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Nils Horstmeyer (Eds.)**

# **Nature Conservation in Eastern Europe, Caucasus and Central Asia**

**Lessons learnt from the transformation process  
and challenges for the future**



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## **Lessons learnt from the transformation process and challenges for the future**

**Proceedings of the Expert Workshop held from 29th February  
to 4th March 2016 at the International Academy for Nature  
Conservation on the Isle of Vilm, Germany,**

**organised by**

**the German Federal Agency for Nature Conservation (BfN) in  
cooperation with the Nature and Biodiversity Conservation  
Union (NABU) and the IUCN Regional Office for Eastern Europe  
and Central Asia (IUCN ECARO)**

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**Cover picture:** Haymaking by villagers, Babash-Ataa mountain, Kyrgyzstan (K. Schleicher)

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Financed by the Ministry of the Environment, Nature Conservation, Building and Nuclear Safety

This publication is included in the literature database "DNL-online" ([www.dnl-online.de](http://www.dnl-online.de))

BfN-Skripten are not available in book trade. A pdf version can be downloaded from the internet at: [http://www.bfn.de/0502\\_skripten.html](http://www.bfn.de/0502_skripten.html).

Publisher: Bundesamt für Naturschutz (BfN)  
Federal Agency for Nature Conservation  
Konstantinstrasse 110  
53179 Bonn, Germany  
URL: <http://www.bfn.de>

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Printed by the printing office of the Federal Ministry for Environment, Nature Conservation, Building and Nuclear Safety

Printed on 100% recycled paper.

ISBN 978-3-89624-184-9

Bonn, Germany 2016

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## Abbreviations

ACBK	Association for the Conservation of Biodiversity of Kazakhstan
ACCOBAMS	Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area
ACSA	National Agency for Rural Development
AEWA	The Agreement on the Conservation of African-Eurasian Migratory Waterbirds
ALPARK	Alpine Network of Protected Areas
BfN	Federal Agency for Nature Conservation
BMUB	Federal Ministry of the Environment, Nature Conservation, Building and Nuclear Safety
BMZ	Federal Ministry for Economic Cooperation and Development
CABNET	Central Asian Biodiversity Network
CAF	Central Asian Flyway
CAMI	Central Asian Mammals Initiative
CAREC	Regional Environmental Centre for Central Asia
CBD	Convention on Biological Diversity
CCD	Convention to Combat Desertification
CENN	Caucasus Environmental NGO Network
CEPF	Critical Ecosystem Partnership Fund
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLRTAP	Convention on Long-range Transboundary Air Pollution
CMP	Conservation Measures Partnership
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CNF	Caucasus Nature Fund
CORDAID	Catholic Organisation for Relief and Development Aid
CPAF	Caucasus Protected Area Fund
CR	Critically Endangered
CTF	Conservation Trust Fund
CWR	Caucasus Wildlife Refuge
DAAD	German Academic Exchange Service
ECARO	Office for Eastern Europe and Central Asia
ECF	Ecoregional Corridor Fund
ECP	Ecoregional Conservation Plan
ECPC	Ecoregional Corridor Programme for Southern Caucasus
EIA	Environmental Impact Assessment
EN	Endangered
ENPI FLEG	European Neighbourhood Policy Instrument – Forest Law Enforcement and Governance Programme
ENPP	Ecoregional Nature Protection Programme
ERCA	Ecosystem Restoration in Central Asia
ESMP	Environmental and Social Management Plans
EUROBATS	Agreement on the Conservation of Populations of European Bats



EX	Extinct
FAO	Food and Agriculture Organization
FFI	Flora & Fauna International
FLERMONECA	EU Regional Project Forest and Biodiversity Governance Including Environmental Monitoring
FPWC	Foundation for the Preservation of Wildlife and Cultural Assets
FSC	Forest Stewardship Council
FZS	Frankfurt Zoological Society
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information Systems
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GLPCA	Green List of Protected and Conserved Areas
GO	Governmental Organization
GPS	Global Positioning System
GRID	Global Resource Information Database
GSLEP	Global Snow Leopard and Ecosystem Protection Program
GTI	Global Tiger Initiative
IBA	Important Bird and Biodiversity Area
ICSD	Interstate Commission on Sustainable Development
ICWC	Interstate Commission on Water Coordination
IFAD	International Fund for Agricultural Development
IFAD VI	IFAD Inclusive Rural Economic and Climate Resilience Programme
IFAS	Fund for Saving Aral Sea
ILC	International Law Commission
IPCC	Intergovernmental Panel on Climate Change
ISESCO	Islamic Educational, Scientific and Cultural Organization
IUCN	International Union for Conservation of Nature
IUCN ECARO	IUCN Regional Office for Eastern Europe and Central Asia
IUCN-WCPA	IUCN World Commission on Protected Areas
IUSS	International Union of Soil Sciences
KfW	Kreditanstalt für Wiederaufbau
LC	Least Concern
MAB	Man and the Biosphere
m.a.s.l.	Meter above sea level
MCC	Millennium Challenge Corporation
MCP	Minimum Convex Polygon
MEA	Multilateral Environmental Agreements
METT	Management Effectiveness Tracking Tool
MOU	Memoranda of Understanding
NABU	Nature and Biodiversity Conservation Union

NBSAP	National Biodiversity Strategy and Action Plan
NFA	National Forestry Agency
NFP	National Focal Point
NGO	Non-Governmental Organization
NOVIB	The Netherlands Organization for International Development Cooperation
NSLEP	National Snow Leopard and Ecosystem Protection Priorities
ODA	Official Development Assistance
OUV	Outstanding Universal Value
POP	Persistent Organic Pollutants
PoWPA	Programme of Work on Protected Areas
RAPPAM	Rapid Assessment and Prioritization of Protected Area Management
REC Caucasus	Regional Environmental Centre for the Caucasus
RINGO	Research and Independent Non-governmental Organisations to the United Nations Framework Convention on Climate Change (UNFCCC)
RSPB	Royal Society for the Preservation of Birds
SEA	Strategic Environmental Assessment
SIDA	Swedish International Development Cooperation Agency
SLM	Sustainable Land Management
SMART	Spatial Monitoring and Reporting Tool
SOF	Special Operational Fund
SPPA	Support Programmes for Protected Areas
SSI	Special Species Initiatives
SVS	Der Schweizer Vogelschutz SVS/BirdLife Switzerland
TEEB	The Economics of Ecosystems and Biodiversity
TJS	Transboundary Joint Secretariat
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNEP-WCMC	UNEP World Conservation Monitoring Center
UNESCO	Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
US-DOI-ITAP	United States Department of the Interior through its International Technical Assistance Program
USPB	Ukrainian Society for the Protection of Birds
UzSPB	Uzbekistan Society for the Protection of Birds
VIP	Very Important Person
VU	Vulnerable
WASWC	World Association of Soil and Water Conservation
WCS	Wildlife Conservation Society
WUA	Water Users Associations for Irrigation
WWF	World Wildlife Fund for Nature



# 1 Introduction

The countries of Eastern Europe, North and Central Asia are home to a variety of unique ecosystems. The alpine mountains of the Caucasus are one of the global hotspots for biodiversity and endemism. The wide steppes, boreal forests, deserts and high mountains of Northern and Central Asia and Mongolia harbour globally important habitats for many endangered species, including the iconic Snow leopards, but also many Critically Endangered (CR) species such as Saiga antelopes, threatened migratory water birds and raptors. The water resources in the region secure livelihoods and provide a multitude of benefits to society as a whole. But the region has also witnessed ecological catastrophes such as the drying-up of the Aral Sea. Many species and ecosystems are threatened through unsustainable use, poaching, and the degradation and fragmentation of unique and still largely interconnected habitat, not least through industrial and infrastructure development in many areas.

This common history influences framework conditions for nature conservation until today. The transformation process in these countries after the massive political changes over the last two decades did not only have socio-economic consequences, but also impacts on biodiversity and the institutions responsible for conservation. On the other hand, new opportunities arose from those changes and many organizations have become involved in conservation processes, globally and regionally. A multitude of new initiatives, protected area networks, the Caucasus Nature Fund, progress in World Heritage nominations or the Klaus-Toepfer-Fellowship are just a few of the success stories from the region. State and non-governmental actors, scientists, international donors and cooperation partners have worked towards the conservation and sustainable use of the natural ecosystems and their wildlife in this region for 25 years now. The challenges for conservation have changed over the years and it is time to take stock and look at what has been done, what was achieved, what are the current threats and challenges ahead and what is needed to successfully and collectively overcome them.

To do so, the International Expert Workshop “Nature Conservation in the Countries of Eastern Europe, Caucasus and Central Asia – lessons learnt from the transformation process and challenges for the future” was organized by the German Federal Agency for Nature Conservation (BfN) with its International Academy for Nature Conservation in cooperation with the Nature and Biodiversity Conservation Union (NABU) and the IUCN Regional Office for Eastern Europe and Central Asia (IUCN ECARO). The workshop was funded by the German Ministry of the Environment, Nature Conservation, Building and Nuclear Safety (BMUB).

Participants included stakeholders active in the region, ranging from governmental and nongovernmental national institutions, to international organizations, experts, and to development cooperation and donor organizations. The regional focus of the workshop was on Eastern Europe (Belarus, Moldova, Ukraine), Southern Caucasus (Armenia, Azerbaijan, Georgia), the Russian Federation, Mongolia and Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan).

A wide range of stakeholders in nature conservation in the region participated in the meeting and presented their work and lessons learnt resulting from their engagement. Many international organizations have been active in the region for several decades, and have

built up strong and long-term partnerships with local and national organizations and experts. The workshop - as becomes obvious from the documentation below - reiterates that building on these partnerships as well as further strengthening joint approaches and cooperation is one of the key elements for success.



Picture: Group picture with workshop participants. Photo credit: Ralf Grunewald/BfN

## 2 Executive Summary

The International Expert Workshop “Nature Conservation in the Countries of Eastern Europe, Caucasus and Central Asia – Lessons learnt from the transformation process and challenges for the future” took place at the International Academy for Nature Conservation, Isle of Vilm, Germany, from 29th February to 4th March 2016. Close to 60 participants and representatives of more than 40 institutions active in the field of nature conservation in Eastern Europe, Caucasus and Central Asia, including Secretariats of Multilateral Environmental Agreements (MEAs), donors, non-governmental and development cooperation organizations, UN, academia and state organizations, came together to:

- Strengthen awareness of the significance of the region for global biodiversity conservation, highlighting the need to invest in the conservation of those unique landscapes and species with associated ecosystem services;
- Highlight the consequences of the political transformation process since the 1990s for nature conservation in the region, both in terms of opportunities and challenges;
- Exchange experience as to how the opportunities have been used to meeting conservation objectives and what can be learnt from that experience;
- Identify current challenges for nature conservation in the region based on concrete examples and get inspired by successful approaches to addressing them;
- Define conservation priorities and ways to address those by applying innovative or proven approaches and building individual and organizational capacities;
- Explore options for networking and coordination of joint activities among different countries and stakeholders.

**In the first part of the workshop**, participants highlighted the importance of Eastern Europe, Caucasus and Central Asia for nature conservation (abstracts provided in chapter 3.1), recognizing its ecological and historical characteristics. The region harbours vast tracts of still interconnected landscapes, which include eight of the 14 biomes of the world and unique large-scale ecosystems. It was stressed that there is great need and potential for effective efforts to conserve those ecosystems and their species and populations while still intact. The region harbours rich biodiversity including some of the most iconic large mammals, such as Snow and Persian leopards, Siberian tiger, European bison, Argali and Khulan as well as mass migration phenomena such as migrations of Saiga antelopes and Mongolian gazelles. Those species also hold considerable economic value through sustainable use and tourism. The region is also important for storing and sequestering carbon dioxide.

**The second part of the workshop** provided an overview of the consequences of the transformation processes since the 1990s for nature conservation as well as the respective opportunities and success stories (abstracts provided in chapter 3.2). This helped to understand the current framework conditions for nature conservation in the region. Nature conservation in the region operates against the backdrop of a legacy of prevalent public land ownership, state-driven mega-projects and centralized policies. The region has experienced an increasing role of non-governmental organizations, new environmental policies and institutions and international actors, increased participation in international processes since the 1990s. Conservation also had a role in nation-building, during periods of political

volatility, weakened state institutions and the rapid transition to market economy. The examples of Mongolia and Georgia illustrated how the transformation process in the 1990s was used as a window of opportunity to establish extensive protected area systems and, in the case of the Russian Federation, to nominate and designate new World Heritage sites.

**The current challenges for conservation in the region** (abstracts provided in chapter 3.3) and how to address them were at the centre of discussion during the third part of the workshop. Participants noted a number of trends leading to potentially harmful effects on nature in the region, relating to:

- how successful establishment, financing and effective management of protected areas can be achieved, bearing in mind that Aichi Target 11 is not reached yet. Challenges for effective conservation are currently posed by a lack of scientific data and capacity for justification of establishing new protected areas, by inadequate legislation and management, poor law enforcement, weak civil society and local communities involvement, low capacities of staff, inadequate financing, and competing land use in and around protected areas.
- how to ensure the sustainable use of natural resources in view of various challenges. For forests, wildlife and pasture, overuse presents a severe threat, which is based on the dependence of local communities on the resources for subsistence use, the lack of monitoring and a scientific base for defining their carrying capacity, and often lacking or insufficient legislation to regulate and control the resource management. Illegal hunting of wildlife by VIP, lacking incentives for communities to protect wildlife, livestock-wildlife competition and illegal wildlife trade contribute to those challenges. In the case of infrastructure development and extractive industries, the lack of coherent and effective application of international guidelines, standards and also participatory instruments contributes to their adverse direct and indirect effects on biodiversity.
- how to effectively participate in international policy processes and apply multilateral environmental agreements. Implementation of MEAs is so far hampered by a lack of institutional recognition, accountability, capacity and institutional stability for translating international agreements into policies and laws (ratification), as by insufficient intragovernmental and inter-agency cooperation.
- how to build up sufficient capacities and ensure good governance. Policy development faces challenges in the form of bad governance, political instability and ineffective legislation. The work of NGOs is impaired by a lack of reliable funding and capacities, limited access to decision makers and sometimes political constraints to being active in the region. As regards capacity development, insufficient professional education and capacities in nature conservation institutions are prevalent.
- how to tackle challenges for nature conservation that result from the projected strong effects of climate change in the region. As all fields and aspects of nature conservation will be affected by climate change, approaches for biodiversity conservation and sustainable resource use will have to be reviewed.



Picture: Mountain landscape in Kyrgyzstan. Photo credit: Klemens Karkow/NABU

Presentations highlighted successful approaches to address those challenges:

- For the establishment, financing and effective management of protected areas, success factors include a long-term funding commitment and sometimes the involvement of business or private actors (e.g. CNF, Caucasus Wildlife Reserve). They also include approaches for transboundary cooperation and protected area networks (e.g. Danubeparks, Dinaric Arc Parks, European Green Belt), using windows of opportunity to push for establishing protected areas (e.g. Mongolia, Georgia) and gaining political buy-in and broad stakeholder involvement.
- To achieve the sustainable use of natural resources, successful approaches include examples where local communities became less dependent on natural resources (e.g. alternative income through fast growing tree species), examples of innovative governance approaches and new institutions for conservation (e.g. pasture-management committees) and of sustainable use standards (e.g. FSC in Eastern Europe). Applying internationally endorsed guidelines for mitigating impacts of infrastructure development (e.g. EIA and SEA in Central Asia) and application of technical solutions were also seen as important.
- For the implementation of multilateral environmental agreements, noteworthy successful approaches were those that provided support to implementing agencies to increase political will or react to crisis situations, that improved the scientific knowledge base through facilitating research and knowledge transfer (e.g. MEA Secretariats), that facilitated dialogue between national governments and international institutions, and those that ensured high-level country buy-in and a broad alliance of NGOs, GOs and donors (e.g. Global Snow Leopard & Ecosystem Protection Program).



- For ensuring good governance and building capacity, effective approaches provided long-term support and provision of core-funding for local NGOs (in Central Asia), continuously invested into the young generation in the region (e.g., Nature conservation clubs, Klaus-Toepfer-Fellowship), and reached effective cooperation between NGOs and government agencies (e.g. Kazakhstan).
- For tackling challenges resulting from the projected effects of climate change, it has so far proven successful to integrate climate change into conservation strategies and sustainable land use planning, and to engage in ecosystem-based adaptation and climate change mitigation, with a big potential for peatland restoration in the region.

### **3 Key Findings of Presentations and Working Groups**

The following section includes summaries of the presentations given during the workshop (and summarized by the editors) as well as of the working group results. It is clustered along the four different sessions of the workshop:

1. The region and its ecological and historical characteristics;
2. Opportunities and success stories related to the transformation process;
3. Current challenges for conservation in the region;
4. Recommendations for improved coordination and international support.

#### **3.1 Session 1: Overview on the Region and its Ecological and Historical Characteristics**

##### **Significance of the Region for Global Biodiversity Conservation: Overview on Importance of Ecosystems and Biodiversity (Hans D. Knapp)**

Hans Knapp opened the session by highlighting the fact that the countries of Eastern Europe, Caucasus and Central Asia cover large areas with different vegetation zones from arctic tundra and boreal taiga and mires above nemoral deciduous forests to steppes and deserts. He described the Tundra as breeding place for many migratory species of birds. The Boreal Zone in Northern Eurasia is characterised by different taiga ecosystems, but also includes wetlands and ecosystems of a very special flora and fauna. The Nemoral Zone is located across Eurasia. Humid parts of Eastern Europe, Western Asia and Russian Far East including mountain areas are characterized by deciduous broad-leaved forests and river floodplains. With the Ukrainian Steppe and the steppes in Kazakhstan and Mongolia in particular, Eurasia is home to the largest grasslands worldwide. Examples for desert landscapes with extreme sparse but very special and adapted vegetation can be found in the Gobi desert and in the deserts of Middle Asia. Mountain regions reach from the Caucasus to the Central Asian high mountains such as the Tian Shan, the Pamir in Tajikistan and the Altai in Russia, Kazakhstan, Mongolia and China.

When it comes to nature conservation, Eastern Europe, Caucasus and Middle Asia are characterised by the classic Russian protected area system, which includes so-called “Zapovedniks” - strictly protected areas or core zones within a protected area. Often, Zapovedniks also constitute the core zone of Biosphere Reserves or are part of World Natural Heritage sites.

Exploitation pressure, mining, infrastructure development and desertification due to climate change - which have evolved during the last anthropocentric century - are the biggest emerging and current threats for most of the regions' ecosystems and biodiversity.

## **Common History and Development: Joint Heritage and Influence on Nature Conservation until Today (Andrey Kushlin)**

In his presentation, Andrey Kushlin highlighted the different degrees to which the countries of Eastern Europe, the Caucasus and Central Asia have developed during the post Soviet transition process. The gross national income of most countries in the region is still rather low. Between 40 and 70 percent of the population lives in cities. Although in some countries this is less significant, the general trend is a growing urban population. In comparison to the world average, the population in Eastern Europe, Caucasus and Central Asia is well educated. Electricity is available in most areas, while the economy is characterized by high carbon emissions.

Most areas are arid with few forested areas, with the exception of some forest rich areas. Only a few countries have a high degree of chemical input, such as by fertilizers, in their agriculture practices. Generally, most countries seem to overcome donor dependency. Incoming international payments peaked at the end of the 90's and are declining since then.

The recent history of most countries was influenced by Stalin's plan for the transformation of nature and economic growth through land and resource exploitation. Large-scale infrastructure projects were realised at all costs, including for example large dams, irrigation and drainage. Generally, the countries' economic development was characterized by public ownership, centralized policies and directive management. Conservation was mainly realised through exclusion.

A development towards precision agriculture and landscape scale planning can currently be observed. Reducing emissions and shifting towards a low-carbon economy of which conservation is a part of, constitutes one of the major challenges for the future.

## **Historical and Current Context of Germany's Engagement for Cooperation on Nature Conservation in the Region since 1990**

**(Michael Succow and Hans D. Knapp)**

Michael Succow provided an overview of the extensive international activities of German NGOs in the region throughout the years. He highlighted that NGOs and foundations contributed to the establishment and development of National Park Programmes in Georgia, Mongolia, Russia, Azerbaijan, Turkmenistan and Armenia. Furthermore, they were involved in the development of the World Heritage programme in the Russian Federation. NGOs also helped to establish and develop biosphere reserves in Kyrgyzstan, Kazakhstan, Uzbekistan, Russian Federation and Ukraine.

According to Hans D. Knapp, German bilateral cooperation through intergovernmental nature conservation agreements started in 1992 with the Russian Federation, followed by the Ukraine in 1993. Since then, many more bilateral agreements with other countries followed, and formed the basis for cooperation in nature conservation. German government agencies active in the region include the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), The Federal Ministry for Economic Cooperation and Development (BMZ), Federal Foreign Office, The Federal Agency for Nature Conservation (BfN), German Federal Enterprise for International Cooperation (GIZ), and Kreditanstalt für Wiederaufbau (KfW).

Capacity building, protection and restoration of ecosystem services, and transboundary cooperation in protected area development and management continue to represent priorities for cooperation by German actors in nature conservation with the region. Furthermore, nomination and management of World Heritage sites, development and management of biosphere reserves, as well as implementation of international environmental treaties such as the Bonn-based Convention on the Conservation of Migratory Species of Wild Animals (CMS) are among the key objectives of German governmental organisations.

### **3.2 Session 2: Opportunities and Success Stories Related to the Transformation Process**

#### **Establishing National Protected Area Systems - Case Study from Mongolia (Suvd Purevjav)**

Suud Purevjav underlined Mongolia's rich cultural and biological diversity. Based on traditional conservation practices as well as on up-to-date scientific knowledge, the country's new protected area network has increased greatly in the past years. Mongolia's protected area system was consolidated and formalised in 1994. Since the transformation process in the 1990s, the number of designated protected areas increased from less than 10 to the current total of 99 protected areas. Today, the Mongolian Protected Area Network covers 27 million hectares - almost 17.4% of the country's territory.

Nevertheless, Mongolia's biodiversity is threatened by the negative effects of unsustainable land management activities. Increasing livestock numbers lead to overgrazing of grasslands and unsustainable legal and illegal hunting affects both rare and common species. Furthermore, illegal logging of trees is a major issue. The booming mineral exploitation industry often takes place at the boundaries of or close to protected areas and negatively

affects the water quality in lakes and rivers. In general, mineral exploitation often takes place in habitats identified as important for the preservation of biodiversity, and which should be incorporated into the protected area network from a nature conservation perspective. In addition, the mining industry constantly tries to reverse the designation of protected areas to legalise mining activities inside them, but so far such attempts to water down the status of protected areas have not been successful.

Apart from the designation of protected areas, a major challenge for nature conservation in Mongolia is to ensure their effective management. The protected area system is characterised by poor financing and low effectiveness. The lack of staff capacities and stakeholder participation remains to be a problem. A long-term solution in this regard is the establishment of sustainable financing mechanisms. Furthermore, as Suvd Purajev mentioned, it is necessary to improve the institutional and staff capacity and to strengthen the systematic management planning and monitoring. Using effectively national and international collaboration as well as science-based information management, is key for successful protected area management in Mongolia.



Picture: Ranger Tumurkhujag and scientist Dr. Tzendjav (†) discussing monitoring approaches for Khangai Nuruu National Park, Mongolia. Photo credit: Andrea Strauss

## **Advancing Towards Best Practices – Georgia Protected Area Chronicle (Paata Shanshiashvili)**

Paata Shanshiashvili stressed that the breakup of the Soviet Union had considerable influence on landscape planning in Georgia. The protected area system previously characterized by “Zapovedniks” was transformed, including an overall expansion of conservation coverage with variety of protected areas categories.

Currently, Georgia’s national protected areas system consists of 14 strict nature reserves, 11 national parks, 41 natural monuments, 19 managed nature reserves and 2 protected landscapes with a total size of 600,597 hectares. Furthermore, several areas were declared or inscribed as Ramsar or Cultural World Heritage sites. This was made possible inter alia through the mobilization of domestic potential, both in terms of scientific expertise and traditional knowledge of the local population. Bilateral partnerships and capacity building efforts of international organisations helped to improve the nature conservation standards. Currently the efforts for the further expansion of the national protected areas network continue and studies to evaluate the potential for new global designations including biosphere reserves in Georgia are underway.

## **International Processes in Multilateral Environmental Agreements (Boris Erg)**

Boris Erg explained how in the absence of a coherent regional policy process for nature conservation, biodiversity-related conventions are a key driving force behind the regional conservation policy. Countries in the region have ratified the Convention on Biological Diversity (CBD) and committed to implement its provisions, including the Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets. National Biodiversity Strategies and Action Plans (NBSAPs) remain the main tracking tool for reaching global biodiversity targets at the national level. Apart from the CBD, a number of global conventions and processes, such as CMS (Convention on Migratory Species), CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), Ramsar, UNFCCC (United Nations Framework Convention on Climate Change) and World Heritage Convention, play an important role with respect to shaping regional and national policies.

In parts, these agreements have a range of different sub-agreements. For example the CMS has a range of species-based agreements, MoUs, and initiatives (e.g. Agreement on the Conservation of African-Eurasian Migratory Waterbirds AEWA, Central Asian Mammals Initiative CAMI, Central Asian Flyway CAF), and thereby represents an important global policy mechanism which translates into regional and sub-regional policy. The Ramsar Convention is being used to a large extent with more than 100 sites designated as Ramsar sites in the region. The importance of these sites for migratory species and ecosystem services, the potentially high impact of infrastructure development on those sites, and the importance of effective management and community engagement makes the effective implementation of the Ramsar Convention on the ground especially important.

Apart from international conventions, sub-regional Initiatives like the Carpathian Convention, the Caspian Environment Forum, the Aral Sea Basin Initiative, the Global Snow Leopard & Ecosystem Protection Programme (GSLEP), the Black Sea Synergy, or the Caucasus Nature Fund, also play an important role in shaping the regional and national nature conservation agendas. As regards Pan-European policy processes, the European Union’s

Neighbourhood and Enlargement Policy represents one of the major environmental policy drivers in parts of Eastern Europe and the Southern Caucasus. The key element of the EU nature policy is the EU Biodiversity Strategy to 2020. This will be a main driver for further nature conservation activities in Europe and countries affected by EU nature-policy.

Countries, donors and nature conservation organizations can benefit from further consolidation of policies and initiatives. Coherent policy development and better enforcement, beyond mere conservation priorities, is of the utmost importance for achieving conservation goals.

### **Past Implementation and Future Potential of the World Heritage Convention in Eastern Europe, Caucasus and Central Asia (Tilman Jäger)**

Tilman Jäger introduced selected past achievements and offered food for thought on future opportunities through the implementation of the World Heritage Convention in the region. The Convention is dedicated to the identification and conservation of the World's "outstanding" cultural and natural heritage. Partnerships bringing together governmental, academic and civil society actors have, for example, achieved the successful inscription of ten large and globally important protected areas in Russia since 1995, a milestone in Russian conservation history and widely recognized as a remarkable conservation success.

Many of the countries in the region have a comparatively short history of involvement with the Convention. The Soviet Union had ratified the Convention in 1988 and many of the newly independent states in the region joined the Convention in the 1990s only. Others, such as Poland and Bulgaria, joined the Convention in the mid-1970s and successfully nominated natural properties as early as in 1979 and 1983, respectively.

The vast steppes, deserts, mountains, wetlands and forests of the region boast many conservation gems of global importance and the World Heritage Convention can make strong contributions to secure the most important areas, if the Convention is used strategically as an instrument. A realistic understanding of the potential and the limitations of the World Heritage Convention must underpin all efforts. The costs and benefits of using the World Heritage Convention must be weighed carefully. The remaining regional 'gaps' on the World Heritage List should be systematically identified. The review of Tentative Lists is one approach for doing so. Existing studies such as the World Heritage Thematic Study for Central Asia (2005) should be updated and refined and new studies will no doubt be useful. Existing World Heritage properties should be re-visited to assess their current situation and to identify room for improvement, for example in terms of governance, management effectiveness; in some cases extensions might be possible to achieve additional conservation gains.

### **Building Capacities and Strengthening Civil Society Engagement (Michael Brombacher)**

Michael Brombacher discussed the role of capacity building and civil society engagement in nature conservation in the region using the work of the Frankfurt Zoological Society (FZS) as an example. FZS works in Latin America and Africa, but also in parts of Europe and in Central Asia. Within its European Programme, FZS operates in cooperation with other, mostly local partners. This ensures sustainability, the outreach of the work is much

larger and it supports joint ownership. A strong role of a local partner ensures better planning and therefore better implementation of projects. To achieve this, joint and comprehensive planning is important, as well as developing partnerships on eye-level, and bringing together local and international expertise in mixed teams. Long-term financing and providing a stable core budget allows long-term sustainable planning and perspectives for the partner organisation.

The BirdLife Supporting Partners Programme and the BirdLife IBA Project were considered a success story with regard to capacity building and cooperation with civil society, leading to significant conservation success on the ground. In the case of the IBA project, it was used to establish and extend existing protected areas, and to establish Ramsar sites. When it comes to lessons learnt from cooperation on nature conservation in the region, it became clear that civil society engagement in conservation can work – even in countries with little such traditions. However, a reliable partnership and a coherent strategy is needed. Competition and jealousy tend to stand in the way of conservation and cooperation. When it comes to financing, core funds are a crucial instrument. Local civil society actors/partnerships can clearly contribute to more efficiency in multilateral project implementation, they can complement the skills and capacity of larger international players. However, they can also be more vulnerable depending on their size/governance structure.

### **3.3 Session 3: Current Challenges for Conservation in the Region**

#### **3.3.1 Introductory Presentations**

##### **Shifting Policies and Shifting Nature: Trends and Challenges of Nature Conservation in Post-Socialist Regions (Natalya Yakusheva)**

Natalya Yakusheva highlighted that the transition from socialism to democratic regimes and market-based economy had a great influence on all spheres of political, economic and social life across Eastern Europe, Caucasus and Central Asia. Nature conservation was not an exception from this trend. The transition period resulted in shortages of resources and capacities in the conservation sector (staff, funding), legal discrepancies, and compromising of conservation measures in prospects of economic development. Furthermore, the impoverishment of the rural population led to a greater pressure on natural resources, including wildlife and forestry. These trends posed significant challenges for conservation in countries across the region. Large mammal populations decreased after the 1990s, then stabilized and rebounded after 2000. However, most endangered species continued to decline; especially wide ranging and migratory species. Even though the number of protected areas increased in most countries, the management effectiveness widely decreased. Generation of income in protected areas was not always possible and long-term financing for protected area management remains a major challenge.

Even though since the 1990s an increasing number of environmental protection laws were introduced, law enforcement remains another challenge. Opportunities for nature conservation management lie in the preservation of unique natural areas and species. The economic potential of protected areas (e.g. tourism-related revenues) could be further developed, where appropriate. The utilization of existing professional networks in the region as well as the sharing of knowledge and practices is necessary.



## **The State of the Environment in Central Asia: Challenges and Trends (Heinrich Wyes)**

According to Henry Wyes, the increase of Central Asia's human population is a main driver for environmental problems in the region. The World Bank predicts that the population will reach 90 million by 2050 which would mean an increase of almost 50%. The future overpopulation and requirement of new jobs potentially leads to economic growth and an increased demand for natural resources. The economic pressure on the environment is growing, causing deterioration of the resource base and degradation of natural resources. Export-oriented natural resources management is the main reason for environmental degradation in Central Asia, leading to the contamination of water and air, loss of biodiversity, excessive use of natural resources and drying water bodies.

Generally, Henry Wyes pointed out that among the biggest environmental challenges in Central Asia are water issues, land degradation, the loss of biodiversity, reduced resilience of environmental systems and climate change. To tackle Central Asia's environmental challenges, the improvement of national agencies' capacities should be priority. An important aspect is to form stronger environmental knowledge centres in the countries and link them with other centres of excellence at regional and international level. According to Henry Wyes, new economic tools such as the economic valuation of environmental services would help to improve the national economic planning. New monitoring and reporting approaches on the state of the environment in combination with better information access to a wider public would strengthen the role of civil society in nature conservation. Finally, strong joint actions by countries of the region are needed to overcome transboundary environmental threats.

### **3.3.2 Challenge 1: Establishing, Financing and Managing Protected Areas, including Transboundary**

#### **Financing of Protected Areas in the Caucasus (Geof Giacomini)**

Conservation Trust Funds (CTF) are private, independent grant-making institutions which raise and invest capital to fund conservation projects. CTFs are primarily financial instruments which serve as an effective means for mobilizing large amounts of funding for biodiversity conservation and, in this regard are mechanisms for sustainable support of conservation and biodiversity. While also strengthening civil society, CTFs can make government protected area management agencies more transparent, accountable, and effective.

Geof Giacomini, the new Executive Director of the Caucasus Nature Fund (CNF), presented the history of CTFs in general, and spoke specifically about CNF and its work in the South Caucasus, highlighting that the success of CNF relies on a public-private partnership with the governments of the South Caucasus. Specifically, CNF addresses everyday protected area needs by providing operational costs such as fuel and electricity, salary supplements for rangers, essential equipment like cameras and uniforms, as well as funds minor infrastructure rehabilitation (i.e. a ranger's shelter).

## **Setting Up Frameworks for Effective Protected Area Management and Transboundary Conservation - Case Studies from Europe (Boris Erg)**

Boris Erg introduced successful examples for going beyond site-based approaches in area-based nature conservation, including transboundary cooperation, protected area networks, system level approaches and regional initiatives, from the workshop region and beyond.

There are multiple examples for successful transboundary nature conservation, like the Wadden Sea trilateral site between Germany, Denmark and the Netherlands as the joint Wadden Sea Plan provides for coordinated management, research and monitoring.

Regarding protected area networks, Boris Erg presented the Albanian experience in which a country level approach has been taken by making an assessment of the national Protected Area system using the Management Effectiveness Tracking Tool (METT) or developing a national capacity development programme. He also introduced the transboundary Lake Ohrid World Heritage Upstream Process, Alpine Network of Protected Areas (ALPARK) and other successful approaches such as DANUBEPARKS, a network of 17 protected areas along the Danube river, which brings together all protected area administrations from 9 different countries. Other positive examples in this regard are the Dinaric Arc Parks and the European Green Belt.



Picture: Mountain landscape, Kyrgyzstan. Photo credit: Klemens Karkow / NABU

## **Setting Up a Privately Protected Area: The Case of the Caucasus Wildlife Refuge in Armenia (Ruben Khachatryan)**

Ruben Kachatryan talked about the benefits of the establishment of privately protected areas in Armenia, as a pilot model of involving private actors in conservation. Privately protected areas have the potential to provide effective approaches for species monitoring,

conservation strategies and community development. The expansion of the current protected area networks by private protected areas can improve ecosystem protection, secure migration corridors and the survival of threatened species populations, thereby helping to halt biodiversity loss and species extinction.

The Foundation for the Preservation of Wildlife and Cultural Assets (FPWC) is a non-governmental organisation with activities in the fields of environmental awareness creation, sustainable tourism and nature conservation. One of its various projects is the Caucasus Wildlife Refuge (CWR), an area with around 5,000 ha of leased and purchased land. The refuge is the first privately managed protected area in the South Caucasus. The refuge is funded by the World Land Trust and builds on IUCN's standards and knowledge on protected areas. Long-term funding finances a ranger station with five rangers, online camera surveillance to combat poaching, and multiple habitat restoration activities. Exchange with local and international universities is part of the CWR management work. An eco-lodge generates income from sustainable tourism.

Participants formed working groups to discuss the situation in the different sub-regions with regard to the establishing, financing and managing protected areas. They identified challenges (see 1) Recognized challenges), potential solutions or actions already underway to address the challenges as well as action needed and applicability of solutions presented before (see 2) What worked). The table below provides a summary of the combined results of all those regional working groups.

Table 3.1. Working Group Results – Protected Areas

1) Recognized challenges	2) What worked
<ul style="list-style-type: none"> <li>• Inadequate legislation and management;</li> <li>• Poor law enforcement;</li> <li>• Management, capacity and structural problems in protected area governance (ministry and administration level);</li> <li>• Weak civil society and local communities involvement;</li> <li>• Conflicting interests and competing land use in and around protected areas (mining, overgrazing, illegal logging);</li> <li>• General lack of               <ul style="list-style-type: none"> <li>a) equipment, resources and financing</li> <li>b) political will to establish and manage protected areas effectively</li> <li>c) scientific data and capacity for justification of establishing new protected areas</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Long-term commitment to funding;</li> <li>• Transboundary cooperation and protected areas networks (e.g., Danubeparks, Dinaric Arc Parks);</li> <li>• Regional initiatives (e.g., European Green Belt);</li> <li>• Support to regional learning and networking;</li> <li>• Long term financial wildlife monitoring;</li> <li>• Support to civil society;</li> <li>• Privately managed reserves such as the Caucasus Wildlife Refuge proved to be successful due to strict protection and permanent monitoring as well as participation of NGOs;</li> <li>• Community-based wildlife management (e.g., Tajikistan);</li> <li>• Evaluation of ecosystem services;</li> <li>• FSC standards (importance of external monitoring);</li> <li>• Improvement of legislation based on EU agreements;</li> <li>• Certain autonomy for transboundary biosphere reserves (e.g., Eastern Carpathian Biosphere Reserve);</li> <li>• Small-scale pilot projects with concrete focus implemented by reliable NGO and backed through official agreements (e.g. German-Russian bilateral agreement);</li> <li>• Promotion of up-to-date concepts for conservation in national legislation, strategies and management practices.</li> </ul>

### **3.3.3 Challenge 2: Policy Integration and Implementation of Multilateral Environmental Agreements (MEAs)**

#### **Establishing and Nominating Golden Mountains of Altai / Altay-Sayan World Heritage Site: Achievements, Challenges, Solutions (Natalia Trofimova)**

Natalia Trofimova presented the case of the Golden Mountains of Altai in Southern Siberia which were inscribed as World Heritage site in 1998. The region represents the most complete sequence of altitudinal vegetation zones in Central Siberia from steppe, forest steppe, mixed forest, sub-alpine vegetation and alpine vegetation. Furthermore, the site is an important habitat for endangered species, such as the Snow leopard.

The biggest challenges for nature conservation in the region are represented by poaching, degradation of the vegetation due to unsustainable farming practices and limitations in funding. Furthermore, illegal geological engineering is being carried out in the Plateau Ukok. The engagement of the local population through a petition with 17,000 signatures led to a suspension of the construction of a gas pipeline in 2013.

The WWF project in the Altai Region involves a sustainable livelihood initiative for residents and communities. New jobs were created focusing on tourism activities. Since its nomination as a World Heritage site, new touristic infrastructure was built at 48 sites and 187 jobs were established in the tourism sector.

#### **Implementing Requirements under the Convention on the Conservation of Migratory Species of Wild Animals (CMS): Challenges and Ways Forward (Bert Lenten and Dana Yermolyonok)**

Bert Lenten and Dana Yermolyonok underlined the fact that CMS, as the only international convention on the conservation of migratory species, is a catalyst for conservation action without borders. In the countries of Eastern Europe, Caucasus and Central Asia, CMS has been active for over 20 years through its mandate to improve transnational communication, raise awareness, establish action plans and stimulate implementation. The main obstacles for implementing the international treaty in the region are posed by complicated governance processes, weak law enforcement, insufficient scientific knowledge on migratory species, insufficient transboundary cooperation and communication, capacities and funding.

The CMS has approached these challenges by working to improve trans-national communication, by engaging in building capacity and raising awareness as well as funding (e.g. through its Small Grants Programme), and by improving the scientific knowledge base through facilitating research projects and knowledge transfer. Another approach aims at maximizing the impact of limited resources, through coordinating efforts, such as with the Central Asian Mammals Initiative (CAMI). CMS will continue assisting governments in their conservation efforts, including exploring new funding options.

Dana Yermolyonok highlighted the GIZ programme on sustainable use of natural resources in Central Asia, which included a range of activities in support of implementing CMS mandates. In particular, within the EU-funded project FLERMONECA, GIZ substantially supported for instance the development of the CAMI, the action plan for the conservation of the Argali (*Ovis ammon*) as well overall support to engaging with the countries of the region.



## International Cooperation for Snow Leopard Conservation: Case study GSLEP (Christiane Röttger)

Christiane Röttger explained why international cooperation is needed for the conservation of the endangered snow leopard, and how it can be achieved. The Snow leopard (*Panthera uncia*) is an endangered and flagship species of the high mountain ecosystem of the twelve Asian countries in which it occurs. The global population of snow leopards in the wild is unknown, estimates range from 4,000 – 6,600 animals. Main threats to the species are illegal killing and trade of Snow leopards and their derivatives (skins, bones, etc.), a declining prey base as well as degradation and loss of their natural habitat.

Following a proposal of NABU and with support of other NGOs and the World Bank Global Tiger Initiative, the Government of Kyrgyzstan led the development of the Global Snow Leopard and Ecosystem Protection Program (GSLEP) which was endorsed along with a joint Declaration by all 12 snow leopard range countries in October 2013 in Bishkek, Kyrgyzstan. The overall goal of this program is to identify and secure at least 20 snow leopard landscapes across the big cat's range by 2020. In 2014, a total of 23 landscapes of significant importance to snow leopards were identified during an international workshop in Kyrgyzstan. Since then, countries and relevant stakeholders active in the region have worked towards developing management plans for those landscapes. In order to achieve the ambitious goal of GSLEP, countries agreed to establish a Secretariat in Bishkek to coordinate implementation and facilitate communication among stakeholders. In addition, a Steering Committee was established, currently chaired by Pakistan with Kyrgyzstan as co-chair. Each country designated a national focal point responsible for communication with and reporting to the Secretariat as well as to coordinate implementation at the national level. The significant high-level political will generated by GSLEP already helped to secure additional financial resources, inter alia through the Global Environment Facility (GEF). In order to evaluate progress in implementation so far, another high-level snow leopard summit with participation of all range states is being planned for 2017.



Picture: Snow leopard (*Panthera uncia*). Photo credit: Klemens Karkow / NABU

## Implementation of the MAB Programme on the Example of Biosphere Reserves in Kazakhstan (Roman Jashenko)

In his presentation Roman Jashenko provided insight into the challenges in establishing biosphere reserves and how they are overcome in Kazakhstan. In the five Central Asian republics, nine Biosphere Reserves exist so far. The primary goal of the Man and Biosphere Programme in Kazakhstan is to develop a national network of Biosphere Reserves. By using an ecosystem based approach and the results of former projects, Kazakhstan's National Committee elaborated proposals for five new Biosphere Reserves. Within the next years, several new Biosphere Reserves (e.g., Karatau, Altyn-Emel, Naurzum, Almaty, etc.) will be established, including three new transboundary Biosphere Reserves.

In order to overcome the challenges related to establishing Biosphere Reserves, there is a need for providing a connection between the UNESCO approaches on Biosphere Reserves, the national system of protected areas and sustainable socio-economic development. In order to achieve this, the national committee drafted nomination standards for national proposals to UNESCO, proposed changes to the national protected area legislation and engaged in public awareness and community involvement. One of the major issues when it comes to Biosphere Reserves is the legislation gap, as there is no legal basis for taking Biosphere Reserves as one entity. The core and the buffer zones are covered by the Law on Protected Areas, but the transition zone doesn't have any legal protection status. This is why the Kazakhstan MAB Committee elaborated and proposed changes to the national legislation devoted to the protected area system in Kazakhstan. The law changes for protected areas include the establishment of a new chapter with two new and high priority categories of protected areas being Biosphere Reserves and transboundary Biosphere Reserves (as recognized by UNESCO).

Participants formed working groups to discuss the situation in the different sub-regions with regard to policy integration and Multilateral Environmental Agreements (MEAs). They identified challenges (see 1) Recognized challenges), potential solutions or actions already underway to address the challenges as well as action needed and applicability of solutions presented before (see 2) What worked). The table below provides a summary of the combined results of all those regional working groups.

Table 3.2. Working Group Results – Policy and Multilateral Environmental Agreements (MEAs)

1) Recognized Challenges	2) What Worked
<ul style="list-style-type: none"> <li>• No capacity (including language problems) to deal with international commitments (need for international organisations to help build capacity and understanding);</li> <li>• Translation of international agreements and obligations into policies and laws;</li> <li>• Civil society not enabled to become involved and play a meaningful role;</li> <li>• Not all government agencies are aware of the existence of international commitments (example Kazakh-Uzbek bilateral agreement on Saiga conservation / building of the border fence);</li> <li>• Those agencies who signed the agreement (e.g. CMS Saiga MOU) are not the strongest and powerful;</li> </ul>	<ul style="list-style-type: none"> <li>• Using MEAs strategically to support national projects;</li> <li>• Provision of support from and coordination efforts by MEA secretariat to increase political will or react to crisis situations (e.g. CMS);</li> <li>• Facilitating dialogue between national governments and international institutions (e.g. GIZ),</li> <li>• Improving scientific knowledge base through facilitating research and knowledge transfer (e.g. CMS);</li> <li>• High-level country by-in, broad alliance of NGOs, GOs and donors (e.g. GSLEP);</li> <li>• Fostering regional cooperation for learning and planning (e.g. CAREC, international regional agreements);</li> </ul>

1) Recognized Challenges	2) What Worked
<ul style="list-style-type: none"> <li>• Uzbek and Kazakh bilateral agreement on Saiga conservation was signed by the president but it is not enforced, even if there is coordination between the agencies, because there are often “higher” and conflicting interests;</li> <li>• No capacity in the government agencies to handle the requirements and stay on top of the different agreements;</li> <li>• No stability in the government structure, changing staff and responsibilities;</li> <li>• No financing is available for implementation;</li> <li>• Lack of buy-in and institutional recognition of MEAs at national level;</li> <li>• Financial support to the implementation of MEAs (use regional processes to overcome shortages);</li> <li>• Participation of influential decision-makers;</li> <li>• Communication between and inside the agencies.</li> </ul>	<ul style="list-style-type: none"> <li>• Using science and economic arguments for making strong cases;</li> <li>• Ecoregional conservation plan for the Caucasus (WWF);</li> <li>• An intergovernmental body with participation of NGOs in Caucasus was created</li> <li>• Handbook for focal points and regional coordinators to support implementation (e.g. CMS);</li> <li>• International organisations and ODAs assisting the governments insist on implementation of international obligations;</li> <li>• Staying on top of all the planned development and industry projects and potential harmful activities to be able to intervene, and lobby government, investors, banks etc. at an early stage;</li> <li>• Eastern Europe: standardized finances system (money transfers, tax issues impairing voluntary work; Moldova – Belarus, Ukraine);</li> <li>• EU Association agreement;</li> <li>• Illegal logging campaigning with public, volunteers’ networks (watchdogs).</li> </ul>

### 3.3.4 Challenge 3: Sustainable Use of Natural Resources

#### Combating Poaching in Central Asia (Stefan Michel)

Stefan Michel explained that poaching constitutes one of the most important threats for many large mammals and some bird species in the region. Where poaching is brought under control, often unexpected recovery of wildlife populations can take place and even large mammals can coexist with various forms of land-use and human presence, e.g. in the Kumtor gold mine area in Kyrgyzstan where Argali can be observed.

Poaching has direct and indirect impacts on wildlife populations. Direct impacts include increased mortality and reduced reproduction (e.g., if poaching targets individuals of one sex only). Indirect impacts of poaching include the reduction of available habitat due to disturbance effects, and a reduced fitness of the animals, leading to lower recruitment, worse overall health status and reproduction. The reasons for poaching and the motivations of poachers are highly diverse. Subsistence or commercial motivations both play a role but also local, domestic and international trade incentives. Sometimes land-users kill wildlife to prevent or retaliate for actual or perceived damage caused by wildlife. Furthermore, hunting also plays an important role in local culture and tradition. Finally, illegal trophy hunting, in particular by foreign clients, is a special form of poaching where the client might not always be fully aware about the illegal character of his hunt, while those organizing and profiting from these hunts are driven by commercial interests. Insufficient law enforcement and lack of incentives like secure user-rights and responsibilities must be considered as underlying factors for poaching, but also poverty and insufficient awareness plays a role.

Approaches for combating poaching include persecution of poachers, combating illegal trade with wildlife products, education, alternative income development, sustainable non-extractive use (through tourism) and extractive use (hunting for subsistence, trade and



sports, sustainable trophy hunting managed by local communities, based on assigned area-bound long-term rights and responsibilities). Nevertheless, none of these strategies are without limitations, challenges and risks. Combating poaching usually requires a combination of approaches – dependent on the specific species and situation. The drivers of poaching need to be considered and existing experience with impacts of specific approaches in similar circumstances should be taken into account.

### **Sustainable Forest Management: Firewood Consumption and Firewood Production Potential in Georgia (Rezo Getiashvili)**

Rezo Getiashvili talked about the massive use of Georgian forests over the last 25 years, which is putting the country at risk as the unsustainable use of timber products might lead to an environmental disaster as well as socio-economic and energy problems. Therefore, a state programme for the provision of the population with fuel resources was established. The work under this programme is being carried out by the Caucasus Environmental NGO Network (CENN) in cooperation with the Ministry of Environment and Natural Resources Protection of Georgia. A special working group calculated the sustainable and actual firewood consumption in Georgia. Furthermore, the group identified key problems and facts which hinder the sustainable development of the state forest sector. Based on the results of this study, annual firewood consumption is currently twelve times higher than the annual amount of a sustainable forest management would allow.

Based on these findings, CENN recommends that the Ministry of Environment and Natural Resources Protection of Georgia presents the data to the Government of Georgia and to publicly announce this information in the nearest future. Beyond that, the Government of Georgia should develop short-term, mid-term and long-term plans to solve the energy shortage problems and to save Georgia's forests from further degradation.



Picture: Herders with their sheep next to river. Photo credit: Klemens Karkow / NABU



## **Roads, Railroads, Pipelines, Fences, Large-scale Development Pressures (Mining): Effects of Infrastructure on Migratory Wildlife (Steffen Zuther)**

Steffen Zuther explained in how far the construction of infrastructure presents a threat to conservation of migratory wildlife in Central Asia, and how this is being addressed. As the wide landscapes of the region are home to many migratory mammals, which need large open places to survive, linear infrastructure developments in the context of economic growth can seriously threaten these species' existence. Infrastructure can be of various types: roads, fences, railways, canals and irrigation ditches, oil and gas pipelines as well as power and communication lines. The latter are usually only a threat to migratory birds. The negative effect of pipelines is mainly limited to the construction phase, since they are buried under ground and therefore lose their barrier effect. The other types of linear infrastructure can have different levels of effects. Wildlife cannot always adapt to linear infrastructure as it is either a complete barrier (i.e., animals are physically unable to cross or otherwise pass it) or it is so unfamiliar or dangerous that it becomes a functional barrier - some animals might pass, but not enough to prevent negative impacts to the population.

Proper planning procedures need to take into account the needs of migratory species, especially a sufficient spatial scale. Therefore, guidelines have been developed in the frame of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), which provide an overview of the current situation and develop recommendations for adequate impact assessments. Improved planning procedures are needed in all countries in the region. According to these guidelines, such procedures would include a proper assessment, planning and design. Mitigation strategies need to be designed place and species specific. Construction standards and solutions would need to involve e.g. construction practices, wildlife fencing, overpasses and underpasses and influence driver and animal behaviour.

Participants formed working groups to discuss the situation in the different sub-regions with regard to sustainable use of natural resources. They identified challenges (see 1) Recognized challenges), potential solutions or actions already underway to address the challenges as well as action needed and applicability of solutions presented before (see 2) What worked). The table below provides a summary of the combined results of all those regional working groups.

Table 3.3. Working Group Results – Sustainable Use of Natural Resources

1) Recognized Challenges	2) What Worked
<ul style="list-style-type: none"> <li>• In Central Asia, no effective legislation on regulating overgrazing;</li> <li>• High pressure on forests because of firewood collection;</li> <li>• No incentives for sustainable forest use;</li> <li>• Building Small Hydro power stations on rivers near high conservation value forests (Georgia);</li> <li>• In Central Asia, no data available as to what is the status of forests, what is the production potential, how to control and monitor the whole forest system: last inventory was done in most countries in 1989 (exception Kyrgyzstan);</li> <li>• Old methods for inventory, no standardized methods;</li> <li>• Uncontrolled collection of wood and forest products by local people as fuelwood - dependence on fuelwood for heating;</li> <li>• No information on pasture usage capacity;</li> <li>• Illegal logging - locals take forest concession rights for own use and clear cut it and sell commercially (Russia).</li> </ul>	<ul style="list-style-type: none"> <li>• Community protected areas in Armenia (e.g., Gnishik);</li> <li>• Introduction of best practice based spatial planning;</li> <li>• Development of well-established comprehensive system of biodiversity monitoring systems,</li> <li>• CENN informational network for distribution of all kind of news/info and data sharing (Caucasus);</li> <li>• Positive examples in Central Asia include upgrading the forest agency within the government,</li> <li>• Plantation of fast growing trees to provide alternative sources for fuel to communities (FFI in Kyrgyzstan);</li> <li>• GIZ pasture management project in Central Asia (conference and launch of website, pasture committees, etc);</li> <li>• Eastern Europe: Forest watch network, anti-corruption training, strengthening civil society and government organization (wood tracking system establishment);</li> <li>• FSC certification works relatively effectively in the European part of Russia.</li> </ul>

### 3.3.5 Challenge 4: Governance and Capacities

#### Education and Capacity Building in Central Asia (Edith Koshkin and Andrea Strauss)

Edith Koshkin presented the education and capacity building needs and approaches in Central Asia. The Association for the Conservation of Biodiversity (ACBK) and the Uzbekistan Society for the Protection of Birds (UzSPB) are building conservation capacity for the future. A network of student clubs established since 2007 at universities across both countries is helping to fill the gap left when professional conservationists and researchers emigrated after the break-up of the Soviet Union. Participating students receive training in practical research and conservation skills, fundraising, advocacy and communication and contribute to research and conservation projects as well as awareness raising campaigns. The programme impact is already visible as the first generation of participants found its way into professional conservation work.

Andrea Strauss explained that the countries of the workshop region experience, to various degrees, an insufficient level of professional education and a chronic lack of capacities - both in technical and methodical knowledge - in nature conservation institutions. Changing this would improve the abilities of nature conservation actors to meet the challenges for conserving biodiversity and ecosystem services and for implementing multilateral environmental agreements. The Klaus Toepfer Fellowship reacts to this need by strengthening the institutional capacity of the nature conservation sector in Central and Eastern Europe, the Caucasus and Central Asia, through developing the personal capacity of young conservation professionals in an extra-occupational training programme on the Isle of Vilm, Germany.

## **Developing Institutional Capacity: Establishing New Institutions: The Case of Kazakhstan (Vera Voronova)**

Vera Voronova explained the challenges regarding governance and capacities in Kazakhstan and presented approaches for how to overcome the existing lack of capacities. The Kazakh Ministry of Ecology and Bio Resources was founded in 1992. During the years, the ministry was transformed several times until it was divided into the Ministry of Energy and the Ministry of Agriculture. The split of the environmental policy field on two different authorities led to an institutional weakness with regard to nature conservation policies. Nevertheless, the government of Kazakhstan successfully developed a system of national protected areas, which led to an increase of the area under protection of more than 100 per cent.

Another important development in Kazakhstan was the establishment of private hunting areas under centralized governmental control. Even though there are examples of sustainable management of wildlife within hunting areas today, the hunting management system is full of gaps and there is a strong need for improving this legislation.

The number of civil society organizations in Kazakhstan is currently decreasing, due to a decrease in funding opportunities from international organizations, donors and overall availability of funding. A governmental funding process for NGOs in Kazakhstan is not developed yet. However, some of the remaining conservation NGOs have quite a strong position in the country now and in some cases were able to establish efficient cooperation with governmental authorities.

## **Developing Policies, Legislation and Governance for Nature Protection and Sustainable Management of Natural Resources (Kathrin Uhlemann)**

Using the example of Kyrgyzstan, Kathrin Uhlemann presented the process to develop new policies, legislation and governance in the field of nature conservation and natural resources management in the region. The Kyrgyz Law on hunting and wildlife management was adopted in 2014 and can be called one of the most comprehensive and well-developed legal acts in the field of natural resources management in the region. Until the 1990s, wildlife conservation and management, including hunting, was centrally organized. Following the political development in the early 1990s, lack of management and supervision created an open access situation and wildlife population were declining. The need to renegotiate roles and responsibilities and management procedures became apparent, when insufficiently regulated use, the insufficient sharing of benefits with the local population and the lack of compliance with multilateral environmental agreement and international practice provoked a lot of criticism by civil society organizations and international actors, and when individual parliamentarians finally started to support the process.

The development of the Hunting Law started in 2009, and a working group consisting of representatives of the national hunting department, the Union of Hunters, the Academy of Science and international experts from GIZ was established. The law was jointly developed by all members of the working group with involvement of all stakeholder groups in a long, intense and hotly debated process.

There have been numerous challenges on the way to a new policy and legislation in the wildlife sector in Kyrgyzstan, but also fortunate circumstances with right people in the right

moment doing the right thing in an appropriate manner. The following recommendations are based on this anecdotal evidence and do not claim to be complete:

- Good leadership and state capacity is the key to adoption of the law and later implementation;
- Start supporting policy formulation only if there is a broad awareness of problems and underlying causes and development is ongoing already;
- Make use of instruments for participatory policy and legislation development, like public hearings, impact assessments etc.;
- Make use of advice by Convention Secretariats, international expert groups and advisory boards (e.g. IUCN);
- Try to gain long-term involvement by an expert from outside;
- Develop the policy or legal act as comprehensive and as detailed as possible;
- Watch out for „influential“ drivers and decision makers – but don't rely on a single person only;
- Broad involvement of all stakeholders is halfway implementation;
- Broad involvement of donors active in the sector ensures concerted action and acquisition for implementation;
- Take your time for negotiation of roles and responsibilities;
- Civil society is not only about NGOs but also about local communities – NGOs are not always constructive players;
- Ensure learning from practice, rather than developing from desk-top only;
- Don't overestimate private sector support.



Picture: Haymaking by villagers, Babash-Ataa mountain, Kyrgyzstan.  
Photo credit: Konrad Schleicher

### **Building Capacity for Conservation in Eastern Europe and Central Asia– the Role, Development and Delivery of RSPB’s Partner Development Programme (Lenke Balint)**

Lenke Balint introduced the BirdLife partner network which involves 120 partners with more than 250,000 volunteers from countries all over the world and its approach for capacity building in the workshop region. It is BirdLife’s ambition to build a strong, skilled and supportive partnership network. Therefore, a Global Partnership Programme in the area of capacity development was initiated, involving partner to partner knowledge sharing, cooperation and support.

The guiding principles for the Royal Society for the Preservation of Birds (RSPB), the British BirdLife partner, are long-term core funding for partners, technical assistance, joint identification of priorities and support to facilitate joint development. In this regard RSPB follows a long-term approach by providing financial support (about £45,000 grants per year) as well overall assistance through a dedicated Partner Development Officer. The Partner Framework Agreements normally have a time span of 3-4 years. Strategic support is being provided to senior managers and technical assistance is being given according to the needs of the partner organisations. Major achievements of RSPB’s cooperation with partners in the region are the creation of new reserves and ecological corridors in Kazakhstan, the extension of reserves in Turkmenistan and major peatland and habitat restoration in Belarus. Furthermore, achievements can be seen in the partners’ organisational status and development.

Participants formed working groups to discuss the situation in the different sub-regions with regard to governance and capacities. They identified challenges (see 1) Recognized challenges), potential solutions or actions already underway to address the challenges as well as action needed and applicability of solutions presented before (see 2) What worked). The table below provides a summary of the combined results of all those regional working groups.

Table 3.4. Working Group Results – Governance and Capacities

1) Recognized Challenges	2) What Worked
<ul style="list-style-type: none"> <li>• Lack or fragmentation of basic conservation knowledge at governmental level as well as within NGOs;</li> <li>• Low status and recognition of conservation jobs;</li> <li>• Funding for education activities difficult to find;</li> <li>• Low quality in education system;</li> <li>• NGOs dependent on grants/project funding;</li> <li>• Lack of               <ol style="list-style-type: none"> <li>a) Political stability;</li> <li>b) Capacities in NGOs;</li> <li>c) Incentives to work in conservation.</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>• Government pays for overseas education (Azerbaijan);</li> <li>• Training/teaching the trainer/teacher;</li> <li>• EU Leonardo programme has the prospect to exchange and train people in institutions;</li> <li>• Dep. Interior best practice training for conservation and PA management issues (e.g., Georgia);</li> <li>• Long term involvement of foreign organizations is necessary for trainings;</li> <li>• Youth camps, eco camps;</li> <li>• Balanced diversification and decentralization of governance;</li> <li>• Co-management involving communities in natural resource management - 'self governance';</li> <li>• Mainstreaming conservation in other curricula like economics, geography etc.;</li> <li>• Moldova established an interministerial committee for green economy (Ministries of Environment and Economy);</li> <li>• Volunteers NGOs in the whole region;</li> <li>• Support through the BirdLife Network;</li> <li>• Community orientated/cooperating NGOs;</li> <li>• International training programmes (University of Greifswald, Klaus Toepfer Fellowship), mixed national - international network for campaigning;</li> <li>• Programme in Tajikistan for capacity development for people working for conservation (FFI);</li> <li>• Provision of long-term core funding for national NGOs for them to be able to develop in the long-term.</li> </ul>

### 3.3.6 Challenge 5: Climate Change

#### Climate Change: Effects and Successful Regional Approaches for Ecosystem-based Climate Change Mitigation and Adaptation (Philip Riordan)

Philip Riordan highlighted predicted and already observed effects of climate change on the region. He explained which priorities and approaches for nature conservation will be influenced by climate change. As the warming in global climate temperature is scientifically documented, nature conservation needs to integrate climate change effects in its planning processes and management systems. When it comes to dealing with climate change, the Intergovernmental Panel on Climate Change (IPCC) differentiates between measures for

adaptation and mitigation of climate change. While adaptation describes the process of adjustment to actual or expected climate and its effects, mitigation describes the human intervention to reduce the sources of climate change or enhance the sinks of greenhouse gases.

As the climate and its potential changes varies within regions, climate impacts must be discussed at the specific regional level. Generally, changes can affect temperature, precipitation, extreme weather events, cryosphere, water resources, health and migration of both humans and wildlife. A rise in temperature in the mountains of the Caucasus and Central Asia is more than likely. Climate change will also impact biodiversity in various forms.

From a nature conservation perspective, adaptation measures might be necessary for future protected area management. These could include increasing the number of protected areas, but also improving the connectivity between protected areas and creating ecological corridors. The relocation of species as well as supplementation of populations could be potential measures to increase the resilience of species against climate change impacts. Pest control should also be considered a useful strategy for future management, while the preservation of different species in gene and seed banks is a measure of last resort to prevent extinction in extreme cases.

### **The Role of Peatlands in Climate Change Mitigation and Adaptation (Tatiana Minaeva)**

Tatiana Minaeva emphasized the important role of peatlands in the context of climate change mitigation and adaptation as peatlands play an important role for local and global temperature regulation. Besides their function as water and carbon storages, peatlands are important areas for migratory birds which use them as wintering, stop-over as well as breeding sites during their migrations. Generally, peatlands are highly resilient when it comes to adaptation to climate change. They also mitigate climate change by storing much more carbon than any other ecosystem type. They contribute to the preservation of permafrost soils. Because of their specific flora and fauna they are also of special importance for global biodiversity conservation.

Multiple international conventions address peatlands in whole or in parts, namely Ramsar, CBD, CMS, CCD, UNFCCC. Therefore, peatland conservation definitely has the potential to create synergies between nature conservation, climate mitigation and climate adaptation strategies.

## **3.4 Session 4: Recommendations for Improved Coordination and International Support**

### **Strategic Planning and Regional Projects: Priorities of GIZ Implemented Projects in the Region until 2020 (André Fabian)**

In 2016, the German Federal Enterprise for International Cooperation (GIZ) started its project 'Integrated Biodiversity Management, South Caucasus'. The project works on supranational, national and local levels and its objective is to support development and implementation of National Biodiversity Strategies and Action Plans (NBSAP II). It also promotes better coordination of biodiversity and ecosystem services management across sectors on

the basis of solid data. Since 2002, GIZ is implementing its “Programme for Sustainable Use of Natural Resources in Central Asia”. Thematically, GIZ focuses on sustainable participatory forest management, sustainable wildlife management, sustainable pasture management, adaptation to climate change, value chains, economics of the environment, awareness raising and knowledge management.

For GIZ, capacity development is key for climate resilient sustainable land use management (SLM) and development. Regional learning and networking is beneficial for national reform processes. Economic arguments for SLM have the potential to create strong new alliances. Furthermore, a flexible facilitation of multi-stakeholder, multi-level dialogue processes is an important success factor. Sustainable solutions for land management must be integrative and overcome silo mentality, while strategic communication is key for mainstreaming SLM and climate resilience into different sectors. For GIZ, ecosystem-based adaptation is a priority element of overall adaptation strategies. Furthermore, climate resilience needs functioning (climate) information services. Finally, climate finance readiness capacities are crucial for adaptation and mitigation in the region, while adapted state-of-the-art knowledge management solutions are the backbone of learning and innovation processes for climate resilience.

### **The Four Pillars of German Financial Cooperation in the Ecoregional Nature Protection Programme in South Caucasus (Servi Nabuurs)**

Servi Nabuurs explained how the Ecoregional Nature Protection Programme (ENPP) in the South Caucasus is financed by German Financial Cooperation through four different pillars. The ENPP aims at a) reducing the pressure on land use at selected locations, b) supporting the sustainable socio-economic development of the local population in harmony with nature, c) developing an eco-regional model for conserving biodiversity in the Southern Caucasus region and d) contributing to the sustainable financing of the conservation systems in the partner countries.

The total portfolio value over the period 2007-2015 was 80 million Euro. It has four components/pillars:

1. The Support Programme for Protected Areas invests in protected area development and socio-economic development;
2. The Caucasus Nature Fund co-finances up to 50 percent of protected areas operational costs;
3. The Transboundary Joint Secretariat fosters transboundary cooperation; and
4. The Ecoregional Corridor Programme functionally connects protected areas.

Coordination ensures that synergies between the pillars are used to enhance the sustainability and impact for creating a functional network of conservation areas in the South Caucasus.



## 4 Recommendations

The fourth and final part of the workshop focussed on **possible solutions and recommendations to address the different current challenges** in the region. Five working groups were established to consider issues surrounding; i) establishing, managing and financing protected areas, including transboundary, ii) sustainable use of natural resources, iii) capacity building and governance, iv) implementation of Multilateral Environmental Agreements, and v) climate change respectively. On basis of their discussions, the working groups presented the following recommendations.

### 4.1 Establishing, Managing and Financing Protected Areas, including Transboundary

#### Establishment:

- Make use of the full spectrum of IUCN protected area management categories for establishing and managing protected areas and protected area networks, paying greater attention to options for national parks and protected landscapes/seascapes. The potential of ecological corridors and biosphere reserves has not been fully used so far.
- Promote and recognize the need for ecological connectivity in protected area networks (on a regional, national and transboundary scale) and ensure consistent management and monitoring.
- Consider the full spectrum of governance types for protected areas, ranging from governance by government agencies, shared and private governance to governance by local communities or indigenous peoples, since this opens up opportunities for further enhancement of support and management:
- Governments should recognize the importance and benefits of all governance types, e.g. in the form of co-managed protected areas, private protected areas and local community conserved areas, within the national protected area system and where appropriate establish relevant provisions in national legislation or through other effective means.
- Explore the potential of private or community conservation initiatives (as present in Armenia, Kazakhstan, Mongolia and Belarus) for establishing and managing protected areas by private organizations, such as private entities, NGOs or community-based organizations and, by which means private conservation initiatives could be facilitated (e.g. legal provisions and financing).
- When assigning international protected area status (e.g. at EU level, Ramsar sites), ensure that areas designated through such international processes obtain the required legal and practical level of protection at the national level.

## **Management:**

- Improve knowledge and skills on protected areas at all institutional levels from field staff to protected area management bodies, to the level of responsible national authorities.
- Establish specialized institutions responsible for protected areas management at the national level, as appropriate, which should promote multi-stakeholder and participatory planning and management processes.
- Develop high quality management plans for each protected area using scientific and participatory methods and ensure their effective application and monitoring, using scientific, participatory and integrated approaches.
- Establish mechanisms to monitor, assess and improve management effectiveness against established standards, e.g. through an independent watchdog organization or by promoting the application of established assessment standards such as Rapid Assessment and Prioritization of Protected Area Management (RAPPAM), Management Effectiveness Tracking Tool (METT) or Green List of Protected and Conserved Areas (GLPCA).
- For Biospheres Reserves, effective coordinating bodies are needed to manage their zones and to liaise with local governments, other local stakeholders and the relevant scientific and educational institutions, as well as an adequate legal basis for zoning.
- Highlight the role of the Zapovedniks to protect wilderness in key areas and keep their high conservation status as IUCN Category I.
- With the designation of new protected areas, follow established scientific and participatory approaches and processes.

## **Financing:**

- Governments should take prime responsibility for establishing, managing and financing protected areas under state governance, (i.e., provide protected areas with essential infrastructure, equipment and operational cost funding) and also support other governance types of protected areas.
- After conducting feasibility studies on alternative income sources and sound economic business planning, make best use of revenue generating possibilities in and around protected areas which are in line with protected area conservation goals:
- Additional revenues could be generated from nature-based tourism, collection and processing of non-timber forest products or production of handicraft, trophy hunting, etc., if appropriate, sustainable and not conflicting with the conservation objectives.
- Explore and where possible make use of the potential of innovative funding mechanisms for protected areas. This includes:
- options for Payments for Ecosystem Services schemes, biodiversity offsets and sponsorships for nature conservation, and

- trust fund mechanisms to secure long-term financial support to protected areas' operational costs.

## **4.2 Sustainable Use of Natural Resources**

- Include and mainstream the concept of Sustainable Use of Natural Resources as a key conservation message into sectoral strategies and policies such as National Biodiversity Strategies and Action Plans (NBSAPs) and ongoing initiatives and processes such as the Green Economy Transition.
- Develop a joint communication strategy for awareness-raising for decision makers, e.g. the especially relevant and influential Ministries of Economy, Finance and Energy ("heating up the system"), on sustainable use of natural resources and education for sustainable development, demonstrating the concept with successful case studies.
- Showcase the so far under-valued economic value of natural resources and ecosystem services (e.g. The Economics of Ecosystems and Biodiversity, Payments for Ecosystem Services) including within initiatives such as the Economics of Land Degradation.
- Support community based resource management as this can act as a strong incentive for sustainable resource management.
- Demonstrate and promote how sustainable use can contribute to species conservation, while fully taking into account the limits and risks of sustainable use approaches. This can e.g. allow for sustainable use of threatened species as a conservation tool. There is a need to further develop economic incentives for sustainable wildlife management. This needs to be combined with efforts to design a favourable legal framework.
- Make use of existing effective management tools such as the GPS-based Spatial Monitoring and Reporting Tool (SMART) applications for improving management and law enforcement in natural resource management.

## **4.3 Capacity Building and Governance**

- External NGOs and donors need to recognize the importance of providing long-term support for national civil society partners: There is a need to provide core funding to enable organisational development - specific programmes should be set up accordingly. For example, BirdLife has built up a regional initiative to supply core funding for partners in the Caucasus and several European BirdLife Partners were joining forces to secure core funds for national partners.
- Donors and foundations should set up and fund special internship programmes as well as regular and targeted exchange programmes and study tours to complement the Klaus-Toepfer-Fellowship programme and other capacity building programmes. Such programmes could be hosted by NGOs, implementing agencies and other organisations.
- National governments and international donors should set up and institutionalise national capacity building programmes for practitioners in conservation. IUCN and

ProPark Romania have developed some guidance and gathered experience on identifying training needs based on the competence standard approach and developing according national capacity development systems for Protected Area staff, as well as institutionalising the competence approach. National governments and donors are also encouraged to promote exchange programmes on a regional level. Moreover, conservation topics need to be integrated into existing national education programmes, including university programmes.

- Strengthen capacities in environmental agencies and relevant ministries on the job, e.g., with the help of CIM experts, or support before and during MEA Conferences of the Parties.

#### **4.4 Policy Integration and MEA Implementation**

- Key recommendations and resolutions of MEAs should be translated into concrete, actionable, and region-specific messages:
- Explore the potential for developing a region-specific guideline for national focal points for MEAs that would summarize recommendations and resolutions of MEAs that are most relevant and important to the region or group of countries in question.
- Ensure that the relevant recommendations and resolutions adopted by the biodiversity related MEAs are integrated into National Biodiversity Strategy and Action Plans (NBSAPs) as concrete actions. NBSAPs are supposed to be a major instrument for governments and donors when taking decisions on conservation and funding priorities.
- Translate approaches for implementation of MEAs into terms which are understood and can be included into the priorities among development banks.
- The Secretariats of MEAs should encourage their contracting parties to build alliances with non-governmental actors such as NGOs and research organizations to broaden the stakeholder base for national implementation of MEAs:
- there is a need for special capacity building activities targeting these actors to improve their understanding and knowledge of MEAs and the tools and mechanisms available.
- provide clarification of the role of MEAs and their Secretariats in terms of what support they can provide to actors of importance to the Convention.
- actors can use MEAs to lobby, and influence government decision making.

#### **4.5 Addressing Climate Change in Conservation**

- Assess existing sources of information on climate change predictions and identify linkage between key data which are relevant to the region. Specifically moves should be made to:
- Progress towards an OPEN-DATA STANDARD accessible for regional agencies, so that all conservation planning and activities may use current climate data.
- Identify information technology companies that could assist with these aims and bring data within easy reach of practitioners and policy makers.

- make climate change information available and accessible to everyone from children and decision makers, for example through interfaces developed with assistance from IT companies, through social media and other widely used platforms.
- Ensure that climate change issues are considered from a focus on processes, rather than purely on measures. Identify which processes (natural / socio-economic / political) are being or likely to be affected by climate change.
- Undertake piloting exercises across the region to understand both the impacts on key processes and how to best incorporate these into policy and management.
- Seek robust means of scaling up the findings from such pilot projects into broader regional level assessments.
- Provide focused assistance to regional banking institutions to ensure that the threats from climate change to development activities and other relevant processes are understood in terms of delivering on long terms aims.
- Ensure that the quality of information and its representativeness within the region are properly explained. In particular, make key concepts such as 'data confidence' and 'data integrity' readily understood by all stakeholders.
- Develop scenarios that clearly position climate change impacts in context with other global changes that are simultaneously occurring (human population / economic / security) and that the dependencies between processes and systematic changes are clearly articulated and understood.
- Undertake participatory actions and develop solutions that engage with local communities, which are often aware of ongoing changes by virtue of living and working with nature, even if their understanding is not based on a scientific underpinning, but on traditional knowledge. Using local and international NGOs as service providers, develop participatory action plans linked to ecosystem-based adaptation measures.

## **5 Contributions of Participants**

The following chapter includes text contributions from workshop participants. Most of these contributions are directly linked to the relevant presentation held during the workshop, while few others (5.8, 5.17, 5.20 and 5.21) have not been covered explicitly in a presentation, yet still constitute relevant additions to the workshop theme and objectives.

The texts were largely left as submitted by the authors in order to guarantee authenticity and ensure a more speedy publication of the workshop proceedings. Only minor formatting and text edits were done to mainstream language and grammar and to ensure a minimum of consistency throughout the different contributions.

### **5.1 Protected Area System of Mongolia: Strategies and Challenges**

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#### **Abstract**

Mongolia is rich in historical and biological diversity. Based on traditional conservation practice and with the ongoing development of scientific knowledge, the new protected area network is expanding. The protected area system was consolidated and formalized with the passage of the “Law on Special Protected Areas” in 1994. Since the transformation process, the area designated as protected areas has expanded from less than 10 to the current total of 99 protected areas. Today the Mongolian Protected Area Network covers 27 million hectares, almost 17.4 percent of the country’s territory.

High and increasing numbers of livestock, leading to overgrazing of grasslands, legal and illegal hunting affecting rare and common species, and illegal felling of trees are main threats and impacts on protected areas. The booming mineral exploitation industry often takes place on the boundary or close to protected areas affecting water quality in lakes and rivers. In addition, mineral exploitation often takes place in areas that have already been identified as important habitats and that should ideally have been incorporated into the protected area network. Several attempts have been made to open protected areas to allow mining but so far these attempts have been resisted.

#### **Environmental Context**

Mongolia is situated almost in the centre of Asia, and is bordered by Russia to the North and China to the South, with a territory of 1,564,100 km<sup>2</sup> including semi-desert, desert plains, grassy steppe, mountains in the west, and southwest; coniferous boreal and steppe forests in the north and sexual scrub forests in the south, and the Gobi Desert across the south-central region. The Mongolian Biodiversity Conservation Action Plan (1993) identifies six specific ecological zones: Desert (20 percent of the country); Desert-steppe (19 percent); Steppe (21 percent); Forest steppe (26 percent); Taiga (8 percent) and Alpine (4 percent).

Mongolia’s recorded faunal diversity includes 136 species of mammals, 436 bird species and at least 76 fish species. More than 3,000 species of vascular plants, 927 lichens, 437

mosses, 875 fungi have been recorded, including 150 endemic and nearly 100 relict species. Mongolia hosts significant global populations of some critically endangered species such as Mongolian Saiga antelope, the Gobi bear, Siberian crane and the Wild camel, as well as globally endangered species like the Snow leopard.

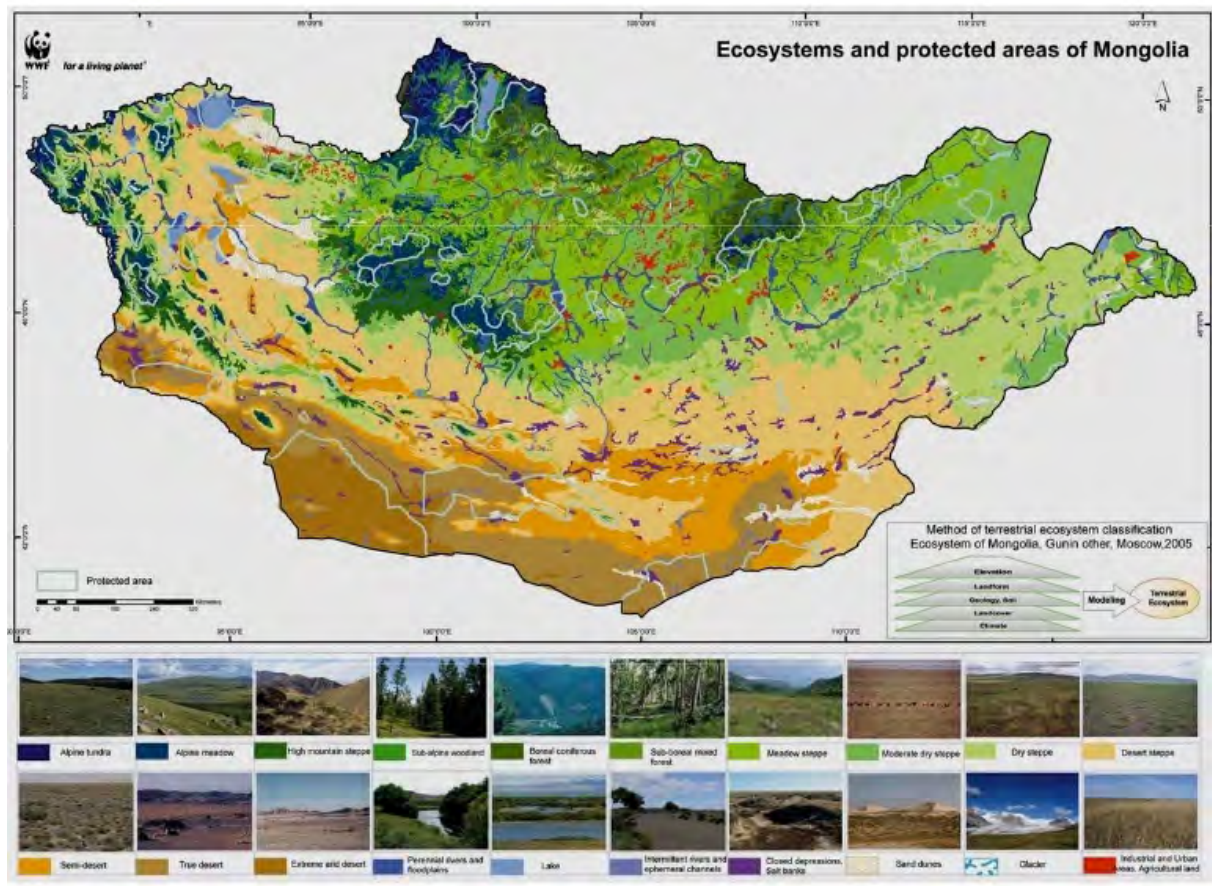


Figure 5.1.1. Map of Ecosystems of Mongolia (source: WWF Mongolia)

## Socioeconomic Context

The population of Mongolia is 3 million people. More than 40 percent of them live in the capital Ulaanbaatar. Economic activity in Mongolia has traditionally been based on live-stock husbandry. By 2015 there were over 50 million livestock; 22 million of them are goats. Mongolia is the world's second largest producer of cashmere. Mongolia has extensive mineral deposits including copper, coal, gold, molybdenum, uranium. Mining is the principal industrial activity in Mongolia, making up 30 percent of all Mongolian industry. Despite the boom in the mining sector, job growth was minimal and the poverty rate did not reduce significantly. The mining licensed areas cover more than 1/3 of the territory of the country.

## Threats, Causes and Impacts on the Environment

Despite the low population density, Mongolia's biodiversity is under considerable threat from:

1. Unsustainable use of natural resources: high and increasing numbers of livestock which leads to overgrazing of grasslands, both legal and illegal hunting affect rare and common species, illegal felling of trees is widespread,
2. Unsustainable development practices: The booming mineral exploitation industry often takes place on the boundary or close to protected areas affecting water quality in lakes and rivers. In addition, mineral exploitation often takes place in areas that have already been identified as important habitats that should ideally have been incorporated into the protected area network. Several attempts have been made to open protected areas to allow mining but so far these attempts have been resisted. Development of roads, rail lines and their associated fences increase habitat fragmentation and present significant threats to wildlife grazing and migrating across vast open landscapes.
3. Climate change: over 80 percent of the territory is highly vulnerable to climate change.

### Protected Area System of Mongolia

With the passing of the “Law on Protected Areas” in 1994 which provides for the establishment of the protected area system, management regulations and sources of financing for protected areas were established. The “National Programme on Protected Areas” was approved in 1998 by Parliament with the main objective of achieving more protected areas, targeting 30 percent of total land territory by 2015.

Since the transformation process, the area designated as protected areas has expanded from less than 10 to the current total of 99 protected areas. Today the Mongolian Protected Area Network covers 27 million hectares, almost 17.4 percent of the country’s territory.



Figure 5.1.2. Expansion of protected area number and size (source: WWF Mongolia)



## **International Commitments**

In 1993 Mongolia joined the International Convention on Biodiversity. With this, Mongolia has committed to conserving its biodiversity and particular, establishing a system of protected areas that represents its biodiversity and ecosystems. Mongolia has signed the World Heritage Convention and Ramsar Convention and is a Contracting Party to the Convention on the Conservation of Migratory Species of Wild Animals (CMS).

## **Transboundary Protected Areas**

The Russia-Mongolia-China Daurian International Protected Area was established in 1994, protecting unique steppe and wetland habitats of 6 species of cranes. The area became a Ramsar site in 1997 and MAB in 2005.

The Mongolia-Russia Silkhem-Salugem was established in 2010 and is the habitat of the globally endangered snow leopard, argali sheep and ibex.

The Russia-Mongolia-China-Kazakhstan Altai Region – a transboundary protected area was established in 2013. The Altai region has global key importance in terms of biodiversity.

## **Challenges:**

- Weak management effectiveness of existing protected areas;
- Poor financing sources for protected area system;
- Lack of participation of stakeholders in the management of natural resources;
- Lack of capacity within protected area staff /local, national level.

## **Solution:**

- Strengthen systematic management planning;
- Improve institutional and staff capacity;  
Effective use of models of collaboration, supported by knowledge-based;  
information Management;
- Sustainable financing mechanisms;

## 5.2 Advancing Towards the Best Practices – Georgia’s Protected Areas Chronicle

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### Biographic Summary

Since the early 90s of the 20th century being landscape architect and leader of Georgia’s protected areas movement, authored protected areas national concept and framework legislation – “Law of Georgia on Protected Areas System” (1996) and several laws and regulations on designation of 16 new protected areas (1 nature reserve, 5 national parks, 6 managed nature reserves, 3 nature monuments and 1 protected landscape) and expansion of 4 existing nature reserves. He is the inventor of Georgia’s new protected areas concept, which is based on holistic conservation of natural and cultural values, equal safeguarding of tangible and intangible assets and integration of protected areas management, landscape planning and spatial organization.

He has been serving as technical adviser and in-country coordinator for the International Technical Assistance Program of U.S. Department of the Interior more than 15 years. He is a member of IUCN World Commission on Protected Areas since the early nineties. He assembled a pool of best practices on protected areas management and mentored about thousand relevant personnel in Georgia, Azerbaijan and Armenia. Between 1998-2005, he worked as the director of The World Bank/GEF – Georgia Protected Areas Development Project that was one of the largest protected areas framework initiatives within the Eastern Europe and Central Asia region that aimed at the creation of an ecologically and socially effective protected areas network. From 1992-1997, he worked as the Conservation Program Coordinator for the World Wide Fund for Nature in Georgia.

In 2004 he was nominated for the IUCN/WCPA Fred Packard Award, because he "carried out his duties in the service of protected areas above and beyond the call of duty".

### Abstract

*After the breakup of the Soviet Union, Georgia, a small ancient country with ecosystems of global importance, and rich cultural heritage, inherited insufficient protected areas - “Zapovedniks”. Since then, Georgia revolutionarily advanced its conservation system through the development of its protected area concept, integration of universal experiences in national legal framework and increase of protected areas coverage. Currently Georgia’s national protected area system consists of: 14 strict nature reserves, 11 national parks, 41 natural monuments, 19 managed nature reserves, 2 protected landscapes totaling in size of 600 597.24 hectares. There are Ramsar sites and the Cultural World Heritage site designations in place.*

After the breakup of the Soviet Union, Georgia, a small ancient country with unique biogeographic characteristics, ecosystems of global importance, and rich cultural heritage, inherited an insufficient system of protected areas - “Zapovedniks” governed by a “no public access” principal. Since then, Georgia revolutionarily advanced its approach for the enhancement of an area based conservation system through the development of its own pro-

tected area concept, integration of universal experiences in national legal and policy framework and increase of protected areas coverage.

Currently Georgia's national protected area system consists of: 14 strict nature reserves, 11 national parks, 41 natural monuments, 19 managed nature reserves, 2 protected landscapes totalling in size of 600,597.24 hectares. There are Ramsar sites and Cultural World Heritage site designations in place. Work for nomination of natural World Heritage sites and Biosphere Reserves are underway.

The important prerequisite of the progress in the conservation sphere was publicly supported informal preparation for worthy safeguarding of natural and cultural heritage of Georgia at the end of Soviet era and following robust start up process commenced upon regaining country's independence. The new concept meant synergy of:

1. (i) national scientific technical capacity (ii) centuries old experience of sustainable living traditions; (iii) newly appeared opportunity for exchange with the best global practices;
2. Late Soviet advanced spatial planning technology;
3. New movement of protected area development driven with systems and network approach.

One of the significant practices that positively influenced the protected areas development in Georgia was territorial planning of the Soviet Union. This experience laid down a good professional foundation for application of spatial planning and landscape level approach to protected areas planning in Georgia. The major value of Soviet experience was related to a cyclic planning system, complete coverage and inter-consistency of diversified territorial planning genres with clear hierarchy of details and scales of plans, complete package of planning units and objects. Environmental protection content was focused on maintenance of general ecological characteristics, protection of air quality, protection of surface water and groundwater, protection of soils and restoration of degraded lands, environmental mitigation of the negative impact of development, protection of vegetation cover and formation of green spaces, protection of fauna, development of a system of protected areas, preservation and improvement of the landscape and planning of ecological zones.

The most important phenomena that determined the following success of protected areas development was the creation of Georgia's concept of protected areas system that shaped the framework legislation and design of most relevant donor supported programs at a later stage. The inspiring attributes of the concept were associated with the vision that protected areas system was supposed to advance far beyond of early "green Islands" approach towards environmental "carcass" model sustaining life support system through linking and chaining major high biodiversity value natural and nearly natural areas of green to greenish brown environment. The concept introduced spatial planning attributes supporting conservation, sustainable development, mainstream biodiversity conservation at production landscapes and area based governance and management. The attributes included: (1) multi level spatially spread and ecologically sound planning coverage: (i) at the national level through protected areas systems planning; (ii) at a regional level through optional protected areas management guidelines; and (iii) at particular biodiversity hot spots and areas of high ecological significance through comprehensive and/or general management plans. (2)

comprehensive consideration of relevant background information on environmental (incl. biotic abiotic, etc.), historic-cultural, social and economic spheres; (3) flexible synergy of international best practices, national level scientific-technical capacity and local level centuries old experience of sustainable living; (4) diverse governance model combining central, regional and local municipal and community levels; (5) wide inclusive rights holders and stakeholders participatory planning and review style; (6) effective combination of considerations about status of values and threats, vision and objectives, strategies and operation, flow of processes and budgeting, monitoring/evaluation and reaching outcomes. As the consequence and at the contrary to other area based planning instruments, the protected areas planning model appeared to be a unique combination of statutory framework, territorial arrangement, manpower competences, financial considerations.

Based on the concept, the preparation of new protected areas system framework legislation had started in 1991 and was passed by the parliament in 1996. According to new legal system the six national protected areas categories such as nature reserve, national park, natural monument, managed nature reserve, protected landscape and multiple use area strengthened with World Heritage Site, Ramsar Site and Biosphere Reserve global protected areas designations, were supposed to form the network.

Since 1989, but especially after 1991 when the country's independence was restored and as opportunities for true international cooperation occurred, Georgia welcomed major conservation organizations, bilateral and multilateral donors and the country started joining relevant conventions, treaties and agreements. One of the first international delegations seeking partnership with Georgian government and citizens were predecessor of BfN and then WWF followed by BMZ, KFW, The World Bank, GEF, IUCN and others.

Particular pioneering role played WWF who supported Georgia in its efforts to build up awareness of global importance of country's biodiversity. First WWF teams assembled by German and Georgian subject experts proposed blue prints of potential conservation areas. The German conservationists such as Hartmut Jungius, Professor Michael Succow and Hannes Knapp were the leaders of WWF conservation program. This assistance catalysed interest of primary donors, but first of all German Government, GEF and the World Bank who provided substantial financial resources for creation of new protected areas. The German Government assistance still remains leading and financially scale full.

As major international financial support continued, the need for the building of quality management capacity matching international standards arose. Thus Georgian government initiated cooperation with the United States Department of the Interior, which were the oldest and most experienced institution managing protected areas of all sizes and categories at variety of bio geographic conditions.

In the late 90s, with funding support from the U.S. Agency for International Development, the U.S. Department of the Interior through its International Technical Assistance Program (USDOI-ITAP) and the Georgian Government entered into a partnership agreement. At the national level, the cooperation was focused on establishing a foundation of informed and fair decision making practices, a sense of purpose and mission, and an ethic of accountability for the governance and management of Georgia's protected areas. At the field level, subject experts shared best practices with respect to resource management, visitor services, public outreach and environmental education, leadership, organizational develop-

ment, public-private partnerships, sustainable infrastructure, facilities management, law enforcement and sustainable business development. More than ten years of collaboration led to success: Georgia's protected areas, now open to visitors, are better managed at the headquarters and field levels to support the goals of resource conservation and local, regional, and national economic development and social well being.

The next phase of Georgia's protected areas development with the continuous assistance of the donor community and partners shall ensure completion of the protected areas network and equitable integration of conservation with social and economic spheres. The one of the enabling assumptions for that will be encouragement of synergy of global, multilateral, bilateral financial institutions and relevant national agencies with comprehensive technical assistance organizations such as IUCN-WCPA and USDOI-ITAP.

In these new developments key criteria for measuring success might be the change of perception of Georgian people towards protected areas when those are considered as the citizen's but not the government's property and when every dollar appropriated by the government for protected areas management generates at least four dollars for economic benefits and essential human values.



Picture: Snowy Mountains in Kazbegi National Park in Georgia. Photo credit: Paata Shanshiashvili

### **5.3 Past Implementation and Future Potential of the World Heritage Convention in Eastern Europe, Caucasus and Central Asia**

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#### **Abstract**

The World Heritage Convention is dedicated to the identification and protection of the World's "outstanding" cultural and natural heritage. Partnerships bringing together governmental, academic and civil society actors have achieved the successful inscription of ten large and globally important protected areas in Russia since 1995, a milestone in Russian conservation history. As the Convention evolves and pressure on areas of global conservation importance increases worldwide, there are new opportunities to further realize the potential of the Convention in Eastern Europe, Caucasus and Central Asia. This contribution has the objective to offer corresponding food for thought and possible entry points for action.

#### **Background**

The "Convention Concerning the Protection of the World Cultural and Natural Heritage", commonly referred to as the World Heritage Convention, was adopted by the UNESCO General Conference in 1972. The Convention is dedicated to the identification and protection of the World's "outstanding" cultural and natural heritage. While fully respecting national sovereignty, the objectives of the Convention are understood to be a duty of all States Parties to the Convention. There are 191 State Parties at the time of writing, i.e. the inter-governmental agreement has almost universal coverage. More than 40 years into the life of the Convention, it has become clear that World Heritage is not a cure-all, as many World Heritage properties are facing severe challenges. At the same time, there is plenty of evidence that the Convention can serve as an effective conservation instrument.

Many of the countries targeted by the workshop documented in this publication have a comparatively short history of involvement with the Convention. The Soviet Union had ratified the Convention in 1988 and many of the newly independent states in the region joined the Convention in the 1990s only. Mongolia joined in 1990, whereas Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan became States Parties between 1992 and 1995. Similarly, the Baltic States, as well as Armenia, Azerbaijan and Georgia became States Parties in the first half of the 1990s. Others, such as Poland and Bulgaria, joined the Convention in the mid-1970s and successfully nominated natural properties as early as in 1979 and 1983, respectively.

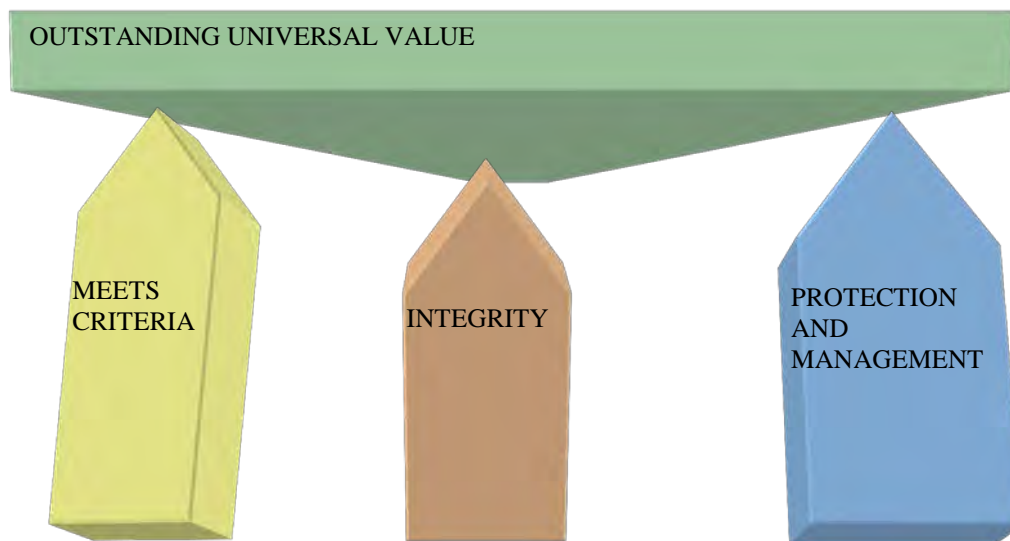
The globally most significant use of the Convention in the region has undoubtedly been made during the political transition of the early years of the Russian Federation. Following a brief overview of key information on World Heritage to set the stage, the Russian experience is described below in inevitably simplified fashion. The case study is primarily offered to shed light on the tangible benefits of World Heritage. Subsequently, the revision of the Tentative List of Mongolia is presented as a recent example of systematically re-visiting the World Heritage potential in one State Party. Finally, conclusions are offered, along with

food for thought and entry points for possible action in Eastern Europe, Caucasus and Central Asia.

## World Heritage in a Nutshell

The notion of “Outstanding Universal Value” (OUV) is at the heart of World Heritage. According to the “Operational Guidelines” (UNESCO / Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage, 2015) OUV means “cultural and/or natural significance, which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity”. It is well known that World Heritage properties are expected to feature extraordinary conservation values according to specific criteria established for this purpose. Four out of the ten World Heritage criteria are applicable to natural heritage. Put simply, they refer to exceptional natural beauty and superlative phenomena (criterion vii), extraordinary geological phenomena (criterion viii), and outstanding biodiversity (criteria ix and x).

OUV encompasses a need to meet defined “conditions of integrity” and to have an “adequate protection and management system”. In other words, there is a requirement for any nomination or property to stand on the “Three Pillars of OUV”, as visualized in Figure 5.3.1 hereafter.



Adapted from IUCN, see also UNESCO / Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage (2015).

Figure 5.3.1. The three Pillars of Outstanding Universal Value

It is advisable to be familiar with the formal institutional landscape detailed in the Operational Guidelines and at [whc.unesco.org](http://whc.unesco.org). At the most basic level, it is important to be aware that there are sovereign States Parties. On a rotational basis, 21 of these State Parties are elected to form the intergovernmental World Heritage Committee, the Convention’s governing body. UNESCO hosts the Convention Secretariat, known as the World Heritage Centre. Along with two partner organizations advising on cultural heritage, the International Union for Conservation of Nature (IUCN) is one of the formal advisory bodies to the World Heritage Committee with a focus on natural heritage.



## World Heritage in Practice 1: The Russian Experience

The Russian Federation, the world's largest country, is renowned for huge and diverse areas with a high degree of naturalness representing most of northern Eurasia's ecosystems. Despite ups and downs over the decades, there is a remarkably long history of formal, science-based conservation efforts in Russia and the countries, which used to be part of the Soviet Union. Governmental conservation faced challenges in the turmoil of the political and economic transition after the end of the Soviet Union. As one response to the crisis, governmental institutions joined forces with the emerging conservation NGOs in addition to their longstanding academic partners, such as the Russian Academy of Sciences. NGOs like Greenpeace Russia ([www.greenpeace.org/russia/en/](http://www.greenpeace.org/russia/en/)), the Natural Heritage Protection Fund ([www.nhpfund.org](http://www.nhpfund.org)) and WWF Russia ([www.wwf.ru/eng](http://www.wwf.ru/eng)), as well as local partners and the dedicated staff of many of Russia's "Zapovedniks" and national parks understood that the World Heritage Convention could be used to draw attention to and mobilize support for the most important protected areas when they were faced with uncertainty. Support was also granted through a bilateral agreement on environmental cooperation between the Russian Federation and Germany (see Butorin et al. 2005), as well as from external conservation NGOs and universities. The preliminary result is an impressive estate of ten natural World Heritage properties inscribed between 1995 and 2012, as detailed in Table 5.3.1.

Table 5.3.1. Natural World Heritage Properties in the Russian Federation

World Heritage Property	Inscription Criteria	Inscription Year	Surface Area (ha)
Lena Pillars Nature Park	(viii)	2012	1,387,000
Putorana Plateau	(vii)(ix)	2010	1,887,251
Natural System of Wrangel Island Reserve	(ix)(x)	2004	1,916,300
Uvs Nuur Basin*	(ix)(x)	2003	898,064
Central Sikhote-Alin	(x)	2001	406,177
Western Caucasus	(ix)(x)	1999	298,903
Golden Mountains of Altai	(x)	1998	1,611,457
Lake Baikal	(vii)(ix)	1996	8,800,000
Volcanoes of Kamchatka	(vii)(viii)(ix)(x)	1996	3,830,200
Virgin Komi Forests	(vii)(ix)	1995	3,280,000

\* Serial property shared with neighbouring Mongolia.

Source: Author, based on data available at [whc.unesco.org](http://whc.unesco.org).

Even by the highly selective standards of the World Heritage Convention every single one of these properties is a truly extraordinary place. It is also conspicuous that all of the Russian properties are large, sometimes exceptionally large; as many as seven out of the ten exceed one million hectares. The largest property, Lake Baikal, boasts more than twice the surface area of Switzerland. Jointly, the ten natural World Heritage properties encompass around 24 million hectares, more than the entire land area of the United Kingdom. Russia's Tentative List, includes further promising candidate sites, such as the Vasyugan Mire, one the largest wetlands in the world, and the Commander Islands.

The literature (e.g. Blagovidov 2006, Maxakovsky 2006, Butorin et al. 2005) and personal communication with several of the Russian colleagues and external supporters involved in

the implementation of the World Heritage Convention in Russia suggest the following lessons in terms of benefits and added value:

- The momentum of nominations can be used to bring together actors, including across national borders;
- Nominations can generate political momentum and incentives to establish new protected areas and/or expand existing ones;
- World Heritage can serve as a platform for fundraising, advocacy, exchange and networking;
- World Heritage recognition can provide added visibility and an added layer of protection for key areas, including in times of crisis, change and acute threats from proposed development projects;
- World Heritage recognition can provide a source of pride and prestige for both places and involved institutions;
- World Heritage recognition can increase public and media awareness and can be used to attract adequate forms of tourism, both in Russia and beyond its borders;
- World Heritage recognition can increase the scrutiny afforded to monitoring and evaluation of management effectiveness.

This simplified overview is not to suggest that all conservation challenges could be successfully addressed using a World Heritage umbrella. It is well documented that several of the Russian properties face complex threats. Nevertheless, it is widely acknowledged that even in the properties facing acute threats, the World Heritage status is an important and helpful factor in the equation and debate. Building upon the existing foundation, many actors are working hard to consolidate the management of the existing properties and to complete the Russian network of natural World Heritage properties.

## **World Heritage in Practice 2: Revising Mongolia's Tentative List**

The Operational Guidelines define a Tentative List as an "inventory of those properties situated on its territory, which each State Party considers suitable for inscription on the World Heritage List". Listing on the Tentative List is mandatory prior to formal submission of any World Heritage nomination. Beyond this formal requirement, the elaboration of a Tentative List is an opportunity to discuss cultural and natural heritage conservation priorities in a given country, as well as the feasibility and usefulness of using the World Heritage Convention as a conservation instrument in a given setting. Mongolia's recent revision of its Tentative List provided an exemplary opportunity to review and discuss existing information. The process brought together governmental, academic and non-governmental actors, as well as external supporters and IUCN. Following months of structured discussion and research, agreement was reached on World Heritage priorities. The result went public in 2014 at <http://whc.unesco.org/en/tentativelists/state=mn> and is now a foundation for the next steps in Mongolia's use of the Convention as a conservation instrument.

## Conclusion and Outlook

The example of the Russian Federation illustrates that the Convention can be used successfully to add political, public and international visibility to nature conservation priorities and to mobilize partnerships and support, even under challenging circumstances. The inscription of the so far ten Russian properties is widely recognized as a remarkable conservation success. There is further potential for consolidating existing properties and nominations of new ones across the region.

The revision of the Mongolian Tentative List is just one example of encouraging recent efforts to systematically use the Convention. A similar process is underway in Georgia. At the site level, the ongoing transboundary efforts to inscribe Lake Ohrid as a World Heritage property in its entirety deserve to be mentioned as a European example. All these examples can serve as models in the region in order to systematically analyze the current situation and to identify the future potential. Such efforts should fully consider evolving broader trends, such as serial approaches, wilderness conservation (Kormos et al. 2015) transboundary cooperation, more meaningful involvement of local stakeholders and rightsholders and more sophisticated approaches to integrate “nature” and “culture”.

It is clear that the steppes, deserts, mountains, wetlands and forests of the region boast many conservation gems of global importance and that the pressure on them is here to stay. World Heritage can make strong contributions to secure the most important areas, if used strategically. Ingredients of future strategies might include, but are not limited to, the following:

- A realistic understanding of both the potential and the limitations of the World Heritage Convention must underpin all efforts;
- The costs and benefits of using World Heritage must be weighed according to the setting under consideration;
- The remaining regional “gaps” on the World Heritage List should be systematically identified. The review of Tentative Lists is one obvious approach for doing so. Existing studies informing the exercises, such as the Central Asia study (Magin 2005) should be updated and refined and new studies might be required elsewhere;
- Existing World Heritage properties should be re-visited to assess the current situation and to identify room for improvement, for example in terms of governance, management effectiveness and in some cases possible extensions;
- Partnership approaches should be taken whenever possible to take advantage of the convening power of the Convention;

In line with its formal role as an Advisory Body and its mandate as a global conservation union, IUCN stands ready to advise and support. All interested stakeholders are strongly encouraged to contact the IUCN’s World Heritage Programme ([www.iucn.org/worldheritage/](http://www.iucn.org/worldheritage/)) and its Office for Eastern Europe and Central Asia (ECARO, [www.iucn.org/about/union/secretariat/offices/europe/about/places/belgrade/](http://www.iucn.org/about/union/secretariat/offices/europe/about/places/belgrade/)).

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## **5.4 FZS's Approach to Co-operation and Capacity-building in Eastern Europe and Central Asia**

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### **Summary**

The Frankfurt Zoological Society (FZS) is a non-governmental conservation organisation working in South America, Africa, Europe and South-East Asia aiming “to conserve wildlife and ecosystems focusing on protected areas and outstanding wild places”. In Eurasia, FZS's focus lies on maintaining Europe's last wilderness areas, many of which are located in Central and Eastern European countries, as well as on several regions in Central Asia. FZS works in long-term partnerships that are backed by core funds and in which it follows particular principles. The author has worked in Eastern Europe and Central Asia for the past 18 years, for both FZS and other employers (e.g. BirdLife International). The experience gained from these previous assignments informed the conclusions and lessons learned.

### **FZS's Approach Towards Partnerships in Central and Eastern Europe/Central Asia**

FZS was founded in 1858 and is a registered non-governmental, not-for-profit and independent conservation charity. FZS runs and supports more than 30 conservation projects in 18 countries in South America, Africa, Europe and South-East Asia, investing about 11 million Euros per year (2014). The mission statement of FZS is “to conserve wildlife and ecosystems focusing on protected areas and outstanding wild places”.

In Europe, FZS focuses on maintaining the continent's last intact natural ecosystems: forests, steppe, alpine habitats and freshwater ecosystems (rivers, lakes, peatlands and bogs). FZS's priority project areas are therefore:

- the beech forest ecosystems of Germany and the beech and fir primeval and old-growth forests of the Carpathian mountains of Romania, Ukraine, Slovakia and Poland
- The largest remaining European lowland mixed-broadleaved old-growth forest of Bialowieza (Poland) and Belovezhskaya Pushcha (Belarus)
- the Polesie region of Belarus, Ukraine and Russia, with its large forests, natural river and streams and immense peatlands and bogs, in what is arguably one of Europe's largest natural areas
- areas where we can see wilderness development as a process on many degraded landscapes such as former military training areas (secondary wilderness).

In Central Asia, FZS's interests lie in the conservation of Eurasian steppes of Kazakhstan with migrating mammals, mainly Saiga.

## **How Does FZS Operate in Europe?**

In all of the countries and regions mentioned, FZS has a long track record and a long history of engagement, co-operation and partnership. In none of the European project countries, FZS operates through own branches or another FZS-linked legal structure. In all cases, FZS instead establishes multi-faceted partnerships between state actors (the relevant ministries or administrations of National Parks), capable and strong civil society organisations and research and scientific partners. FZS builds these partnerships on the following principles:

- The partnership should be established and maintained in such a way that all partners see eye to eye.
- Joint, high-quality and comprehensive planning is crucial not just to a successful partnership but also to the smooth operation and implementation of a project and thus to its conservation success.
- Partnerships within the FZS context are long term and are backed up by an annual core budget available for the project.
- Reliability is a key to success, as is the preparedness on all parts to persist in overcoming any crisis that might arise in such a project partnership.

## **The Author's Experience: Other Success Models for Partnerships and Capacity Building**

Based on the author's 18 years of experience of working in conservation-related projects in Central and Eastern Europe, as well as in Central Asia, in his opinion, the following models/approaches have not only worked well and delivered conservation success but have also helped involved partners to increase their operations and capacity:

The BirdLife Partners Supporting Partners Programme:

In the 1990s, the network of European Partners to BirdLife International set up the so-called "Partners Supporting Partners Programme". Long-term partnerships have been established between several Central European BirdLife Partners (mainly driven by The Royal Society for the Protection of Birds (RSPB), Vogelbescherming Netherlands, SVS BirdLife Switzerland, along with several others) and a large number of younger and smaller organisations in Eastern European and Central Asian countries. These partnerships have been underpinned by three components:

- the provision of core funding from the "Supporting Partner"
- the provision of technical support (where needed) by the "Supporting Partner"
- the joint implementation of conservation and advocacy projects to the benefit of both Partners.

Dozens of capable civil society conservation organisations – in e.g., Poland, Belarus, Ukraine, Kazakhstan and Armenia – have emerged from this initiative: many of these are now the leading conservation organisations in their countries. FZS itself benefits from this development and in Belarus, Ukraine and Kazakhstan works through and with the national BirdLife Partners.

### The BirdLife Important Bird Areas Programme:

A second pillar of the BirdLife approach has proven to be a successful tool for civil society engagement: the Important Bird Areas (IBA) Programme, a conservation tool that has been developed by civil society organisations and the implementation of which builds on the local knowledge and the engagement of national civil society conservation organisations. NGOs identify, monitor and protect IBAs across the continent. In many countries (e.g. within the European Union and beyond), IBAs act as a blueprint for national protected area designation.

### Strengthening and improving of existing systems/protected areas:

Starting afresh is not often a good way of efficiently and effectively using funds and time resources in conservation. Often, existing national protected area systems are an already-existing tool, not only backed up by local knowledge and understanding but also established among national decision makers and other stakeholders. On the other hand, the complex approaches often applied by “western” conservation organisations (e.g. the promotion of the establishment of Biosphere Reserves) can require established funding and legal mechanisms as well as public support, which can be absent even in EU-countries but are lacking in many Eastern European and Central Asian countries, in particular. Improving existing systems in these countries through a joint identification of the gaps/shortfalls might be a better approach than seeking to impose an external model in many cases and lead to stronger engagement and ownership by national/local partners and stakeholders.

### What Lessons Have the FZS and Author Learned?

- Civil society engagement in conservation can work – even in countries with little tradition of such!
- For successful conservation work, reliable partners and a plan/strategy are needed.
- Competition and jealousy can often stand in the way of successful conservation/co-operation.
- Membership schemes for civil society organisations can be problematic – especially when large grants/sums of money are involved and membership numbers are low (this can lead to memberships being “bought” to gain control of organisations).
- Many civil society actors’ behaviours are driven by external income as a result of a lack of core/unrestricted funds – foundation models with capital stock can be an alternative. More emphasis should be laid on gaining unrestricted funds (but without losing the focus of the organisation).
- Working with civil society actors in partnerships can be more (cost-) effective than with larger players (e.g. UNDP and others).
- Civil society actors have a watchdog function but they can also play a key role in ensuring sound implementation of large projects (e.g. the NGOs USPB-BirdLife Ukraine, FZS, WWF Danube-Carpathian programme which joined a consortium led by the AHT Group AG to implement a BMZ-financed conservation project to support protected areas in Ukraine).



- Partnerships can potentially be vulnerable – creating risk if both third-party money and different views on visibility are involved.
- Civil society actors can be powerful and act beyond the lifetime of a project – they help to gain sustainability of a project.

## **5.5 Shifting Policies and Shifting Nature: Trends and Challenges of Nature Conservation in Post-Socialist Regions**

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### **Abstract**

The transition from socialism to democratic regimes and market-based economy had a great influence on all spheres of political, economic and social life across Eastern Europe, Caucasus and Central Asia. Nature conservation was not an exception from this trend. The transition period for this sector resulted in shortage of resources and capacities (staff, funding), legal discrepancies, and compromising of conservation measures in prospect of economic development. Furthermore, the impoverishment, of especially rural population, lead to a greater pressure on natural resources, including wildlife and forestry. All this posed significant challenges that to date greatly constrain conservation in countries across the region.

### **Introduction**

The collapse of socialist regimes across Eastern Europe, Caucasus and Central Asia greatly influenced economic, political and social spheres in these countries. Even though the dissolution of the Soviet Union is perceived as a peaceful process, in some countries and disputed regions the political instability led to armed conflicts and civil unrests. Economically, the transition period lead to the disappearance of the established production network, decrease of internal markets, and drop of the state subsidies, consequently the GDP per capita declined rapidly. The economic decline resulted in the impoverishment of the population, especially in the rural areas. The transition brought a full-scale restructuring of the political sphere and introduction of such new concepts as e.g. economic liberalization, private property and privatization. These processes often lead to the confusion of competencies among different state agencies, increased corruption, and weaker governance capacities. At the same time new regimes had to face a popular demand for socio-economic development. To satisfy these demands new governments relied to a greater extent on the exploration of the natural resources (oil and gas, rare minerals).

As regards nature conservation institutions, they were not an exception and faced significant challenges in this transition period both as a result of structural changes and increasing threats. Amongst structural changes the most prominent were shortage of resources and capacities for nature conservation, decreased law enforcement, unclear legal framework and competencies, as in some cases old Soviet law co-existed with newly adopted legislation.

The threats were and are manifold starting from overexploitation of natural resources both locally (e.g. through subsistence hunting, illegal logging, overgrazing) and nationally, including poaching for highly valued wildlife species, habitat changes, infrastructure development.

## **Current Threats and Trends Influencing Habitat Changes and Population Dynamics**

The general trends for the region in terms of land use changes are strictly connected to economic transformation. Namely, as state subsidies ceased and internal markets shrank agriculture became less profitable and production decreased dramatically leading to land abandonment and emigration of the rural population to urban centers or abroad. It is hard to provide an overall estimate of the abandoned land as no comprehensive regional study has been conducted to date. However, existing studies focused on particular regions within Eastern Europe estimate from 20 – 40 percent abandonment rate (Munteanu et al. 2014, Siber et al. 2009). The abandonment in less productive steppe and mountain regions was even more significant (Werger & van Staalduinen, 2012)

The trends for forestry are less clear. Official statistics from the region suggest overall decline of forestry production. However, some reports and anecdotal evidence suggest an overall high rate of illegal logging, estimating that about half of the forest in the Russian Far East is harvested and sold on a black market leading to the loss of habitat for endangered Amur tiger (Smirnof et al. 2013, Kuemmerle et al. 2009). With an exception of Central Asian countries and some regions in the Caucasus (Dagestan, Kalmykia, Stavropol) the number of cattle also dropped significantly (from 30 – 50 percent).

In general the effects of natural succession on biodiversity are not well understood. On the one hand, conversion of agricultural habitats and grasslands into forest leads to a loss of certain species. On the other hand, the increase of forest cover can expand the suitable habitat for forest species, especially large mammals, which are particularly prone to land use changes as these species are typically wide-ranging and require large and well-connected habitat networks (Sieber et al., 2015).

The opening up of these countries for foreign investors, combined with the desire of the governments to secure the national income resulted in the rapid expansion of linear infrastructure and extraction sites. Additionally, changes in the security situation in the region led to the expansion of the border fences, including between countries where it did not exist before. The infrastructure expansion is particularly problematic for long distance migratory large mammals of the open landscapes such as steppe. The negative effects include prohibiting animal movements, habitat fragmentation, direct mortality through entanglement and collision, increased disturbances and easier access for the poachers.

The increased poverty rates and decreased protection and law enforcement resulted in the widespread poaching both for subsistence and commercial purposes. In first case rural population engaged in poaching to obtain extra sources of meat for households, whereas commercial poachers are interested in the high value animal products, such as horns (e.g. Saiga), skins (leopard, tigers), paws (bear) that can be sold on the illegal market. The latter is often conducted by the organized crime groups. In the 1990s reportedly even protected area staff was involved in poaching and it occurred inside protected areas. However, the overall scope of poaching is hard to estimate as any other illegal activity. The prosecution for wildlife crime is rather low across the region and often poachers can get away just with confiscation of their guns.

The effects of climate change on wildlife and habitat is hard to predict with certainty. The existing research suggests that climate change will lead to water scarcity both for humans

and wildlife. This will especially affect dry and semi-dry regions. Mountains are amongst the regions most sensitive to climate change as shifting seasons and water scarcity can lead to a rapid fragmentation and loss of habitats (Arvela et al., 2012). The weather fluctuation can act as an additional stress factors, e.g. longer and harsher winters with thick snow cover or dry summers can reduce fitness of the population and increase mortality rates.

Overall, the studies record significant decrease of large mammals' population following the collapse of the socialist regimes in the early 1990s. This applies even to common species such as e.g. roe deer and moose with an exception of predators (wolves) as forced intake of this species that was in place during the Soviet times was stopped (Bragina et al., 2014). However, the population numbers for common species stabilized and even increased in the 2000s. This most likely can be attributed to the decrease of subsistence poaching as local population's well-being stabilized. The situation is rather different regarding the populations of endangered species that have high value on the black market, as most of these species continue to decline. It is important to mention that due to the economic hardship and staff shortage in many protected areas regular comprehensive monitoring is no longer practiced, or the methods and equipment are outdated. Thus, for many species it is hard to talk about confirmed population numbers.

### **Protected Areas Management and Trends**

The overall number of protected areas increased in every country across the region. In Russia alone 68 new protected areas, including eight national parks were designated after 1990 (Muller, 2014). In the Caucasus protected land increased from about 2 percent in 1988 to about 3 percent at the beginning of 2000 (GRID-Tbilisi, 2002).

Unfortunately, many of these designated protected areas do not have any allocated budget, staff or basic infrastructure and often remain "paper" parks. As regarding effectiveness of protected areas during the transition period and later on it is hard to pick up the single trend. In many regions following the economic hardship the deterioration of protected areas was reported. Mainly the number of illegal activities, including poaching and illegal hunting, grazing and logging took place inside protected areas (GRID-Tbilisi, 2002, Michel 2008). In some cases staff members were involved in the provision of these activities. Other studies report relative effectiveness of protected areas in preventing illegal logging e.g. in the Western Caucasus (Bragina et al., 2015).

Currently, protected areas across the region are facing demands on a financial self-sufficiency through generation of own income e.g. through tourism. However, it is not always feasible and protected areas in remote locations are often disadvantaged, as the state support is no longer adequate. In this situation, parks have to rely on external donor support even to cover basic running costs. Finally, despite increased coverage there is certainly still a potential to expand the network of protected areas across the region, especially to protect ecological corridors, crucial for wildlife movement.

## Legal and Political Changes

The above mentioned challenges were combined with the comprehensive policy restructuring of nature conservation and wildlife management in these countries. This sector was not at forefront of the reforms and in many countries updates in the legislation took more than two decades and in some countries is still underway.

This is not least true for the membership in the international conventions related to biodiversity conservation. The table below provides an overview of the accession dates. While most of the countries joined the CBD shortly after the transition started, for other conventions process is still underway.

Table 5.5.1. Participation in Multi-level Environmental Agreements

Country	CBD	CITES	CMS	Ramsar
Armenia	1993	2008	2011	1993
Azerbaijan	2000	1998	-	2001
Belarus	1993	1995	2003	1991
Georgia	1994	1996	2000	1997
Kazakhstan	1994	2000	2006	2007
Kyrgyzstan	1996	2007	2014	2003
Moldova	1996	2001	2001	2000
Mongolia	1993	1996	1999	1998
Russian Federation	1995	1992	-	1977
Tajikistan	1997	2016	2001	2001
Turkmenistan	1996	-	-	2009
Ukraine	1995	1999	1999	1991
Uzbekistan	1995	1997	1998	2002

Source: Author's own compilation

Nature conservation is one of the areas regulated by many different legal and political frameworks such as the Nature Conservation Acts, Wildlife Management and Hunting Laws, Forestry Acts, Water Management Acts etc. Thus, in order to ensure coherent management harmonization of these legislations, inter-sectoral and inter-institutional coordination is a key. In the 1990s, however, the situation was the opposite as legislation was fragmented, outdated and weakly enforced. The reform process for this sector started shortly after the political changes and is still ongoing (see table 5.5.2). The current challenges are related in the development of up-to-date legislation based on internationally recognized principles – public participation, science-based and adaptive management, inclusiveness etc. The process of revision in many countries faced challenges related to balancing between many involved stakeholders and finding a way for participatory decision-making (e.g. Kyrgyzstan during the revision of the Hunting Law).

Table 5.5.2. Overview of Updates of the Key National Laws Related to Nature Conservation

Country	Law on Environmental Protection	Law on Protected areas	Law on Wildlife Management/ Hunting
Armenia	1991	1991	2000/2007
Azerbaijan	1999	2000	1999
Belarus	1992	1994	2007
Georgia	1996	1996	1996
Kazakhstan	1997	2006	2004
Kyrgyzstan	1999	2011	1999/2014
Moldova	1993	1998	1995
Mongolia	1995	1995	2012
Russian Federation	2002	1995	1995/2009
Tajikistan	2011	1996	2008/2014
Turkmenistan	2014	2012	2013/1998
Ukraine	1991	1992	2001/2000
Uzbekistan	1992	2004	1997/2006

Source: Author's own compilation

### Current Challenges and Opportunities

The countries of Eastern Europe, Caucasus and Central Asia have come a long way in reforming nature conservation policy and institutions over the past two decades. However, current challenges are manifold. Law enforcement is, perhaps, one of the biggest challenges as even the reported illegal activities are rarely brought to court and violators are prosecuted. Financing is another problematic area. The state financing of this sphere has improved since the 2000s, however, in many countries it is still far from sufficient and no long-term financing is available. There is a number of international donors, NGOs and other organizations supporting implementation of nature conservation across the region via various projects. The implementation of the obligations under international treaties ratified by countries is still rather constrained, as often no dedicated financing is allocated to it.

Furthermore, nature conservation is often compromised for national economic, security and political interests (e.g. Sochi Olympic Games, resource extractions), which can significantly harm biodiversity and halt conservation efforts. On structural level there are problems related to unclear land ownership and management of the land among different state authorities. Thus, even inside protected areas conservationists not always have a decisive voice. Other structural challenges are related to updating scientific and monitoring guidelines and capacities, as well as up-to-date professional training of young people, who will be able to lead further changes in the future.

In order to address these problems further harmonization of national legislation is required. For supporting implementation and law enforcement multi-stakeholder partnership for conservation that will involve the representatives of various state institutions, local communities, businesses can be beneficial.

The regions in focus host some unique natural habitats and species, preservation of which is of global importance. Some of these habitats have been rather well-preserved and continue with this task is of crucial importance for the future. Other potential of the sector are

connected with the development of economic potential of protected areas, which is especially important in times of economic crisis. Utilizing and further developing existing professional networks in the region that will allow better knowledge and expertise exchange, as well as utilize project funding available from various donors for this and other conservation activities.

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## 5.6 State of the Environment in Central Asia: Challenges and Trends

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### Introduction

Central Asia is a region of both promise and concern for the globe. The region on the one hand is rich in natural resources and on the other hand experiencing serious challenges. The environmental situation in the region could become a serious threat to sustainability. Therefore, analysis of current trends and understanding of challenges related to the state of the environment in Central Asia should become part of development agenda in the region. Focus of this report is to highlight the (i) analysis of major environmental problems, their scope and linkages, and the (ii) institutional aspects and potential improvement paths of the environmental situation.

The population of Central Asia continues to grow and in 2015 it was estimated at 65 million people. The proportion of the population living in rural areas varies from 45 percent in Kazakhstan to 73 percent in Tajikistan. Average annual growth of the population (2011-2015) in the region varies from 2.2 percent in Tajikistan to 1.3 percent in Turkmenistan. The World Bank predicts that the population in Central Asia by 2050 will reach 90 million or increase almost by 50 percent. In Central Asia, the demographic pressure will increase and remain a major factor for the degradation and changes of the environmental situation. *Over-population, growing number of workforce and the economically active number of youth will require new jobs, economic growth and increased demand on natural resources.*

The economy of the region is growing, for example the Gross Domestic Product (GDP) in 10 years grew by 10.6 percent in Turkmenistan and 3.6 percent in Kyrgyzstan. Most of the economic growth in the region is natural resource-based and related to exports of gas, oil or other natural resources. High technology exports are registered in Kazakhstan around 3 million USD or 0.0001 percent of GDP and only 1 percent of total value of exports and in Kyrgyzstan as 37 000 USD or 0.003 percent of GDP or only 0.4 percent of total exports. *The economic pressure on the environment is growing, causing deterioration of resource base, degradation of natural resources quality and quantity are becoming serious obstacle for long-term sustainability.*

Export oriented natural resources management is the main producer of human-induced environmental degradation. Contamination of water and air, reduction of biodiversity, excessive use of natural resources, drying of water bodies are common issues in the region. More than half of the species of flora and fauna disappeared in the Aral Sea region due to reduced water inflow and long-term misuse of water, which caused degradation of the river systems in the delta areas. Vulnerability of natural ecosystems are therefore very high, any future increase in pressure by human activities in the region may produce more pressures and advance Aral Sea disaster further.

Recent economic changes, transition from centrally planned economy into more of market-oriented economies have increased use of natural resources for development. The economies of Central Asia are both **(i) resource oriented and (ii) resource intensive**. Resource footprints of different economic activities in Central Asian countries are among highest in the world. Moreover, ecological pressure is very high on vulnerable ecosystems of Central

Asia. Serious concern is the **transboundary nature and interdependence of water and environmental space**, which could trigger conflicts over the shared resources and spaces among the Central Asia states. The region is known as potential “hot spot” over the trans-boundary water resources. Five countries are sharing two major rivers and use water for agriculture, energy, industry and other types of human needs and environment. However, since the collapse of Soviet Union institutional arrangements for sharing of water became inadequate for the new political settings and emerging individual interests of the region’s countries. Moreover, *intensive use of water resources will further exacerbate water resources and ecosystems linked to the water.*

### **Main Environmental Challenges of Central Asia<sup>1</sup>**

Central Asia is currently facing multi-facet environmental challenges and some of them may become serious and long-term obstacles to the sustainable development of the region. Primarily these are **water issues**: reduction of quality and quantity, growing *competition* for water resources, degradation of water environment and increasing of frequency of *natural disasters* of water nature. Current inadequate policies and institutions in water both at the intra and interstate levels will further deteriorate water related environmental problems in the region.

Second serious environmental challenge in the region related to the **high levels of land degradation**. The scale of the land degradation of different nature is widespread and threatening not only agriculture, and consequently food security in the countries, but also natural ecosystems and biodiversity of lowlands, pre-mountain and mountain areas. The scale of land degradation in Central Asia measures millions of hectares and related to the *over irrigation, salinization, agricultural, industrial* activities of human being. The region’s land resources are declining in quality and may further degrade if no proper care is taken.

Important aspects of environmental health in the region relate to the **reduction of biodiversity, and reduced resilience of environmental systems**. The number of species of flora and fauna in Central Asia has been seriously reduced due to long-term human interventions and intensive economic development. Development of desert lands, mining and extension of cities and construction of new industrial zones have led to serious disruption of environmental systems of rivers, desert zones, mountain ecosystems and other relevant ecological zones of Central Asia.

**Climate change** will further induce above-listed environmental problems of the region. The countries will face serious challenges due to the higher and longer heat waves, melting of glaciers and increased number of droughts, floods. Current predictions of climate change impact on water resources show decrease of water availability by 20-30 percent in the region by 2050. Central Asia’s *vulnerable environmental system will receive more pressure due to climate change: more demand for water due to higher temperatures, more intensive use of the land for cropping due to longer hot periods, more tree cutting and deforestation* for human needs. Overall, climate change became a serious obstacle for sustaining the

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<sup>1</sup> More detailed information is provided in the report “The State of the Environment in Central Asia: illustrations of Selected Environmental Themes and Indicators”, prepared by CAREC and ZOI.2015

natural ecosystems of Central Asia and requires huge efforts to adapt and mitigate the negative consequences.

### **Institutions: Roles and Dilemmas**

Central Asian countries are in transformation since the collapse of Soviet Union and new politico-economic systems are in place in each country. Environmental policies have been transformed since, *framed by and dependent on state's overall political system*. De jure, in all Central Asian states environmental policies are progressive and targeting protection and preservation of the natural wealth of the countries. However, *de facto policies are more of declarations and the environmental sector has been one of less importance in the process of nation building* in Central Asian countries.

Most of the stronger environmental policies in Central Asia are outcome of either impacts of *perestroika* – the late Soviet period - or are outcome of international initiatives/processes. The role of the state in nature protection is three-fold: *making, monitoring and implementing the policies*. The regulatory role of the state have been key in resource mining sectors, mainly making sure states fully control the natural resources. The monitoring functions have been executed to limited extend due to the outdated infrastructure (observatory stations, laboratories and equipment) and human expertise. *Implementation of nature protection-environmental policies of the state has been mainly very slow due to both reduced budget flow and unclear institutional structures and arrangements*.

The current institutional context in the region regarding the environment is very diverse and complex. Although, environmental protection agencies and committees are in place in each country, their role and institutional strength differ considerably across the region. Committees and agencies for nature protection in some countries are accountable to the Cabinet of Ministries; in one country it directly reports to the Parliament; in another it is under the Ministry of Energy. In all countries, environmental protection is assigned to a single organization. Implementation of the national policies on environmental sector requires coordination and cooperation between different state agencies. *This is a challenging task for the nature protection agencies to implement due to their weaker positions in the hierarchy of the government and institutional structure*.

The environmental legislations of Central Asian states are regularly updated on different aspects of nature protection, environmental monitoring, remediation measures and resource use. The countries are recognizing the primary nature of international agreements, conventions of which they are part. The environmental normative documents such as technical standards, monitoring indicators and implementing processes are applied in regulatory interventions by the state. This is one of the weakest areas in environmental legislation. *Countries are experiencing serious problems with both development and application of environmental normative documents in practice*.

However, although at the national level the structure of nature protection is relatively streamlined, at the local, mezzo and regional (provincial) levels environmental agencies are weak and outdated. *The agencies have kept roles and responsibilities of the Soviet period with large functions. However, the current capacities of the agencies cannot cope with the responsibilities allocated to them*.

## Ideas and Solutions

Strengthening of the environmental protection in Central Asia and coping with the manifold environmental problems require a systematic approach towards institutions and policies. Major focus has to be given to the **improvement of capacities of the national agencies on multi-sectoral coordination and cooperation** on major environmental challenges within and amongst countries. Moreover, recent initiatives of Central Asian countries on strengthening of nature protection through initiation of national programmes could be used as platforms of such interventions. The nature protection agencies are lacking access to knowledge, former centres are either closed down and new ones are lacking proper human and institutional capacities. Therefore, an **important aspect is to form stronger environmental knowledge centres in each country or/and linking them with other centres of excellence at the regional and international level.**

Environmental problems of the region require **innovative solutions and approaches**. The role of the private sector in addressing environmental problems is underestimated in all countries of the region. Both investors and pollutant of the environment are private business. The current setting of the environmental system regulates the use of natural resources through quotas for private businesses. However, private businesses can play a more serious role in protection, restoration and investment in the environmental improvements. **New economic tools such as economic valuation of environmental services, inclusion of natural wealth should help to improve the planning and governing of the national economies.** The environment must become part of the development system and valued as an independent source of wealth and services.

Environmental monitoring has been lagging behind in Central Asia since collapse of Soviet Union. The former monitoring system and indicators have been slowly degrading due to both absence of maintenance and funding. The State of the Environment reports at the national level have been restarted recently. Access to information on the state of the environment became a serious issue. **Application of international “best practices” and approaches on monitoring and reporting on the state of the environment and provision of access to the data and information to the wider public will strengthen the role of civil society and concerned citizens in nature protection.** Without vibrant and active civil society engagement, Central Asian countries will face further acceleration of the problems related to the environment.

**The environment in Central Asia is transboundary and interdependent in many contexts:** shared water resources, transboundary nature zones, migration patterns of birds, animals, etc. However, environmental problems are primarily national state policies. In order to coordinate at the regional level, Central Asian states have formed a few institutional settings, such as the International Fund for Saving Aral Sea (IFAS), Interstate Commission on Sustainable Development (ICSD), Interstate Commission on Water Coordination (ICWC) and Regional Environmental Center (CAREC). Almost during three decades those regional organizations have performed their function within very dynamic inter-state relations. **Inter-state relations were not supportive of regional cooperation in environmental issues.** The serious issues of territorial and national integration, economic development and security concerns were overwhelming for inters-state relationships. However, environmental problems are currently threatening economies and social systems of all countries of the region.

**Therefore, strong joint action by countries of the region to overcome environmental threats is a pre-condition for their survival and sustainable development.**

## **Conclusions**

Central Asia is currently facing serious environmental challenges related to water, land and biological diversity of the ecosystems. In this context, efforts of national governments to strengthen environmental policies and institutions would be a first pre-requisite for improving the environmental situation. Improvement of capacities of local-mezzo level organizational structure, provision of more incentives for private sector to invest into the environmental protection and restoration are areas of primary focus.

Economic valuation of the environmental services and wealth could help to improve current economic decision making in development interventions. Monitoring, indicators and access to environmental information are key areas for improving the environmental situation. The role of the public is key in making the process of environmental protection more results-oriented and participatory. Therefore, viable communities of concerned citizens and public have to have an access to environmental information.

Central Asian countries should strengthen regional cooperation in order to respond to common threats and form alliances towards improving the situation in transboundary environmental systems. Common vision and cooperation on the environment will reduce risks of uncoordinated overuse of natural resources and open up new opportunities for sustainable development.

## 5.7 The Efficiency of Privately Protected Areas: The Case of the Caucasus Wildlife Refuge, Armenia

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### Abstract

*Protected areas are pivotal for conserving both ecosystems and threatened species. While the persistence of biodiversity often requires a suite of management strategies, protected areas provide a buffer from a myriad of threatening processes<sup>2</sup>. Gap analysis of the current legislation basis, as well as practical fails in state management of local protected areas highlight that many ecosystems and most threatened species are not well preserved, neither are international funds targeted to strengthen state protected areas used effectively and purposefully. In most cases, essential lack of follow up, strictly limited monitoring of provided funds and untargeted use of funds have given rise to significant biases in the effective management of protected areas. Systematic conservation analysis in the country relating to sustainable management of protected areas has led to the establishment of a new management model involving private actors in conservation by establishing privately protected areas which practically redress these biases by providing effective tools of species monitoring and conservation strategies. The expansion of current protected area networks has the potential to overcome these biases and improve ecosystem protection and the survival of threatened species populations, helping to avoid biodiversity loss and species extinctions.*

There are 34 protected areas and 232 natural monuments found in Armenia<sup>3</sup>. The 166 endangered plants (36.7 percent of all Red listed plants) are all found (Shikahogh reserve has the highest figures) in protected areas. From 155 Red listed invertebrates, 145 (93.5 percent) are found in protected areas (Khosrov reserve, Arevik and Sevan National parks). From 153 Red listed vertebrates, 96 (62.7 percent) are found in protected areas (Khosrov, Shikahogh reserves, all national parks). State sanctuaries presented no data on the occurrences of animals and plants.

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<sup>2</sup> Tal Polak, James E. M. Watson, Richard A. Fuller, Liana N. Joseph, Tara G. Martin, Hugh, P. Possingham, Oscar Venter, Josie Carwardine. Efficient expansion of global protected areas requires simultaneous planning for species and ecosystems. Published 29 April 2015. DOI: 10.1098/rsos.150107

<sup>3</sup> National programme on the conservation and action plans for the development of Armenia's Protected areas/project design. Yerevan 2014

Table 5.7.1. Summarizing List with Protected Area State Categories

N	STATE CATEGORY	NAME	IUCN CATEGORY COMPLIANCE	TOTAL AREA (HA)
1	State reserve	Khosrov Forest State Reserve Shikahogh reserve Erebuni reserve	Category I	35,439.6
2	National parks	Sevan Dilijan Arpi lake Arevik	Category II	236,802.1
3.	State sanctuaries	Akhnabad Ardjatkhlani Gihi Gyulagarak Her-her Sosi park Caucasian mrtavardeni Vordan karmir .....to 27	Category IV	114,812.7
4.	National monuments	232 national monuments	III	-

\* Category IV protected areas aim to protect particular species or habitats and management reflects this priority (IUCN Protected Areas Categories System)

Given the high occurrence of locally endangered biodiversity in most of the state reserves, it is essential to strengthen their protection, as well as to establish a practical working management plan/review and modify the old plans with special focus on monitoring of species and overall security measures. In general, most of the reserves and national parks in Armenia have the following shortcomings which hinder effective management in protected areas, namely:

1. Most protected areas have vertical management systems thus an inflexible decision making process. In most cases, due to poor communication and wrong reporting systems, protected areas fail in implementing even their routine tasks.
2. Given the low budgets, the communities adjacent to protected area territories are not actively being involved into the protected area protection (there is also no wish given the absence of understanding about additional income generation from protected areas). Absence of motivation is another crucial factor given the low level of community awareness.
3. Poor quality/absence of technical capacities and low quantity of qualified staff. Given the low salaries and absence of technical skills/equipment, there is very low level of interest in communities to work in protected areas. Those employed often lack the necessary knowledge and skills, and, given the unpurposeful usage of budgets, are not trained/re-qualified. No long term plans on education/training/human resources and management exist.

4. No scientific base at protected areas. Given the low budgets and ineffective human resource management, the most important part of all protected areas activities is not being implemented. Even if scientific articles/reports are being occasionally published, no proper attention is given to the contents and suggested ways for improvement. Consequently, in most cases, there is no comprehensive reporting on scientific findings, no biodiversity monitoring, as well as no databases of animals, which significantly affects the effective decision making process in protected areas.
5. Deficient implementation of protected area management plans, as well as low qualifications of staff in implementing the mentioned plans (no set standards). Poor co-operation between protected areas and interested stakeholders.

In order to combat the challenge of ineffective protected area management in the country, the FPWC has acquired 12,355 acres of land along the Urts mountain range southeast of Yerevan, bordering the Khosrov State Reserve.

The Caucasus Wildlife Refuge is a 4000 hectares territory in the vicinity of Khosrov Forest State Reserve. The Khosrov reserve as well as adjacent territories is a core area for South-Caucasian biodiversity and rare wildlife species as Armenian Mouflon, Syrian Brown bear, Bezoar goat, Black Eurasian vulture, Bearded vulture, Caucasian Leopard, Caucasian Lynx and Armenian viper. The area of FPWC's Caucasus Wildlife Refuge also forms a corridor for the mentioned species. While in 2010 wildlife in the area was nearly non-existent – mainly due to illegal hunting activities – trap camera footage now shows regularly huge quantities of Bezoar goats as well as pictures of large predators like wolves, bears, lynxes and even a Caucasian leopard of which only about 8-13 are left in Armenia according to the IUCN Red List<sup>4</sup> (Fig.5.7.1).



Pictures 1 & 2: Camera trap photos showing Bezoar ibex (1) and Caucasian lynx (2). CWR 2015

<sup>4</sup> <http://www.iucnredlist.org/details/15961/0>





Picture 3: Screen shot from camera trap showing Caucasian leopard. CWR 2013

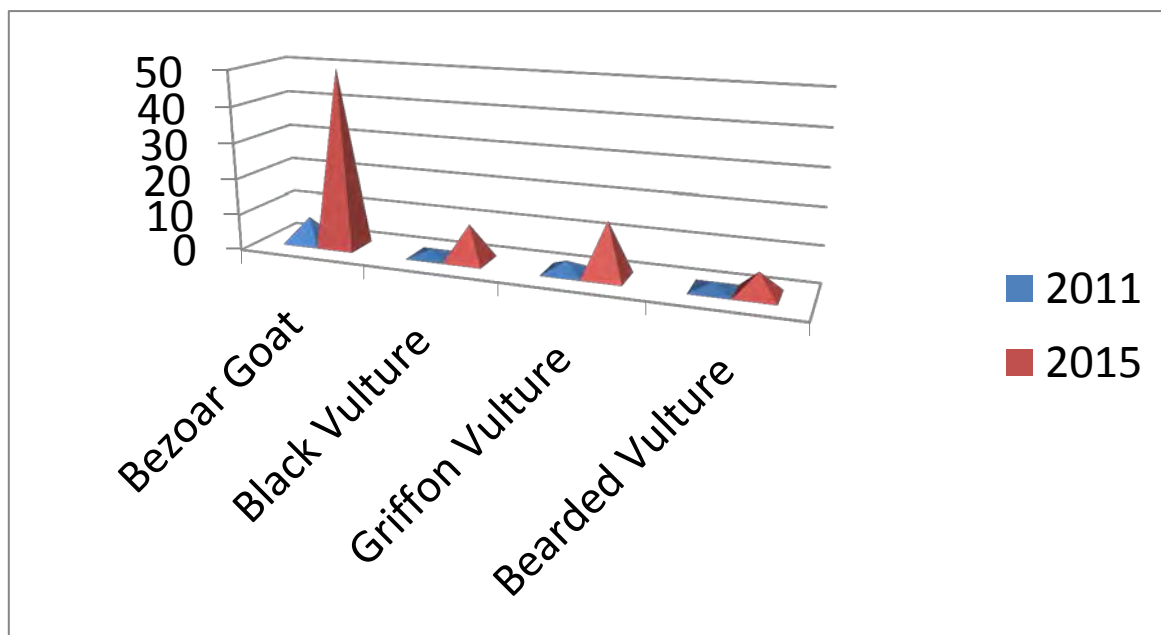
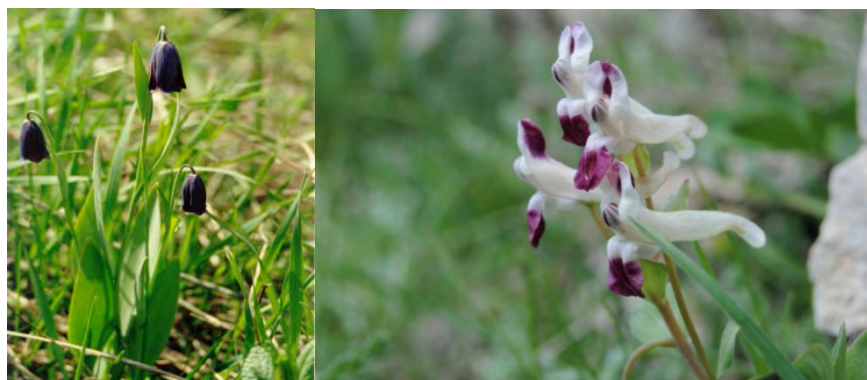


Figure 5.7.1. Animals Quantity Increase for a Period 2011-2015 (Permanent Observation Data)

According to plant survey implemented by Dr. Prof. Eleonora Gabrielyan in 2011 (Institute of Botany National Academy of Science, Republic of Armenia), more than 300 plant species are found only at Dahnak mountain/CWR.



Pictures 4 & 5: Portrait pictures of flowers *Fritillaria Hajastanica* (4) and *Corydalis seisumsiana* (5). CWR 2011

At least 16 animal species are found in CWR recorded in IUCN Red List with VU, LC and EN categories (Bearded Vulture, Cinereous Vulture, Griffon Vulture, Golden Eagle, Caucasian leopard, Brown bear, Wild Cat, Armenian Mouflon, Armenian viper, Bezoar ibex, Mehely horseshoe bat, etc.)<sup>5</sup> (pictures 1,2,3).

According to the CWR Management plan, the wildlife is continuously monitored by 5 rangers and a number of trap cameras located at respective altitudes of the area. The recorded animal and plant species are being monitored via ranger's observations, as well as according to the data received from camera traps. The recorded results are being incorporated into GIS maps, and respective changes made to the Monitoring and Conservation Plan constantly (Figure 5.7.2).

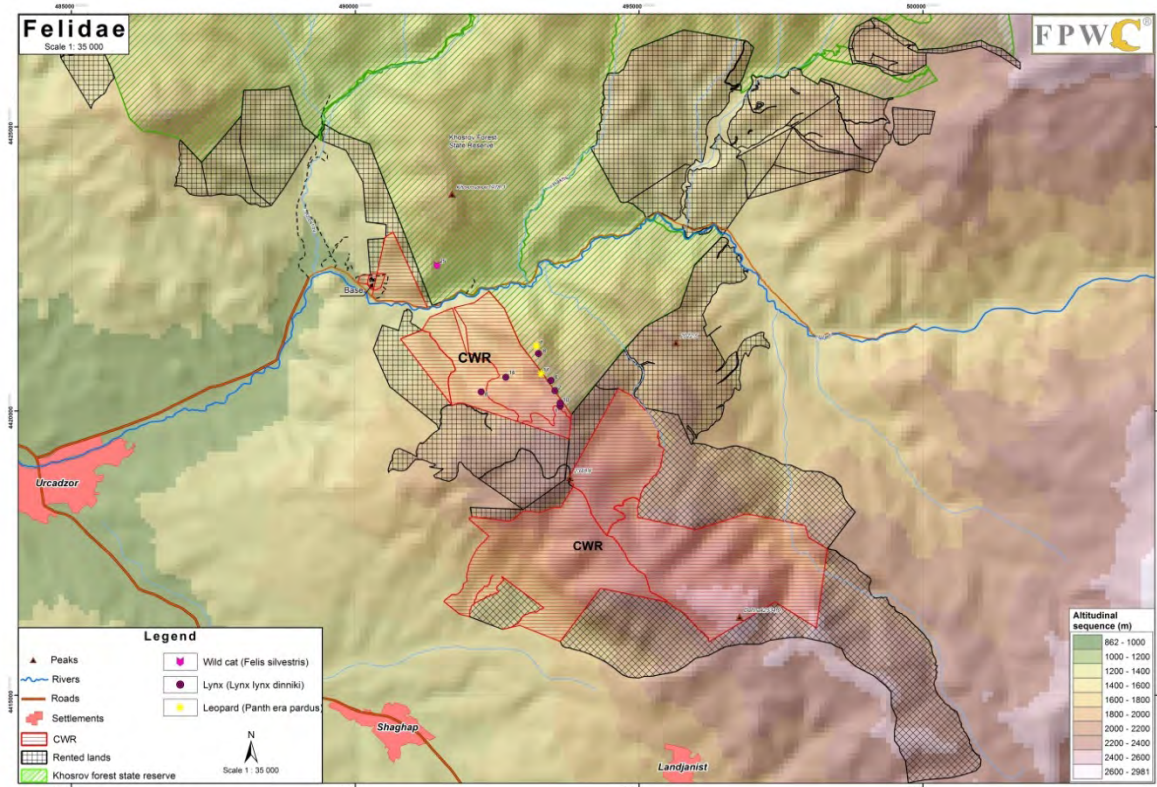


Figure 5.7.2. Distribution of Felids in CWR. GIS Map Database

The CWR management closely cooperates with international and local universities and experts to trigger scientific exploration and evaluation of biodiversity. Poaching, logging, overgrazing and other human activities are strictly prohibited in the whole area and specifically strengthened in the core zones of the refuge. The environmental officer's position in the community funded by FPWC has the right to apply penalties and hold the intruders for two hours before the police records. Furthermore a Memorandum of Understanding has been signed with the local Ministry of Nature Protection back in 2012 outlining the commitment for future collaboration in the field.

<sup>5</sup> Animal survey data. @FPWC 2012

Habitat restoration activities are being implemented constantly through tree plantings, including newest technologies for the arid/semi-arid areas, such as Hydrogel. The direct benefits are briefly summarized below, yet are not limited to the following:

- New job opportunities for community members/direct finance flow to community budgets as a result of land lease/strong threshold of the community;
- Equipping kindergartens and schools with energy efficient and environmentally friendly technologies such as solar panels;
- Renovation of Bed and Breakfast houses and development of ecotourism infrastructure to involve community members;
- Lighting of streets with energy efficient technologies;
- Renovation and installation of drinking water network in arid areas with no access to water;
- Support to farmers to mitigate human-wildlife conflict and promote their harvest in local markets;
- Education and public awareness projects are organized on a permanent basis (SunChild Eco-club, Green School and others) involving community schools;
- Organic agriculture is being promoted as an additional income source directly involving community members.

With private actors involved in nature and wildlife conservation activities in the country, and set up of a scientific network, as well as state level cooperation, the efficiency of management increases and shows tangible results for the communities actively involving them into nature conservation efforts.

## **5.8 Planning of a New Protected Area in the South of Karakalpak Ustyurt**

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### **Abstract**

The study applies a systematic conservation planning and analysis tool for a protected area zonation attempt to the specifics of Uzbekistan's nature conservation context. It supports decision making on protected area zonation at scientific basis for a currently not recognized conservation demand in Southern Ustyurt in Uzbekistan, at the triangle border to Kazakhstan and Turkmenistan.

The planning has been done through the identification of threats, human impact, occurrence of flagship species and most valuable habitats. The available information about the study area is scarce and outdated. It is a typical situation for natural sciences in Uzbekistan after the collapse of the Soviet Union due to socio-economic changes. An international, interdisciplinary ecological expedition in Southern Karakalpak Ustyurt, conducted in May 2012 (and followed by expeditions in 2013 and 2014), enabled the scientists to collect up-to-date field data from the study area.

### **Introduction**

Since most of protected areas in Uzbekistan have been established during Soviet time, there are no guidelines how to define a category and gradational zonations during the establishment process of a protected area, considering the legal framework, natural features and social context.

The Ustyurt Plateau is located between the Aral Sea and the Caspian Sea. Its area is about 200,000 km<sup>2</sup>, and its maximum altitude is 370 m in the southwest (Zonn et al., 2009). The plateau is fragmented by steep cliffs (chinks) which are up to 150 m high. The average annual temperature is about 12 °C; the absolute maximum and minimum might reach up to +42°C and –40 °C, respectively (Karnieli et al., 2008). The Uzbek part of the plateau, called Karakalpak Ustyurt, is situated in the western part of the country and belongs to Kungrad district of semi-autonomous republic of Karakalpakstan. The study area is found in the southern part of Karakalpak Ustyurt in adjacency to the borders of Kazakhstan and Turkmenistan, which includes two major geographic objects – Assake-Audan Depression and Sarykamysh Lake.

According to Rachkovskaya (2003) Southern Ustyurt floristically belongs to Western-Southern-Turanian subprovince of Southern-Turanian province. The flora of Ustyurt comprises 724 species of 295 genera and 60 families (Bakhiev et al., 1987). The fauna belongs to the Ustyurt zoogeographic territory of the subzone of northern deserts of the Iranian-Turan province. The fauna of the region comprises of 25 species of reptiles, 1 species of amphibian (Bogdanov, 1961), 67 species of mammals, although 9 of them should be confirmed (Plakhov, 2002). 15 fish species were observed in Sarykamysh Lake (Zholdasova et al, 2009). The plateau is an important stop-over of bird migration routes. 230 bird species can be encountered in various seasons in wetlands (Sarykamysh and Sudochoye lakes) near the plateau (Kashkarov et al., 2008).

## Methods

Our investigation has been focused on planning a protected area for the conservation of habitats in Southern Karakalpak Ustyurt. The proposed area should be part of the national network of protected areas which has been developed within the Master plan development under the Programme of Work on Protected Areas of CBD. This document is conceived as a comprehensive summary of the activities and strategies needed to ensure a fully representative and functional network of well managed and financed protected areas. The document is developed by joint project Government of Uzbekistan and UNDP-GEF “Strengthening Sustainability of the National Protected Area System by Focusing on Strictly Protected Areas”, but still hasn’t approved by the government. The authors adapted proposals from Pressey & Bottrill (2009) which consists from 11 stages and Appleton (2012) which consists from 8 stages for the national context.

### **Stage 1:** Describing the context for conservation areas

- 1.1 Political, economic and social setting for conservation planning,
- 1.2 Identifying the types of threats to natural features that can be mitigated by spatial planning

### **Stage 2:** Identifying conservation goals

- 2.1 Review of current spatial protection
- 2.2 Review of current species protection
- 2.3 Priorities and obligations for protection of species and habitats (GAP analysis)

### **Stage 3:** Collecting and compiling data on socio-economic variables

- 3.1 Compiling data about industrial, agriculture, transport impact

### **Stage 4:** Collecting and compiling data on biodiversity & other natural features

- 4.1 Biotope features
- 4.2 Species diversity
- 4.3 Other natural features

### **Stage 5:** Setting conservation objectives and targets for the protected area

- 5.1 Identifying the category of the protected area

### **Stage 6:** Preparation of maps

- 6.1 Conservation priority map.
- 6.2 Socio-economic, cultural priority and infrastructure map
- 6.3 Threat map

### **Stage 7:** Zone integration

The zonation has been made according to following criteria:

- Most valuable habitats for flagship species;
- Connectivity with protected areas in other countries;
- Migration corridors for flagship species to other countries

## Results

As the adapted approach combines analysing available data and developing of several layers of maps, the authors decided to compile most relevant parts of the research. The analysis of field work findings results in a species approached GAP analysis recognizing most threatened species (according to IUCN Red List and red book of Uzbekistan) (compare table).

Table 5.8.1. GAP Analysis (Stage 2.3)

	Outside of any protected areas in Uzbekistan	Outside of strict protected areas (I, II) in Uzbekistan
Species with global AND national conservation status	3 species	6 species
Species with global OR national conservation status	9 species	12 species

1. Species with national and global conservation status and outside of any national protected areas: Transcaspian urial (*Ovis vignei arkal*), Asiatic cheetah (*Acinonyx jubatus venaticus*), Four-lined Snake (*Elaphe quatuorlineata sauromates*)
2. Species with national and global conservation status and outside of existing national protected areas with high (I, II) category: Saiga antelope (*Saiga tatarica tatarica*), Khulan (*Equus hemionus kulan*), White-headed Duck (*Oxyura leucocephala*), Imperial Eagle (*Aquila heliaca*), Macqueen's Bustard (*Chlamydotis undulata macqueennii*), Black-winged Pratincole (*Glareola nordmanni*)
3. Species with national or global conservation status and outside of any national protected areas: Pin-tailed Sandgrouse (*Pterocles alchata*), Aral Stickleback (*Pungitius platygaster aralensis*), Honey Badger (*Mellivora capensis*), Turkmen Caracal (*Caracal caracal michaelis*), Central Asian tortoise (*Agrionemys horsfieldii*), Climacoptera ptiloptera, Malacocarpus crithmifolius, Salsola chiwensis, Euphorbia sclerocyathium
4. Species with national or global conservation status and outside of existing national protected areas with high (I, II) category: Steppe Eagle (*Aquila nipalensis*), Squacco Heron (*Ardeola ralloides*), Eurasian Spoonbill (*Platalea leucorodia*), Glossy Ibis (*Plegadis falcinellus*), Greater Flamingo (*Phoenicopterus roseus*), Mute swan (*Cygnus olor*), Whooper Swan (*Cygnus cygnus*), Osprey (*Pandion haliaetus*), White-tailed Eagle (*Haliaeetus albicilla*), Great White Pelican (*Pelecanus onocrotalus*), Little Egret (*Egretta garzetta*), Great Black-headed Gull (*Larus ichthyaetus*)

Four major biotopes have been identified in the study area during the Stage 4.1.

**Shrub saxaul desert** with dominance of *Haloxylon aphyllum* on a high layer and sometimes perennial and annual plants like *Kalidium caspicum*, *Salsola orientalis* on low layer (Allaniyazov & Sarybayev, 1983). Despite of small areas (3,5% according to Rachkovskaya, 2003), the habitat is valuable for a lot of animal species.

**Dwarf semi-shrub desert** with dominance of *Anabasis salsa*. According to Allaniyazov (1983) about 80% of the desert is covered by communities with dominance of *Anabasis salsa*. But *Artemisia spp.*, *Salsola spp.* are present here as well (Allaniyazov & Sarybayev, 1983). This is zonal vegetation (Rachkovskaya et al., 2003).

**Wetland** is the area of brackish water along the shore of Sarykamysh Lake and Shakhpakhty small lake. The major vegetation along the cost is represented by *Phragmites australis*.

**Cliffs** are usually quite steep along the plateau. In the study area cliffs exist in Shakhpakhty depression, Assake Audan depression, and Southern cliffs of the plateau in the front of Sarykamysh lake. The results of the expedition prove that cliffs have more plant diversity than the plateau. Cliffs are suitable habitats for some endemic species like Transcaspian urial (*Ovis vignei arcal*).

**Salt desert** is another widespread biotope in the study area. The surface is sparsely covered by halophytes like *Halocnemum strobilaceum*, *Kallidium caspicum*, *Sueda microsperma*, *Climacoptera spp.* This biotope doesn't have crucial importance for selected flagship species.

Another important part of the work has been the identification of a suitable type of protected area.

Table 5.8.2. Protected Area Management Objectives and IUCN Categories (Stage 5.1)

Management objective	Ia	Ib	II	III	IV	V	VI	Study Area
Science	3	1	2	2	2	2	1	1
Wilderness	2	3	2	1	1	0	2	3
Biodiversity protection	3	2	3	3	3	2	3	3
Environmental services	2	3	3	0	3	2	3	1
Natural/cultural features	0	0	2	3	1	3	1	1
Tourism and recreation	0	2	3	3	1	3	1	0
Education	0	0	2	2	2	2	1	0
Sustainable use	0	1	1	0	2	2	1	2
Cultural attributes	0	0	0	0	0	3	2	0

For each comparison we have calculated the difference between the objectives. The calculation shows that categories Ia and Ib are most suitable for the study area. According to the national legislation it should be a "Zapovednik" (strict nature reserve) or complex (landscape) "zakaznik" respectively. Both categories stipulate a different zonation.



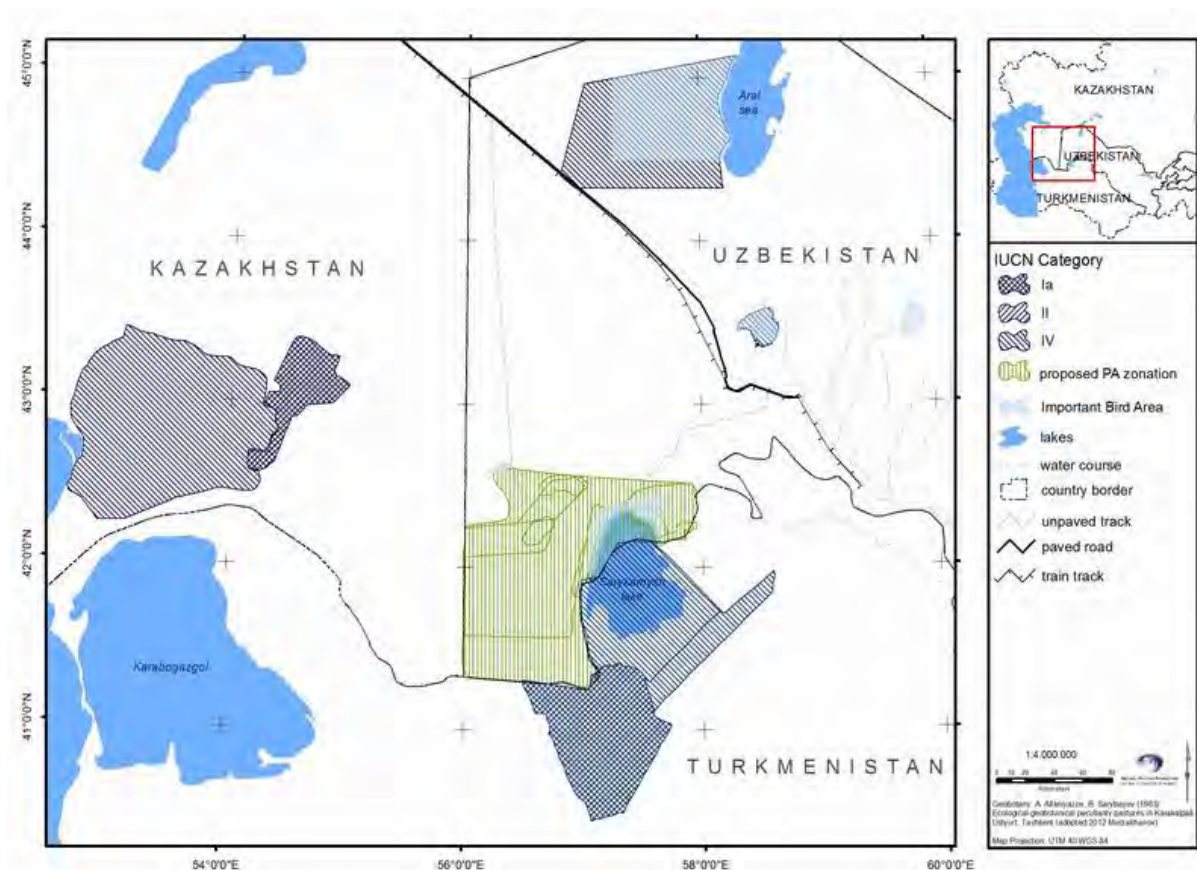


Figure 5.8.1. Existing and Proposed Protected Areas around the Study Area (Stage 7)

## Discussion

As next steps it is necessary to update the map according to latest available data and discuss the draft with stakeholders. It is also important to involve stakeholders from Kazakhstan and Turkmenistan in the process since transboundary nature conservation efforts have been proven as more and more relevant and are thus considered at international level under the CBD, Central Asian Mammals Initiative (CAMI) under CMS as well as at bilateral level as stressed through the agreement of Uzbekistan and Turkmenistan for closer scientific cooperation among others in the field of environmental and nature conservation. Kungrad forestry and hunting ground could be a basis for the future protected area.

## Acknowledgments

The research was completed in cooperation with the Main Forestry Department (Uzbekistan) and Michael Succow Foundation (Germany) and with the support of the Central Asian Biodiversity Network (CABNET) financed by the German Academic Exchange Service (DAAD). The authors want to thank Marion Doenhoff Foundation, Manfred Hermsen Foundation (Germany) and the Federal Ministry of Environment, Nature Conservation, Building and Nuclear Safety for financial support.



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## **5.9 Implementing Requirements under the Convention on the Conservation of Migratory Species of Wild Animals (CMS): Challenges and Ways Forward**

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Geographical scope of this publication: Belarus, Moldova, Ukraine, Armenia, Azerbaijan, Georgia, the Russian Federation, Mongolia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan

### **Abstract**

As the only international treaty for the conservation of migratory species, CMS is a catalyst for conservation action across borders. In the countries of Eastern Europe, Caucasus and Central Asia, CMS has been active for over 20 years through its mandate to improve transnational communication, raise awareness, establish action plans and stimulate implementation. The main obstacles remain poor governance, insufficient scientific knowledge, capacities and funding. One of the solutions is to maximize the impact of limited resources, though such efficient tools, as the Central Asian Mammals Initiative (CAMI). CMS will continue assisting governments in their conservation efforts, including exploring new funding options.

### **Background and CMS Experience in the Region**

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) is an inter-governmental environmental treaty concluded under the aegis of the United Nations Environment Programme in 1979. As the only global convention on migratory species, CMS aims to conserve terrestrial, aquatic and avian migratory species, their habitats and migration routes. Migratory species threatened with extinction are listed on Appendix I of the Convention. CMS Parties strive towards strictly protecting these animals, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them. Besides establishing obligations for each State joining the Convention, CMS promotes concerted action among the Range States of many of these species. Migratory species that need or would significantly benefit from international co-operation are listed in Appendix II of the Convention. For this reason, the Convention encourages the Range States to conclude global or regional agreements. In this respect, CMS acts as a framework Convention. The agreements may range from legally binding treaties (called Agreements) to less formal instruments, such as Memoranda of Understanding (MOU) and Special Species Initiatives (SSI), and can be adapted to the requirements of particular regions. The development of models tailored according to the conservation needs throughout the migratory range is a unique capacity to CMS.

The political changes of the recent decades in the region of Eastern Europe, Caucasus and Central Asia, have given rise to new threats to migratory species, as well as to new challenges, but also opportunities for conservation action. After the break-down of the Soviet

Union, new political borders including border fences appeared on the routes of migrating animals, fragmenting the habitat and making their populations even more prone to human disturbance. A break-down of old scientific and regulatory institutions and an economic recession lead to a loss on knowledge on migratory species, poor wildlife management and law enforcement. More recently, population growth, industrialization and infrastructure development have put additional pressure on habitats of wild animals. As a result, the region has witnessed unprecedented declines in migratory species. In addition to national and some bi-lateral efforts to counter-act these negative trends, the region's governments have become increasingly engaged with the international community, including funding institutions, NGOs, scientific experts and MEAs to build up new strategies to conserve migratory species.

CMS has been active in the countries of Eastern Europe, Caucasus and Central Asia for over 20 years, starting from the region's first MOU for the conservation of the Slender billed curlew, which was signed by Uzbekistan, Georgia and Kazakhstan in 1994 (for an overview see Table 5.9.1). Since then, all 13 countries of the region have become engaged in at least one of the CMS legal instruments for the protection of migratory species; 10 countries signed the Convention. In total, there are 7 MOUs, 2 SSIs and 3 legally-binding agreements active in the region (Table 5.9.1), which cover 13 large mammals, over 50 bat and, over 200 bird species and 24 species of cetaceans.

The commitments of the governments under CMS did not remain fruitless, as cross-boundary dialogue was strengthened, science-based action plans were established and new on-site conservation projects were initiated with the assistance of CMS. Furthermore, the numbers of some CMS-listed species stopped declining or even showed an upward trend (e.g. Bukhara deer, Saiga antelope) in the recent decades. However, to date, the conservation status of all migratory species of the region remains unsatisfactory, as advancing habitat fragmentation, poaching and other threats evolve in this economically and politically dynamic region. Thus, conservation actions need to be continued and intensified in response to existing and emerging threats.

## **Challenges to CMS Implementation and Ways Forward: the Example of Central Asia**

### ***Challenges***

High biodiversity and large expanse of still inter-connected habitats on the one hand, and increasing threats to migratory wildlife on the other hand, are characteristics that are common to Central Asia, Caucasus and Eastern Europe. We will focus on Central Asia, as a priority region for CMS, to highlight the challenges and ways forward for the implementation of the Convention.

Central Asia harbors the largest intact and interconnected grasslands worldwide. As such, it is of global importance for many migratory and nomadic mammals which rely on the vast steppe, desert and mountain ecosystems that enable the essential long-distance movements which ensure their survival. In addition, Central Asia is of vital importance for over 150 species of migratory birds, which are known to breed, stop over or spend the winter period there. However, this global migration hot spot is threatened due to human activities causing habitat fragmentation and degradation, due to illegal hunting/poaching and climate

change. Therefore, facilitating action on the conservation of migratory animals and their habitat in Central Asia is a key area of action for CMS.

To strengthen the implementation of CMS, a number of obstacles both within the region and within the CMS need to be addressed. According to a recent assessment conducted by the CMS and the GIZ with the support of the European Union and the FLERMONECA project (Karlstetter and Mallon, 2014) the main obstacles to the implementation of the convention in Central Asia include (but are not limited to) the following: 1) insufficient trans-boundary cooperation and communication; 2) poor governance and lack of legal security; 3) insufficient scientific knowledge on migratory mammals; 4) unsustainable environmental management; 5) weakened law enforcement and little respect for the law on all levels of society; and 6) socio-economic drivers.

In addition to these obstacles, CMS has a limited capacity to coordinate conservation activities in this vast region, encompassing over 200 species of migratory mammals, bats and birds. For example, the level of implementation of MOUs is proportional to the frequency of communication with countries involved, reflecting the coordination efforts of the CMS Secretariat (UNEP/CMS Secretariat, 2013). This, in turn, is proportional to available funding and personnel. There is only a relatively small amount of funding available for CMS action in Central Asia, reflecting a generally weak interest of donors, mostly industrialized countries, to invest in conservation in the region through e.g. their voluntary contributions.

### **CMS ways forward**

CMS has extensive experience and well-established tools through which it is able to achieve excellent results in steering international conservation action. A recent expert assessment recognized that CMS plays a critical role in fostering dialogue on conserving trans-boundary populations of wildlife among governments as well as the private sector in Central Asia (Karlstetter and Mallon, 2014). CMS sees its role primarily in: 1) improving trans-boundary cooperation and communication; 2) raising awareness and building capacity for better governance and environmental sustainability; 3) facilitating research projects and knowledge transfer to improve knowledge on migratory species; 4) coordination of conservation action of national and international players; 5) raising funds or facilitating new international projects. These objectives correspond to the main challenges identified in the abovementioned assessment of CMS implementation in Central Asia (Karlstetter and Mallon, 2014).

The governments of the region made a number of important commitments through CMS and its instruments. From Central Asian countries considered in this report, namely Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan and Mongolia all but one (Turkmenistan) are Parties to CMS. In addition, all Central Asian countries are Signatories to MOUs. There are 3 MOUs relevant for Central Asia: the MOU concerning the Conservation, Restoration and Sustainable Use of the Saiga antelope (*Saiga spp.*), the MOU concerning the Restoration and Conservation of the Bukhara deer (*Cervus elaphus yarkandensis*), and the MOU concerning the Conservation of the Siberian crane as well as two SSIs (the Central Asian Flyway and Central Asian Mammal Initiative). The Central Asian Mammal Initiative (CAMI) was most recently developed under CMS to provide a strategic framework to conserve 15 species of migratory mammals. In September 2014, Range States and concerned stakeholders came together to agree on the joint Programme of

Work (POW) for the CMS CAMI. The POW addresses main threats and issues not (sufficiently) covered by existing work programmes and explores synergies between the conservation needs of different species to maximize the impact of the limited resources (Rosen, Michel and Röttger, 2014). Participants also agreed on a coordination mechanism, including the opportunity to draw on the expertise of existing specialist groups and species networks.

Examples of concrete results of CMS implementation include completed projects that benefited migratory species (over a dozen of small scale funding projects within the Saiga and Siberian Crane MOUs, as well as a GEF project, initiated and supported by CMS under the Siberian Crane MOU), and several comprehensive assessments conducted by international experts in Central Asia. These assessments aimed at improving knowledge on migratory species and threats to their survival and guiding policy to reduce these threats. The following publications were produced as a result: "Saiga Crossing Options", "Assessment of Gaps and Needs in Migratory Mammal Conservation in Central Asia", "Guidelines for Addressing the Impact of Linear Infrastructure on Large Migratory Mammals in Central Asia". Finally, CMS has raised awareness of the significance of Central Asia as a threatened migration hot spot and continues to do so through meetings, publications and its web presence.

CMS has taken the conservation issues of the region to a global agenda and created a network to advise on and to support conservation action in Central Asia. In addition, CMS has brought the regional stakeholders around one table to make commitments to conservation. Now is the time to take decisive measures. However, limited funding remains a major obstacle for the region's wildlife conservation. Concerted efforts and partnerships between governments, private sector and local communities are required to ensure implementation (Rosen, Michel and Röttger, 2014). CMS can support the countries in those efforts to make their commitments a reality.

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Table 5.9.1. Status of Countries in the Region of Caucasus, Eastern Europe and Central Asia with Respect to CMS Legal Instruments: Memoranda of Understanding (MOUs), Agreements and Special Species Initiatives (SSIs)

	MOUs							Agreements			SSIs		
Country	Birds of Prey (rap-tors)	Siberi-an Crane	Bukhara deer	Saiga Antelope	Aquatic warbler	Slender-billed curlew	Middle-European great Bus-tard	AEWA <sup>1</sup>	ACCO-CO-BAMS <sup>2</sup>	EURO-BATS <sup>3</sup>	CAF <sup>4</sup>	CAMI <sup>5</sup>	CMS Party
Russia	Range state	2002		2009	Range state	Range state	Range state	Range state	Range state	Range state	Range state	Range state	no
Belarus	Range state				2003			2016		Range state			2003
Ukraine	Range state				2003	1995	2002	2003	2004	1999			1999
Moldova	Range state						2000	2001		2001			2001
Armenia	2008							Range state		Range state	Range state		2011
Azerbaijan	Range state	1998						Range state		Range state	Range state		no
Georgia	Range state					1994		2001	2001	2002	Range state		2000
Mongolia	2008	2004		2010							Range state	Range state	1999
Kazakhstan	Range state	1998	2002	2006		1994		Range state		Range state	Range state	Range state	2006
Kyrgyzstan	Range state										Range state	Range state	2014
Uzbekistan	Range state	1998	2002	2006		1994		2004			Range state	Range state	1998
Tajikistan	Range state		2002								Range state	Range state	2001
Turkmenistan	Range state	1998	2002	2005		Range state		Range state			Range state	Range state	no

<sup>1</sup> The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA);

<sup>2</sup> The Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic area (ACCOBAMS);

<sup>3</sup> The Agreement on the Conservation of Populations of European Bats (EUROBATS);

<sup>4</sup> Central Asian Flyway (CAF);

<sup>5</sup> Central Asian Mammals Initiative (CAMI)

## 5.10 Snow Leopard Conservation: The Global Initiative

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### Introduction

The Snow leopard (*Panthera uncia*) is an endangered and flagship species of the high mountain ecosystem of the twelve Asian countries in which it occurs. The exact global population of snow leopards in the wild is unknown, estimates range from about 4.000 – 6.600 animals (Jackson et al. 2008, GSLEP 2013). The population has experienced drastic declines in some places: the Kyrgyz snow leopard population dropped from about 1400 animals to approximately 300 today. The species is classified as endangered in the IUCN Red List (Jackson et al. 2008).

Snow leopards live in high mountain ecosystems, generally at elevations between 2,700 and 5,000 meters above sea levels, though they are also found at lower elevations in higher latitudes. The species occurs across a vast area of approximately 1.8 million square kilometre in twelve countries: Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russian Federation, Tajikistan and Uzbekistan. Snow leopard's prey includes mainly wild mountain ungulates such as Blue sheep, Argali, Ibex, Markhor as well as smaller mammals such as marmots and birds.

About 60 percent of the Snow leopard habitat is located in China. Map 5.10.1 shows the global distribution area of Snow leopards, also illustrating the fact that snow leopards habitat crosses international boundaries. Individual animals, especially young after separating from their mother, are known to travel significant distances and ignoring international borders.



Figure 5.10.1. Snow Leopard Distribution Map



## Key Threats

Snow leopards are illegally hunted and killed for their fur as well as their bones which are used in Traditional Asian Medicine. Snow leopards sometimes kill livestock, which leads to angry herders killing snow leopards in retaliation. Snow leopards also suffer from declines in their prey: Illegal and unsustainable hunting of wild sheep and goats, which also compete with increasing domestic livestock for pasture and grazing grounds negatively affect snow leopards. With ranges of Snow leopards often bigger than protected areas and crossing international borders, they receive little protection through traditional approaches and protected areas. More recently, mining and poorly planned infrastructure are threatened the snow leopard through habitat destruction and fragmentation. The upcoming threats of climate change are posing newer challenges to snow leopards and its habitats. Other than affecting their available habitat, climate change may lead to greater conflict between snow leopards and humans, and reduced tolerance to conflict due to increased frequencies of extreme climatic events.

In general there is a lack of awareness and support for snow leopard conservation ranging from local inhabitants and herders living in Snow leopard habitat to those responsible for policies and infrastructure development – which also can have detrimental effects on snow leopard habitat. Maintaining intact large-scale and interconnected mountain ecosystems for both snow leopards and their prey is one of the key challenges for their long term conservation. With ranges that can sometimes extend across national boundaries, the snow leopards require conservation efforts that extend beyond protected areas and involve participation of local communities, various government departments, NGOs and stakeholders.



Picture: Snow leopard (*Panthera uncia*). Photo credit: Klemens Karkow / NABU



## **A Global Initiative for Snow Leopard Conservation**

Early in 2011, the government of the Kyrgyz Republic began spearheading an initiative that would comprehensively address high-mountain environmental issues using the conservation of snow leopards as a flagship. Then, President Roza Otunbayeva supported a proposal from NABU to host a global forum on Snow leopard conservation in Bishkek. In February 2012, the subsequent president of the Kyrgyz Republic, Almazbek Atambayev, solicited support for this initiative from the World Bank to help replicate the effort of the Global Tiger Initiative (GTI) for the conservation of the Snow leopard. At President Atambayev's request, the GTI's Secretariat at the World Bank, in technical partnership with NABU and the Snow Leopard Trust, offered its support and advice to guide the process of developing a Global Snow Leopard and Ecosystem Protection Program (GSLEP) with the participation of the 12 snow leopard range countries. Subsequently, the snow leopard range countries, with many partners, held a series of meetings and worked intensely to develop individual National Snow Leopard and Ecosystem Protection Priorities (NSLEPs). These NSLEPs are the core of the GSLEP. (Zakharenka et al. 2016)

In October 2013, high-level government representatives of all snow leopard range states came together in the Kyrgyz capital Bishkek and agreed on a joint Declaration for the Conservation of Snow Leopards. The date of adoption of the Bishkek Declaration (23 October) is since celebrated as International Snow Leopard Day. During this summit, the GSLEP and its underpinning NSLEPs were launched to implement the goals set in the Declaration.

In order to promote implementation of the global program and the national priorities, international organizations support addressing particular issues that transcend national boundaries and go beyond the capacities of national governments through Global Support Components: Wildlife law enforcement; knowledge sharing; transboundary cooperation; engaging with industry; and research and monitoring.

In general, activities are grouped under the following broad themes that correspond to the commitments of the Bishkek Declaration:

1. Engaging local communities in conservation, including promoting sustainable livelihoods, and addressing human-wildlife conflict
2. Managing habitat and prey based upon monitoring and evaluation of populations and range areas
3. Combating poaching and illegal trade
4. Transboundary management and enforcement
5. Engaging industry
6. Building capacity and enhancing conservation policies and institutions
7. Research and monitoring
8. Building awareness

The program ties together support of all range countries, and international conservation and donor communities to achieve its overall goal: *To identify and secure at least 20 snow leopard landscapes across the cat's range by 2020 or, in short – “Secure 20 by 2020.”*

## **Securing Landscapes**

Those snow leopard landscapes are defined as those that (a) can potentially contain at least 100 breeding age Snow leopards conserved with the involvement of local communities, (b) support adequate and secure prey populations, and (c) have functional connectivity to other snow leopard landscapes, some of which cross international boundaries (GSELP 2013).

During an action planning leadership and capacity development workshop which took place in June 2014 in Kyrgyzstan, range states identified 23 landscapes (see Map 5.10.2) and agreed on the following criteria for securing landscapes (GSLEP 2014):

- Snow leopard landscapes designated as ‘ecologically fragile’ zones that have defined ‘values’ and biodiversity-sensitive land-use and development planning for various zones within the landscape. Critical wildlife areas and corridors designated within the landscapes where damaging land use is minimized.
- Stable or increasing population of Snow leopards and sufficient prey populations maintained in the landscapes.
- Sustainable and socially responsible development achieved through community based efforts and business models to enhance livelihoods of local communities within the ecologically fragile zones (landscapes).
- Industry encouraged to aid local communities in the multiple-use zones within the Snow leopard landscapes (chipping in funds for conservation and livelihood activities).
- Local community involvement in conservation planning and implementation through community-based conservation efforts, provisioning of economic and other incentives, and policy and legal support.
- Policy initiatives and strengthening of laws to effectively address traditional and emerging threats including climate change.
- Sustainability of Global and National snow leopard programs through capacity building, technology, research, resource mobilization, multi-country information exchange and cooperation among the range countries.
- Monitoring efforts involve two groups of activities: impact and process oriented activities.

## Structure

The GSLEP is guided by a Steering Committee which also oversees the operations of the GSLEP Secretariat, which is based in Bishkek. The Steering Committee is currently chaired by Pakistan with Kyrgyzstan as co-chair. Each Snow leopard range state designated a National Focal Point (NFP) to coordinate implementation at the national level, liaise with the GSLEP Secretariat and provide regular information about progress and ongoing activities.

The role of the GSLEP Secretariat is to connect to range countries via their NFPs and to provide coordination and communication between different stakeholders including funding partners who directly support operations listed in the NSLEPs and the Global Support Components. The Secretariat's operations are supported primarily by the Kyrgyz Government, GEF, NABU, Snow Leopard Trust, UNDP, USAID and World Wildlife Fund.

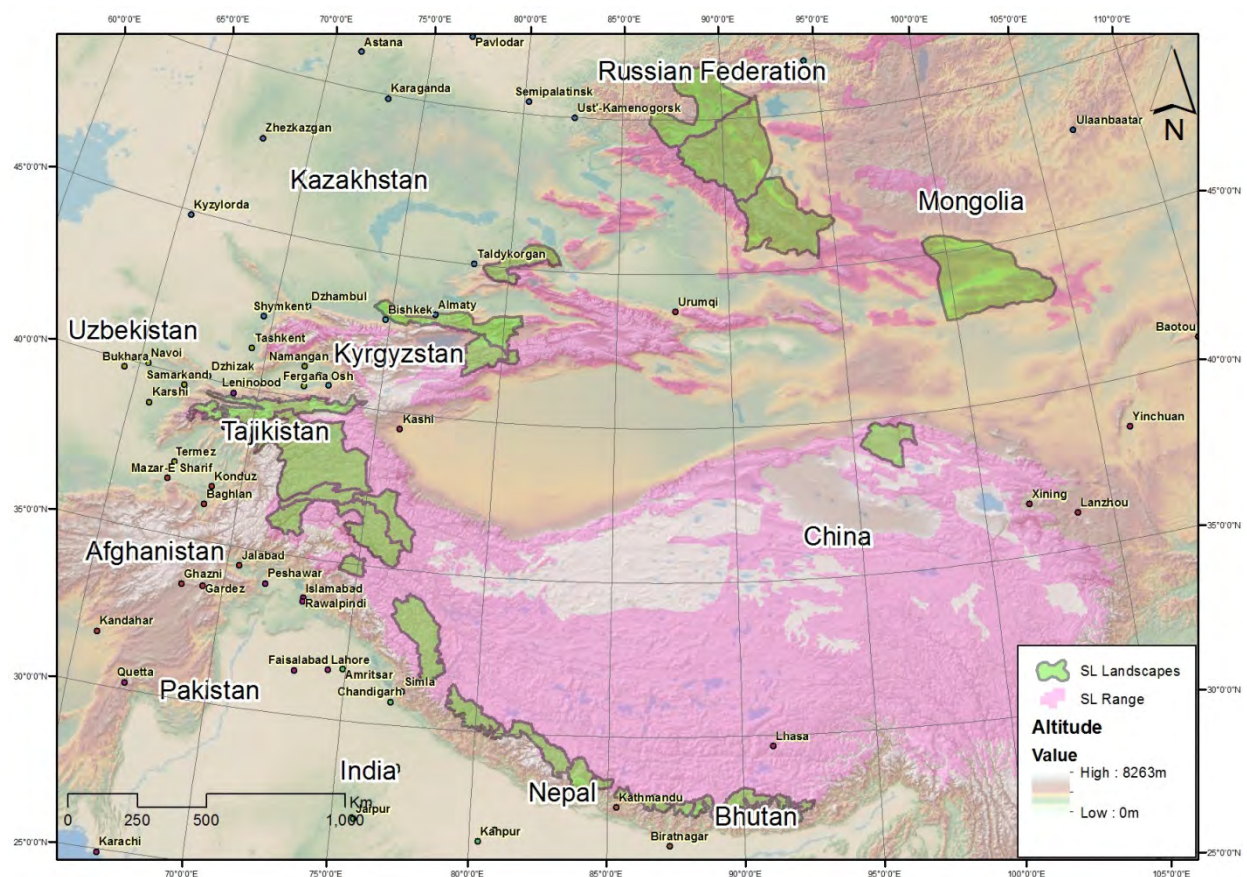


Figure 5.10.2. Snow Leopard Landscapes Identified under GSLEP

Source: GSELP Secretariat

## What Has Happened So Far

- October 2013: Bishkek Declaration adopted, leading to formation of GSLEP;
- In June 2014: 23 landscapes, covering 25 percent of snow leopard habitat identified to be secured by 2020;
- March 2015: Formation of First High Level Steering Committee;
- March 2015: Management planning guidelines released;

- June 2015: Ilbirs, a quarterly newsletter with updates on the GSLEP program's progress initiated (currently pending due to lack of manpower)
- September 2015: Regional enforcement strategy developed for Central Asia to combat illegal wildlife trade (GSLEP 2015).
- December 2015: Need for climate smart landscape management plans realized at a meeting in sidelines of Climate Change COP 21;
- April 2016: Workshop focused on Climate Smart Landscape Management Planning processes in Nepal;
- April 2016: GIS capacity building workshop in Nepal;
- October 2016: Stocktaking workshop on status of management planning and illegal wildlife trade;
- October 2016: Second Steering Committee Meeting of the GSLEP Program;
- Early 2017: All Management plans ready for implementation to secure the 23 snow leopard landscapes;
- Mid 2017: Snow Leopard Summit

## **Conclusion and Outlook**

The process to develop this global program has already contributed to raising awareness and understanding not only about the need to take action for the conservation of snow leopards, but for the conservation of an entire ecosystem. Snow leopards are a symbol of these remote yet very fragile and very important high mountain ecosystems. It is those ecosystems – the snow leopard landscapes – for which we need sound approaches and solutions for their protection and sustainable development.

The participatory, international process to develop and implement GSLEP, as well as the high-level commitment it has managed to secure, already constitutes one of its great achievements. Through the commitment of the countries, it has been possible to mobilize considerable resources, including through the Global Environment Facility (GEF) to implement activities in the field. A lot of momentum has been built for the conservation of Snow leopards, their prey and their habitat, which helps to mainstream conservation in national and international policies and development planning, as well as to promote concrete action on the ground.

In order to track implementation and progress made so far, the second Meeting of the Steering Committee is scheduled to take place in October 2016. Furthermore, a “Snow Leopard Mid-term Summit” is planned to be held in spring/summer 2017 to review implementation and landscape management plan development so far, as well as to agree on next steps for implementation until 2020.

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## 5.11 Implementation of the UNESCO MAB Programme in Kazakhstan

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### Abstract

*The primary goal of MAB Committee in Kazakhstan is developing the national network of biosphere reserves. Using the ecosystem approach and results of some projects, the Committee worked out some national proposals for 5 biosphere reserves. In the next years several new Biosphere Reserves (Karatau, Altyn-Emel, Naurzum, Almaty, etc.) will be established including 3 new transboundary biosphere reserve. The MAB Committee worked out some nomination standards for national proposals to UNESCO and proposed changes to the national legislation devoted to the protected area system in Kazakhstan.*

The Kazakhstan National Committee for UNESCO Programme “Man and the Biosphere (MAB)” was established in 1978 as a part of the Scientific Council on “Nature Protection and rational use of nature resources” (Resolution of the Presidium of Academy of Sciences of Kazakhstan at 30 July 1978). The main goal of the MAB Committee of that time was postulated as coordination of scientific research on the status and protection of the environment. Three years later the Plenary session of the Scientific Council in 10 April 1981 approved the following important decisions:

- Leading institutions and project leaders of the MAB UNESCO Programme.
- Temporary Regulation on the Kazakh Committee for the UNESCO program "Man and Biosphere"
- Research Programme for 1981-1985

The list of the institutions consisted of 38 organizations including mainly some research institutes of the Kazakhstan Academy of Sciences (Institute of Zoology, Institute of Botany, Institute of Microbiology and Virusology, Institute of Hydrogeology and Hydrophysic, Institute of Geology, etc.), as well as the Academy of Agricultural Sciences (Institute of Agriculture), several universities (Kazakh National University, Karaganda National University, Kazakh Normal University, etc.), botanical gardens and strict nature reserves (Zapovedniks). According to the Temporary Regulations, the main goal of the Kazakhstan MAB committee was a coordination of scientific research on the status and protection of the environment. Within the general Soviet MAB programme, the Kazakhstan participants took part in 6 large projects (from the 14 projects, index of the projects is according to the general project list):

- *Project 3:* The influence of human activities and land use on pastures and grassy savanna landscapes (Institute of Botany, 7 research themes)
- *Project 4:* The influence of human activities on ecosystem dynamics in dry and semi-arid zones, including the use of pastures and the consequences of irrigation (Institute of Soils, 3 research themes)
- *Project 5:* The environmental impact of human activities on the resources of lakes, marshes, rivers, deltas, estuaries and coastal areas (Kazakh National University, 9 research themes)

- Subproject 6a: Influence of human activity on mountain ecosystems (Main Botanical Garden, 5 research themes)
- *Project 8*: The conservation of natural areas and contained genetic material  
subproject 8a: Biosphere Reserves (Institute of Zoology, 8 scientific themes),  
subproject 8b: Species and its productivity in the range (Institute of Zoology, 5 research themes).
- *Project 9*: Ecological assessment of the control of agricultural pests and use of fertilizers in a terrestrial and water ecosystems (Institute of Land, 1 scientific research theme)
- *Project 10*: The influence of the main types of engineering works on humans and the environment (Institute of Geography, 9 research themes)
- *Working group* on nature conservation education and training (Kazakh National University, 3 research themes).

Since 2004 the Kazakhstan National Committee of MAB became the working body of the National Commission of the Republic of Kazakhstan for UNESCO and ISESCO. The Committee was periodically reorganized to enhance the work, including the introduction of new ideas and expanding its scope. The last reorganization of the committee took place in April 2011. The first session of the renewed Kazakhstan MAB Committee was held in 15 July 2011, the committee worked out the basic documents regarding its activity – Basic Regulation, Strategy and Working Programme for the period 2011-2021. The general goal of the Kazakhstan MAB Committee was formulated as *“development of a national network of biosphere reserves in the Republic of Kazakhstan and its integration into the global and regional network of biosphere reserves, analysis and synthesis of international experience in the development of specially protected areas, as well as the study of the conservation of biological diversity and ecosystem, the relationship between man and the environment and dissemination of environmental knowledge in UNESCO program “Man and Biosphere”*. The main purposes are as follows:

1. Establishing and promoting a national network of biosphere reserves in Kazakhstan;
2. Monitoring of the national biosphere reserves network in Kazakhstan;
3. Integration of the national network of biosphere reserves into the global and regional network of UNESCO;
4. Analysis and generalization of international and national experience on the theory and practice of the development of biosphere reserves;
5. Conservation of biological and ecosystem diversity, studying of general problems, explore common issues of relationship between man and biosphere;
6. Informing the public of the UNESCO program “Man and Biosphere”, distribution of ecological and environmental knowledge;
7. Promoting the Kazakhstan sites to the UNESCO World Heritage lists (nature and mixed values).

One of the major issues is the legislation gap when it comes to biosphere reserves. There is no legal basis for taking biosphere reserve as one entity, as a whole. The core and the buffer zones are covered by the Law on the Protected Areas, but the transition zone doesn't have any special status on paper. This is why the Kazakhstan MAB Committee elaborated and proposed changes to the national legislation devoted to the protected area system in Kazakhstan. These changes to the Law on the Protected Areas include establishment of a new chapter on the Protected Areas of International Significance with two new and high priority categories of PAs being biosphere reserves and transboundary biosphere reserves (as recognized by UNESCO). The proposed chapter provides a description of those two categories based on UNESCO documentation on biosphere reserves and in accordance with Model Law as proposed by Marie Bonnin and Mireille Jardin in their study dedicated to finding legislation gaps and dealing with them. The mentioned changes were put forward to the governmental authorized body in the end of 2013, they were further moved to the Parliament and now are being examined and approved by all corresponding bodies such as financial and strategic institutions. It is also noteworthy that the authority responsible for specially protected natural areas – the Forestry and Hunting Committee – recently prioritized all the PAs in its possession and all territories with UNESCO status were put into the first category, which is the highest rank. It is a very positive circumstance because even before the changes in the Law come into force this highest rank provides the biosphere reserves with more attention and more budget funds from the state.

The primary goal of the MAB activity in Kazakhstan in the last 5 years is the development of national networks of biosphere reserves. Using the ecosystem approach to the study of natural processes and results of several national and GEF-UNDP international projects undertaken in Kazakhstan during last decade, the Kazakhstan MAB Committee worked out several national proposals for nomination of some Protected Areas as biosphere reserves. To date, there are 5 biosphere reserves established in Kazakhstan: Korgalzhyn (approved in 2012), Alakol (2013), Ak-Zhayik (2014), Katon-Karagay (2014) and Aksu-Zhabagly (2015). The new Kazakh proposal on Barsakelmes Biosphere Reserve was prepared and sent to MAB UNESCO in September 2015 for further evaluation. According to committee's plan in nearest years, several new Biosphere Reserves such as Karatau, Altyn-Emel, Na-urzum, Almaty, Zhongar, Shyryn and West Altai will be established in Kazakhstan. At the same time, the committee plans to work on the creation of 3 new transboundary biosphere reserve: Great Altai (with Russia), North Caspian (with Russia) and West Tien Shan (with Kyrgyzstan and Uzbekistan).

The MAB Committee worked out the nomination standards for national proposal to UNESCO in 2011, which include:

1. Nomination documentation (Application Form with supplements) including maps of zonation, ecosystem and/or vegetation, as well as some thematic maps (endemics, red-list species, resources species, administrative division, etc)
2. Nomination Brochure
3. Short Video film
4. Posters (3)
5. High quality photos



The most important issue is the management system of biosphere reserves. In Kazakhstan it is based on national legislation devoted to the national system of Nature Protected Areas. According to national legislation the core and buffer zones belong to the National Nature Protected Area and both zones are managed by the appropriate Governmental Agency. Management of the transition zone is going through the Coordination Council (Committee) that is a collegial public body consisting of governmental agencies, local authorities (settlement or district, or regional administration, administration of the Nature Protected Area, local NGOs and business organisations such as large land users, private owners, industrial companies, etc.). The main objectives of Coordinating Council include:

- promoting an effective management and sustainable use of natural resources;
- introduction of ecologically friendly technologies (resource-conserving and resource-renewing);
- promoting collaboration with Nature Protected Area,
- solving the conflicts between all stakeholders (mainly between Nature Protected Area and others).

Management Plans for core and buffer zones are usually worked out by the administration of Nature Protected Area and approved by governmental agency. In transition zones the nature users have their own management plans that should corresponded to the Nature Reserve's Management Plan. So, simple combination of all these plans would be an Integrated Management Plan for Biosphere Reserve.

In general, the situation with the process of biosphere reserve nominations we have in Kazakhstan now is a top-down approach, but we deliberately chose to go this way. If we would choose to focus on raising awareness and waiting for the local communities and local authorities to start moving towards establishing a biosphere reserve, they would still face the problems we are trying to solve now with the power of our Committee, such as the legislation. So instead we chose another strategy – to establish a network of biosphere reserves using a top-down approach and in the frames of this network to show people its value and its potential, as well as to help solve arising issues. This, in our mind, would lead to a better understanding and promote the bottom-up approach to balance man and the biosphere in this program. Even more, it would provide justification for state funding of the activities in the transition zone and stimulate local authorities and community to actively involve themselves in these issues. Some of the territories chosen to be biosphere reserves were already prepared for the bottom-up approach. For example, there were UNDP/GEF funded projects in some approved biosphere reserves, providing research and supporting the activities in the transition zone. And, the local administrations of protected areas are very active in tackling social, economic, environmental problems using a multidisciplinary approach. In conclusion we want to stress that Kazakhstan is very young in inscribing, but, more importantly, in managing biosphere reserves, and we have yet to learn and figure out many things along our way.

## 5.12 Combating Poaching in Central Asia

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### Introduction

Poaching is one of the most important threats for many large mammals and also some bird species. In Central Asia, extent and quality of habitats across the landscape are substantially reduced by factors like degradation, fragmentation and loss of habitats, caused by land-use intensification and expansion, infrastructure development and extractive industry, and increasingly aggravated by climate change. However, in general across this region many wildlife populations are currently much below the carrying capacity of the remaining habitats. The phenomenon of the “empty steppe” and the “empty mountains” is mainly caused by poaching, which affects large areas in the region, like the semi-deserts of the Ustyurt plateau or large tracks of mountains in the Pamirs and the Tian Shan. Where poaching is brought under control, often unexpected recovery of wildlife populations can take place and even large mammals can coexist with various forms of land-use and human presence.

Poaching has direct and indirect impacts on wildlife populations. Direct impacts are the increase of the mortality and reduced reproduction. The latter happens where fecundity drops due to selective poaching of one sex, e.g. male Saiga antelopes selectively poached for their horns, causing an extremely skewed male-female ratio, leading to reproductive collapse. If reproduction is reduced below the rate necessary to substitute mortality, population declines can be fast and severe.

Indirect impacts of poaching include reduced available habitat and fitness of individuals, which cause a decline in survival, reproduction and recruitment. The reason is that poaching causes animals to avoid areas with presence of humans and leads to an increase of the individual escape distance. In areas with poaching, Argali avoid herders' camps and livestock by several kilometres, and thus critical grazing habitat can become entirely inaccessible even if livestock grazing leaves enough forage available. Increased escape distance additionally reduces fitness as less forage can be taken in during a given time period and increases the animals' expenditure of energy. For instance, where Saiga antelope are poached the animals flee in sight of humans or vehicles at distances of five and more kilometres.

In contrast, in areas where poaching is under control escape distances are low and wildlife uses habitats in close proximity to human settlements and human activity. In the conservancies in Tajikistan where local people prevent poaching, mountain ungulates can often be observed close to the villages or from the highway. Similarly in the mining area Kumtor in Kyrgyzstan where a strict no poaching policy is enforced, Argali sheep can be seen close to roadsides with heavy machinery.

## Reasons for Poaching

The reasons for poaching and the motivations of poachers are highly diverse. Often people poach for subsistence or commercially for local, domestic and international trade. In other cases land-users seek to prevent or retaliate for real or perceived damage caused by wildlife. Killings of Snow leopards are often related to attacks on livestock, and sometimes herders try to sell the body parts to recover at least some of their loss. The important role hunting plays in local culture and tradition is sometimes not sufficiently recognized by nature protection agencies and conservation organizations. Many poachers are not motivated by economic aspects, but rather see poaching as leisure. A special form of leisure hunters are members of the elites or “VIP poachers”. Illegal trophy hunting, in particular by foreign clients, is a special form of poaching where the client might not always be fully aware about the illegal character, while those organizing and profiting from these hunts are driven by commercial interests.

On the first glance, insufficient law enforcement is the main reason for poaching, but the complexity of forms of poaching and of the immediate motivations makes it often difficult to understand and address the underlying reasons of it. Poverty and lack of income alternatives can motivate poachers. But in many cases poachers are not necessarily the poorest members of the communities. Lack of awareness can be the reason for poaching, e.g. where hunters are not aware about the protected status of certain species or are not able to distinguish protected from huntable species. Protest and retaliation motivate poaching where people feel that nature protection agencies do not adequately react on real or perceived damage caused by wildlife. In some countries VIP poachers are obviously motivated by the illegal character of their activities and they openly show disrespect towards the law to underline their “special” status. In many situations the root cause of poaching is a de-facto open access situation with lack of defined ownership or poorly executed state ownership, of exclusive rights and related responsibility. This results in the absence of secure and tangible benefits from wildlife for those who are in the position to poach or to prevent poaching.

## Approaches for Combating Poaching

The following overview of approaches to combat poaching is not exhaustive and the approaches are neither mutually exclusive nor are the boundaries between these approaches always well defined:

Table 5.12.1. Analysis of Different Approaches and their Impact

Approach	Potentials and positive impacts	Limitations, challenges and risks
<b>Law Enforcement</b>		
<i>Persecution of poachers and preventing poaching through controls/presence of ranger</i>	<ul style="list-style-type: none"><li>• Deterrence – raising costs of poaching</li><li>• “Removal” of specialized poachers</li><li>• Confiscation of weapons and transport</li><li>• Increased awareness that poaching is not accepted but a serious crime</li></ul>	<ul style="list-style-type: none"><li>• Effectiveness not always sufficient</li><li>• Prone to corruption</li><li>• VIP poachers often not persecuted</li><li>• Can cause resistance by local people</li><li>• Difficult to effectively control large and remote areas</li></ul>

Approach	Potentials and positive impacts	Limitations, challenges and risks
<i>Combating illegal trade</i>	<ul style="list-style-type: none"> <li>• Deterrence if effectively prosecuted</li> <li>• High detection rate prevents poachers from selling product</li> <li>• Raises costs of trade =&gt; reduced demand for products with elastic demand</li> </ul>	<ul style="list-style-type: none"> <li>• Effectiveness depends on detection rate</li> <li>• Without effective prosecution no deterrence</li> <li>• Removed/confiscated product replaced by more poaching</li> <li>• Products with inelastic demand =&gt; raise of price and more incentives to poach</li> </ul>
<b>Education</b>	<ul style="list-style-type: none"> <li>• Changing behaviour and creating commitment through understanding</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to reach the target groups</li> <li>• Need to convince all potential poachers</li> <li>• No sufficient incentive to prevent poaching by others</li> <li>• Better understanding/knowledge does not necessarily lead to behavioural change</li> <li>• Changes in behaviour may not be fast enough for saving acutely threatened populations</li> </ul>
<b>Alternative income development</b>	<ul style="list-style-type: none"> <li>• Distraction of commercial poachers by raising opportunity costs</li> <li>• Reduction of poverty induced subsistence poaching</li> <li>• If conditional, entire communities can be addressed, peer pressure established</li> </ul>	<ul style="list-style-type: none"> <li>• Availability of income alternatives may not reduce poaching if <ul style="list-style-type: none"> <li>1) other motivations are behind this behaviour,</li> <li>2) too many poachers do not benefit from these alternatives or</li> <li>3) local poachers that give up poaching are replaced by outsiders.</li> </ul> </li> <li>• Difficult to address highly specialized poachers</li> <li>• So far "alternative income" from labour migration has little impact on poaching</li> <li>• Poachers that give up are often fast replaced by others – target group potentially unlimited</li> <li>• Can create disincentives for wildlife conservation when wild animals are no longer used, people might value them less and or even perceive them as nuisance</li> </ul>
<b>Sustainable use of wildlife as incentive</b>		
<i>Non-extractive use (tourism)</i>	<ul style="list-style-type: none"> <li>• Direct benefits from wildlife motivate people to prevent poaching</li> </ul>	<ul style="list-style-type: none"> <li>• Limited interest of tourists in wildlife in the region =&gt; weak incentive</li> <li>• Not every area attractive for tourists</li> <li>• Low income per tourist, and either limited number of potential tourists or with higher numbers negative environmental impact</li> </ul>

Approach	Potentials and positive impacts	Limitations, challenges and risks
<i>Extractive use (hunting for subsistence, trade and sports)</i>	<ul style="list-style-type: none"> <li>• Direct connection between status of wildlife population and benefits – positive feedback loop</li> <li>• Strong incentive to keep healthy populations of used species in the landscape and legitimate users interested in preventing poaching</li> <li>• Carnivores benefit from healthy ungulate populations</li> </ul>	<ul style="list-style-type: none"> <li>• Requires assignment of area-specific responsibility</li> <li>• Highly mobile species – need for involvement of users in the wider areas</li> <li>• Focus on herbivore target species may encourage predator removal</li> <li>• Sustainability of subsistence hunting and hunting for trade not easy to achieve (low income per take)</li> <li>• Trophy hunting (high income per take) potentially prone to take over by powerful elites with short term interests</li> <li>• Trophy hunting where elites capture most benefits and don't reinvest in protection can encourage poaching by locals that feel alienated</li> <li>• Incentive from trophy hunting only available for certain attractive species</li> <li>• Hunting only possible for species whose reproduction patterns allow for sustainable take</li> </ul>

## Examples of the Different Approaches from Central Asia

### *Law enforcement – persecution of poachers – Saiga antelope in Kazakhstan*

In the range area of the Betpakdala population of Saiga in Central Kazakhstan, anti-poaching efforts by the Government of Kazakhstan and a national NGO have significantly contributed to the rehabilitation of this population from few thousands in the early 2000s to up to about 250,000 in spring 2015. The very low Saiga numbers made commercial poaching already costly and the concentrated anti-poaching efforts forced most poachers to give up or possibly to shift to less intensively protected populations, like the Ustyurt population, which continues to decline. With the recovery of the Betpakdala population, poaching again increased<sup>6</sup> as indicated by seizure of thousands of illegally traded Saiga horns<sup>7</sup> and again declining percentages of adult males observed in rutting aggregations<sup>8</sup>. However, the anti-poaching efforts have been and are effective enough to keep poaching rates at a low level for it to not substantially impact on the recovery and conservation of the Betpakdala Saiga population. In the range area of the transboundary Kazakh-Uzbek Ustyurt population anti-poaching efforts (without NGO involvement) have not been as successful and even with critically low Saiga numbers (estimated 1,200 in 2015) poaching continued still in fall 2015.

<sup>6</sup> E.g. Saiga News 16, 2013, p. 5.

<sup>7</sup> E.g. Saiga News 17, 2013, pp. 8-9; Saiga News 20, 2016, p.14.

<sup>8</sup> Vesti ACBK 16, 2014, pp. 10-11.

### *Law enforcement – combating illegal trade – trade in Saiga horns with China*

During the last few years, customs officers several times intercepted large amounts of Saiga horns originating from Kazakhstan<sup>9</sup>, numbering in the several thousand pairs of horns. No information is publicly available as to whether the people behind the smuggling of those horns have been effectively prosecuted. The large overall commercial trade in various goods with China, the use of alternative routes by smugglers and the availability of Saiga horn in China suggest that during the last years large parties of horn could have been successfully trafficked illegally. Without effective prosecution of those profiting from illegal trade or at least a detection rate that effectively prevents the horns reaching the consumer market, confiscations of only fractions of the actual amount of illegal horns risk to make the traded good more scarce, raise its price and thus create more incentives for poachers and traders.

### *Education – Saiga antelope in Karakalpakstan*

National experts, supported by international NGOs and donor-funded projects have made substantial efforts to improve the conservation status of Saiga antelope in Karakalpakstan (Uzbekistan) through education of school children and adults. Despite the establishment of several childrens' clubs and positive response by the local people, poaching continues and the Ustyurt Saiga population is close to total extermination. Seemingly the education campaign did not timely achieve sufficient change of behaviour of the poachers in the short-term in order to achieve an immediate reduction in poaching. Education for raising of awareness is likely to be an effective investment that facilitates behavioural change in the long run to prevent future poaching.

### *Alternative income development – Snow leopard and mountain ungulates in Kyrgyzstan and Tajikistan*

In Kyrgyzstan and Tajikistan labour migration is an important alternative income source that has caused the reduction of the able-bodied male population in many remote villages. Reportedly in some areas highly specialized poachers gave up poaching for labour abroad, and pressure on wildlife dropped substantially. However, in most areas either still enough poachers stayed in the villages and/or migrant labourers would poach during their vacation in their home villages.

In the Tien Shan of Kyrgyzstan local people receive support in producing handicrafts, which are also marketed with support of an international NGO. In order to receive this kind of support, it is conditional that none of the community members would poach snow leopards or their prey. Despite the fact that local communities agree to these conditions, poaching of Snow leopards and other predators with snares and also of poaching of mountain ungulates continued in the respective region. Possibly outsiders are responsible for these incidents and the approach is now being complemented with additional training and enforcement measures. It is difficult to effectively reach active poachers with such alternative income development, because they may actually not really be interested in changing their occupation, or, even if they give up poaching, other community members or outsiders may fill their place. This case illustrates the difficulty to achieve an effective reduction of poaching even

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<sup>9</sup> E.g. Saiga News 17, 2013, pp. 8-9; Saiga News 20, 2016, p.14.

with conditional alternative incomes and the need for a combination of complementary measures.

*Sustainable use of wildlife as incentive – Tourism and hunting – mountain ungulates and Snow leopard in Tajikistan and Kyrgyzstan*

In Tajikistan and Kyrgyzstan the Tajikistan Mountain Ungulates Project, GIZ, Panthera and ZGAP have used tourism and hunting as incentives for local hunters to motivate them to refrain from poaching and prevent poaching by outsiders. In the following two sections these approaches and the impact achieved are presented in brief.

**Case Study – Mountain Ungulates and Snow Leopard in Tajikistan**

Over the years, poaching caused a significant drop of population numbers of ungulates in the Tajik mountains. In order to halt this trend, supported by GIZ and several NGOs, a project on the conservation of mountain ungulates started, focusing on Asiatic ibex (*Capra sibirica*) and Marco Polo sheep (*Ovis ammon polii*) in the Pamirs, Markhor (*Capra falconeri heptneri*) and urial (*Ovis vignei*). The process started through initiating and facilitating meetings with traditional hunters and community members to discuss the declining trends of their wild ungulates, the underlying reasons as well as the options and potential for the protection of the species. It was made clear that hunting of the species would not be possible anymore in the future if populations continued to decline. In the Pamirs, these discussions and the mobilization of local traditional hunters led to the formation of community-based NGOs and the development of conservancies. In contrast, in the Markhor range areas some hunters preferred to set up individual small enterprises, due to the more fragmented character of the local communities. These Markhor conservancies also overlap with Urial habitat, but due to the greater mobility of this wild sheep, so far not all parts of its large range area could be covered by effective management.

The Agency for Forestry assigned to these organizations wildlife management rights and responsibilities for the game management areas for 10 years with option for extension. Once the population numbers would have recovered, the organizations would be able to apply for a quota (up to 1-2 out of a total population of 100 animals and at least 5 of trophy age) and market the hunts to foreign hunters or use them for their own members. Depending on the circumstances (species, location, number of hunters) up to 30-50 percent of the price of the hunt is needed to cover expenses outside of the conservancies, like permit fees, domestic travel, groceries, while the remaining expenses are locally paid for goods and services and thus benefit the economy in the involved communities. The profit generated through trophy hunting is then used by the NGO to reinvest into the protection as well as in the development of the community (infrastructure, support of poor community member, schools, etc.).

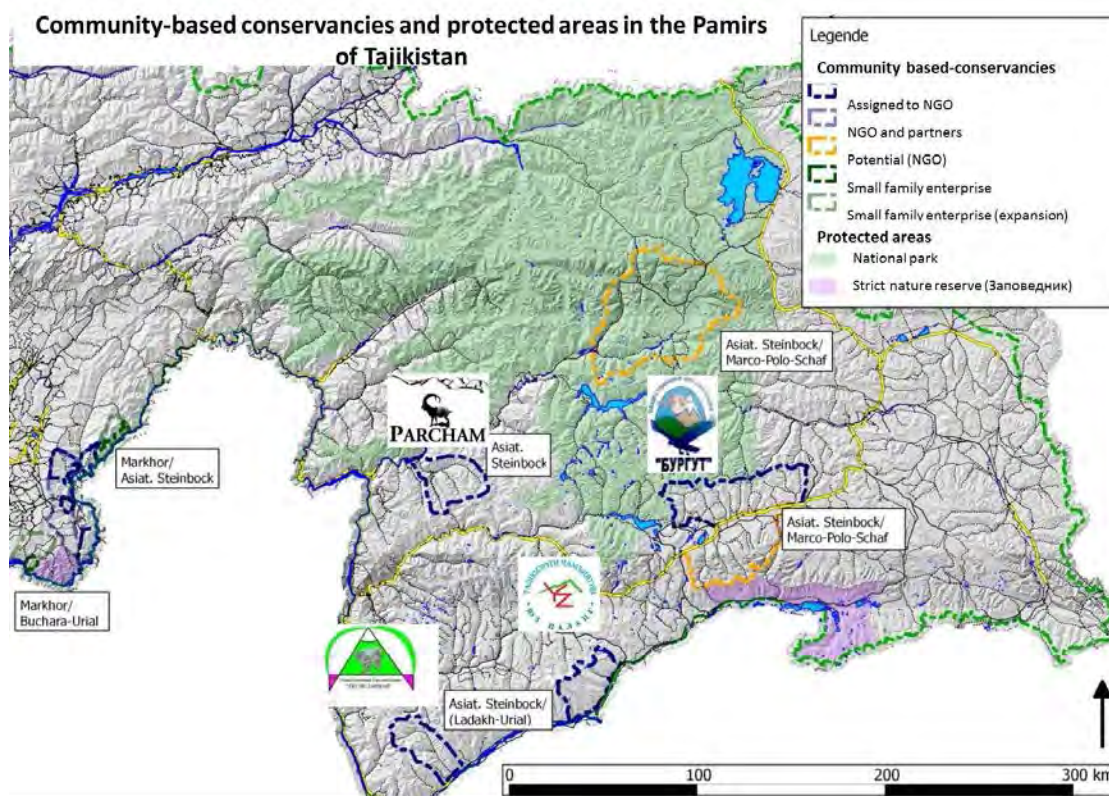


Figure 5.12.1. Community-based Conservancies and Protected Areas in the Pamirs of Tajikistan

Additional income is created from guided trekking and nature tourism. However, compared to the hunting, income from other types of tourism is low, both per client and in total. Furthermore, only few non-hunting tourists are especially interested in wildlife observation and the willingness to pay for such opportunities is much lower than that of hunting tourists. For this reason, non-hunting tourism alone would not provide sufficient incentives to stop poaching. Incomes from hunting and non-hunting tourism not only benefit the members of the organizations, but also benefit other community members through payments for goods and services and the contributions the organizations make to community development projects.

External support to the development of the conservancies was provided in form of facilitation, technical and organizational advice and training, joint wildlife monitoring with external experts, some initial investment in equipment (in particular optical equipment, field clothes, outdoor gear, and office hardware) and marketing support for tourism and trophy hunts. No salaries for rangers or other staff were paid from external donor funding, thus from the very beginning making a clear connection between the effectiveness of the work of the rangers and the benefits received from the use of wildlife.

## Results

Local traditional hunters in the Tajik Pamirs have formed NGOs which currently manage four conservancies, covering a total area of 2,248 km<sup>2</sup> (fig. 5.12.1). The wildlife in these areas is protected and managed by 40 volunteer rangers, which are motivated by income from trophy hunts and tourism. Recent surveys in three of the four conservancies in December 2015/January 2016 yielded 508 Marco Polo sheep and 1,919 Asiatic ibex – with population numbers showing an increasing trend over the years (see fig. 5.12.2 and 5.12.3).



In the range areas of Markhor, four conservancies are managed by one NGO and three small enterprises are run by local families (fig. 5.12.1). A survey in March 2016 yielded observations of 1,450 Markhor in the three latter conservancies and some adjacent areas – more than in previous surveys (2012 and 2014) for a much larger area, and more than ever reported for this species for the entire Soviet Union! Although these conservancies also cover some Urial range area, so far its population numbers stagnate. Likely reasons are the insufficient coverage of Urial habitat by the conservancies, possibly also less effective protection of this more mobile species and incomplete detection of Urials during surveys focusing on Markhor.

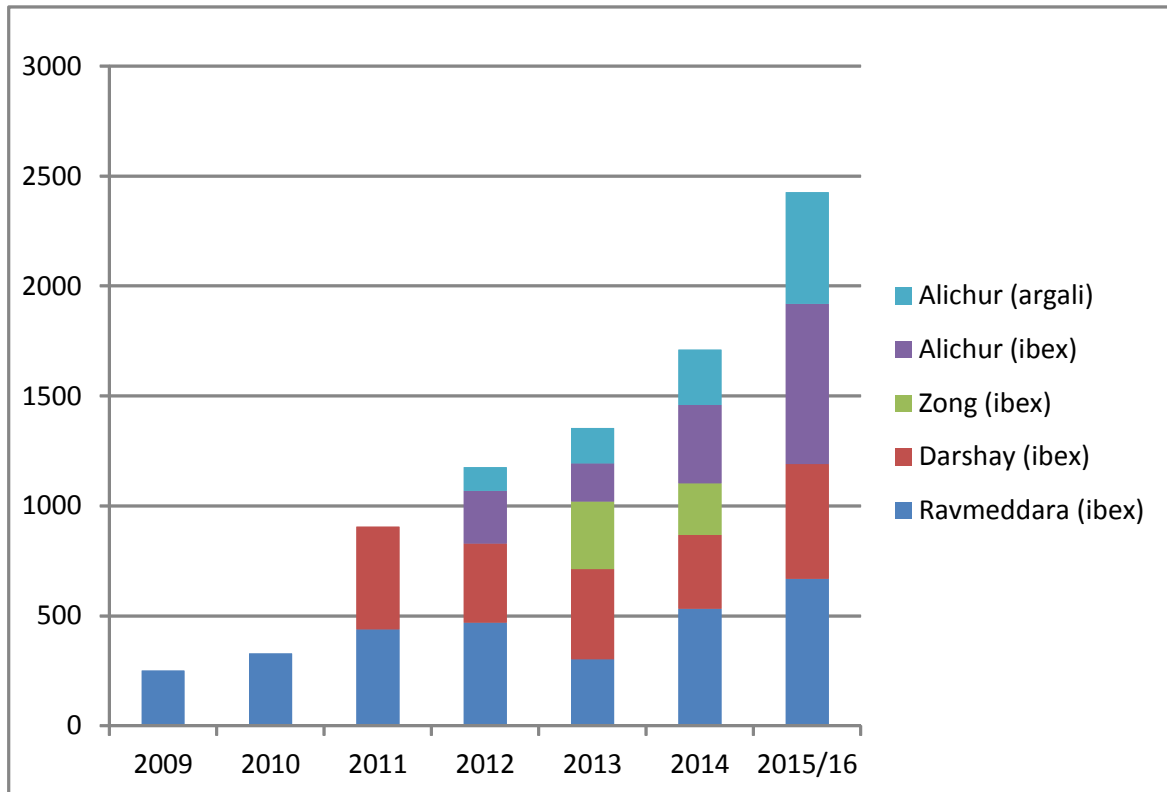


Figure 5.12.2. Total Numbers of Mountain Ungulates Recorded in Conservancies  
(source fig. 5.12.1-5.12.3: Tajikistan Mountain Ungulates Project, S. Michel)

The project not only led to a stabilization and significant increase of the population numbers of the respective species in the project areas (see figures 5.12.2 and 5.12.3). It also had additional positive effects including the empowerment of local people to manage and feel responsible for their resources themselves. The project enabled local community members to organize themselves, develop skills and processes including for monitoring, decision making, accounting and joint planning not only to protect their wildlife but also to develop their own community. In addition, the attitude towards the wild ungulates they protect is strongly positive. People developed a sense of pride in their wildlife (and their work) – not limited to the actually hunted ungulates, but also in other species like Snow leopard, Lynx and Brown bear – and are proud to see their populations increase.

The success of the Project “Conservation of Mountain Ungulates in Tajikistan” was honoured with the CIC Markhor Award at the 12th Meeting of the Conference of the Parties to the Convention on Biological Diversity 2014.

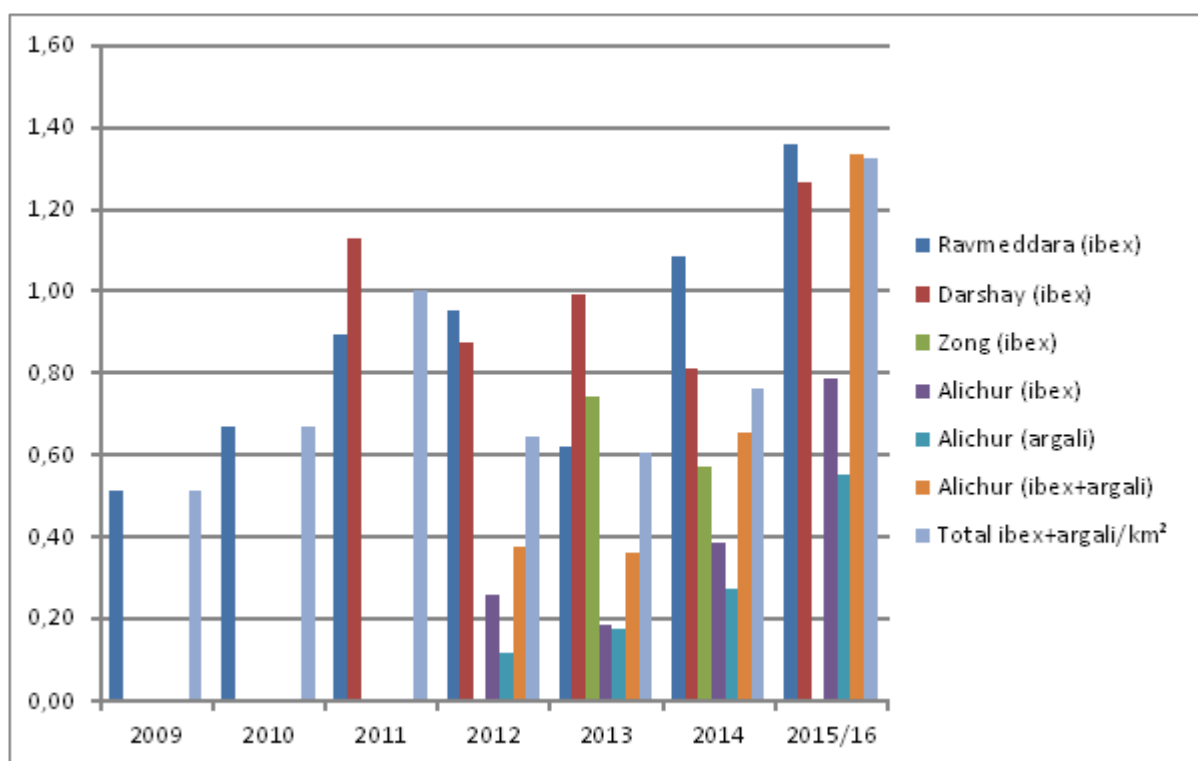


Figure 5.12.3. Density of Mountain Ungulates per km<sup>2</sup> Conservancy Area

## Discussion

There are as well challenges: As the assigned rights and responsibilities only concern wild-life, problems with conflicting land-use are difficult to address. In the early stages, the community rangers had difficulties to stop poaching by external people, especially by armed law enforcement bodies. In conservancies where the access is difficult to control such problems still persist, but the installation of camera traps and even “tire killers” (hidden boards with nails) have much reduced the incidences of poaching by outsiders. Another problem is political opposition by commercial hunting concessions, which focus on Marco Polo sheep, and which generally seem to be afraid of the competition by a successful alternative community-based approach. Because of their influence so far no quota for Marco Polo sheep was issued to the one technically eligible community-based conservancy.

## Case Study – Replication of conservancy approach in Kyrgyzstan

The approach of developing conservancies with the involvement of local traditional hunters forming their community-based NGOs was replicated in Kyrgyzstan. With support of GIZ and Panthera, two areas were developed since 2012 in Chu and Issyk-kul regions and three more areas in the Alay valley (Osh region) since 2014. These areas are only preliminarily assigned to local NGOs until the conduction of a formal competition. It is however expected that – given the visible successful work of the NGOs and the limited commercial potential – the areas will then be fully assigned to these organizations. Because of still low population numbers of the target species – Asiatic ibex (*Capra sibirica*), Argali (*Ovis ammon*), Siberian roe deer (*Capreolus pygargus*) and Tien Shan wapiti or Maral (*Cervus canadensis songaricus*) – no hunting quota has yet been allocated.

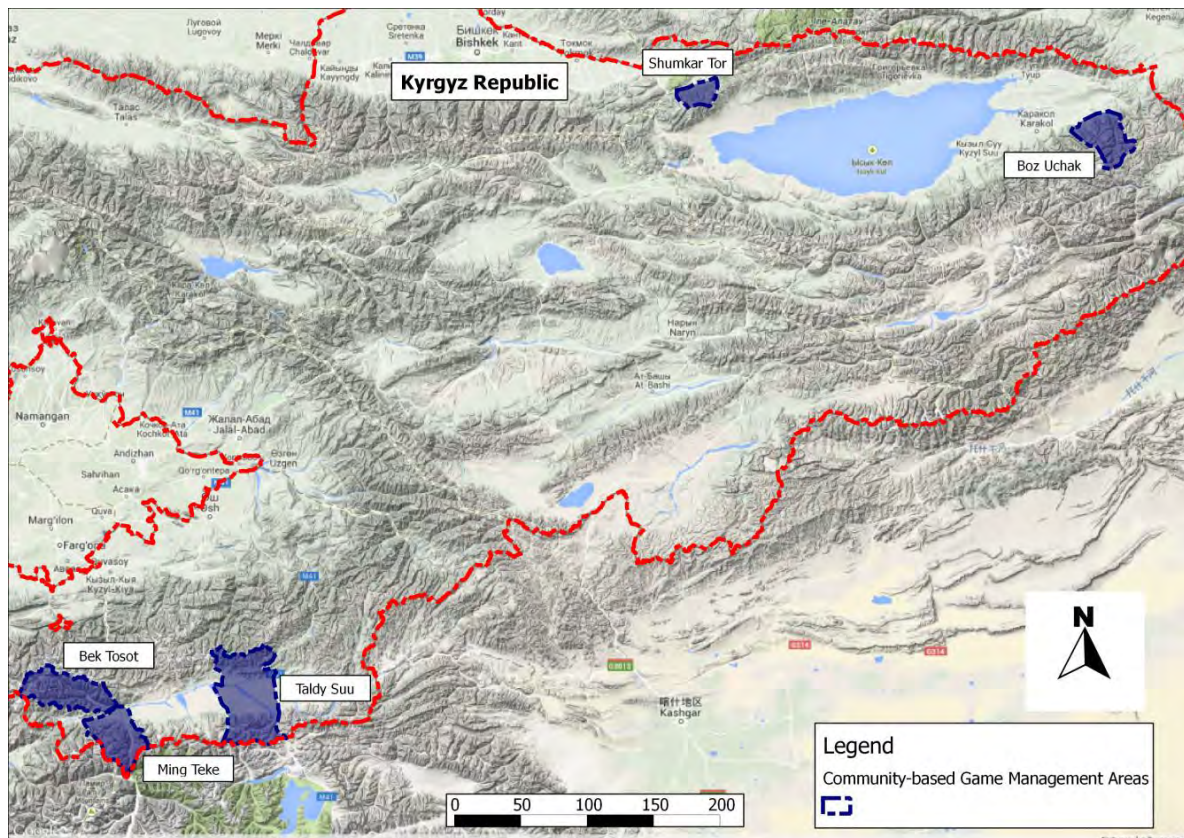


Figure 5.12.4. Community-based Conservancies in Kyrgyzstan (source: S.Michel)

## Conclusions

Combating poaching usually requires a combination of approaches – dependent on the species and on the situation. The presented approaches are not mutually exclusive. For deciding about likely successful approaches the drivers of poaching need to be carefully examined and their potential as well as existing experience and impacts of the specific approaches in similar circumstances should be taken into account. The eventual indicators of positive impact and effectiveness of any approach are the reduction of human caused mortality and finally the population trends of the target species.

## 5.13 Firewood Consumption and Firewood Production Potential in Georgia

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### Brief Introduction

Massive use of Georgian forests for social purposes over the last 25 years is putting the country at risk of an environmental disaster as well as socio-economic and energy shocks.

Due to the urgency of the problem, in 2014 an obligation to develop a state programme on the provision of the population with fuel resources became part of the environmental component of the implementation of the EU Association Agreement road map. The work is being carried out by CENN in cooperation with Ministry of Environment and Natural Resources Protection of Georgia and the key stakeholders under IUCN ENPI FLEG program.

### Key Facts

In Georgia, firewood is the main source of heating. Its share as a fuel source ranges from 75-96 percent by region. The amount of firewood legally provided to the population of Georgia—which is for the most part supplied by means of small-scale logging by private individuals in areas allocated by the National Forestry Agency — has decreased to a critical point. According to Georgian legislation, the Government of Georgia is obliged to provide firewood resources for its population. Georgian Forest Code gives the definition of Social Cutting – in the cases envisaged by the law of Georgia, implementing the relevant activities to provide timber to local population, authorities depended on state budget, Legal Entities of Public Law as well as other authorities determined by the Georgian Government with timber.

In order to agree on a methodology that would provide valuable and precise data for on providing rural population with fuel resources, the Ministry within NFP program established a special working group. Before developing the study methodology on calculating the optimum and actual firewood use the group decided to identify key problems and facts which hinder general development of the state forest sector. As a result, the list of “key facts” has been agreed by all parties and declared by the National Forestry Agency:

N	Facts
1	Firewood is the main heating resource
2	Firewood, as a energy resource, is not considered in state energy policy
3	Firewood production is the main function of Georgian forests
4	Firewood provision is the main direction of forest management
5	Firewood is free of charge and does not contribute to the state income
6	The firewood market is totally illegal in Georgia
7	Forestry does not participate in state economy
8	Firewood consumption depends on social demand and is not based on forest growth

N	Facts
9	Unsustainable forestry management is connected to the state security
10	The disasters caused by forests and river basin degradation annually cause hundreds of millions economical damage
11	Population constantly shows dissatisfaction for the limited firewood recourses or unavailability
12	There frequent violations when population cuts unnumbered trees
13	Forest degradation level is proportional to existence of forest roads
14	Firewood is actively used by private sector and budgetary organizations
15	Rational exploitation of the forestry material does not exceed 30 %
16	Firewood is traditional attribute of population lifestyle
17	Firewood production is carried out by unqualified people lacking appropriate technical equipment and safety measures, which not rarely causes fatal accidents

### Assessment of Optimum Annual Firewood Production

One of the key objectives to be defined by the survey was the assessment of the optimum annual firewood obtainable under a continuous consumption approach. Presently, the National Forestry Agency allocates approximately 600,000 m<sup>3</sup> of firewood annually. However, the jointly developed new methodology concluded that the optimum amount of firewood should not exceed 200,000 m<sup>3</sup>. This calculation was made based on existing taxation indicators made before 2001 for all forest area, and since 2001 only for the certain forests (Borjomi, Kharagauli and licensed forests).

### Firewood Consumption by Local Households

According to data from the national census conducted in 2015, the population of Georgia is 3,729,500, approximately 1,000,000 households. Based on the above mentioned agreed methodology, the next objective of the survey was to determine the number of households consuming firewood.

Taking into consideration internal migration patterns, especially from rural to urban areas during the winter period, it was necessary to come up with a methodology which would account for wintering households. In order to define the real number of consumers, the methodology identified the following criteria and thresholds:

- Household consuming over 3 GEL (Georgian Lari) per month of electricity during the winter are assumed to have remained in their homes for the winter<sup>10</sup>;

Based on information from energy distribution companies, a total of 832,052 households are registered as energy consumers. However, the number of households consuming over 3 GEL per month of electricity was only 577,695 as given in the table below.

<sup>10</sup> Electricity, as a source of heating was considered only in particular cases (Mestia, Rustavi, etc.), according to existing data and regional specifics.

In order to derive the number of households consuming firewood as a source for heating from the total number of wintering households, statistical data on gas and nutshell consumption was used. For calculating the data on gas consumption, the following criteria and thresholds have been agreed:

- Household consuming up to 30 GEL per month of gas during the winter were considered not to be using gas for heating;
- Household consuming from 30 to 50 GEL per month on gas during the winter were considered to be partially using gas for heating;
- Household consuming more than 50 GEL per month on gas during the winter were considered to be using only gas for heating.

Accordingly, the real number of winter households was estimated to be 254,357 less, and it became 577,695 instead of the total number of registered households using electricity (832,052).

The specifically developed methodology revealed 91,918 households consuming only natural gas and 5,679 households consuming nutshells for heating. These, along with stumps and firewood cut outside of forest fund territories, which based on sociological research conducted by CENN accounts for 10 percent<sup>11</sup> of firewood consumed, were deducted from the overall number of wintering households.

As a result, the actual number of firewood consumers was calculated as 419,328 households, with 29,944 of these using firewood along with natural gas.

In addition to this, CENN used an opinion poll, "Assessment of the existing demand on firewood energy in Dedoplistskaro and Akhmeta municipalities", conducted by CENN in November 2015 within the GIZ programme Sustainable Biodiversity Management in South Caucasus, to determine the annual rate of firewood consumption per household in the winter season. A forest expert examined the existing situation and has prepared an average calculation of annual consumption taking into consideration the climate conditions in the mountains and plains and came to the following conclusion - for households consuming both firewood and gas for heating, annual firewood consumption was identified as 3 m<sup>3</sup>, and for households consuming firewood only, 6 m<sup>3</sup>.

Based on calculations using this information, the overall annual consumption of firewood amounts to **2,426,138 m<sup>3</sup>** which critically exceeds both the optimum rate according to the survey (128,490 m<sup>3</sup>) and the amount of firewood annually allocated by the National Forestry Agency (600,000 m<sup>3</sup>).

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<sup>11</sup> Based on the result of the socio-research conducted in around 2,000 villages by CENN in 2014, the average consumption of stumps is 10 % in comparison with the total amount of firewood consumption.

## Summary of Findings

Based on the results of the study, annual firewood consumption is currently twelve times more than the optimum annual available amount under continuous consumption principles.

In particular:

According to forest inventory materials and taxation indicators of state-owned forests, the optimum annual available firewood resources is less than 200,000 m<sup>3</sup>, while the actual annual rate of firewood exploitation exceeds 2,400,000 m<sup>3</sup>.

To satisfy the demand on heating sources, the National Forest Agency allocates 600,000 m<sup>3</sup> of firewood annually. Despite this amounting three times more than the optimum annual available amount in case of sustainable forest use, this volume of firewood still only satisfies 25 percent of the overall demand. The remaining 300,000 households must resort to illegally obtaining the extra 1,800,000 m<sup>3</sup> of the firewood for their existence.

This is demonstrated in the results of the recently conducted forest inventory in Borjomi-Bakuriani and Kharagauli forests, which shows drastic results of forest decline, a rapid decrease in wood supplies and highlights the extreme difficulty in marking final areas of forests. This brings into question the possibility of sustainable provision of firewood covering even 25 percent of existing demand.

Georgia faces a real risk of a part of the population finding themselves without any firewood and lacking the ability of obtaining it even by illegal means.

Based on the above, it is recommended that the Ministry of Environment and Natural Resources Protection of Georgia present to the Government of Georgia, and publicly announce in the nearest future, the volume of firewood available for legal allocation for the 2016-2017 winter season, and that the Government of Georgia should develop short-term, mid-term and long-term plans for a resolution to the energy shortage which will reliably provide the population of Georgia with vital essentials and protect forests from inevitable degradation.

## **5.14 Roads, Railroads, Pipelines, Fences, Large-scale Development Pressures (Mining): Effects of Infrastructure Construction on Migratory Wildlife**

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The wide landscapes of Central Asia are the home for many migratory mammals, which need large open places to survive. Linear infrastructure developments in the context of economic growth in the region can seriously threaten their existence. Proper planning procedures are needed to take into account the needs of these migratory species. Therefore, guidelines have been developed by CMS, which provide an overview of the current situation and provide recommendations for adequate impact assessments. Improved planning procedures are needed in all countries in the region.

Central Asia in the sense used in this article encompasses Kazakhstan, Uzbekistan, Kyrgyzstan, Turkmenistan, Tajikistan, but also Mongolia and parts of China, Russia, Afghanistan, Pakistan and Iran. It is characterized by vast landscapes, and it is one of the few regions anywhere, and especially in Asia, where large intact habitats and wildlife migrations (other than birds) can still be observed. The seasonal extremes of heat and cold, the unpredictability of precipitation, and accompanying low and dramatically variable productivity in this region make their migratory and nomadic use of the landscape necessary for survival. Significant populations of large mammals, who are dependent on a migration across long distances on the search for suitable habitats and food, have been preserved in Central Asia until today due to the availability of large and relatively intact habitats.

However, since the year 2000 most of the economies of the region have developed quite rapidly, especially the natural resources sector. New mines have been created for coal, ore, and others, and new extraction sites have been developed for exploitation for gas and oil. This already has had important effects on the habitat of wildlife, as these development have led to the creation of new transport routes through the region, dissecting the valuable, spacious habitats of large, migratory mammals.

Linear infrastructure projects are often vital for the economic growth of the region, but they can have significant negative effects on the wildlife. This infrastructure can be of various types: roads, fences, railways, canals and irrigation ditches, oil and gas pipelines as well as power and communication lines. The latter are usually only relevant for migratory birds. Pipelines usually show effect only in the construction phase, but are buried afterwards and therefore lose their barrier effect. The other types of linear infrastructure can have different levels of effects. Wildlife cannot always adapt to linear infrastructure development as it is



either a literal barrier (i.e., they are physically unable to cross or go around it) or it is so unfamiliar or dangerous that it becomes a functional barrier; some pass, but not enough to prevent negative impacts to the population (Sawyer 2013). The impacts are not just limited to disruption of the migratory movements. It also fragments habitat, splits populations, causes genetic isolation and alters behaviours that may be important to long-term survival. Moreover, transportation corridors also bring a wave of additional problems including increased human pressure from commerce, tourism and hunting, decreased animal health and reproduction due to exposure to dust, increased development, pollution, garbage and stress, not to mention direct mortality caused by fences and vehicles.

The most obvious impact of linear infrastructure is habitat fragmentation. There are three types of fragmentation: 1) habitat dissection, 2) habitat conversion or loss, and 3) habitat compression or sedentarization. The main impact of the first and third is the barrier effect of infrastructure, which does not allow the animals to cross to other parts of their distribution range. But there is infrastructure which is crossable, but still functions as a partial barrier. Such barriers can cause wildlife to change, delay or lengthen routes and otherwise to make migratory movement harder (Olson, 2013). This can in the end affect the survival of the species. Often it is not only the infrastructure itself causing this effect, but other developments next to it, such as increased human activity through new or larger settlements or more livestock. Furthermore, natural processes can be altered through the development of linear infrastructure, affecting the habitat quality for wildlife. For instance, wildfires can either be created or blocked, or hydrological processes changed.

Finally, there are indirect and cumulative effects, which are not immediately obvious in the planning phase. Several infrastructures in a region might not have a big effect for wildlife if they are considered separately, but the sum of them might have huge impacts. Table 5.14.1 provides an overview of potential impacts of linear infrastructure for wildlife and shows the rating of the relationship with the main types of linear infrastructure. It shows very clearly that pipelines usually have a fairly low impact, since they are buried under ground, whereas the biggest impacts are usually from roads, followed by railways due to the various ways in which they can affect movements of wildlife.

Table 5.14.1. Potential Impacts of Linear Infrastructure and Level of Relation with Infrastructure Types (source: CMS 2014)

Potential Impact	Roads	Rail Lines	Pipelines	Fencing <sup>1</sup>
Wildlife strikes	High	Medium	Low	Not applicable
Entanglement/trap mortality	Not applicable	Not applicable	Low	High
Habitat fragmentation	High	High	Low	High
Altering behaviour	High	High	Low	High
Barrier to movement	High	High	Low	High
Altering use of habitat	High	High	Low	High
Increased human presence	High	Medium	Medium	Not applicable
Increased hunting	High	Low	Low	Not applicable
Conduits for invasive alien species	High	High	Low	Not applicable
Effects on population genetics	High	High	Low	High
Air pollution	High	Low	Not applicable	Not applicable
Altering natural processes	Low	Low	Low	High
Changed discharges in water bodies	High	High	Medium	Not applicable

Relationship rating: high - High, medium - Medium, low - Low, not applicable - Not applicable

In the framework of the Central Asian Mammals Initiative, CMS partnered with the Wildlife Conservation Society (WCS) to develop Guidelines on Mitigating the Impact of Linear Infrastructure and Related Disturbance on Mammals in Central Asia (CMS, 2014). These guidelines describe best practices to address the impacts from linear infrastructure development (including roads, railways, fences, pipelines, etc.) at the project and national level to maintain connectivity for wildlife populations in the face of growing infrastructure development.

The Guidelines begin with a description of the main migratory large mammals under consideration<sup>12</sup>, along with a description of the different kinds of movement they exhibit (migration, nomadism, and dispersal). The recommendations of the Guidelines then are organised in groups of principles. For the principles of mitigation, there is the recommendation to strictly follow the mitigation hierarchy (avoid – mitigate – compensate). In this widely accepted hierarchy, the first option must always be to avoid impacts to the migration routes and critical habitat for migratory species wherever possible.

<sup>12</sup> 1. Asiatic Wild Ass or Khulan, 2. Saiga Antelope, 3. Tibetan Wild Ass or Kiang, 4. Tibetan Antelope or Chiru, 5. Mongolian Gazelle, 6. Wild Yak, 7. Tibetan Gazelle, 8. Bactrian Camel, 9. Przewalski's Gazelle, 10. Argali, 11. Goitered Gazelle, 12. Snow Leopard

Any mitigation measure must be specific for the species affected by the linear infrastructure and specific for the place, since different approaches might be needed for different species and locations. Furthermore, the durability and sustainability of the mitigation is important, as the impact of the infrastructure will probably also last for a long time period. The principles for planning and design include some overarching recommendations. For example, it is important to achieve inter-agency coordination as multiple agencies have important roles in planning, and in many cases these roles may overlap or even conflict. In development processes a landscape view should be applied in order to include relevant issues at a larger scale. Strategic planning processes are recommended as well as a careful identification of the species which might be affected and their movement patterns and routes. Several principles exist for the process of the assessment of impacts. First of all, multi-stakeholder participation is needed. Screening for potential impacts of linear infrastructure is crucial as well as scoping to identify the needed assessment level. In order to understand the full impact of linear infrastructure, cumulative effects have to be identified as well as secondary effects. And finally, potential impacts from climate change should be included in the whole consideration process.

The principles for construction standards and solutions contain some general construction practices, but also specific solutions such as wildlife friendly fencing and overpasses and underpasses. Apart from construction changes, behaviour can be changed, both of drivers (which is applicable only to roads) and of animals to make them able and willing to cross the infrastructure. The guidelines also provide a section on monitoring and evaluation of the mitigation measures, which is an important component of the whole process.

The Guidelines also contain a review of the legal situation in Central Asia. On the international level several important agreements exist which regulate planning procedures and impact assessments, but they have not been signed by all Central Asian countries. If money from development banks is used for the implementation of infrastructure projects, their own rules for an impact assessment apply to the project. On the national level two different assessment processes need to be distinguished:

1. Strategic environmental assessment (SEA): applies to policies, programmes, strategies, is usually conducted by the government and has the task to identify impacts on a larger scale and has a forward-looking character – it creates and defines the legal regulations and enabling environment for individual project assessments (EIAs). It usually considers the landscape or region and is thereby able to identify cumulative impacts.
2. Environmental impact assessment (EIA): evaluates the potential impacts (both adverse and beneficial) of a particular project or development and identifying avoidance or mitigation measures. It is more reactive in character, because many important decisions have already been made by the time the EIA is conducted.

Table 5.14.2. Review of SEA Legislation by Country (source: CMS 2014)

Component Type		Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan	Mongolia	China	Russian Fed.
Impact-Centered									
1	Plans (including feasibility studies, mapping, and zoning)								
2	Programmes (referencing development of any type)								
3	Policies (including international agreements, laws, regulations, standards and guidelines)								
4	Mentions linear infrastructure (including any specific reference to roads, rail lines, pipelines or fences)								
5	Mentions natural resources								
6	Mentions wildlife (using the term fauna, wildlife, animal or other equivalent)								

Legend: referenced - ■ not referenced - ■ unclear - ■

Looking at the SEA legislation in the countries in the Central Asian region (Table 5.14.2), it becomes obvious that the integration of strategic assessments into national legislation in Central Asia has been widely adopted at least for planning and programmes. However, in none of the countries is linear infrastructure explicitly mentioned in the legislation, and only one country (Kazakhstan) mentions wildlife.

All of the countries reviewed have project-level environmental impact assessment legislation. There are, however, few direct references to linear infrastructure, migratory species or transboundary impacts within any of the frameworks (Table 5.14.3). The most common reference among them (five of eight countries) is to wildlife, but only one country (Kazakhstan) explicitly mentions migratory species and further requires consideration of migratory species in the construction of linear infrastructure.

Table 5.14.3. Review of EIA Legislation by Country (source: CMS 2014)

Component Type		Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan	Mongolia	China	Russia
1	Includes transboundary Impacts								
2	Mentions roads (referencing any type such as motorways, highways, transportation corridors etc.)								
3	Mentions rail lines (using terms such as railways, railroads, rail corridors, transportation corridors etc.)								
4	Mentions pipelines (in reference to oil, gas and water pipelines)								
5	Mentions fences (whether border, livestock or used in connection with transportation corridors)								
6	Mentions wildlife (using terms such as wildlife, animal(s) or animal resources, fauna, etc.)								
7	Mentions migratory species								
8	Expressly requires consideration of migratory species during the construction of linear infrastructure.								

Legend: referenced -  not referenced -  unclear -

The Saiga antelope is an example of a species which is seriously affected by linear infrastructure. Two of the three populations in Kazakhstan are affected by a new railway line, which crosses their distribution range from east to west, thereby cutting through the critical north-south migration movements of the animals. The Ustyurt population west of the Aral Sea is additionally affected by a border fence, which has been erected at the border to Uzbekistan a few years ago and cuts the animals off from their wintering grounds in Uzbekistan. As a reaction to these threats for the migration of Saiga a special document has been developed with recommendations for mitigation: "Saiga Crossing Options: Guidelines and Recommendations to Mitigate Barrier Effects of Border Fencing and Railroad Corridors on Saiga Antelope in Kazakhstan". For the border fence, it recommends to change the part of the fence relevant for Saiga movements to a wildlife-friendly design. The responsible border service in Kazakhstan has not yet approved this completely, but they have suggested to remove the lower strands of the barbed wire fence between two poles every kilometre, allowing Saiga antelope to pass through at these places.

For the railway, feasible alternatives were suggested, but they could not be adopted due to a late proposal and the high priority of the transport corridor for economic development. However, other recommendations were accepted: a station in the range of the Betpak-Dala population was moved out of the migratory pathway of the animals, and crossing points for Saiga were built along the whole length of the railway.

As a conclusion, incorporating the impact of linear infrastructure on migratory species into both EIA and SEA processes is urgent and the legislation has to be amended or improved to include impacts on wildlife and in particular migratory species. Furthermore, more specificity is needed on avoidance and mitigation plans. There is a clear need to formalise and harmonise practices to ensure that migratory species are identified as relevant and then considered at appropriate stages of project planning and development processes.

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## **5.15 Capacity Building in Central Asia – Raising a New Generation of Nature Conservationists in Kazakhstan and Uzbekistan**

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### **Abstract**

In Central Asia, the Association for the Conservation of Biodiversity (ACBK) and the Uzbekistan Society for the Protection of Birds (UzSPB) are building conservation capacity for the future. A network of student clubs established since 2007 at universities across both countries is helping to fill the gap left when professional conservationists and researchers emigrated after the break-up of the Soviet Union. Participating students receive training in practical research and conservation skills, fundraising, advocacy and communication and contribute to research and conservation projects as well as awareness raising campaigns.

In Central Asia, a BirdLife Partner in Kazakhstan and a BirdLife Affiliate in Uzbekistan are building conservation capacity for the future.

Everything started with the Important Bird and Biodiversity Area (IBA) Programme initiated by BirdLife International. Since the late 1970s, it aims to identify, protect and manage a network of sites that are significant for the long-term viability of bird populations and other forms of biodiversity around the world<sup>13</sup>.

When NGOs in Kazakhstan and Uzbekistan started the IBA inventory in 2004, it was immediately clear that without educating students in up-to-date field and research techniques, the project would not be sustainable in the long-term. At that time, not more than 30 ornithologists were working in the region, based mainly in the capitals or other large cities. For the IBA inventory, it was temporarily possible to involve foreign specialists, but it was unclear, who would continue long-term monitoring and conservation of these sites.

For this reason, ACBK (Association for the Conservation of Biodiversity of Kazakhstan) and UzSPB (Uzbekistan Society for the Protection of Birds) started to set up a new project, aiming at educating university students in field and research techniques, as well as nature conservation principles, advocacy, communication and fundraising, in order to have people on the ground, close to IBAs, who could monitor them regularly and implement conservation measures and to have people across the country, who could implement awareness raising campaigns and spread ACBK's and UzSPB's ideas.

Since 2007, ACBK and UzSPB have been setting up nature conservation clubs linked to universities. To date, more than 220 students in seven clubs in Kazakhstan (Astana, Almaty, Karaganda, Petropavlovsk, Kostanay, Ust-Kamenogorsk, Semipalatinsk) and five clubs in Uzbekistan (Tashkent, Samarkand, Bukhara, Nukus, Namangan) are involved in the NGO's conservation activities.

The growing network of student clubs has now established an effective and enthusiastic base from which to develop a strategy for conserving Central Asia's rich natural heritage.

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<sup>13</sup> BirdLife Partners have, to date, identified and documented more than 12,000 sites in over 200 countries and territories worldwide, as well as in the marine environment: <http://www.birdlife.org/worldwide/programme-additional-info/important-bird-and-biodiversity-areas>

The NGOs provide the clubs with all the necessary equipment, including binoculars, telescopes, cameras, field guides and scientific literature, tents and GPS devices, organize trainings, summer camps and conferences and provide students with scholarships for attending international conferences and for studying abroad. In turn, the students have the opportunity to assist ACBK and UzSPB in their efforts to conserve birds, other wildlife, and habitats by participating in conservation and monitoring projects as well as awareness raising campaigns, such as World Migratory Bird Day, World Birdwatch Day, etc.

Since the establishment of university clubs, more than 80 students have been involved in research and conservation projects, such as the Sociable Lapwing Project and the Altyn Dala Conservation Initiative, a large-scale project to protect steppe and semi-desert ecosystems and their key species in Kazakhstan. Three hundred volunteers across both countries provide their observation data to the NGOs. Students have been trained to raise funds and implement their own projects on the ground. Seven clubs in Kazakhstan and five clubs in Uzbekistan regularly monitor 'their' IBA and work with local people, landowners, farmers, and fishing and hunting associations to develop action plans for the IBAs. They also raise awareness among local communities and school children on the importance of protecting their biodiversity-rich surroundings. The network encourages members to maintain their interest in conservation and helps to place them in relevant careers. Eight former members of Kazakh clubs now work for ACBK, which is more than a quarter of ACBK's staff and half of its scientific team. Two members from Uzbekistan's clubs are employed by UzSPB.

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## **5.16 The Klaus Toepfer Fellowship Programme for Future Leaders in Nature Conservation from the Countries of Central and Eastern Europe, the Caucasus and Central Asia**

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### **Abstract**

The Klaus Toepfer Fellowship Programme aims to strengthen the institutional capacity of the nature conservation sector in Central and Eastern Europe, the Caucasus and Central Asia, by developing the personal capacity of young conservation professionals. The extra-occupational training programme catalyses capacity development through training on international best conservation practice and policy, management training, mentoring, a transfer project and network development.

### **Background and Goals**

The countries of the workshop region experience, to various degrees, an insufficient level of professional education and a chronic lack of capacities - both in technical and methodical knowledge - in nature conservation institutions. This hampers the abilities of nature conservation actors to meet the challenges for conserving biodiversity and ecosystem services and for implementing multilateral environmental agreements. The Klaus Toepfer Fellowship programme reacts to this need by investing into emerging nature conservation leaders of Central and Eastern Europe, the Caucasus and Central Asia, on an extra-occupational and long-term basis. The programme content, structure and methodology were tailored to the priority needs of conservation actors from the programme countries by conducting a training needs analysis with representatives of government institutions and NGOs of the region, and by using information from relevant evaluations of previous seminars at the International Academy for Nature Conservation, as well as additional documents such as CBD capacity needs self-assessments and project documents from the region.

The Klaus Toepfer Fellowship Programme is funded by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety and implemented by its Federal Agency for Nature Conservation, in collaboration with the International Union for Conservation of Nature (IUCN), the Secretariat of the Convention on Biodiversity (SCBD), the UNEP World Conservation Monitoring Center (UNEP-WCMC) and additional international partners. Dr. Klaus Toepfer, the Former Executive Director of the United Nations Environment Programme UNEP, has agreed to serve as patron for the Fellowship. The fellowship programme has been started in 2012, and is now in its 3rd round.

The programme takes an integrated approach to the development of the personal capacity of early-career conservation professionals. It combines technical learning on international best conservation practice and policy with management and leadership training as well as network development support and alumni activities. It focuses on individuals with outstanding leadership potential while promoting the participants' commitment to their home institutions.



Picture: The programme aims at enabling its fellows to work effectively in leading positions in the biodiversity conservation sector of their home countries, and to be actively involved in international conservation processes and networks. After graduation, Fellows become part of a growing network of leaders in the field of nature conservation. Photo credit: Asja Bernd

## Programme Structure

The 15-month programme consists of four training modules of ten-days each, held at the Federal Agency's International Academy for Nature Conservation, Isle of Vilm, including excursions to leading nature conservation institutions in Germany, a transfer project with relevance to the work of the participants at their home institution, as well as additional assignments between the modules.

The modules combine joint learning on key conservation topics with management and leadership training:

**Module 1**, Informing Conservation, introduces types and distribution of biodiversity, trends, causes and root causes of biodiversity loss and conservation rationales. It furthermore discusses concepts of evaluating and monitoring biodiversity; information management and communication for biodiversity conservation. It also introduces strategic and project planning methodologies through the CMP Open Standards and MIRADI.

**Module 2**, Conservation Economics and Financing, deals with ecological economics, TEEB, resource mobilization and sustainable financing of conservation measures; fundraising, proposal writing and technical writing.

**Module 3**, Conservation Management in a Spatial Context, focuses on protected areas, national systems of protected areas, ecological networks and integrated land use planning.

Trainings in engaging stakeholders and building collaborative partnerships, and on leadership complement the course.

**Module 4**, Conservation Governance and Policy, discusses decision making processes and structures relevant to conservation at the local, national and international level, as well as user-based approaches to resource conservation. In addition, negotiation and lobbying & advocacy skills for nature conservation are trained.

For the fellows, participation in the Klaus Toepfer Fellowship Programme is free of charge. The twenty participants receive free accommodation and board at the training venue and during excursions, as well as a contribution towards their travel expenses.

### **Transfer Projects and Mentors**

Throughout the Klaus Toepfer Fellowship Programme, fellows work on a transfer project, applying the training received during the training modules to a work task at their home institution. It should address a technical or management challenge that the home institution is facing and suggest solutions or innovative ways how to overcome this. Highly experienced conservation professionals from the programme region and beyond provide guidance and subject-specific advice as mentors for the transfer project development.

### **Trainers and Excursions**

The trainers of the Klaus Toepfer Fellowship Programme are highly experienced professionals on their topic. They use case studies from nature conservation practice and apply participatory and interactive training techniques in the course modules. Through excursions and site visits to key nature conservation institutions based in Germany, the fellows receive hands-on information on conservation practice in Germany and have the opportunity to discuss potential cooperation and to build networks.



Picture: Map of countries eligible for the Klaus Toepfer Fellowship: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, FYR Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Slovenia, Tajikistan, Turkey, Turkmenistan, Ukraine and Uzbekistan.

## **5.17 Bottom-up Approach in Environment Protection and Conservation in Moldova**

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National legislation and international conventions and agreements ratified by the Republic of Moldova stipulate the necessity of undertaking urgent and efficient action on environment protection and conservation. However, the degradation of the environment, the exhaustion of natural resources and the progressive decline of biologic diversity have become one of the most important problems of the country. Bottom up participatory approaches are one of the environment protection and conservation tools, which NGO BIOS applies in its various activities.

The Republic of Moldova is located in South Eastern Europe and most of its territory lies between two main rivers, the Dniester (at the Eastern border with Ukraine) and Prut (at the Western border with Romania). Moldova's proximity to the Black Sea makes its moderately continental climate mild and sunny. The landscape is plain with hilly areas: the highest elevation reaches only 430 meters. Most of the territory (74 percent) is covered by agricultural landscape (vineyards, orchards, pastures, grain fields), the forestland counts for 13,7 percent (broadleaf deciduous forest type, mainly of oaks, predominantly in the central hilly area), and wetlands form around 3 percent (flood plain areas in the lower Prut and Dniester rivers).

The four eco-regions of the country (Central European mixed forests, East European forest steppe, South forest steppe and Pontic steppe area) provide home to significant biological diversity. The protected natural areas provide the most favourable conditions for the development of plant communities. The legally designated protection areas in the Republic of Moldova increased from 1.96 to 4.65 percent of the territory during the transformation process after the breakdown of the Soviet Union. Most of the landscape and biological diversity is conserved within the four nature reserves, a National Park and other protected categories (landscape reserves, multifunctional management areas, natural monuments etc.).

The degradation of the environment, the exhaustion of natural resources and the progressive decline of biologic diversity and productivity have become one of the most important problems at the local and national levels. The rational use and conservation of biodiversity are decisive in the insurance of environmental sustainability and the eradication of poverty which are very important for our country. These two major goals are specified in the National Environmental Strategy for 2014-2023 and the Strategy for Biologic Diversity of the Republic of Moldova for 2015-2020. These documents stipulate most urgent and concrete measures to stop biodiversity loss and degradation through the sustainable use of biological resources, the reduction of human impacts on natural ecosystems and biodiversity components, the maintaining of natural habitats and the protection of rare and endangered species. The necessity of undertaking urgent and efficient action on conservation, protection and restoration of ecosystems is also stipulated in a series of international conventions and agreements ratified by the Republic of Moldova (CBD, CITES, CMS, Ramsar, etc.) as well as in the national legislation and in particular: the Environmental Protection Law, the Law of

State-Protected Areas, the Law of the Animal Kingdom, the Law of the Vegetal Kingdom, etc. One of the major environmental policy drivers for the Republic of Moldova represents the EU Association Agreement.

Conservation of natural ecosystems, biological and landscape diversity will be assured through a National Ecological Network which is presently in the course of establishment in the Republic of Moldova. However, in spite of above mentioned actions, the phenomenon of rapid increase of the numbers of endangered flora and fauna species is registered in the Republic of Moldova. Thus, while in the first edition of the Red Book (1978) included 26 species of superior plants and 29 species of vulnerable vertebrates, endangered and critically endangered species; the second edition of the Red Book (2001) comprised 126 species of plants and 116 species of animals and the present edition of the Red Book (2016) includes already 208 species of plants and fungi and 219 species of animals. The significant increase of the number of endangered species included in the third edition of the Red Book can be explained by the following:

- Measures undertaken up to now to protect flora and fauna species or to rehabilitate their habitats have been inefficient, or totally absent.
- The processing of the information in the last edition is based on much more rigorous and systematic field investigations, which resulted in an assessment of the real ecological condition of the species of plants and animals.
- The first edition of the Red Book included only superior plants and vertebrates, leaving out the moss, lichens, fern, algae species, as well as mushroom reign, whereas the section devoted to the animal species have left out the invertebrates.

### **Key Challenges for Environment Protection and Conservation**

- environment protection and conservation is not a priority in the Republic of Moldova;
- contradictions in environmental legislation;
- poor law enforcement;
- corruption,
- unsustainable use of natural resources: deforestation, overgrazing, hunting;
- low involvement of local population in the decision making process and implementation of environment protection and conservation;
- poor financing sources for environment protection and conservation;
- poor capacities of environment protection and conservation institutions;
- low level of public awareness;
- lack of working places for local population from settlements near protected areas;
- lack of integrated monitoring, including protected areas, etc.

Even a well-designed and integrated protected area system will be insufficient to ensure the conservation of all important species and habitats. Seasonally migratory animals, or species that normally range over large distances will be among those insufficiently protected by parks. Many endemic species of plants and animals may also remain outside protected areas. Therefore, other conservation tools are necessary to ensure the protection of biodiver-

sity throughout the country. Bottom up participatory approach is one of the environment protection and conservation tools, which NGO BIOS applies in various activities since its foundation (1995). Hereinafter we provide a brief review of most prominent activities carried out by BIOS at its various development stages.

### **1995-1999. Dreams and Plans, Growth and Development**

The initial five-year period of organisation's operation has comprised establishment of the organisation and its strengthening, selection of areas of activity, extensive work for organisational development, accruing knowledge and data in different environment related areas. BIOS has stated its firm priorities as being rural development and environmental protection, as well as harmonization of agriculture and nature conservation through initiation of pilot research projects, preparation of agricultural landscape plans, actions for soil, water and biodiversity conservation, restoring and planting of communal forests and forest belts, but also training of farmers in all the above issues. The work principles of the organisation were clearly stated to include respect for any personality, irrespective of gender, nationality, race, confession, age, social status, etc. In addition, a declaration was laid at the basis of the organisation's work, stating that no practices were allowed in the organisations that do not comply with the highest ethical standards. Fairness, equity, respect for man and nature were other declared and observed principles. The period was rich in initial sustainable agriculture and environment protection activities, but also some charity actions. The first publications of the organisation were prepared and printed and the basis was laid for the quarterly newsletter of BIOS. As soil erosion was identified as a problem threatening long term welfare of the rural people and environment, a model for soil erosion prognosis was developed, as well as related sustainable agriculture practices.

### **2000-2005. Learning, Re-training, Gaining Experience**

The period included the extension of the range of activities through development and implementation of a number of programs in sustainable agriculture, environment protection and conservation. Some projects were focused on addressing climate change in a specific manner by reducing vulnerability of agro-systems to climate change. BIOS staff has changed its approaches in order to disseminate and promote knowledge and data existing in research institutions, universities, colleges, in a more accessible way but also to appreciate and maximally apply the knowledge and experience of local communities, their creativity, to address rural problems in a holistic way. The main characteristics of the organisation's work over the period was establishment of model sustainable agriculture farms in the centre, north and south of the country; research of soil, water and biodiversity in pilot communities; integration of environment protection and conservation in community development action plans, implementation of environmentally friendly practices, involvement of communities at all stages of actions implementation, training of farmers, students, children, rural organisations by BIOS training centres. Over this period, BIOS has gained and shared knowledge in organic agriculture and has outlined related opportunities for Moldova. The organisation contributed to development of the National Action Plan in respect to Persistent Organic Pollutants (POPs), has developed a POPs related Communication Strategy and has developed and carried out awareness building component in cooperation with Ecological Movement of Moldova. In addition, BIOS has evaluated the quality of national experts' reports in institu-

tional capacities related to climate change, conservation of biologic diversity and combating desertification within an UNDP project and assessed socio-economic situation, and peoples' perceptions of Project "Ecological Network Creation on Pruth River".

### **2006-2010. Improvement of Methods, Creation of Partnerships**

Over this period, BIOS continued activities initiated in pilot communities, trained all the four development agencies of the country, staff of the Rural Development Agency (ACSA), National Farmers' Federation of Moldova and commercial banks in impact of agriculture on environment and environmentally friendly agricultural practices within a large World Bank project. BIOS expertise was solicited for moderating the development of six community plans, integration of nature conservation activities in community development action plans and to assess the impact of such plans on environment. Over 40 local authorities' communities were trained in community development and environment impact assessment. In addition, the respective period comprised addressing areas that were poorly known and understood in society, including access to information of interest for the rural space, state of environment and nature conservation, gender equality and asserting rural women in development activity, aspects of genuine participation of all social and age groups in community development. The issues of climate change, with aspects of mitigation and adaptation, desertification and biodiversity conservation issues were addressed as having major significance for rural development. Prevention of pollution in agriculture and adopting agro-environment practices was believed to be as unavoidable in the activity of the organisation, its competence being requested to evaluate environmentally-friendly agricultural practices, shrub and tree planting program and wetland restoration activities in a large World Bank project implemented in Moldova.

### **2011-2016. Maturity, Competence and Success**

Over this period we focused on discussion of environmental problems and solutions, with all concerned parties, sharing of knowledge, lessons learnt. Special attention was paid to combating desertification, planting and maintenance of communal forests, landscape conservation, promoting the national ecologic network, organic agriculture, conservation agriculture, etc. NGO BIOS trained the staff of Water Users Associations for Irrigation (WUAs) in participatory Development of Environmental and Social Management Plans (ESMPs) in framework of the MCC Project: Transition to High-Value Agriculture, integrated environment protection and conservation in WUAs activities, updated ESMPs in a participatory manner. Due to the fact that irrigated areas (15,500 ha) are along Nistru and Prut rivers special attention was paid to biodiversity conservation, as well as to the impact of climate change on agriculture, soil, biodiversity and water resources and measures for climate change adaptation and mitigation.

While BIOS has continued to learn and implement activities for organisational development, through a specific project in the area, the competencies and skills of BIOS staff and experts have reached a superior level, being recognized both by the civil society and by authorities, including through requests for capacity development, comments to new laws, counselling and practical assistance in such complicated areas as development and updating of management plans related to environmental and social issues. BIOS made the ecological and social impact assessment of some projects, evaluated farmers' and local public authorities'

perceptions of environmentally friendly practices in rural areas by international agencies, trained trainers and farmers in organic agriculture, developed rural development, environment protection and conservation chapter of the draft strategy for land consolidation of fragmented agricultural plots based on FAO methodology, prepared the Strategy for Implementation of Climate Resilience through Conservation Agriculture (IFAD VI program). The expertise in monitoring and assessment of other environmental areas was used in assessing the feasibility of reaching Millennium Development Goals, evaluating the state of forests, networks of natural habitats, water supply; contributed to the elaboration of the national reports on sustainable development, green economy, etc., as requested and highly appreciated by international organisations and projects, including UNDP, World Bank, EU, FAO, IFAD, as well as UNFCCC, UNCCD, CLRTAP conventions.

The children and young people are a most valuable resource and beneficiary in our work. Young people are passionate researchers and speakers and they dig out old practices very effectively from communication with their grandparents and the elderly of their native communities. Our quarterly newsletter is full of their discoveries. When organizing work with children we request their advice starting at the early stage of planning. Together with them we have developed and created community parks; have prepared and published an ecological ethnical code, Bios Junior bulletin, books of ecological fairy tales, poems, essays and drawings in soil, water and biodiversity conservation. The books are exceptional in that they are created by children themselves. We have also prepared radio materials such as testimonials, meditations on some specific facts, creative impersonation of nature elements and offered them to schools for use by smaller children. Successful activities implemented by BIOS with children and youth include: contests in nature conservation, projects for search and dissemination of traditional environmental protection practices, development and implementation of plans for beautifying villages, cleaning of natural springs and rivers, tree planting activities, excursions to nature reserves and BIOS pilot communities, meetings of urban and rural youth in rural settings, students' conferences, etc.

NGO BIOS developed and published over 60 publications in the field of sustainable agriculture, environment protection and community development. NGO BIOS is accredited to UNFCCC and CCD. Organisation is member of: IUSS, ILC, WASWC, RINGOs, National Platform of Eastern Partnership NGOs with EU and GEF-NGO Network.

No activity can be carried out and no idea can be implemented successfully without the assistance, support and advice of true friends. They encourage, enhance trust and assist to find the right ways and overcome difficulties and thus, to reach goals with dignity. Over the two decades, for NGO BIOS, those friends included over partners and donors, to whom the board and staff of the organisation expresses its highest gratitude and appreciation. BIOS implemented activities in collaboration with over 90 partners since 1995. Over 25 donors supported BIOS activities. The donors who supported BIOS environment protection and conservation activities are as follows: Bavarian Academy for Nature Conservation and Landscape Management, CORDAID - Mensen in Nood Caritas Nederland, European Union, FAO, GEF, IFAD, Millennium Challenge Corporation, NOVIB - The Netherlands Organization for International Development Cooperation, Research Support Scheme, Secretariat of UNCCD, UNFCCC and CLRTAP, SIDA, UNDP, USAID, World Bank.



Search and dissemination of good practices in environment protection and conservation and sustainable use of natural resources is an important area of NGO BIOS work. It employs not only local material but also international experience.

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## **5.18 Developing policies, legislation and governance for nature protection and sustainable management of natural resources – lessons learnt from the practitioner’s side**

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### **Abstract**

How evolve(d) new policies, legislation and reforms of governance system in the countries of Central Asia, Caucasus and Eastern Europe in the field of nature protection and management of natural resources? The current article provides an analysis of respective processes in the wildlife sector in Kyrgyzstan as an example. The Kyrgyz hunting law adopted in 2014 can be called one of the most comprehensive and well developed legal acts in the field of natural resources management in the region. The article will look in more detail on drivers of the process, pitfalls and success factors and is providing general lessons learnt and recommendations for policy formulation from a practitioner’s side.

### **Introduction**

The policy cycle as it has been first mentioned in 1956 by Harold Dwight Lasswell [5] and further refined by numerous political scientists all over the world is the most common model to describe policy formulation processes and the basis for development aid worldwide. It consists of four major steps: (1) Agenda setting including problem definition, (2) policy formation, (3) policy implementation and (4) policy review [1]. Numerous tools and instruments have been developed to support each of the steps, for example in the context of climate change [see 3]. All countries of Central Asia, Caucasus and Eastern Europe went/are still going through changes in policies, legislation and governance system in the field of nature protection and natural resource management. Development cooperation projects have been initiating, pushing, supporting or accompanying reform processes with different intensity and success. The current paper is not about to review those efforts, rather wants to draw lessons learnt and recommendations for policy formulation from a practitioner’s view from the example of Kyrgyzstan’s wildlife sector.

### **The Kyrgyz Case**

Figure 5.18.1 illustrates the major milestones in the development of policies, legislation and governance in wildlife management in Kyrgyzstan. Like in other former soviet countries after independence in the beginning of the 90s the state was no longer able to enforce the centralized management of natural resources and the conservation of biodiversity and landscapes. Natural resources could be openly accessed by any person or organization interested in exploitation of the resource, which led to the degradation of formerly abundant wildlife populations and their habitat also in Kyrgyzstan. However competition over high profitable resources, like wild sheep and goats with potential for trophy hunting has urged those to

the scene interested in gaining exclusive access and user rights. Hence, the bylaw on allocation of hunting grounds, adopted in 1995 was one of the first legal acts in the field of natural resources management after independence and was lobbied first of all by state elites. Acts regulating access to forests and pastures have been adopted several years later. Respectively the number of private companies with access rights to hunting grounds rose quickly up to ninety within five years only, leaving not a single white spot in the area with potential for trophy hunting. However the run on wildlife resources also urged the conservationists to the scene. In 1995 the strict nature reserve, the Sary-Chat-Ertash Zapovednik, finally has been established, aiming specifically on conservation of wild sheep (Argali), Ibex and snow leopard. The idea goes back to initiatives by the Hunting Department in the 70ies. A few years later and with support of the German Biodiversity Conservation Union (NABU) the Biosphere Reserve Issyk-Kul covering 4 million hectares with diverse landscapes and wildlife was enacted, widening the view from strict and exclusive nature protection towards conservation through sustainable and well-regulated use. The adoption of the law on wildlife in 2001 was part of a broad support provided by different donor organization and came along with the adoption of other laws on natural resources, like the law on protected areas, the law on plants and the forest code. However the wildlife law is not clear at all when it comes to the regulation of hunting of rare animals. It even seems that this part was kept unclear by purpose providing room for hidden procedures and corruption. Wildlife resources have been used, but not managed. Government officials understood the need to incentivize local population to stop poaching and concessionaires to invest in management, i.e. protection, propagation and sustainable use of wildlife. In 2003 a regulation was adopted according to which 40 percent of the hunting fee could be paid back to the concessionaires upon proven investment in conservation and propagation of wildlife populations. Further a 20 percent share of the fee was decided in favor of the local communities' budget. It is remarkable, that such a benefit sharing mechanism was pushed by the state and introduced without any reference to the international discussions on access and benefit sharing or pushing from an external side.

The development of a Hunting Law started in 2009, when it became obvious that on the level of by-laws all aspects of wildlife management could not be outlined properly. In 2010 the Hunting Department has been tasked officially by the government to develop the Hunting law and a working group out of the national hunting department's staff, representatives from the Union of hunters, the Academy of Science and international experts provided by GIZ has been set up. This was the first time, when donor aid stepped into the policy formulation process. Every single sentence of the law was developed jointly by all members of the working group. A national survey of the most valuable species, the wild sheep was undertaken and could provide evidence on the status of the population. Several public hearings took place with participation of all groups of stakeholders, including private sector. An ecological impact assessment, an assessment of juridical accuracy, an assessment of elements likely to foster or minimize corruption and an assessment of the impact on private sector development have been prepared by independent experts according to the official requirements. However the draft law got stuck in the beginning of 2011 due to internal disputes between different subdivisions at the State Agency on Environment Protection and Forestry and the law hasn't been taken further. "By chance" a Member of the Parliament has taken up the draft and submitted it directly to the parliamentary hearings. At that time the already heavily discussed question whether sustainable use can contribute to the con-

servation of Redbook species or not was put again on the table by a strong environmental NGO, urging the member of the parliament to delete respective parts of the draft law and announce a general ban on the use of all Redbook species. Again the situation as with the law on wildlife from 1995 was likely to happen. The Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the International Union for Conservation of Nature (IUCN) stepped in and provided sound expert advice on this topic and helped to ground highly emotionalized discussions. The Kyrgyz association of falconry addressed the parliamentarian in an open letter. Interestingly, concessionaires remained more or less silent. It took another two years and several public and parliamentary hearings for the Hunting law to be adopted. While Kyrgyzstan became a party of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) already in 2007, accession to the Convention on the Conservation of Migratory Species of Wild Animals (CMS) became effective in 2014 only. The long way to accession was mainly due to fluctuation of decision-makers and changes in procedures, with the result that documents had to be prepared and submitted again and again. With accession to CMS and CITES, the adoption of the Hunting Law, Kyrgyzstan now has a sound legal basis for all aspects of wildlife management and enforcement (the most important elements of the Hunting Law are outlined in Box 5.18.1.). The law provides for a broad set of incentives and accountability mechanism to ensure implementation of sustainable management of wildlife. The slowly evolving institutional changes since independence have been formally fixed and sharpened. For the first it looks like as if the wildlife sector in Kyrgyzstan has a well-developed political, legal and institutional basis for the conservation of species and economic development and tackled the major challenges of the transition period. However what is equally important, a comparable strong state administrative body is in place and practically capable to implement the new framework and to push sustained change in the day to day, week by week, month to month practices of thousands of individuals involved in wildlife management.

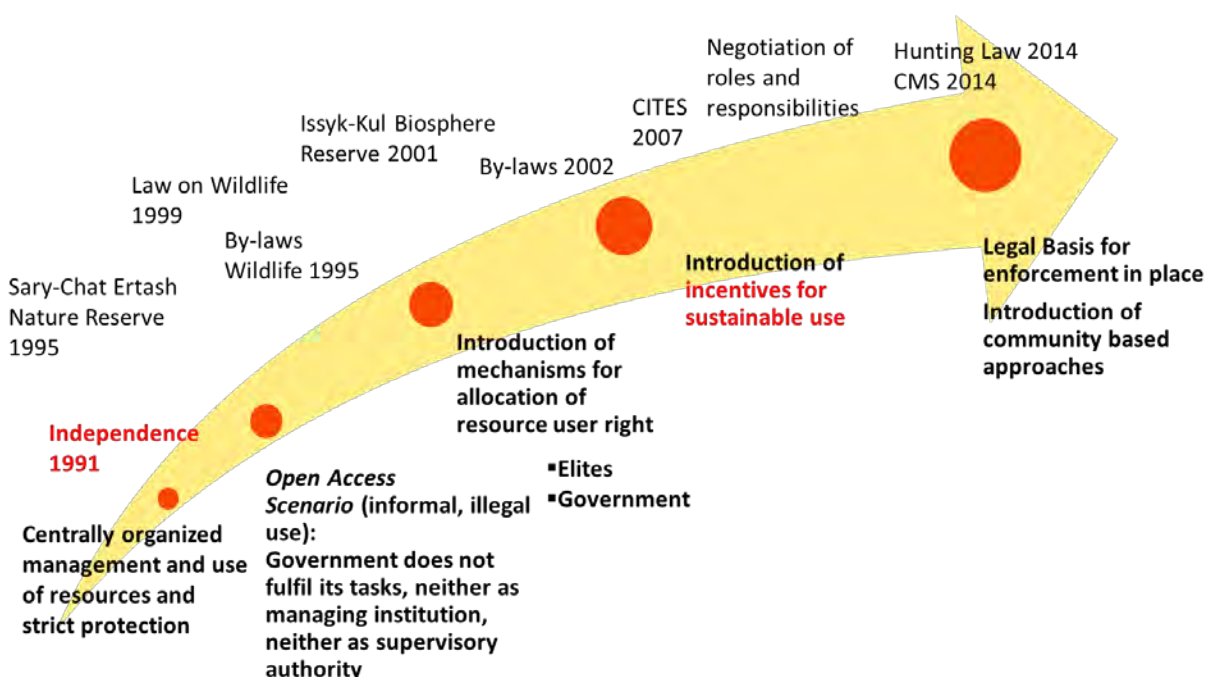


Figure 5.18.1. Milestones of Wildlife Conservation and Sustainable Management in Kyrgyzstan

Change from permit based system to **area based management system**.

**Strict division of functions** avoids conflict of interest and corruption: hunting area management to be fulfilled by private companies or union of hunters - policy and control functions are taken over by the state department. Private Service providers and scientific institutes are supporting the development of management plans and surveys. The issue of hunting licenses, formerly enforced by the non-governmental Union of Hunters became state prerogative.

Corruption to be minimized through **clear assignment of roles and responsibilities and detailed description of all relevant procedures** starting from allocation of hunting areas, obtaining of hunting license and permits and communication and reporting rules.

**Increased rights for staff of Hunting Area Management Organization to combat poaching:** staff is allowed to confiscate weapon and other equipment of illegally hunting persons, photos and video materials are considered valid materials at the court.

Increased opportunities for protection: Hunting area managers can announce **seasonal protection zones** for example at lambing sites or migration routes where other activities like grazing, tourism will not be allowed.

**Incentives for sustainable management of the Hunting Area:** duration of the rent contract for hunting concessions increased to 15 years, with possible extension; part of the hunting fee can be paid back against proof of investment in conservation of the populations and their reproduction by the area manager.

**Incentives to combat poaching:** 30 percent of the fine issued for illegal hunting will be paid to the person catching the poacher.

**Broad involvement of private sector and civil society organizations in decision making:** one representative of the association of hunting area managers and of a relevant NGO are part of the commission on allocation of hunting areas and distribution of hunting permits.

**Mandatory monitoring of wildlife populations:** private sector is obliged to provide regular data on population of key species and actively take part in national surveys. NGOs are encouraged to participate in country wide surveys. Survey data are to be published.

Tracking trophies is eased through the mandatory **introduction of tags**.

**Benefit sharing** with local population: 30 percent of the hunting fee is transferred to the local communities' budget, where the hunt has taken place.

**Hunting traditions are supported:** detailed regulations on falconry, covering all aspects of catching, keeping, using and transporting falcons, helped to shape the necessary legal framework for traditional hunting practices.

**Obtaining a hunting license** is only possible **with proven knowledge** of the subject. Alcohol consumption during hunting will lead to withdrawal of the hunting license.

**Discouraging and eliminating unprofessional concessionaires:** The introduction of minimum sizes for hunting areas and the obligation to pay the hunting permit fee 100 percent in advance helped to get rid of unprofessional hunting companies with small areas. The allocation of hunting areas is based on knowledge, experience of the applicant and quality of the documents provided.

## **Lessons Learnt and Recommendations**

There have been numerous challenges on the way to a new policy and legislation in the wildlife sector in Kyrgyzstan, but also fortunate circumstances with right people in the right moment doing the right thing in an appropriate manner. The following recommendations are based on this anecdotal evidence and don't claim to be complete.

Start supporting policy formulation only if there is a broad awareness of problems and underlying causes and development is ongoing already. In the case of Kyrgyzstan the exploitation of wildlife resources through poaching and by private concessionaires has been an obvious problem for years and several constructive attempts have been undertaken to solve those problems by the country without donor support. The time was sufficiently ripe for a comprehensive policy formulation process. Governance improvement cannot be an entry point for developmental reform, but is important to sustain development, as has been pointed out by many other political scientists [2,4]. It is therefore advisable not to start right into policy formulation processes, without prior awareness raising preferably through several practical learning exercises either with or without external support – which may take several years.

**Good leadership and state capacity is the key to adoption of the law and later implementation.** Any new law, policy or governance are as good as local leaders and capacities can take them further. This actually means, that if there is not such a leader, you are advised not to initiate or support reform processes. Aid-supported institutional change has a well-documented tendency to produce either 'capability traps' or purely cosmetic improvements [2]. In Kyrgyzstan the different organizations dealing with wildlife management have been in place already for several years, with little fluctuation in staff composition and with reasonable command on wildlife management.

**Watch out for „influential“ drivers and decision makers – but don't rely on a single person only.** The broader the number of drivers of the policy and law development process the greater the chance that the policy/law will go through a deep and open discussion process. Especially in governmental structures staff fluctuation might be high and the driver of the process maybe no longer in the position as needed. Therefore try to involve several persons from each stakeholder group. In the Kyrgyz case, there was not only the state agency tasked to develop a Hunting law, but local population was criticizing current practices and interested to be involved, representatives of private sector explicitly wanted to have regulations in place to outcompete other business entities, and finally Secretariats of the Convention put pressure on the Kyrgyz government to comply with the international agreement. Finally a parliamentarian, not interested as much in the topic, as in showing performance was taking the draft law further when it got suddenly stuck.

**Broad involvement of all stakeholders - is halfway implementation.** Even if the law development process may take much more time, the more stakeholders are involved, the

more consultations and hearings are organized, the easier will be implementation of the law afterwards. (1) Involving stakeholders means taking up valuable advice from practitioners, (2) each consultation helps to shape a proper understanding of roles and responsibilities and hence fosters implementation straight away. In Kyrgyzstan, some regulations of the law – like the requirement of a minimum area for allocation of a hunting ground – have been considered already before the law has been adopted. Already from 2012 onwards the number of hunting concessions decreased and amounts now to 53.

**Civil society is not only about NGOs - NGOs are not always constructive players.** Involvement of civil society is very important, but it is not easy to identify the right representatives. Sometimes NGOs active on national level have only vague understanding of the resource user's day to day problems in the region. Such NGOs often tend to bring in generalized opinions that they feel important or have taken up from international discussions, but do not constructively contribute to the law development process. In the case of the Kyrgyz wildlife sector two years have been lost on the way to adoption of the law and some aspects of the draft law have been taken out in the final version.

**Take your time for negotiation of roles and responsibilities.** Especially when the law is about to introduce changes in the governance system, negotiating roles and responsibilities will take most of your time. Whatever process you want to describe in the legal act, as long as functions are not precisely clear, you will end up in endless discussions and risk contradictory phrases in the legal document. When developing the Hunting law in Kyrgyzstan discussions on procedures have been thrown back several times unless roles and responsibilities haven't been clarified sufficiently.

**Make use of instruments for participatory policy and legislation development.** Already since 2006 different impact assessments of upcoming laws are mandatory and standardized in Kyrgyzstan [9]. Public hearings are also prescribed by law [7]. Such instruments are useful to ensure involvement of all stakeholders and different opinions in the policy formulation process and to provide facts and analytical data during sometimes hot discussions and rushed decisions. In the case of Kyrgyzstan four impact assessments have been undertaken and revealed important new insights during the law development process. However it has to be admitted that the number and capacity of relevant independent experts is currently not sufficient to support all law development process in the necessary quality.

**Make use of advice by Convention Secretariats and international expert groups and advisory boards.** IUCN's species survival commission has several species expert groups, task forces and subcommittees that may provide expert advice on a certain aspect or species. Since often many organizations within the country are members of IUCN, such statements may help to unite diverging opinions. Statements by Convention Secretariats may further help to consider international agreements and standards. In Kyrgyzstan statements by IUCN and CMS Secretariat helped to ground highly emotionalized discussions.

**Comprehensive and as detailed as possible.** The more detailed the law is, the easier will be implementation. However if development and adoption of laws is rushed, it may be helpful to set only the rough legal framework and leave the precise regulations on the level of the bylaw, when hopefully there is more room for discussion. The Kyrgyz hunting law is a very detailed law and implementation is possible even if some by-laws are still missing.

**Ensure learning from practice, rather than developing from desk-top only.** Whenever a law is developed most of the aspects it will regulate are already practiced, or are suggested by practitioners. Watch out for such practical examples. In the Kyrgyz case, private sector representatives and government had already lots of practical experiences and brought them into the law development process, during public hearings and as members of the working group.

**Don't overestimate private sector support.** Private sector's interest is mostly focused on a few aspects, while a law needs to cover quite a bundle of issues. In such case private sector may heavily push the adoption of the law, as soon as they feel their interests are met. In some cases private sector may also be interested to minimize precise legal regulations, since this narrows down the room for maneuver and corruption. When the discussion around the use of red book species was at its height in Kyrgyzstan, private concessionaires making profit from trophy hunting on red book species remained remarkable silent.

**Long-term involvement by an expert from outside.** Very often discussions on draft laws and policies get stuck and/ or drafts contain contradictory statements. Each stakeholder tends to look from his view only, and compromises are not sought. Lawyers tend to pay attention to juridical accuracy only and often lose an understanding of the subject and matter of regulation. A neutral person, knowing well the language (!) in which the law is developed is helpful to mitigate conflicts and to steer due the final ideal version. This can mean that the expert has to spend dozens of days and hundreds of hours with the working group, on public consultations and hearings, which luckily was the case in Kyrgyzstan with experts provided by the Gesellschaft für internationale Zusammenarbeit (GIZ) GmbH in the framework of the Regional Program on Sustainable Use of Natural Resources in Central Asia financed by the Federal Republic of Germany. Unfortunately many donor projects tend to provide only expert reports and arrange short expert missions. Only a few advisors have the patience and the necessary language skills to take part in a law development process from the very beginning until the end.

Kyrgyzstan will make its way in the wildlife sector, thanks to a well-developed political, legal and institutional framework and necessary capacities to further development of the sector and change. Any further support by development cooperation should concentrate on building Kyrgyzstan's institutional (and especially state) capacities.

## **ACKNOWLEDGEMENT**

We are grateful to Stefan Michel backstopping the process as a wildlife expert, Simon Stuart Chair of IUCN Species Survival Commission, Marco Festa-Bianchet and Richard Harris of the Caprinae Specialist Group, Bert Lenten and Christiane Röttger from the CMS Secretariat for their expert advice and support. The law would not have been developed without the steadiness and patience by Nadeshda Emeljanova, employee of the hunting department taking over the formulation and writing down of each single word of the law. Final acknowledgement goes to Reinhard Bodemeyer who was the Head of the Regional Program from GIZ at that time, who had the trust in the process, experts and the partner country.



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## **5.19 The Four Pillars of German Financial Cooperation in the Ecoregional Nature Protection Programme in South Caucasus**

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A development project of WWF (World Wide Fund for Nature), co-financed by the Federal Republic of Germany through KfW

Consultant: AHT GROUP AG, Germany and REC Caucasus.

### **Abstract**

The Ecoregional Nature Protection Programme in South Caucasus is financed by the German Financial Cooperation. The total portfolio value over the period 2007 - 2015 is 80 million Euro. It has four components/pillars:

1. The Support Programme for Protected Areas invests in protected area development and socio-economic development;
2. The Caucasus Nature Fund co-finances up to 50 percent of protected areas operational cost;
3. The Transboundary Joint Secretariat fosters transboundary cooperation, and
4. The Ecoregional Corridor Programme functionally connects protected areas.

The synergies between the pillars enhance the sustainability and impact for creating a functional network of conservation areas in South Caucasus.

### **Historic Development of the Ecoregional Nature Protection Programme for South Caucasus**

The Ecoregional Nature Protection Programme (ENPP) is financed by BMZ through KfW. The ENPP is part of the "Caucasus Initiative" by BMZ, launched in April 2001 after the three South Caucasus countries joined the European Council. ENPP aims to foster cooperation between Armenia, Azerbaijan and Georgia, and to support economic, social and political development in the region, thus helping to defuse conflicts<sup>14</sup>. Because the Caucasus is a biodiversity hotspot and where biodiversity came under threat due to the transition, regional conflicts and the economic collapse after the collapse of the Soviet Union, this was chosen as one cornerstone programme. It is politically relatively neutral and has local, national, regional and global relevance. The biodiversity conservation cornerstone aims at encouraging cross-border cooperation between sector ministries, authorities, NGOs and experts through establishing transboundary national parks and bio-corridors.

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<sup>14</sup> BMZ Materials, no 138

In 2001 WWF Caucasus, with financial support from McArthur Foundation had prepared the first investment portfolio for the Caucasus Ecoregion for four countries<sup>15</sup>. From 2002 until 2005 a more comprehensive Ecoregional Conservation Plan (ECP) was prepared for the whole Caucasus region, including Armenia, Azerbaijan, Georgia, Iran, Russian Federation and Turkey. 160 Experts from all six countries contributed to it. In 2011 this plan was updated focusing on 56 priority conservation areas and 60 priority eco-corridors<sup>16</sup>. The ECP includes now 47 long-term target, 73 medium term targets and 189 actions<sup>17</sup>, divided in six main action areas: i) improving framework conditions, ii) forests, iii) freshwater, iv) marine and v) high mountain ecosystems, as well as vi) conservation and restoration actions for specific species.

In 2002 and 2003 KfW developed the Ecoregional Nature Conservation Plan with an investment portfolio for German Financial Cooperation, later the Ecoregional Nature Protection Plan (ENPP). The ENPP objectives are:

1. Reduce the pressure on land use at the selected locations
2. Support the sustainable socio-economic development of the local population in harmony with nature
3. Develop an eco-regional model for conserving biodiversity in the Southern Caucasus region
4. Contribute to the sustainable financing of the conservation area system of the partner countries

Subsequently KfW financed projects for protected area development, was co-founder and main financial donor for starting the Caucasus Protected Area Fund and thirdly set up a regional Transboundary Joint Secretariat for developing and promoting a regional model for biodiversity conservation in the region. These were the first three pillars of the ENPP. After 2010 also the fourth pillar for sustainable natural resource management in priority eco-corridors was prepared.

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<sup>15</sup> Armenia, Azerbaijan, Georgia and Russian Federation

<sup>16</sup> ECP, 2006

<sup>17</sup> ECP 2012

## The Four Pillars

The four pillars comprise (see Figure 5.18.1):

1. Support Programmes for Protected Areas (SPPA): investing in the development of selected Protected Areas and in the socio-economic development of adjacent communities;
2. Caucasus Nature Fund (CNF): co-financing up to 50 percent of operational costs of protected areas;
3. Transboundary Joint Secretariat (TJS) for the Southern Caucasus, fostering cooperation and harmonisation in nature protection in the region; and
4. Ecoregional Corridor Programme for Southern Caucasus, preparing land use plans for selected eco-corridors and supporting sustainable land use through an Ecoregional Corridor Fund (ECF<sup>18</sup>).

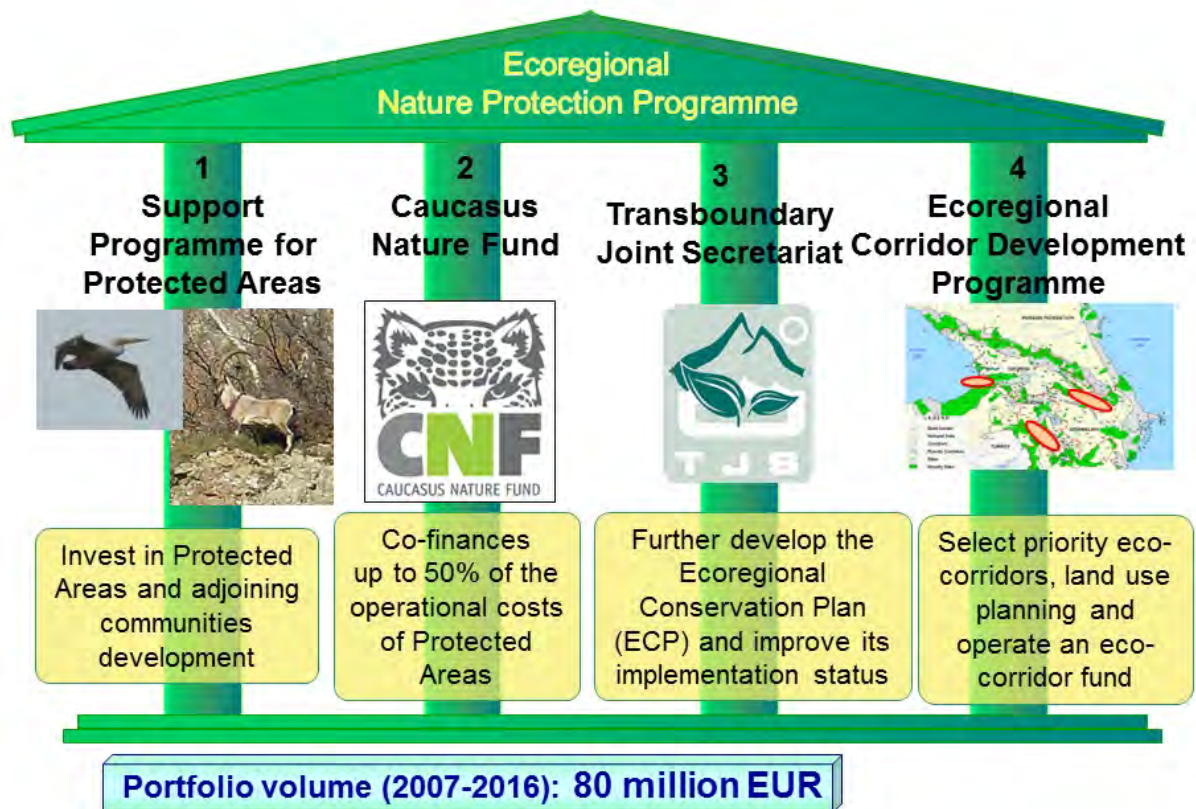


Figure 5.19.1. The Ecoregional Nature Protection Programme Pillars  
(source: TJS ENP 2014, modified)

<sup>18</sup> Ecoregional Corridor Programme for Southern Caucasus (ECPC) will also be referred to as ECF (Eco-Corridor Fund), to avoid confusion with the ECP (Ecoregional Conservation Plan)

## **Support Programmes for Protected Areas (SPPA)**

The general objective of all SPPA programmes in each country is to improve natural resource and protected area management while simultaneously improving the socio-economic situation of adjacent local communities. The projects activities cover:

- Preparing Management Plans, including inventories, zonation, protection regimes, tourism plans and monitoring plans.
- Capacity building of protected area management, including training of staff, investments in protected area equipment, such as vehicles, field equipment and office equipment. Investments in protected area infrastructure, such as administration and visitor centres, ranger shelters, trails, etc.
- Investments in socio-economic development in adjacent communities, to provide alternative sources of income, stimulate the sustainable use of natural resources in the buffer zones, and to improve community infrastructure (e.g. drinking water supply or access roads).

These activities contribute to the ENPP objectives to reduce the pressure on land use and to support sustainable socio-economic development of the local population in harmony with nature.

The lessons learned are used to strengthen the national protected area management systems. Finally SPPA projects support the sustainable financing of protected area system by developing remunerative tourism services, or other income generating services, but also by paying attention to low operation and maintenance cost for the infrastructure and equipment that is provided.

Borjomi Kharagauli National Park in Georgia was the first protected area investment project. In 2008 the investments in Javakheti Protected Areas (in Georgia) and in Lake Arpi National Park (National Park, in Armenia) were started, followed by Samur Yalama National Park in Azerbaijan from 2010 onwards. In 2014 SPPA Georgia was launched, investing in four protected areas (Kazbegi National Park, Kintrishi National Park, Algeti National Park and Psav Khevsureti National Park). In 2015 SPPA Armenia was launched for Zangezur Biosphere Complex, comprising six protected areas in South Armenia. Preparations for an SPPA in Zaqatala-Balaken protected area in Azerbaijan are on its way.

## **Caucasus Nature Fund (CNF)**

Experiences elsewhere had shown that after completion of protected area investment projects, governments often lack financial resources for the necessary operational and maintenance costs of protected areas. Therefore the Caucasus Protected Area Fund (CPAF) was founded in 2008 by KfW, WWF Germany and Conservation International as an instrument to co-finance up to 50 percent of the operational costs of selected protected areas. This financing instrument contributes significantly to the sustainability of the SPPA investments.

In 2010 CPAF was renamed Caucasus Nature Fund<sup>19</sup>. CNF operates as a trust fund, presently having an endowment of about 30 million Euro. This is largely financed by BMZ

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<sup>19</sup> <http://caucasus-naturefund.org/wp-content/uploads/2013/02/NL-Oct-2010.pdf>

through KfW. Through active fund acquisition it obtains also contributions from other donors, private companies, such as banks and individual benefactors. It operates with a central office in Europe and has since 2012 local offices in Georgia and in Armenia.

CNF now co-finances 18 protected areas and has the objective to increase to 20 in 2020. The protected areas largely coincide with protected areas developed under SPPA. The financing includes topping up of protected area staff salaries, staff insurance schemes, repair and maintenance of equipment and infrastructure, equipment, ranging from vehicles to binoculars, uniforms, etc. It also finances studies into tourism development (for more income generation) and for updating protected area management plans.

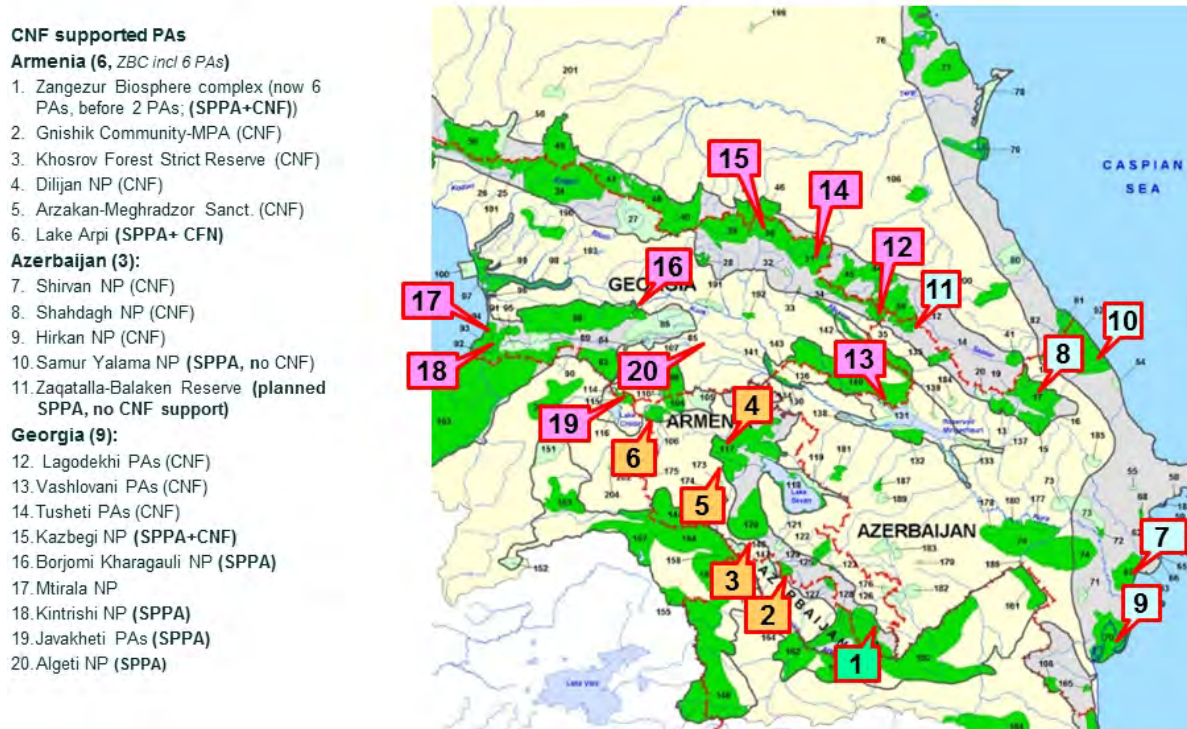


Figure 5.19.2. Map of the Eco-region with Protected Areas Supported by SPPA and CNF (source: TJS ENP 2014, [http://wwf.panda.org/what\\_we\\_do/where\\_we\\_work/black\\_sea\\_basin/caucasus/projects/english](http://wwf.panda.org/what_we_do/where_we_work/black_sea_basin/caucasus/projects/english))

## Transboundary Joint Secretariat (TJS)

The first phase of the Transboundary Joint Secretariat for the Southern Caucasus was from 2007 until 2010. It focussed on harmonising sector policies, developing financial cooperation strategies, preparing projects and establishing and improving technical guidelines. Main achievements include regional guidelines for preparing protected area management plans, guidelines for landscape planning and support to SPPA project preparation.

TJS second phase (2011 - 2015) aimed to foster harmonisation in biodiversity protection, establishing and improving protection instruments, and at developing strategies for sustainable funding of protected areas. The main achievements were i) the successful pilots of a new financial participatory approach for socio-economic development in communities adjacent to protected areas, ii) promoting protected areas as eco-tourism destinations and iii) financing several regional cooperation and national priority measures through a Special Operational Fund (SOF). It also monitored sector developments and reported these to BMZ, the German Embassies and the German Cooperation Organisations.

The present TJS phase-III (2015 - 2020) has the objective to further develop the Ecoregional-Regional Conservation Plan (ECP) and to improve its implementation status. The five output areas are i) sector analysis and reporting to BMZ, ii) further develop and promote appropriate socio-economic development approaches for communities adjacent to protected areas, iii) eco-tourism development in and around protected areas, iv) updating the ECP and v) further develop and use a special operational fund (SOF) for financing transboundary activities. TJS works closely with government partners and follows a flexible and responsive approach to support the governments and the other ENPP programmes.

The present third phase is implemented by WWF Caucasus Programme Office with the support of an implementation consultant.

### **Ecoregional Corridor Programme for Southern Caucasus (ECPC)**

For a functional connected conservation area network the protected areas should be connected to link key species populations, such as large herbivores and predators. Therefore the fourth pillar for establishing eco-corridors, ECPC, was launched in 2015.

The objective of the ECPC is to secure conservation and sustainable use of biodiversity in priority ecological corridors in Armenia, Azerbaijan and Georgia, while securing at least equal income to the local rural population and helping the local rural population (beneficiaries) of the selected eco-corridors to manage their land in an ecologically sound way. To this end ECPC works towards the following outputs:

- Establishing an “Ecoregional Corridor Fund” (ECF) as an instrument for promoting/financing sustainable land use practices in the selected ecological corridors.
- Preparing long-term land use plans with participation of the beneficiaries; the plans are aiming to support the ecologically sound use of natural resources.
- Conclude Conservation Agreements with the beneficiaries, for paying compensation payments for long term measures, such as abstaining from land use that are against the principles of ecological corridors.
- Acquisition of additional funds for the Ecological Corridor Fund for securing long-term funding of eco-corridor land use practices by local populations.

ECPC is implemented by WWF Caucasus with support from an implementation consultant.

### **Synergies among the Four Pillars**

The co-financing of protected area operational costs contributes significantly to the sustainability of the SPPA investments protected areas. The SPPA and the Eco-corridor programme benefit from management plan- and land use planning guidelines, as well as from the financial participatory approach for socio-economic development that was piloted by TJS. Ecotourism development in and around protected areas is an important working area in all four pillars. TJS also fosters transboundary cooperation which is a pre-condition for creating an ecoregional conservation area network. Through its special operational fund it can finance complementary measures for capacity building, regional exchange, knowledge sharing and cooperation.



## Coordination and Cooperation

Coordination and exchange among the four pillars is achieved through participation on each other's planning and/or technical workshops, holding joint meetings, exchange events, regional seminars and through personal contacts. Planning and technical documents are shared and the programmes support each other in areas of socio-economic development approaches, eco-tourism, monitoring, capacity building, etc.

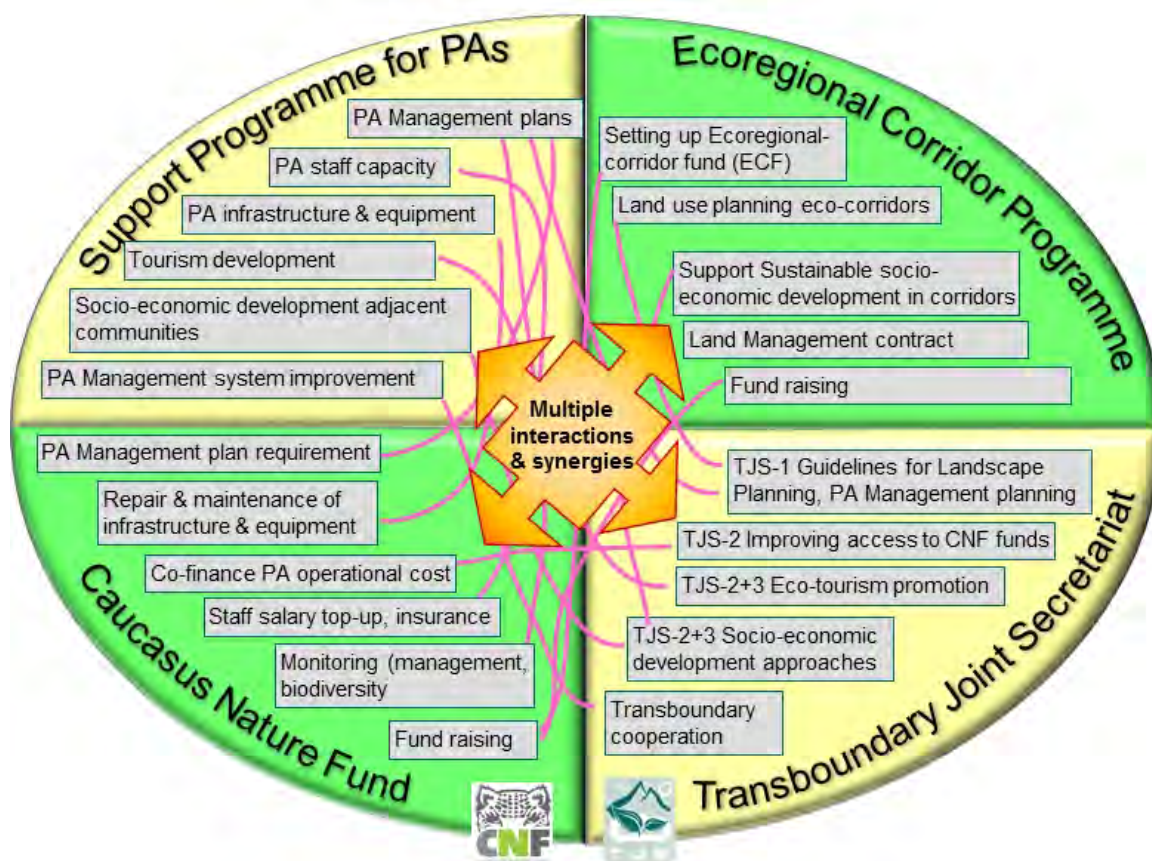


Figure 5.19.3. Synergies among the Four Pillars of the ENPP (source: TJS ENP 2014, modified)

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## 5.20 The Most Endangered Species of Vertebrates in Armenia

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Armenia is a small (about 30 thousand km<sup>2</sup>) landlocked mountainous country located in the Southern Caucasus. Armenia is located in two “biodiversity hotspots”: the Irano-Anatolian and the Caucasus Hotspots. Particularly it is located in the Caucasus Anatolian Hyrcanian Temperate Forest Global 200, which is considered a critical/endangered Global 200 ecoregion (Olson, Dinerstein, 2002). While encompassing only six to seven percent of the Caucasus area, over 500 species of vertebrates can be found in Armenia. The location of the country in the intersection of three biogeographical provinces, diversity of climatic conditions and active geological processes have resulted to formation of diverse ecosystems and rich biodiversity with high level of endemism. The territory of Armenia is notable by intensive speciation processes and it is not accidental that the researchers of flora and fauna of the country often identify new species for the science. Armenia is a globally significant center of origin of agrobiodiversity. The wild relatives of numerous cultivated plants and of a number of domestic animals have been preserved in Armenia.

In the result, on the small territory of the country there are about 3,800 species of vascular plants, 428 species of soil and water algae, 399 species of mosses, 4207 species of fungi, 464 species of lichens, 549 species of vertebrates and about 17,200 species of invertebrate, many of which are considered endemics. Vertebrates also consist of high number of endemics. Thus among 39 species of fish 3 are endemics, among 51 species of reptiles - 6, and among 93 species of mammals 6 species are endemics (CBD 5th National Report, 2014).

Among a range of higher taxa, the majority of species are currently in decline. Studies of vertebrates on Armenia show the many of species to be declining in range or population sizes. 155 vertebrates and 153 invertebrates are currently listed in Red Data Book of Armenia (2010).

Below are listed the most endangered species of vertebrates categorized as critically endangered and endangered according to IUCN criteria (Red Data Book of Armenia, 2010).

### Mammals:

Long-eared hedgehog, *Erinaceus (Hemiechinus) auritus* (Gmelin, 1770). Populations are fragmented and number in separate sub-populations continue to go down. Status: Endangered EN B1ab(iii)+2ab(iii). Major threats: deterioration of key habitats (arid grasslands, semi-deserts and deserts), alteration of vineyards and orchards, high road kill mortality and illegal harvesting.

Transcaucasian water shrew, *Neomys schelkovnikovi* (Satunin, 1913). Population is significantly reduced. Status: Endangered EN B1a+2a. Major threats: water pollution and human economic activities in riparian areas in highlands (up to 2500 m above sea level), semi-deserts and forests.

Blasius' horseshoe bat, *Rhinolophus blasii* (Peters, 1866). A rare and poorly studied species of limited distribution and decreasing population. Lives only in caves located in moun-

tain grasslands and semi-deserts. Status: Endangered EN B1a+2a. Major threats: unknown.

Arax myotis, *Myotis schaubi araxenus* (Dahl, 1947). An extremely rare and poorly studied species of limited distribution. Very low numbers make it highly prone to extinction. Status: Endangered EN B1a+2a. Major threats: human disturbance during the breeding and wintering seasons in caves, grottos, cliff crevices, tree hollows, cellars, outhouses and other similar places.

Armenian whiskered bat, *Myotis hajastanicus* (Argyropulo, 1939). Endemic species, extremely rare and poorly studied species. Such a limited range has never been observed before. Status: Critically Endangered CR B1a; D. Major threats: unknown.

Dahl's jird, *Meriones dahl* (Shidlovski, 1962). In Armenia the species is teetering on the brink of extinction. No populations were recently found. Status: Regionally Extinct RE. Major threats: human activities within the Arax riverside.

Armenian birch mouse, *Sicista armenica* (Sokolov et Baskevich, 1988). A rare species in need of research and conservation. Only 10 individuals were recorded in the subalpine zone of the Pambak and Tsakhkuniats ridges. The one individual was recorded in 2015. Status Endangered EN B1a. Major threats: human activities in subalpine meadows, such as animal grazing, and climate aridization.

Asia Minor ground squirrel, *Spermophilus xanthoprymnus* (Bennet, 1835). In Armenia the extent of occurrence is about 350000 ha, but the area of occupancy is only 15,000–25,000 ha because of the patchy pattern of the population. Status: Endangered EN B2ab (ii,iii,iv). Major threats: in the southern and central parts of the range, large portions of habitats are destroyed or no longer inhabited by ground squirrels because of gardening or other ways of land encroachment.

Shidlovsky's pine vole, *Microtus (Sumeriomys) schidlovskii* (Argyropulo, 1933). An endemic species. Extremely rare and poorly studied. Since the late 1980s and especially early 1990s, the population has significantly reduced. Some populations considered in the 1970s as stable (e.g., on the Mastarin Plateau) have virtually vanished. No current data. Status: Endangered EN B1ab(ii,iii,v). Major threats: human activities and climate change aggravated by strong rainfalls in early spring and subsequent droughts in summer affect the food base of pine voles.

Small five-toed jerboa, *Allactaga elater* (Lichtenstein, 1825). An endemic subspecies of the Ararat Valley having severely fragmented range. Numbers and habitats experience reduction because of shrinkage of living spaces. Status: Endangered EN B1ab(ii,iii,iv). Major threats: human activities in the Ararat Valley. Conversion of plain virgin lands. Increasing populations of feral dogs and jackals.

Eurasian otter *Lutra lutra* (Linnaeus, 1758). Population size and its trends are unknown, but greatly reduced. Possibly, the population decreases because of habitat pollution and construction of hydrotechnical facilities. Status: Endangered EN D. Major threats: habitat destruction, water pollution and overfishing.

Leopard, *Panthera pardus saxicolor* (Linnaeus, 1758). The maximum possible number of leopards in Armenia is 10–15 individuals. The extent of occurrence is 7497.2 km<sup>2</sup>. Only two areas (central and eastern Khosrov Forest Reserve, 207.9 km<sup>2</sup> and the area to the north of

the Nrnadzor village, 296.9 km<sup>2</sup>) hold constantly living leopards. This pattern of the population makes it entirely dependent upon the functioning of the corridors. Status: Critically Endangered CR C2a(i); D. Major threats: the most imminent threat to leopard survival is range fragmentation caused by poaching and other human activities.

Pallas's cat or manul, *Otocolobus manul* (Pallas, 1776). Most likely, does not live in Armenia any more. Recorded in only two sites (Urts Ridge and Meghri district), the latest of which is dated 1935. Status: Regionally Extinct RE. Major threats: the potential threats are poaching and habitat destruction.

Striped hyena, *Hyaena hyaena* (Linnaeus, 1758). Most likely, the hyena does no longer exist in Armenia, but some individuals may come in from adjoining areas. Before the 1940s, it was occasionally recorded in semi-desert landscapes of the Ararat Valley and the districts of Meghri, Ijevan and Shamshadin. Thenceforth, no any information about this species was available. In autumn 2010, a dead animal was discovered near the Nrnadzor village. However, it still occurs in the semi-desert zone lying between Nagorno Karabakh and the Arax River. Status: Regionally Extinct RE. Major threats: poaching and habitat destruction.

Armenian mouflon, *Ovis orientalis gmelinii* (Blyth, 1841). Up-to-date studies show that the mouflon population in Armenia does not exceed 250–300 individuals. Most of animals (maximum 200) live on the Bargushat and Zangezur ridges. Status: Endangered EN D. Major threats: poaching, land encroachment, mining, habitat destruction and overgrazing.

Caspian red deer or maral, *Cervus elaphus maral* (Gray, 1758). Counted in singular individuals. Current existence has been maintained solely through casual immigrations from Azerbaijan. Already in 1954 this species was considered a casual vagrant from Georgia and Azerbaijan. Before that, it was widespread in forests of the northern, eastern and southern parts of Armenia. In 2005, the antlers aged 5–10 years were found on the southern slope of the Meghri Ridge, to the north of the Nrnadzor village. Status: Critically Endangered CR D. Major threats: poaching and habitat destruction.

## **Birds:**

Dalmatian pelican, *Pelecanus crispus* (Bruch, 1832). In summer 30–40 individuals occur on the lakes Arpi and Sevan. Fifty to eighty individuals are recorded during migrations on the fish ponds of the Ararat Valley. Dryout of many fish ponds has led to the decline of food base and the consequent drop in the numbers of visiting birds. Status: Endangered EN D. Major threats: chasing by fish farmers in summer, uncontrolled hunting and poaching in winter. Meantime, legal and illegal fishing spread throughout this lake inflicts a serious disturbing pressure.

Eurasian spoonbill *Platalea leucordia* (Linnaeus, 1758). Drainage of the Lake Gilli and some of the Ararat Valley's wetlands has led to the destruction of nesting grounds and the reduction of food base. It is essential to estimate population size throughout a year, identify the places of gregarization and nesting. Status: Endangered EN D. Major threats: No information.

White-headed duck, *Oxyura leucocephala* (Scopoli, 1769). A relict species. Twenty to thirty pairs are recorded during the nesting season on the Armash fish ponds and in the Ararat Valley's wetlands, with no trends of increase. Status: Endangered EN A2bcde+4bcde. Major threats: reed burning and rooting out, poaching.

Red-breasted goose, *Branta ruficollis* (Pallas, 1769) A rare casual migrant species. No information about population size and its trends. Status: Endangered EN A2bcd+3bcd+4bcd. Major threats: no information.

Marbled teal, *Marmaronetta angustirostris* (Ménétries, 1832). An endangered nesting and migratory species of limited distribution. The Armash fish ponds and ambient wetlands are inhabited by 5–30 breeding pairs. In the past, some individuals used to be recorded during migrations on the Lake Sevan. At present, 30–50 individuals occur during migrations only in the Arax riverside. Status: Endangered EN D. Major threats: reed burning, as well as disturbance and poaching during the nesting season.

Red kite, *Milvus milvus* (Linnaeus, 1758). The total population size in Armenia is unknown. Status: Endangered EN B1a; D. Major threats: no information.

White-tailed eagle, *Haliaeetus albicilla* (Linnaeus, 1758). A rare wintering and casual migrant, threatened in Armenia. The population is supposed to consist of only few wintering, but not nesting, pairs. Status: Endangered EN B1a; D. Major threats: the nesting sites are considerably deteriorated because of the drainage of the Lake Gilli and the pollution of Votran waters which brought about a drastic decline of prey base.

Egyptian vulture, *Neophron percnopterus* (Linnaeus, 1758). A threatened bird of low numbers. The guesstimate is 40–60 breeding pairs. Status: Endangered EN A2bcde+3bcde+4bcde. Major threats: the vulture population can be affected by the use of toxic chemicals in agriculture and silviculture, and also by snaring, trapping, killing or lure poisoning. Reduction of prey base is also an imminent threat.

Cinereous vulture, *Aegypius monachus* (Linnaeus, 1766). A rare species of significantly decreasing population. Possibly, does not exceed 50 nesting pairs. Status: Endangered EN D. Major threats: possibly, reduction of prey base ensuing from the decline of wild ungulate populations, as well as poaching and snaring.

Pallid harrier, *Circus macrourus* (S.G. Gmelin, 1771). A rare species of significantly decreasing population. A casual migrant throughout a year. The total population size in Armenia is unknown. Status: Endangered EN B1ab(iii)+2ab(iii); D. Major threats: habitat loss because of intensive land use in semi-desert and mountain grassland zones and aerie destruction by livestock.

Saker falcon, *Falco cherrug* (J.E. Gray, 1834). Population size and its trends is unknown. Status: Endangered EN A2bcd+3cd+4bcd. Major threats: unknown.

Common crane, *Grus grus* (Linnaeus, 1758). A species of limited distribution and sharply decreasing population. In total, the number of breeding pairs in Armenia is about 10 pairs. Status: Endangered EN D. Major threats: the population is affected by the drainage of wetlands and the intensive use of meadows as pasture grounds.

Greater sand plover, *Charadrius leschenaultii* (Lesson, 1826). A rare species. At present, no nests are known in Armenia. Status: Endangered EN B1a+B2a; Ca(i); D. Major threats: Unknown. Small population size and human activities in the historically known nesting sites could have an adverse impact on the population.

Sociable lapwing, *Chettusia gregaria* (Pallas, 1771). A rare species of rapidly decreasing population in Armenia. Status: Endangered EN B1a+B2a; Ca(i); D. Population size and its trends is unknown. Major threats: unknown.

Kurdish wheatear, *Oenanthe xanthopyrmyna* (De Filippi, 1863). A vulnerable species of low numbers. Available information is insufficient to judge about the population size. In the Meghri district, the population density is 0.23 individuals/ha. Status: Endangered EN B1a+2a; D. Major threats: the population has been affected by the use of habitats and, possibly, by the application of toxic chemicals to combat vermin.

Savi's warbler, *Locustella luscinioides* (Savi, 1824). A rare species of very limited distribution in Armenia. Since recent times, recorded in small colonies. Status: Endangered EN B1a+2a. Major threats: nests can be destroyed by reedbed burning.

Paddyfield warbler, *Acrocephalus agricola* (Jerdon, 1845). A rare species of limited distribution in Armenia. Status: Endangered EN B1a+2a. Major threats: nests can be destroyed by reedbed burning.

Yellow-billed chough, *Pyrrhocorax graculus* (Linnaeus, 1766). A very rare species of strictly localised nesting. Status: Endangered EN D. Major threats: unknown.

## Reptiles:

Spur-thighed tortoise, *Testudo graeca* (Linnaeus, 1758). Two subspecies. An critically endangered subspecies *T.g armeniaca* occurring in very low numbers only in Armenia. Status: Vulnerable VU A2cd; B1a+2ab(iii). Major threats: Habitat degradation, poaching.

Horvath's toadhead agama, *Phrynocephalus horvathi* (Mehely, 1894). It was known from 21 localities. Nowadays, only 3 very small populations are known to survive in the Arax River basin. Status: Critically Endangered CR A2c; B2ab(i, ii, iii). Major threats: large-scale conversion of semi-deserts of the Ararat Valley to crop fields, irrigation, expansion of villages and reservoirs have led to deterioration and extirpation of the majority of populations. Overgrazing and poaching also pose serious threats.

Chernov's snake-eyed skink, *Ablepharus chernovi* (Darevsky, 1953). Skink habitats were affected by intense human pressure and numerous surveys turned out to be fruitless. At present, some skink sites are totally deteriorated or encroached. Currently it is known from one locality Status: Critically Endangered CR A2ac; B2ab(ii,iii). Major threats: agricultural activities in local mountain grasslands deteriorate the skink habitats around the villages and underlie the plight of the population.

Steppe runner, *Eremias arguta transcaucasica* (Darevsky, 1953). An endangered subspecies occurring in very low numbers only in Armenia, away from the main range. In 1961, the last 27 surviving adult steppe runners were captured in the Martuni district's narrow strip stretched from the crop fields to the Lake Sevan shoreline and released into the wild. These founders have engendered a new population which is ever expanding its boundaries. Currently, its size is 80–150 individuals. Status: Critically Endangered CR A2c; B2ab(ii,iii). Major threats: Overgrazing and habitat use for agricultural production.

Transcaucasian racerunner, *Eremias pleskei* (Bedriaga, 1907). A species of limited distribution and decreasing population. In the past 10–15 years, abundance has plummeted and a number of populations from the Arax basin have disappeared. Almost completely gone from the Ararat Valley. Currently known from one locality. Status: Critically Endangered CR B2ab (ii, iii). Major threats: habitat encroachment for agricultural production, overgrazing and landscape deterioration.

Lizard of Asia Minor, *Parvilacerta parva* (Boulenger, 1887). An endangered species of very low numbers. The surveys carried out in 1982 recorded 2–5 individuals/ha. At present, abundance is sharply reduced and known from two localities. Status: Critically Endangered CR A2ac. Major threats: habitat encroachment for human use and lizard destruction through grazing and haymaking.

Dahl's lizard, *Darevskia dahli* (Darevsky, 1957). Parthenogenetic lizards. The range represents a set of small isolated patches in which population trends are unknown. Status: Endangered EN B1a+2a. Major threats: road reconstruction and microclimatic changes ensuing from reduced river flows.

Rostombekov's lizard, *Darevskia rostombekowi* (Darevsky, 1957). Parthenogenetic lizards. The limited distribution area and low density in populations. Status: Endangered EN B2ab(ii, iii). Major threats: economic activities in mountain grasslands and habitat deterioration.

Dark-headed dwarf racer, *Pseudocyclophis persicus* (Anderson, 1872). Only one individual (male) was found so far. Occurrence in the wild is extremely low. Status: Critically Endangered CR B2ab(i,ii,iii). Major threats: encroachment of typical habitats.

Darevsky's viper, *Vipera (Peliias) darevskii* Vedmederja, (Orlov et Tuniyev, 1986). A species of very limited distribution. The population density in typical habitats is quite high, ca. 10–12 individuals/ha. Status: Critically Endangered CR B2ab (ii, iii). Major threats: destruction of suitable habitats, intensive use of highland meadows, uncontrolled overgrazing and poaching.

## **Amphibian:**

Northern banded newt, *Ommatotriton ophryticus* (Berthold, 1846). Represented by local relict populations in Northern Armenia. Numbers 1500–1800 individuals in the wild. Status: Critically Endangered CR B2ab(iii,v). Major threats: the principal threats to this newt species are deforestation, deterioration of small water bodies, overgrazing. Mass harvesting for amateur artificial breeding and sales poses a serious threat.

## **Fishes:**

Ishkhan, *Salmo ischchan* (Kessler, 1877). A polymorphic species comprising 4 races (sub-species).

a) Subspecies winter ishkan, *Salmo ischchan ischchan* (Kessler, 1877). An extinct endemic, generative lacustrine subspecies of the Sevan trout or ishkan. Before the 1970s, it was an abundant fish of commercial importance with the annual harvest rates up to 200–250 tonnes. The last reliable catch took place in 1982 near the north-eastern shoreline of the Great Sevan. Status: Extinct EX.

b) Subspecies bojak, *Salmo ischchan danilewskii* (Jakovlew, 1927). An extinct endemic subspecies of the Sevan trout. Before the 1970s, it was an abundant fish of commercial importance with the annual harvest rates up to 100 tonnes. The last catch took place in 1986. Status: Extinct EX.

c) Subspecies summer bakhtak, *Salmo ischchan aestivalis* (Fortunatov, 1927). An endangered endemic subspecies of limited distribution. Before the mid-1970s, it was an abundant fish of commercial importance with the annual harvest rates up to 100 tonnes. In 2004–

2006, about 20 individuals were caught during reproduction and migrations. Status: Critically Endangered CR A2cd.

d) Subspecies gegharkuni, *Salmo ischchan gegarkuni* (Kessler). An endangered endemic subspecies of limited distribution. Before the 1960s, the gegharkuni and winter bakhtak represented the major objects of commercial pisciculture. Since recent times, the gegharkuni abundance has plummeted and it is being maintained mainly by artificial breeding. Status: Critically Endangered CR A2cd.

Major threats: The principal factors of disappearance are changes in water regime in spawning grounds, pollution, deterioration of natural conditions and poaching.

Armenian roach, *Rutilus rutilus schelkovnikovi* (Derjavin, 1926). At present, it disappeared from small drainage gutters and lakes that were formed in sandpits. Becomes increasingly rare along the Metsamor River course. Status: Endangered EN B1ab(iii)+2ab(III). Major threats: Changes in water regime ensuing from uncontrolled water use, water and habitat pollution, deterioration of natural conditions, competitive pressure of alien fish species and poaching.

**Thus among 29 species of mammals listed in Red Book of Armenia** - 3 species are regionally extinct, 3 - critically endangered and 10 - endangered; among 96 species of birds 18 species are endangered; among 19 species of reptiles 7 species are critically endangered and 2 - endangered; among 2 species of amphibian one is critically endangered; and among 7 species of fishes 2 subspecies are extinct, 2 species are critically endangered and one endangered.

Changes in biodiversity due to human activities were more rapid in the past 50 years than at any time in human history, and the drivers of change that cause biodiversity loss and lead to changes in ecosystem services are either steady, show no evidence of declining over time, or are increasing in intensity. The most important direct drivers of biodiversity loss and ecosystem service changes in Armenia are habitat change (open mining, urban development, construction of roads, land cultivation etc.), climate change, overexploitation, and pollution.

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## 6 Appendix

### 6.1 List of Participants

No.	Name	Institution	Country
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