landscape and constantly (if possible) conduct explanatory discussions with dog owners.
2. Генеральный Директор биосферной территории "Иссык-Куль"/BIOSPHERE TERRITORY	(Аманкулов М.А.) biosfera.ik@rambler.ru	1. Threat #3, addition to 3.1 pg. 17: Removal or transfer of currency hunting concessions bordering with the Sarychat-Ertash State Reserve that target ungulates (the primary snow leopard food base). There is a precedence of border violation by hunting concessions and earlier requests to remove or transfer hunting concessions to a safe location did not receive any reaction from higher authorities. There are seven hunting concessions along the reserve border. 2. Threat #4, addition to 4.3 pg. 32: Encouragement of fine wool sheep breeds. Fine wool sheep breed implies high revenue, low maintenance cost. Fine wool sheep do not pull grass roots when grazing that can lead to pasture degradation, and therefore, are more preferable. 3. Threat #6, addition to column “Administrators and Partners”, pg. 39: *add “Issyk-Kul”* Biosphere Directorate. 4. Threat #6, additions to 6.1.3, 6.2, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.3.1, 6.3.2, 6.4, 6.4.1, 6.4.2, pgs. 40-44: *addition of the “Issyk-Kul” Biosphere Directorate to column “Administrators and Partners”.*

3. Региональный комитет пастбищ/PASTURE COMMITTEE	(Нурлан Муслимович)	No feedback received.
4. Директор Фонда Развития Иссык-Кульской Области/ISSYK-KUL DEVELOPMENT FUND	(Садыралиев Р.К.)	No feedback received.
5. Областной департамент статистики/STATISTICS DEPARTMENT	(Искатов У.Т.)	Jeti-Oguz district: "Baraobas", "Minteke", "Carabel", "Pickertik", "Kaicha", "Jangart"; - along the Ak-Suu district: "Zhergalan", "Turgen", "Almalau", "Arashan", "Mola", "Koilu", "Kichi Taldy-Suu", "Chon-Taldy-Suu", "Enilchek" "Kaindy", "Terekty", "Koikap" where there is a large population of ibex.
6. Начальник областного отдела управления чрезвычайными ситуациями/EMERGENCY MANAGEMENT DEPARTMENT	(Джумагазиев З.Д.)	No feedback received.
7. Руководитель Иссык-Кульского областного департамента Министерства Экономики/MINISTRY OF ECONOMICS IN ISSYK-KUL	(Мурадылову У.Ж.) ik-mer@mail.ru	Addition to 5.1, pg. 35—add another subsection: *"To work with* the Ministry of Agriculture in order to increase the production of milk - the breeding of high-*yielding breeds of cows."* In 2017, the export of milk products from Issyk-Kul to Russia and KZ have increased 15 fold. There are two major milk-processing plants in Issyk-Kul (Ak-Zhalga and Sut-Bulak). In addition, several small milk-processing plants are located in Karakol that procure milk from the local population. In the last 5 years, the price on milk increased by over 35%.
8. Глава областной инспекции по безопастности, ветеринарного и фитосанитарного осмотра/SAFETY, VET AND PHYTOSANITARY INSPECTION	(Шарапов Б.Д.) bakyt.sharapov@mail.ru	No change recommended.
9. Представитель Министерства культуры и туризма КР на Иссык-	(Исмаилов Э.Т.)	No feedback received.

Куле/MINISTRY OF CULTURE AND TOURSIM IN ISSYK-KUL		
10. Руководитель областного отдела бассейна водных ресурсов/WATER RESOURCES	(Кайдулатов Б.К.) issyk-kul-oopavp@mail.ru	1.1, pg. 6: recommended addition: identification of food base populations in the snow leopard habitat (indicator: monitoring of ungulate, marmot and plants); 1.2, p. 7: protection of the regional natural heritage of snow leopard habitat; 1.3: habitat, snow leopard movement, argali, deer, wild hog and marmot, identification of reproduction sites (quiet zones); 1.5, pg. 8: development of action plans at the level of AO and stakeholder organizations (indicator: preparation of reports and action plans at the country level based on these reports, partnership with neighboring countries); 2.1.1, pg. 9: *existing laws don't work,* therefore, conducting training at the local level (indicator: seminars, trainings etc.); 2.1.3, pg. 10: include AOs. Facilitation of trainings in schools and universities (indicator: with participation of all interested organizations, including AOs, schools and universities); 2.4.1, pg. 13: indicator: annual progress reports from all stakeholders and AOs; 2.4.3, pg. 14: indicator: work progress report; 2.5.2, pg. 15: publications in mass media and TV; 2.5.6, pg. 16: vegetation conservation, prohibition of logging; 3.2, pg. 19: high school education on flora and fauna preservation, as well as ecological preservation in general (indicator: education, training, seminars using support materials—ppt, movies on the subject); 3.2.2, pg. 20: designation of protected areas and re-cultivation; 3.4, pg. 22: indicator: install posters on prevention of flora and fauna violations in tourist places; 3.4.1, pg. 23: indicator: work to be conducted at the district level, district state administration; 3.5, pg. 25: indicator: development of reports, taken measures to publish in mass media; 3.5.3, pg. 26: indicator: reports on dog vaccinations; 3.6: indicator: rational use of pastures and forest resources, tree planting; 4.1, pg. 28: pastures are constantly used at same locations which leads to pasture degradation; 4.2.1, pg. 30: indicator: education, trainings, seminars with the use of support materials such as ppts, movies on the subject; 4.4, pg. 32: indicator: reports once a year; 4.5.1, pg. 34:

		indicate reasons, 6.1, pg. 39: indicator: availability of information stands/corners; 6.2, pg. 40: indicator: training programs or work plans; 6.2.2, pg. 41: forest enterprises, pasture visits (good/bad sites); 6.2.3, pg. 42: reward winners with a trip to another country to see applicability of ecosystem protection there; 9.2, pg. 55: make a movie on flora and fauna in 2018; repeat again in 2025, compare and analyze video material for its strengths and weaknesses, indicator: movies.
11. Руководитель Государственного финансирования и Фонда экономического развития/STATE FINANCING AND ECONOMIC DEVELOPMENT FUND	(Абдыракунов О.С.)	No feedback received.
12. Руководитель отдела по экологической и технической инспекции/ECOLOGIC AND TECHNICAL INSPECTION	(Турдалиев К.И.)	No feedback received.
13. Руководитель областной ассоциации водопользователей/REGIONAL ASSOCIATION OF WATER USERS	(Казакбаев Т.Ш.)	See #10
14. Отдел архитектуры и градостроительства ИО/ARCHITECTURE AND PLANNING DEPARTMENT	(Дуйшенкул Сатыбалдиевич)	No feedback received.
15. Представитель регионального филиала Государственного агенства по межэтническим отношениям/INTERETHNIC RELATIONS DEPARTMENT	(Майрыков А.М.)	No feedback received.
16. Глава регионального Департамента	(Тойгоналиев А.С.)	No feedback received.

строительства/CONSTRUCTION DEPARTMENT		
17. Директор Иссык-Кульского микрокредитного агенства/ISSYK-KUL MICROCREDIT AGENCY	(Калмакиев К.Т.) issykulmka@mail.ru	No change recommended.
18. Директор региональных архивов/REGIONAL ARCHIVES	(Сейдиматова Ч.М.)	No feedback received.
19. Координатор регионального института образования на Иссык-Куле/EDUCATIONAL INSTITUTE	(Шарипов К.С.)	No feedback received.
20. Декан факультета естественных наук Иссык-Кульского Гос. Универ-та им. Тыныстанова/ISSYK-KUL STATE UNIVERSITY	(Калдабаев Б.К.)	No feedback received.
21. Руководитель территориального управления охраны окружающей среды и лесного хозяйства/SAEPF IN ISSYK-KUL	(Оскомбаеву Т.С.) ikntuoos@mail.ru	No change recommended.
22. Госрегистр в г. Каракол/REGISTRATION SERVICES	(Эрнест Кубанычбекович)	No feedback received.
23. Главный специалист по сельскому хозяйству отдела регионального развития/AGRICULTURE SECTOR	(Сагынбеков Э. Т.)	
24. Начальник производственного отдела ПЛУАТ/ROAD MANAGEMENT	(Самаков Т.Ш.)	No feedback received.
25. Заведующий сектором по туризму и привлечению инвестиций Аппарата полномочного	(Мусаев Максат)	No feedback received.

представителя на Иссык-Куле/TOURISM SECTOR		
26. Аксуйское Управление Аграрного Развития, АКСУ УАР/ AKSU DEPARTMENT OF AGRICULTURE DEVELOPMENT	aksuuar@mail.ru	A list of pasture tenants in the Ak-Suu District (14 municipalities/AO): 1. Ak-Bulun, 2. Ak-Chiy, 3. Boz-Uchuk, 4. Boru-Bash, 5. Kara-Dzhal, 6. Karakol, 7. Kerege-Tash, 8. Oktyabr, 9. Otradnoe, 10. Tepke, 11. Teplokluchenka, 12. Chelpek, 13. Shahta-Zhyrgalan, 14. Enilchek.

Appendix 16: Sustainable Development Goals

(excerpted from Wikipedia (https://en.wikipedia.org/wiki/Sustainable_Development_Goals) and SDG Websites (https://sustainabledevelopment.un.org/post2015/transformingourworld))

The Sustainable Development Goals (SDGs), officially known as Transforming our world: the 2030 Agenda for Sustainable Development is a set of 17 "Global Goals" with 169 targets between them. Spearheaded by the United Nations through a deliberative process involving its 193 Member States, as well as global civil society, the goals are contained in paragraph 54 United Nations Resolution A/RES/70/1 of 25 September 2015. The Resolution is a broader intergovernmental agreement that acts as the Post 2015 Development Agenda (successor to the Millennium Development Goals). The SDGs build on the Principles agreed upon under Resolution A/RES/66/288, popularly known as The Future We Want. It is a non-binding document released as a result of Rio+20 Conference held in 2012 in Rio de Janeiro, in Brazil.

The Central Tien Shan Landscape Management Plan under the GSLEP is expecting to carry out numerous activities (Appendix 14), most of which fit into one or more of the SDG goals for the country. The more pertinent ones have been highlighted in grey.

Goal 1. End poverty in all its forms everywhere
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
Goal 3. Ensure healthy lives and promote well-being for all at all ages
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
Goal 5. Achieve gender equality and empower all women and girls
Goal 6. Ensure availability and sustainable management of water and sanitation for all
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
Goal 10. Reduce inequality within and among countries
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
Goal 12. Ensure sustainable consumption and production patterns
Goal 13. Take urgent action to combat climate change and its impacts
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Goal 17. Strengthen the means of implementation and revitalize the global partnership for sustainable development

Figure: Graphic representation of the 17 SDGs reproduced from the Wikipedia Site.

Appendix 17: Memorandum of Understanding between the SAEPF, the Pasture Department and the Tourism Department.

Меморандум о сотрудничестве

в сфере сохранения биоразнообразия и устойчивого пользования природными ресурсами животного и растительного мира

Департамент рационального использования природных ресурсов Государственного агентства охраны окружающей среды и лесного хозяйства при Правительстве Кыргызской Республики (далее – Департамент природных ресурсов), в лице директора Мусаева Алмаза Мустафаевича, действующего на основании Положения, с одной стороны,

Департамент пастбищ Министерства сельского хозяйства, пищевой промышленности и мелиорации Кыргызской Республики (далее – Департамент пастбищ), в лице директора Торогельдиева Уланбека Тургунбековича, действующего на основании Положения, с другой стороны,

Департамент туризма при Министерстве культуры, информации и туризма Кыргызской Республики, в лице директора Жаманкулова Азамата Капаровича, действующего на основании Положения, с третьей стороны,

вместе именуемые – Стороны,

принимая во внимание, что законодательство Кыргызской Республики в сфере природопользования и сохранения биоразнообразия основывается на Конституции Кыргызской Республики, законах Кыргызской Республики «Об охране окружающей среды», «О животном мире», «О пастбищах», «Об особо охраняемых природных территориях», «О туризме», «О природных лечебных ресурсах, лечебно-оздоровительных местностях и курортах» и «Об охоте и охотничьем хозяйстве», на основании которых разработаны и приняты соответствующие нормативные правовые акты (НПА) Кыргызской Республики, регулирующие вопросы сохранения биоразнообразия, природопользования, стратегий и программ развития КР, сохранения и восстановления в целом уникального биоразнообразия, численности и ареала обитания диких животных в Кыргызской Республике;

учитывая содержание в указанных НПА преимущественно общих определяющих рамок сферы природопользования, и/или влияющих на данную сферу в контексте регулирования управления другими субъектами, и необходимость обновления отдельных НПА (внесения в них дополнений и изменений) в соответствии с требованием интегрированного взаимодействия различных секторов природопользования;

подтверждая, что внесение изменений и дополнений в некоторые НПА с учётом внедрения интегрированного взаимодействия различных секторов природопользования и экосистемного подхода не только в охотничьем, а также в сельском хозяйстве, других секторах экономики, оказывающих влияние на биоразнообразие, положительно скажется на эффективности сохранения биоразнообразия и среды его обитания, улучшении как состояния биоразнообразия, так и экосистем в целом, и совместная ответственность за внесение в законодательство Кыргызской Республики изменений в отношении интегрированного управления, сохранения и восстановления в целом биоразнообразия будет способствовать достижению поставленных задач;

понимая, что устойчивое управление природными ресурсами, в соответствии с экосистемным подходом, требует расширения межсекторального взаимодействия и сотрудничества на различных уровнях (министерств, агентств по управлению на национальном, региональном и местном уровнях), чему может содействовать не только продвижение вопросов биоразнообразия в секторы и процессы, но также активный поиск взаимных и положительных исходов развития системы сохранения биоразнообразия и создания сети для обмена информацией и опытом;

признавая, что разрушение биотопов, сокращение кормовой базы, использование пастбищ без учета биологических особенностей и потребности диких животных, а также

браконьерство являются основными причинами сокращения численности и ухудшения состояния диких животных;

сознавая, что скоординированные согласованные действия по разработке и внесению изменений в законодательство Кыргызской Республики государственными органами и неправительственными организациями, специализирующимися в охране и сохранении биоразнообразия будут способствовать рациональному использованию и предотвращению угрозы исчезновения сохранившихся популяций диких животных, и сохранению уникального биологического разнообразия соответствующих экосистем;

считая, что незамедлительно должны быть приняты совместные скоординированные действия и осуществлена работа по внесению изменений в законодательство Кыргызской Республики, стратегии и программы развития по вопросам сохранения биоразнообразия и регулирования природопользования;

составили настоящий Меморандум о сотрудничестве (далее – Меморандум).

На основании настоящего Меморандума Стороны **соглашаются** (договариваются) проводить совместные работы по усовершенствованию законодательной базы в сфере управления и использования пастбищ, сохранения биоразнообразия, природопользования, туризма, а также по восстановлению в целом уникального биоразнообразия, численности и ареала обитания диких животных в Кыргызской Республике, определенные настоящим Меморандумом, для обеспечения сохранения биоразнообразия на территории Кыргызской Республики.

В соответствии с этим, в рамках взаимопонимания и взаимодействия Стороны будут:

1. Совместно вносить предложения в целях улучшения законодательства Кыргызской Республики, регулирующие вопросы сохранения биоразнообразия, природопользования, туризма, стратегий и программ развития КР и согласованно действовать в отношении:

- инвентаризации действующих НПА;
- внесения предложений в соответствующие НПА необходимых изменений и дополнений;
- планирования и осуществления деятельности во взаимодействии Сторон.

2. В целях эффективной реализации положений законодательства Кыргызской Республики составлять планы совместных мероприятий по:

- оперативному обмену научной и технической информацией и законодательной базой для координации мер по сохранению и восстановлению животного и растительного мира, также пастбищ;
- выявлению и пресечению фактов браконьерства и других нарушений в сфере природопользования;
- проведению совместной работы с жайыт комитетом по использованию охотничьих угодий для пастьбы скота и управлению ими совместно с органами местного самоуправления и чабанами, установлению зон и сроков пастьбы, а также допустимого количества выпасаемого скота, определенных и согласованных на основе прав и необходимостей местного населения;
- обеспечению вовлечения в процессы, осуществляемые в рамках данного Меморандума, субъектов лесохозяйственной и туристической деятельности;
- проведению при необходимости охотпользователем совместно с работниками субъектов лесохозяйственной деятельности и жайыт комитетом на подведомственных территориях работ по биотехническим мероприятиям;
- пилотированию информационных и образовательных программ по пропаганде бережного отношения к окружающей природной среде;

- по повышению правовой культуры населения в сфере природопользования и сохранения биоразнообразия;

- рациональному использованию природных ресурсов, в том числе пастбищ;

- инициированию экономических и природоохранных программ для стимулирования местных общин, зависящих от ресурсов, находящихся на прилегающих угодьях охотпользователей;

- осуществлению мониторинга популяций диких животных и состояния пастбищ.

3. Организовывать и проводить обучающие семинары и тренинги для сотрудников жайыт комитетов и егерей охотпользователей по вопросам мониторинга популяций диких животных и учету их численности.

4. Взаимодействовать с органами местного самоуправления для определения приоритетных совместных действий в контексте данного Меморандума.

5. Осуществлять разработку и принятие ежегодного плана совместного управления пастбищами, являющимися охотничьими угодьями.

6. Дополнительные условия по обязанностям и ответственности Сторон будут определены в планах управления данными территориями.

7. Настоящий Меморандум вступает в силу с даты его подписания и действует в течение 5 (пяти) лет. Его действие будет автоматически продлеваться на аналогичный срок, если ни одна из Сторон не менее чем за шесть месяцев до истечения соответствующего срока не уведомит в письменной форме другую Сторону о своем намерении прекратить действие настоящего Меморандума.

Прекращение действия настоящего Меморандума не затрагивает выполнение принятых обязательств, программ и проектов в соответствии с настоящим Меморандумом, кроме тех случаев, когда Сторонами достигнуты иные договоренности.

8. Действие Меморандума может быть временно приостановлено или прекращено по взаимному согласию Сторон.

9. настоящий Меморандум о сотрудничестве, может быть исправлен либо дополнен по соглашению Сторон.

10. Основной текст настоящего Меморандума составлен на официальном языке, в трёх экземплярах, имеющих одинаковую юридическую силу, по одному экземпляру для каждой из Сторон.

Директор Департамента рационального использования природных ресурсов ГАООСиЛХ при ПКР

_____ **А. Мусаев**

«__» _____ 2016 г.

М.П.

Директор Департамента пастбищ Министерства сельского хозяйства, пищевой промышленности и мелиорации Кыргызской Республики

_____ **У. Торогельдиев**

«__» _____ 2016 г.

М.П.

Директор Департамента туризма при Министерстве культуры, информации и туризма Кыргызской Республики

_____ **А. Жаманкулов**

«__» _____ 2016 г.

М.П.

Appendix 18*: Broad Budget for the CTSL Management Plan. Based on activities outlined in Chapter 7 and Appendix 14.*

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