



UNIVERSITY OF CENTRAL ASIA
GRADUATE SCHOOL OF DEVELOPMENT
Mountain Societies Research Institute

Mountain Societies Research Institute
ANNUAL REPORT 2018



Snow avalanche tracks in the Pamir Mountains, Gorno Badakhshan, Tajikistan.

Photo: Roy Sidle

On the cover:

Agriculture practiced on an active debris fan in Badakhshan, northern Afghanistan adjacent to the Panj River that separates Tajikistan and Afghanistan.

Photo: Roy Sidle



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MSRI MISSION

MSRI is committed to advancing the sustainable mountain development agenda in and around mountain societies of Central Asia. This mission is accomplished through transformative research, education, and dissemination of key findings for development practitioners, policy makers, local communities and scientific scholars working together with partner agencies. Our goal is to improve local livelihoods and promote sustainable development in the region. MSRI is part of University of Central Asia's (UCA's) Graduate School of Development.

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<http://msri.ucentralasia.org>



Photo: Matthew Emslie-Smith

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Director's Message



During 2018, The Mountain Societies Research Institute (MSRI) advanced its mission throughout Central Asia and beyond through scientific publications, research investigations, outreach, hosting meetings, and capacity building. With my arrival as Director of MSRI in October 2018, we are committed to establishing the main office of MSRI on the University of Central Asia (UCA) campus in Khorog GBAO, Tajikistan, where we will be engaging in new research activities in Tajikistan and in northeast Afghanistan, as well as supporting the Earth and Environmental Sciences Programme at UCA. Our office in Bishkek, Kyrgyzstan will remain, with some of the research staff moving to Khorog in 2019.

One of the major accomplishments during 2018 was the planning, preparation, and hosting of the fourth World Mountain Forum that was jointly conducted with UCA and the government of the Kyrgyz Republic under the auspices of the Swiss Agency for Development and Cooperation (SDC). The Forum took place in Bishkek from October 22 to 26, 2018, with about 300 participants contributing to the theme of “Mountains in a Changing World: Strengthening Partnerships and Pathways towards a Thriving Mountain Future”. This international meeting advanced the sustainable mountain agenda via thematic presentations and discussions, preparation of “A Call for Mountains” document, and sessions devoted to exploring innovative partnerships and best practices for mobilizing financing of sustainable mountain development. The Forum was preceded by the Youth Mountain Forum, held on October 22nd, that brought together students and young professionals interested in the linkages between sustainable mountain development and climate change to serve as Youth Ambassadors during the World Mountain Forum 2018.

Two of the major thematic research areas that MSRI engaged in during 2018 were social dynamics and resilience in mountain societies and sustainable food systems. Underlying research themes include impacts of migration, resilience of mountain communities to shocks and stressors, climate change impacts, sustainable water supplies, natural resource management, disaster response, and nutritious agroforestry products. These projects were supported by the Conflict, Stability and Security Fund (CSSF) in the United Kingdom, Aga Khan Foundation, USAID, International Centre for Potato, PALESCA, and German Federal Ministry for Education and Research, among others. The Pathways to Innovation project, funded by the International Development Research Centre (IDRC, Canada), is strengthening research and educational capacity by supporting interdisciplinary environmental research in the region, partnering with Khorog State University, Tajikistan, and Bamyan and Badakhshan Universities, Afghanistan to advance innovation in natural resource management. During 2018, MSRI supported 11 applied research projects, including an intensive course on research design and methodology held in March and published 11 papers, including 10 in refereed journals.

Moving forward, MSRI will strive to closely partner with the AKDN to implement our research for the development of this region, expanding our focus particularly into new areas related to regional and local water supplies; natural hazards and associated disaster mitigation; and land degradation related to past and current land use. Overarching issues that cross-cut many of these and other themes include climate change, social dynamics, and sustainable development of mountain communities. With the expansion of our research and outreach activities in Tajikistan and Afghanistan, MSRI will address some of the most pressing needs of the poorest mountain societies. Please follow our progress and journey at: www.ucentralasia.org/Research/MSRI/EN

Roy C. Sidle
Director of MSRI

Professor of Earth and Environmental Sciences
University of Central Asia



Photo: Roy Sidle

Mountain Societies Research Institute

The Mountain Societies Research Institute (MSRI) is an inter- and transdisciplinary research institute within UCA's Graduate School of Development dedicated to addressing the challenges and opportunities within Central Asian mountain communities and environments. MSRI's goal is to support and enhance the resilience and quality of life of mountain societies through the generation and application of sound scientific research.

During 2018, MSRI strengthened ongoing partnerships and research programs; initiated new projects; conducted training sessions, summer schools, and workshops; and hosted the Fourth World Mountain Forum in Bishkek. MSRI is involved in a new project launched in November 2018, jointly funded by USAID and AKF - Thrive Tajikistan: Enhancing social services, governance, and economic inclusion in border regions. The new Prince Sadruddin Aga Khan Fund for the Environment (PSAKFE) 2018 project focuses on "Bringing nature and society together" through strategic dialogues and review of available data, particularly the value of mountain protected areas for local communities. Another new project implemented in northern Afghanistan leverages MSRI's expertise in resilience related research, developed with AKF and further partners to inform interventions through climate specific information (funded by the European Community).

The objectives of MSRI are to:

1. Generate new knowledge on mountain environments and societies based on applied research;
2. Enhance Central Asian capacity to conduct research relevant to mountain societies;
3. Serve as a knowledge hub for scholars, development practitioners, and decision-makers;
4. Inform policy and practice through research, training sessions, certificate programs, and consultations; and
5. Contribute to the development and execution of UCA's academic programs in Earth and Environmental Sciences.

Members of MSRI support and contribute to the Earth and Environmental Sciences undergraduate curriculum offered at UCA's Khorog campus.



Photo: Gulbara Omorova

Social Dynamics and Resilience in Mountain Societies

Local mountain communities, as well as societies downstream, depend on mountain ecosystems and their services for livelihoods. Today, mountain communities are experiencing rapid change through globalization, resource extraction, and modernization, including political and demographic changes. While some of these changes offer needed development options for mountain people, others result in significant pressure on the sensitive social-environmental mountain systems. Such stress is often further exacerbated by impacts of climate change and threatens the sustained provision of key ecosystem services that support communities in mountains and lowlands, as well as the capacity of mountain social-environmental systems to cope with such disturbances and unexpected shocks.

Understanding these complex processes within the context of uncertain global changes requires a systematic and integrative approach to analyse these interactions in terms of their trends and impacts on the resilience of social-environmental systems in mountains and their ability to transform into thriving communities in a sustainably managed environment. Ideally, such an approach spans across space and time, and includes diverse perspectives and types of knowledge in observing and understanding these changes.

The objective of MSRI is to explore, and better understand key dependencies between humans and nature in the mountain space today, and how mountain communities and ecosystems are currently interacting under conditions of rapid global change.

Promoting Social Cohesion and Conflict Mitigation along the Kyrgyz -Tajik Border



Photo: Gulbara Omorova

Supported by United States Institute of Peace (USIP), the research project “Promoting social cohesion and conflict mitigation along the Kyrgyz-Tajik border” explored social dynamics in border areas of Kyrgyzstan and Tajikistan. In this study, MSRI applied qualitative research methods, which help build deep understanding of adaptation strategies that are used by local people to cope with rural development issues in the borderland context. The research findings were presented during a regional round table on 18 February 2018 in Bishkek, where 113 participants from Tajikistan, Kyrgyzstan, the European Union and the United States participated. The roundtable provided an opportunity to improve understanding of current knowledge gaps in social and conflict dynamics in the border areas, discuss problems related to cross-border project implementation, and identify promising areas for development and cooperation. The round table discussion was aimed at practitioners, researchers, specialists, and civil society organizations in the fields of development and peacebuilding and consisted of three sections:

- Current challenges related to conflict and social cohesion in Kyrgyz-Tajik border areas;
- Challenges related to natural resources and their management;
- Knowledge management: platforms for development.

The round table provided a rare opportunity to discuss the issue from the position of social capital and the agrarian crisis, thus, conflict issues such as the right to own land or government actions were not at the center of the discussion. This created a sense of safe place for both sides and opened fruitful discussions. Local community leaders from conflict affected areas such as Vorukh enclave, Surkh (Tajikistan), Kara-Bak, and Ak-Sai (Kyrgyzstan) had opportunities to raise their voices and present their own vision on conflict mitigation and cooperation. Four articles published in international media referenced this project: Eurasianet, AKIpress, Polpred and Maral radio.



More information: <https://projects.msri.io/psccm>

Research findings are available at: <https://ucentralasia.org/Research/Item/1885/EN>

Improving Stability through Better Natural Resources Management



With support from the Conflict, Stability and Security Fund (CSSF) in the UK, a project on “Improving Stability and Better Natural Resources Management in Kyrgyzstan and Tajikistan” compared different models of resource management along Kyrgyzstan, Tajikistan, and Uzbekistan border areas with a focus on migration patterns and infrastructure changes. The study area coincided with the Mountain Societies Development Support Programme in Tajikistan and Kyrgyzstan (MSDSP) and infrastructural interventions, leading to a holistic approach in which the research and infrastructure projects work together. Researchers lived with the families of residents in border villages each season to build deep understanding of local challenges and problems they face in water and pasture management. MSRI organized stakeholder engagement meetings and research presentations for decision-makers at local and national levels.



More information: <https://projects.msri.io/isnrm>

Research findings are available at: <https://ucentralasia.org/Research/Item/1494/EN>

Assessing the Resilience of Mountain Communities



Photo: UCA

In collaboration with the London School of Economics and Political Science (LSE), MSRI conceptualized and presented a new approach towards understanding and assessing resilience capacity in rural mountain communities. The methodology which emphasizes the power of local people to understand and communicate their own resilience capacities without the need for long and complex surveys, was introduced and presented at the workshop “Predicting Future Food Security: A New Method for Measuring Resilience Using Data from Kyrgyzstan” on 13 April 2018 in Bishkek. This workshop brought together different stakeholders, state and international organizations, NGOs, development agencies, and researchers involved in the practical aspects of planning, delivering, and/or analyzing field surveys on the topics of food security, climate change adaptation, and development.

Based on results of three rounds of household surveys conducted in Batken, Bazar-Korgon, and Naryn districts of Kyrgyzstan, two papers were published: (1) MSRI Brief “Opinions matter! Subjective approaches to measuring resilience” and (2) Centre for Climate Change Economics and Policy Working Paper (London School of Economics and Political Science) on “Can subjective resilience indicators predict future food security?”. Evidence from three communities in rural Kyrgyzstan were developed. Several focus group discussions as well as household surveys conducted within the frame of the PRISE project revealed the importance of social capital and labour migration in enhancing resilience of rural communities to climate related and socioeconomic shocks and stressors. To study the role of social capital in building resilience to climate induced and livelihood shocks, additional surveys were conducted in the same rural communities of Batken and Naryn provinces in 2018.



More information: <https://projects.msri.io/prise>

Project policy brief is available at: <https://ucentralasia.org/Research/Item/1637/EN>



Photo: Azamat Azarov

Sustainable Food Systems

Mountain areas are disproportionately affected by poverty and food insecurity. Whilst food security has increased across the globe over the past several decades, many mountainous regions in developing countries have experienced increased vulnerabilities and risks in food and nutrition security due to deteriorating local food systems, loss of agricultural biodiversity, degradation of mountain ecosystems, changing food habits, increased climate variability, sediment disasters, and other socio-economic and environmental dynamics. Mountain landscapes often form biodiversity hotspots with a high degree of endemism. This biodiversity forms the basis of many ecosystem services that humans rely upon, including the origin of many of the world's major food crops and unique varieties that are highly adapted to their specific mountain environments. Mountain biodiversity is crucial for global food security and long-term resilience of food systems. Therefore, it is important to maintain and understand mountain agricultural biodiversity within the context of regional environmental change as a means to enhance the resilience of food security for local, national, and global communities. MSRI seeks to better understand the complex interactions among poverty, food systems, and agricultural biodiversity, and how these are influenced by policy and institutional frameworks under regional and global change.



MSRI article is available at: <https://doi.org/10.1659/MRD-JOURNAL-D-18-0048>

Potato Production and Food Security in Tajikistan



MSRI continued partnering with the International Potato Center (CIP) and Institute of Botany, Plant Physiology, and Genetics of the Academy of Sciences of Tajikistan on the second phase of the Potato Production Support and Research to Improve Food Security in Khatlon project. This project promoted growing sweet potatoes (and other nutritious potato varieties) for reducing malnutrition and supporting food security in Tajikistan. The overriding aim of the project is to address dietary deficiencies and to increase family-level incomes for resource-poor farmers by adding value to agricultural production in areas of West Khatlon, Tajikistan that regularly suffer from drought conditions and thus are prone to water stress.

Throughout 2018, project team members conducted comparative examinations of the growth of potato varieties planted in Khatlon region. Twenty local farmers received more than 18,000 seedlings of 13 sweet potato genotypes, which were planted in plots achieving an average yield of 48.7 metric tons per hectare. Preliminary results of the economic assessment showed that CIP varieties are viable and can compete in the future due to, not only cost-effectiveness and productivity, but also because of heat- and drought-tolerance (e.g., CIP sweet potatoes require less water and fertilizer inputs). This is particularly important in the context of global warming and climate change adaptation. Following the process of introducing low-cost technologies to help small holding farmers increase their income, project team members conducted workshops for more than 150 villagers in five villages of Khatlon. MSRI and CIP will further disseminate promising practices and applicable potato varieties. This project was financially supported by the US Agency for International Development (USAID).



More information: <https://projects.msri.io/ppsr>

Sustainable Walnut Forests in Kyrgyzstan



Photos: Nurdoolot kyzy Cholponai

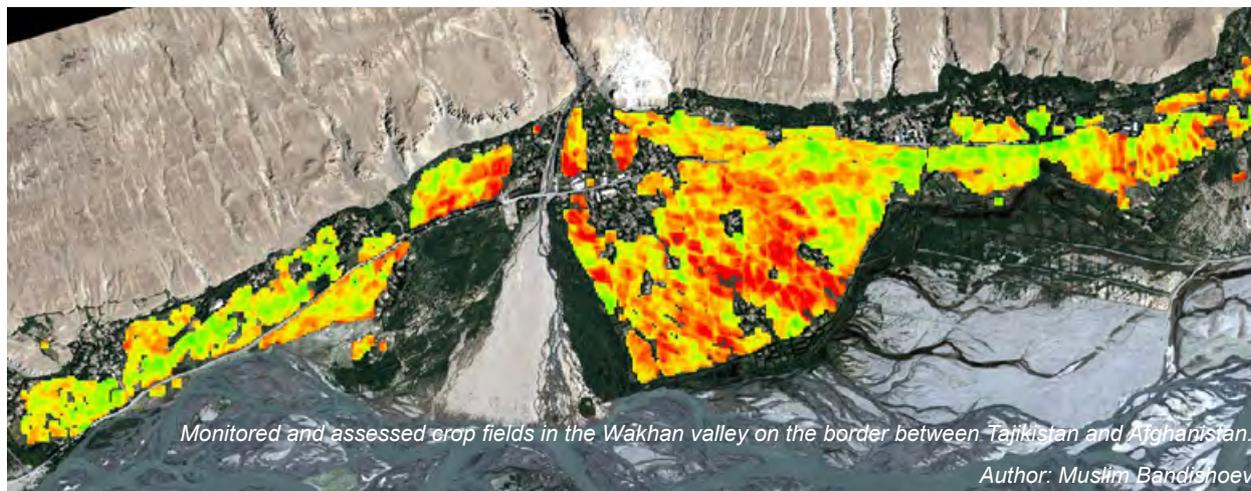
The project “Analysis and sustainable utilization of the nutritional potential and secondary plant compounds in underutilized plant species of walnut-fruit forests of Kyrgyzstan (SUSWALFOOD)” aimed to improve food security, promote sustainable management of forest resources, and investigate new sources of income for local populations. MSRI together with the Weihenstephan -Triesdorf University of Applied Science (Germany) employed both qualitative and quantitative research methods in developing and conducting a social survey in Kyzyl-Unkur village (Jalal-Abad district), located near walnut-fruit forests of Kyrgyzstan. This social survey covered 102 households, with a cost-benefit economic analysis conducted for a subset of 32 households. The aim of this socio-economic research was to understand the contribution of underutilized non-timber forest products (e.g., wild apples, hawthorn, rose dogs, barberries, sea buckthorn, medicinal herbs, and mushrooms) into rural livelihoods and the profitability of underutilized forest products compared with traditional sources of income, such as animal husbandry and crop production. The project was funded by German Federal Ministry of Education and Research (BMBF).

The research findings were presented at the Tropentag conference “Global food security and food safety: The role of universities” in Ghent, Belgium and at the World Mountain Forum, Kyrgyzstan, Bishkek. These results facilitated the identification of different livelihood strategies connected with forest product utilization and promoted an understanding of the economic potential of underutilized forest species for household budgets.



More information: <https://projects.msri.io/suswalfood>

Improving Food Security Through Cop Performance Assessment



Climate change combined with demographic and environmental pressures are expected to have significant effects on livelihoods and food systems, particularly in developing countries of Central Asia, like Tajikistan and Afghanistan, where less adaptable, small rainfed mountainous agricultural systems are dominant. A sustainable improvement of food security for people living in this region requires better monitoring of agricultural systems and their production.

Key deliverables of food security systems in terms of crop monitoring consist of early estimates of cultivated crops. Given remote sensing technology ability to observe cultivated areas on a uniform timescale, time-series composed of moderate to high spatial and temporal resolution satellite data have been identified as a particularly appropriate source of information for mapping of croplands and estimating crop yields.

The aim is to evaluate the efficiency of new satellite data for classification of land use and land cover, assessing agricultural productivity of small-scale mountain agriculture and predicting crop yield performance in early stages, before standard harvest statistics are available or crop failures become apparent, which could lead to food shortage and insecurity. The pilot sites are comprised of cropped farmland on the Tajik and Afghan sides of the Panj river in the Badakhshan region.

Therefore, MSRI in collaboration with Aga Khan Foundation aimed to identify annual changes in land use and the contributions of the local agricultural resource base to food security in the Afghan-Tajik cross border Badakhshan mountainous region. The primary goal of the project was to test the applicability and effectiveness of Sentinel-2 optical data in classifying land cover, accurately delineating small agricultural areas, and estimating yields of major crops, which commonly contribute to food security of remote mountainous communities.

Based on the study results, we conclude that Sentinel-2 imagery, despite its moderate spatial resolution, is effective in differentiating agriculture lands from other land cover categories at both settlement and regional levels. Also, simple linear regression models were successfully applied to estimate crop yields and predicted which crops are most important for food security monitoring. Google Earth Engine cloud-based technology was also used in developing web-based tools for data collection, analysis, modeling, and dissemination of results in the form of digital maps, tables, and charts with local farmers, decision-makers, and other stakeholders interested in monitoring food security.



More information: <https://projects.msri.io/rsfs>



Photo: Aziz Ali Khan

Advancing Sustainable Mountain Development

Emerging drivers of global change are transforming mountain communities and environments. The pronounced vulnerability of mountain people and ecosystems to the negative effects of global change make building adaptive capacity and resilience an urgent priority to maintain the essential goods and services provided by mountains to humankind. Developing and identifying solutions to enhance mountain livelihoods and well-being in a sustainable manner must be built on inclusive, just, and environmentally sound foundations.

Addressing existing threats and taking advantage of opportunities to advance sustainable development in mountain regions is contingent on in-depth understanding of current dynamics within mountain systems. At MSRI we explore these current trends and dynamics through the lens of different events and integrated processes to generate shared understanding of sustainable mountain development. Forging pathways and effective policy to achieve sustainable mountain development goals across multiple scales can only be achieved based on objectives shared objectives developed jointly with all stakeholders. Thus, MSRI seeks to set such goals to collectively create a new vision for mountain development. At the same time, engaging all stakeholders from multiple disciplines and across boundaries will help achieve the effective and long-term results for mountain communities and environments, and maintain the goods and services provided by mountains. MSRI pursues strengthened cooperation by fostering new and building on existing relationships towards achieving sustainable mountain development in the Central Asian region, in coordination and cooperation with international partners committed to advancing the sustainable mountain development agenda globally. In this context, MSRI has also contributed to a piloting process aiming at developing an assessment process for Sustainable Mountain Development referring to the global SDG assessment process.

World Mountain Forum 2018



In the context of its engagement for sustainable mountain development, MSRI co-hosted the fourth *World Mountain Forum (WMF 2018)* with the Kyrgyz Republic in Bishkek from 23-26 October 2018, supported by the government of Switzerland and AKDN. The forum was convened under the auspices of the Sustainable Mountain Development for Global Change Programme funded by the Swiss Agency for Development and Cooperation (SDC).

Approximately 300 participants attended the forum, which addressed the overarching theme, “Mountains in a Changing World: Strengthening Partnerships and Pathways Towards a Thriving Mountain Future”. With the overall objective of advancing the sustainable mountain development agenda globally, discussions over three days were organized around plenary sessions, parallel thematic tracks, poster presentations, and featured focus events. The thematic discussions on the first two days addressed three overarching topics: current trends and dynamics; pathways towards a sustainable mountain future; and partnerships and alliances to advance sustainable mountain development in alignment with the 2030 agenda. On the final day, the participants developed and consolidated key messages contributing to the conference outcome document titled “A Call for Mountains” and convened sessions exploring innovative partnerships and best practices for mobilizing and financing sustainable mountain development. The WMF was preceded by the *Youth Mountain Forum* supported by UNICEF, held on 22 October 2018, that brought together students and young professionals committed to promote sustainable futures for mountain regions and to tackle challenges of climate change.



More information: <https://wmf2018.org/>

WMF2018 video report by MSRI: <https://youtu.be/btNgN6zFZu4>

Full Report about the WMF2018 by IISD: <http://bit.ly/reportwmf2018>

Sustainable Mountain Development for Global Change



Photo: Roy Sidle

MSRI's "*raison d'être*" is to conduct scientific research and develop research capacity aimed at improving the wellbeing and resilience of mountain communities in rapidly changing socioeconomic, political, and environmental contexts. In this context, MSRI seeks to support and advance the sustainable mountain development agenda through integrative research at the research–policy interface, advocating for marginalized mountain societies and their environments in Central Asia. In its research capacity, MSRI endeavors to strengthen regional efforts to inform policy and practice and to promote open dialogues among stakeholders about development issues by way of sound scientific research, education, training, and targeted dissemination of key findings to communities, practitioners, and policy-makers. Related to this effort, MSRI contributed to the UN high level Water conference in Dushanbe in June 2018, by co-hosting a session on Disaster Risk Management benefiting mountain communities affected by the effects of climate change. MSRI is also a member of GADRI (Global Alliance of Disaster Research Institutes) based on the Hyogo Framework for Action and the more recent Sendai Framework for Disaster Risk Reduction 2015-2030 with support from UNISDR (United Nations office of Disaster Risk Reduction).

Committed to advance sustainable and equitable development in mountain regions, as described in the UN Sustainable Development Goals (SDG) framework, MSRI contributed to a scoping/pilot assessment of sustainable mountain development in Central Asia (focusing on Kyrgyz Republic) led by the SMD4GC partners "Centre for Development and Environment" and the "Mountain Research Initiative" (both with University of Bern, Switzerland). In its capacity as a regional think tank for SMD, MSRI also contributed to a seminar with Swiss Development Cooperation (SDC) hosted in Khorog (August and September 2018). In addition to addressing regional concerns, MSRI's global partnerships, in the context of major international agreements and with development agencies and other research institutes, allow MSRI to participate in current dialogues, and thus contribute Central Asian perspectives in debates on development and sustainability.

Understanding Migration and Remittances to Improve Forest Management Projects and Policies



The goal of this project was to fill an important research gap by identifying, evaluating, and synthesizing official and existing statistics, and combining this information with primary data collected on migration and remittance patterns at national and subnational levels. The aim was to better inform policy makers, development practitioners, and rural households related to information on patterns of migration and remittances and how they influence changes in livelihoods, gender roles, natural resource use, and income distribution. For this purpose, MSRI and the Center for International Forestry Research (CIFOR) collaborated to implement and support field research activities relevant to the project.

In Tajikistan, two areas were identified for data collection - Bartang, GBAO and Penjikent, Sughd. A quantitative survey of 600 families in Penjikent was conducted, and qualitative data were collected via focus group discussions in both Penjikent and Bartang. Additionally, a national workshop was held in Dushanbe and a regional workshop was convened in Khorog during 2018.



Building Regional Research Capacity

High quality research is an essential component of successful sustainable development strategies. This success is contingent upon the generation and dissemination of knowledge from a broad scope of actors, sectors, and institutions, and through collaboration among multiple disciplines. However, supporting and encouraging excellence in research towards sustainable development in developing countries is often overlooked in national frameworks in favour of other sectors. This is perhaps particularly acute in mountainous regions where capacity for education is sometimes limited; research is confined to economic and urban centres downstream; and in times where drivers of change, both global and local, are affecting mountain societies and environments at a rapid pace.

At the core institutional function of MSRI is research – generally applied, and interdisciplinary or transdisciplinary in nature. Whilst MSRI continues to strive for quality knowledge generation as a leading centre of research within the mountains of Central Asia, expanding the scale and quality of research more generally within the region is a key priority as well, including within academia, amongst development practitioners, and indeed the general public. This is achieved through building successful partnerships and hosting arrangements; knowledge management and dissemination; strategic and information sharing networking and event hosting; and training and curricula development.

Pathways to Innovation in Afghanistan and Tajikistan



Photo: Aziz Ali Khan

MSRI has implemented one of the key objectives within the “Pathways to Innovation: Strengthening Mathematics, Science & Economic Policy in Afghanistan and Central Asia” project within UCA, supported by the International Research Development Centre (IDRC), Canada, and the Aga Khan Foundation Canada. MSRI has strengthened science and educational capacity by supporting interdisciplinary environmental research with partners Khorog State University in Tajikistan, and Bamyan and Badakhshan Universities in Afghanistan. The aims of the project have been achieved through two approaches: technical support for applied research projects, and development of a Certificate Program in Natural Resources Management designed for delivery to faculty members of the partner universities.

Following a process of identifying the major knowledge gaps in the region, MSRI supported 11 research projects led by partner university faculty, which address diverse thematic areas under the framework of sustainable mountain development. These include research on food systems and agronomy; water and sanitation; environmental monitoring and conservation; and sustainable tourism for rural income generation. Support from MSRI has included ongoing technical advice in field implementation as well as a one-week intensive course on research design and methodology held in Bishkek in March 2018. Throughout 2018, the certificate program is also being developed for delivery during a three-week training session in Bishkek in July and August 2019. The course will include modules on sustainability; integrated agricultural management and food systems; livelihoods in rural mountain communities; natural hazards and disaster risk reduction; and adaptation to climate change.



More information: <https://projects.msri.io/p2i>

Palaeoclimate, Environmental Change and Social Interaction in Central Asia



Photo: Lira Sagynbekova

Palaeoclimate, Environmental Change and Social Interaction In Central Asia (PALESCA) project expanded monitoring activities towards greater environmental understanding, whilst developing future research opportunities and capacities using novel approaches which together are modelled as “Natural Labs”. This progress was based on combining MSRI’s Learning Landscapes initiative with ‘citizen science’ activities that contribute to GFZ Potsdam’s ongoing monitoring activities in the region. The project sought to implement integrative approaches towards environmental monitoring. Collecting lake sediment, dendro, speleo, and dust monitoring data through participatory approaches such as citizen science aimed to bridge the gap between scientists and mountain societies to investigate anthropogenic feedback processes, such as magnitude and frequency of climatic and tectonically induced extreme events (droughts, floods, earthquakes, landslides) across differing spatio-temporal scales.

To enhance adaptive capacities of rural communities to environmental and climate change, MSRI worked closely with local schools and community members in At-Bashy and Naryn districts. Within the framework of the project, MSRI installed several low-cost weather stations at schools for monitoring climatic parameters and to inform teaching. The climatic data is disseminated through Frogit displays and the Weather Underground service. Additionally, two soil profiles were prepared on school lands and several training sessions on soils have been organized for teachers in Naryn and At-Bashy. Moreover, teachers and students conducted several soil experiments by using soil test kits and local materials. Based on these experiments, teachers of geography, biology, chemistry, physics, and natural science delivered a series of open lessons on soil issues. All of these activities contributed to the preparation of a soil manual for schools, to be published in 2019.



More information: <https://projects.msri.io/palesca>



Photo: Rustem Ilyasov

MSRI Geographic Information Systems & Knowledge Platform

MSRI's Knowledge Management Platform (see: <http://msri-hub.ucentralasia.org/>) is an interactive system that serves both as repository and source of information on Central Asian environments and mountain societies, and as a project and knowledge management support system (see: <https://toolbox.msri.io/>). The Platform provides a practical interface for academics and researchers – beginning with MSRI researchers, and in future also for a wider range of researchers, development practitioners and policy makers – to access information relevant for critical development dialogues.

The Laboratory of Geographic Information Systems (GIS) at MSRI provides GIS support for projects of the Institute. The laboratory activities are aimed at collecting, editing, analyzing, storing, and promoting spatial data, as well as developing GIS methods and knowledge used in sustainable development research of mountain regions in Central Asia. To create spatial data, our laboratory conducts field research using drones, GPS (GNSS) sensors, as well as participatory GIS modeling approaches where locals contribute to data collection. For editing spatial data, the GIS laboratory uses satellite images of various resolution and data from aerial surveys and field studies. Spatial data of different thematic foci are used for mapping, environmental modelling, and various other temporal and spatial analyses, which allow us to visualize and predict the goals and objectives of research, obtain additional data, and generate more robust conclusions.

GIS capabilities also are integrated within the 'geonode' of the aforementioned Knowledge Management Platform (see: <http://geonode.msri.io/>), which allows easy open data sharing. In addition, the GIS laboratory actively adapts standard GIS methods for the conditions of the mountainous regions in Central Asia and develops and implements new research methods. The GIS laboratory conducts open training and workshops for local stakeholders on how to use open source software products, such as QGIS and SAGA GIS. Also, our training sessions are aimed at data collection methods and tools for creating user maps.

Hosting Arrangements



Photo: Begayim Emileva

ICRAF – World Agroforestry Centre.

MSRI hosts the Central Asia Office of World Agroforestry Centre (ICRAF), which was launched in 2014 in Bishkek, operating as a country office under the ICRAF Regional Office for East and Central Asia. During 2018, the ICRAF Central Asia Office Central Asia continued its project “Agroforestry systems in irrigated agriculture in Central Asia for building resilience against water stress and climate change”. Further data on tree and crop water consumption were collected from poplars in an agroforestry system near Kemin, Paulownia near Bishkek, Maple near Sokuluk, and Walnut near Bishkek. Results indicate that tree wind-break systems substantially reduce water consumption in irrigated agricultural systems – about 15% for corn in Chui Valley when combined with a single-row poplar wind break system. These findings were communicated to rural communities during workshops held together with partners from Eberswalde University for Sustainable Development, Germany. Several Master’s studies were also conducted during 2018 with this university to investigate farmers’ perception of agroforestry and agroforestry-based value chains.

As poplars are the most important agroforestry tree across Central Asia, especially in intensive irrigated agriculture, new hybrids were pre-tested in cooperation with the Forestry Research Institute in Bishkek, FAO in Kemin, and the Kazakh National Research Institute for Plant Protection and Quarantine in Almaty. A set of 20 different hybrids from Central Asia and Europe were planted and pre-tested. One-third of the hybrids from Europe grew to heights of more than 3.5 m from 20 cm cuttings during 2018. Hybrids H-8 and Orion reached up to 4 m.

During the World Mountain Forum, the Deputy Director for Science of ICRAF, Dr. Ravi Prabhu, and the Regional Coordinator South Asia, Dr. Javed Rivzi, represented ICRAF and meetings were held with the Rector of UCA and the Director of MSRI.



ICRAF East & Central Asia: <http://www.worldagroforestry.org/region/east-central-asia>

MSRI hosted events in 2018



Photo: MSRI UCA

Roundtable on Promoting Social Cohesion and Conflict Mitigation along the Kyrgyz-Tajik Border.

Bishkek, Kyrgyzstan, 15-16 February 2018.

This regional roundtable was held by MSRI on 15 February 2018 in Bishkek, Kyrgyzstan, presenting research on Promoting Social Cohesion and Conflict Mitigation along the Kyrgyz-Tajik Border conducted by UCA in the Batken and Leilek districts of Kyrgyzstan. Nearly 100 practitioners, researchers, development and peacebuilding specialists, representatives from civil society organisations and government, and local leaders from conflict zones participated in the discussions. The dialogue covered current challenges related to conflict and social cohesion in Kyrgyz-Tajik border areas, challenges related to natural resources and their management, and using knowledge management platforms for development.



More information: <https://www.ucentralasia.org/Resources/Item/1597/EN>



Photo: Lira Sagynbekova

Predicting Future Food Security: A New Method for Measuring Resilience Using Data from Kyrgyzstan workshop.

Bishkek, Kyrgyzstan, 13 April 2018.

MSRI in collaboration with the London School of Economics organised this workshop on 13 April 2018 in Bishkek, Kyrgyzstan. At this workshop, a new tool for household surveys, which uses generalised and shock-specific subjective resilience measures to evaluate households, and considers different contexts and demographics, was presented by the PRISE project research team. The workshop mainly targeted stakeholders involved in the practical aspects of planning and delivering/analysing field surveys on the topics of food security, climate change adaptation, and development. The event brought together researchers, representatives of the State Agency for Environmental Protection and Forestry, Ministry of Emergency and the Ministry of Agriculture of the Kyrgyz Republic, and experts from non-governmental organisations and development agencies including the United Nations Food and Agriculture Organisation and the World Food Programme.



More information: <https://www.ucecentralasia.org/Resources/Item/1638/EN>



Photo: Lira Sagynbekova

Summer School “Learning Landscapes through Environmental Research and Monitoring”.

Naryn, Kyrgyzstan, 2-9 July 2018.

MSRI in collaboration with PALESCA project’s main partner, the German Research Centre for Geosciences (GFZ), organized the summer school “*Learning Landscapes through Environmental Research and Monitoring*” from 2 to 9 July 2018 at UCA’s Naryn campus. This one-week summer course included lectures, laboratory exercises, and field activities on important environmental topics including climate/paleoclimate, phenology, dendrochronology, geology, soil and water resources, wildlife studies, and participatory monitoring and citizen science approaches. The summer school helped enhance the capacity of participants, particularly students from different universities of Kyrgyzstan studying earth and environmental sciences. Participants had intensive field activities in very remote and mountainous areas of Naryn province such as Naryn State Nature Reserve, Salkyn Tor National Park, Chatyr-Kul Lake, Tash Rabat Caravanserai, and the ancient fortress of Koshoi Korgon in At Bashy. One of the most active participants of the PALESCA summer school spent a two-week internship at GFZ Potsdam during fall 2018.



More information: <https://www.ucentralasia.org/Resources/Item/1774/EN>



Photo: Alma Uzbekova

The Silk Roads Conference “Anticipating Social and Environmental Impacts of China’s Belt & Road Initiative (BRI) in the mountains of Central Asia”.

Bishkek, Kyrgyzstan, 26 October 2018.

The Silk Roads Conference in Bishkek, Kyrgyz Republic brought together nearly 40 academics and development practitioners on 26 October 2018, with the aim of discussing emerging social and environmental impacts associated with China’s Belt & Road Initiative in partner countries. Following the inaugural workshop *Silk Roads in the Mountains of Central Asia* held in Dushanbe, Tajikistan in 2017, this one-day conference further sharpened the focus of development-related discussions while equally expanding the geographic scope, drawing on valuable insights of participants’ research in Africa, Europe, Southeast Asia, as well as Central Asia. Interdisciplinary presentations were supplemented by a spatial mapping workshop to help identify significant opportunities and potential risks to sustainable mountain development that could arise from China’s Belt & Road Initiative.



More information: <https://www.ucentralasia.org/Resources/Item/1911/EN>
Conference Proceedings: <https://ucentralasia.org/Research/Item/2078/EN>



Photo: Alma Uzbekova

Indigenous and Community Conserved Areas and Territories Consortium Regional Meeting for West & Central Asia, Bishkek.

Bishkek, Kyrgyzstan, 29-31 October 2018.

MSRI and the ICCA Consortium co-organized this regional meeting for envisioning the future of Indigenous and Community Conserved Areas (ICCAs) in West and Central Asia and the Caucasus in Bishkek, Kyrgyzstan. Participants included a variety of stakeholders including community members, NGOs, donor organizations, and academics. The aim of the meeting was to raise awareness and knowledge of ICCAs in the Kyrgyz Republic and the region, identify emblematic ICCAs and how to enable them to ‘self-strengthen’, and to create partnerships to work towards these goals.



More information: <https://www.iccaconsortium.org/index.php/2018/10/30/central-and-west-asia-and-caucasus-regional-meeting/>

Workshop on “Understanding migration and remittances to improve natural resources management projects and policies”.

Dushanbe, Tajikistan, 21 December 2018.

MSRI co-hosted a workshop funded by Center for International Forestry Research (CIFOR) in which participants discussed different aspects of migration in Tajikistan and throughout Central Asia. Participants included national partners, policy makers, civil societies, and NGO’s.

Conferences & Workshops attended by MSRI staff in 2018

The Central Asia Climate Change Conference, Almaty, Kazakhstan, 24 – 25 January 2018.

Workshop on Introducing Green Climate Fund in Kyrgyzstan, Bishkek, Kyrgyzstan, 30-31 January 2018.

Central Asian Citizens Forum towards World Water Forum 8, Dushanbe, Tajikistan, 14-15 February 2018. <http://www.academic-waters.org/news-en/central-asian-citizens-forum-towards-world-water-forum-8-regional-pre-consultations>

Creating Shareable Research Data, Bishkek, Kyrgyzstan, 19-22 March 2018. <http://blog.ukdataservice.ac.uk/creating-shareable-research-data-training-in-kyrgyzstan/>

Expert Round Table “Country program of cooperation with Green Climate Fund”, Bishkek, Kyrgyzstan, 29 March 2018. <http://www.fao.org/europe/news/detail-news/en/c/854275/>

International Scientific Conference: Arid Lands: Environmental and Social Sustainability, Almaty, Kazakhstan, 11 April 2018. <http://greenbridgework.kaznu.kz/?p=3479>

Ecosystem-based adaptation regional workshop, Almaty, Kazakhstan, 23-25 April 2018. <https://www.giz.de/en/worldwide/40944.html>

Unconventional convention “Knowing the Naryn river” Transdisciplinary Flash Study Workshop, Shamaldy-Sai, Kyrgyzstan, 25-30 April 2018. <https://uni-tuebingen.de/fakultaeten/philosophische-fakultaet/fachbereiche/aoi/ethnologie/forschung/zusammenleben-von-mensch-und-fluss-zentralasien/knowning-the-naryn-river-report/>

Improved Knowledge Management Workshop, Dushanbe, Tajikistan, 14-16 May 2018. <https://k-link.technology/workshops/>

Regional training seminar “Safe migration and reducing the risks of radicalization among migrants: How to conduct an information campaign”, Almaty, Kazakhstan, 22-23 May 2018. <http://migration.gov.tm/ru/v-almaty-sostoyalsya-regionalnyj-seminar-posvyashhennyj-bezopasnoj-migratsii-i-snizheniyu-riskov-svyazannyh-s-nej/>

Ecological information systems and ecological statistics for achievement of Goals of sustainable development, Bishkek Kyrgyzstan, 11 June 2018.

International Conference on the International Decade for Action “Water for Sustainable Development” 2018-2028, Dushanbe, Tajikistan, 19-21 June 2018. <https://wsdconf2018.org/>

“Needs and Rights of Women and Girls Affected by Labour Migration in Kyrgyzstan and Tajikistan and Strategies to Address Them”, Regional Workshop on Validation of Research Findings and on Joint Development of Advocacy Strategy, Dushanbe, Tajikistan, 24-25 June 2018. http://www.iom.kz/images/TheFragilePowerOfMigration_FullReport%202.pdf

IPROMO 2018 Summer School: Bioeconomy in mountain areas – an opportunity for local development, Pieve Tesino-Ormea, Italy, 18 June-2 July 2018. <http://www.fao.org/mountain-partnership/our-work/capacitydevelopment/ipromo/course-2018/en/>

Annual conference Society for Conservation Biology “Conservation Asia” 2018, Bishkek, Kyrgyzstan, 6-9 August 2018. https://auca.kg/uploads/Alumni/brochure_eng.pdf

6th Conference of the Asian Borderlands Research Network (ABRN): Borderland Spaces Ruins, Revival(s) and Resources, Bishkek, Kyrgyzstan, 13-15 August 2018. https://auca.kg/en/auca_news/3453/

Workshop “Biocultural diversity conservation in KR and Nagoya protocol on genetic resources”, Bishkek, Kyrgyzstan, 24 August 2018. <http://ekois.net/rdf-provel-kruglyj-stol-na-temu-dostup-i-spravedlivoe-raspre-delenie-vygod-ot-ispolzovaniya-geneticheskikh-resursov-i-traditsionnyh-znanij-v-kyrgyzskoj-respublike/>

IUCN CEESP/SSC Sustainable Use and Livelihoods Specialist Group, 2018 Central Asia Regional Meeting, Achieving conservation goals through community benefits and Empowerment Workshop, Bishkek, Kyrgyzstan, 5-7 September 2018. https://www.iucn.org/sites/dev/files/report_casia_suli_meeeting_final.pdf

Forum and school of young specialists from CIS countries, “Nature without borders”, Gorno-Altai, Altai Republic, Russia, 10-13 September 2018. <http://www.mfgs-sng.org/activity/2466.html>

Harmonizing Conservation & Development along the Silk Road - Facilitating Network of the Protected Areas in Hindukush, Karakoram, Pamir, Lanzhou, China, 13-17 September 2018. <http://www.icimod.org/?q=32034>

Global food security and food safety: The role of universities, Ghent, Belgium, 17-19 September 2018. <https://soilhealthinstitute.org/event/global-food-security-and-food-safety-the-role-of-universities/>

International Symposium on Cultural Diplomacy, Berlin, Germany, 5-7 October 2018. http://www.central-asia-program.org/index.php?en_iscd_cdcac-2018_overview

Fourth Annual Life in Kyrgyzstan Conference 2018, Bishkek, Kyrgyzstan, 17-18 October 2018. https://lifeinkyrgyzstan.org/?page_id=180

Orange-Fleshed Sweet Potato (OFSP) Exhibition-Fair, Dushanbe, Tajikistan, 23-24 October 2018. <https://pspsr.cipotato.org/ofsp-festival/>

Central Eurasian Studies Society (CESS) 19th Annual Conference 2018, Pittsburgh, PA, USA, 24-26 October 2018. <https://www.cess.pitt.edu/>

Mountain ecosystems management conference and training, Chengdu, China, 5-22 November 2018.



Photo: Marc Foggin

Publications in 2018

Refereed Journal Publications

Alamanos, A., Xenarios, S., Mylopoulos, N., & Stålnacke, P. (2017). Integrated Water Resources Management in Agro-economy using linear programming: the case of Lake Karla Basin, Greece. Presented at the 10th Conference of European Water Association, Athens: EWRA. Retrieved from http://www.ewra.net/ew/pdf/EW_2017_60_06.pdf

Foggin, J. (2018). Environmental Conservation in the Tibetan Plateau Region: Lessons for China's Belt and Road Initiative in the Mountains of Central Asia. *Land*, 7(2), 52. <https://doi.org/10.3390/land7020052>

Foggin, M., Emslie-Smith, M., & Hergarten, C. (2018). Food systems and agrobiodiversity in the mountains of Central Asia. *Mountain Research and Development*, 38(2), 175–179. <https://doi.org/10.1659/MRD-JOURNAL-D-18-0048>

Hardy, K. A., Thevs, N., Aliev, K., & Welp, M. (2018). Afforestation and Reforestation of Walnut Forests in Southern Kyrgyzstan: An Economic Perspective. *Mountain Research and Development*, 38(4), 332. <https://doi.org/10.1659/MRD-JOURNAL-D-17-00046.1>

Laldjebaev, M., Morreale, S. J., Sovacool, B. K., & Kassam, K.-A. S. (2018). Rethinking energy security and services in practice: National vulnerability and three energy pathways in Tajikistan. *Energy Policy*, 114, 39–50. <https://doi.org/10.1016/j.enpol.2017.11.058>

Loaiza-Usuga, J., Monsalve, G., Pertuz-Paz, A., Arce-Monsalve, L., Sanín, M., Ramírez-Hoyos, L., & Sidle, R.C. (2018). Unraveling the dynamics of a creeping slope in Northwestern Colombia: Hydrological variables, and geoelectrical and seismic signatures. *Water*, 10(11), 1498. <https://doi.org/10.3390/w10111498>

- Missall, S., Abliz, A., Halik, Ü., **Thevs, N.**, & Welp, M. (2018). Trading Natural Riparian Forests for Urban Shelterbelt Plantations—A Sustainability Assessment of the Kökyar Protection Forest in NW China. *Water*, 10(3), 343. <https://doi.org/10.3390/w10030343>
- Pueppke, S., Iklasov, M., Beckmann, V., Nurtazin, S., **Thevs, N.**, Sharakhmetov, S., & Hoshino, B. (2018). Challenges for Sustainable Use of the Fish Resources from Lake Balkhash, a Fragile Lake in an Arid Ecosystem. *Sustainability*, 10(4), 1234. <https://doi.org/10.3390/su10041234>
- Sidle, R. C.**, Al-Shaibani, A. M., & Kaka, S. I. (2018). Geomorphic hazards in south-west Saudi Arabia: The human–environmental nexus. *Area* <https://doi.org/10.1111/area.12509>
- Sidle, R.C.**, Jarihani, B., SanLinn, I. K., Koci, J., & Al-Shaibani, A. (2018). Hydrogeomorphic processes affecting dryland gully erosion: Implications for modelling. *Progress in Physical Geography* 43(1): 46-64. <https://doi.org/https://doi.org/10.1177%2F0309133318819403>
- Strengé, E., **Thevs, N.**, **Aliev, K.**, Eraaliev, M., Lang, P., & Baibagyshov, A. (2018). Water consumption of Populus alba trees in tree shelterbelt systems in Central Asia. *Central Asian Journal for Water Resources*, (4), 48-62. <https://www.water-ca.org/api/v1/articles/5955-water-consumption-of-populus-alba-trees-in-tree-shelterbelt-systems-in-central-asia.pdf>
- Xenarios, S.**, Gafurov, A., **Schmidt-Vogt, D.**, Sehring, J., Manandhar, S., **Hergarten, C.**, Shigaeva, J., & **Foggin, M.** (2018). Climate change and adaptation of mountain societies in Central Asia: uncertainties, knowledge gaps, and data constraints. *Regional Environmental Change*. <https://doi.org/10.1007/s10113-018-1384-9>
- Xenarios, S.**, Gafurov, A., **Schmidt-Vogt, D.**, Sehring, J., Manandhar, S., **Hergarten, C.**, Shigaeva, J., & Foggin, M. (2018). Climate change and adaptation of mountain societies in Central Asia: uncertainties, knowledge gaps, and data constraints. *Regional Environmental Change*. <https://doi.org/10.1007/s10113-018-1384-9>
- Xenarios, S.**, Kakumanu, K. R., Nagothu, U. S., & Kotapati, G. R. (2017). Gender differentiated impacts from weather extremes: Insight from rural communities in South India. *Environmental Development*, 24, 156–169. <https://doi.org/10.1016/j.envdev.2017.05.002>
- Xenarios, S.**, Klove, B., & Wegerich, K. (2017). Editorial for the Special Issue on Water Use Management Challenges in Central Asia and Afghanistan. *Central Asian Journal of Water Research*, 3(2).
- Xenarios, S.**, Queiroga, H., & Lillebø, A. I. (2018). Economic and Environmental sustainability of Bait Fishing in European Coastal Lagoons: the Case of Ria de Aveiro in Portugal. *Sustainability Journal*, <http://www.mdpi.com/journal/sustainability>
- Xenarios, S.**, Shenhav, R., Abdullaev, I., & Mastellari, A. (2018). Current and future challenges of water security in Central Asia. In *Global Water Security: Lessons Learnt and Long-Term Implications* (pp. 117–142). Singapore: Springer Singapore. https://doi.org/10.1007/978-981-10-7913-9_5
- Zhumanova, M.**, Mönnig, C., **Hergarten, C.**, Darr, D., & Wrage-Mönnig, N. (2018). Assessment of vegetation degradation in mountainous pastures of the Western Tien-Shan, Kyrgyzstan, using eMODIS NDVI. *Ecological Indicators*, 95, 527–543. <https://doi.org/10.1016/j.ecolind.2018.07.060>

Book & Book Chapters

- Foggin, M.** (2018). Snow Leopards at Large: One herding community’s hope for the future in the grasslands of Tibet. In *Mountain Futures: Innovation and Inspiration from the World’s Highlands* (pp. 135–142). Nairobi, Kenya: World Agroforestry Centre.

Murzakulova, A., & Mestre, I. (2018). Border Change and Conflict in Central Asia: the Case of Agro-Pastoral Communities in Cross-Border Areas of the Fergana Valley. In *Crisis and Conflict in Agriculture*. Retrieved from <https://www.cabi.org/bookshop/book/9781786393647>

Other Publications

Clare, A., **Sagynbekova, L.**, & Rakhmanberdi uulu, A. (2018). *Opinions matter! Subjective approaches to measuring resilience* (MSRI Brief). Bishkek: Mountain Societies Research Institute, University of Central Asia. Retrieved from https://ucentralasia.org/Content/Downloads/UCA%20MSRI%20Brief%20-%20Subjective%20approaches%20to%20measuring%20resilience_ENG.pdf

Foggin, M. (2018). ‘Bam-e-Duniya Network’ connecting mountain landscapes along the Silk Route. *Mountain Protected Areas UPDATE*, (100), 10. Retrieved from https://www.iucn.org/sites/dev/files/content/documents/mountain_update_dec_2018_100.pdf

Foggin, M. (2018). In memory of Andreas Gruschke (1960-2018). *Nomadic Peoples*, 22(2), 187–191. <https://doi.org/10.3197/np.2018.220201>

Foggin, M., & Emslie-Smith, M. (Eds.). (2018). In *Proceedings of the Silk Roads Conference: Anticipating Social and Environmental Impacts of China’s Belt & Road Initiative in the Mountains of Central Asia*. Bishkek: Mountain Societies Research Institute, University of Central Asia. Retrieved from https://ucentralasia.org/Content/Downloads/Silk%20Roads%20Conference%20Proceedings_2018.pdf

Foggin, M., & Emslie-Smith, M. (Eds.). (2018). *Proceedings of the Silk Roads Conference: Anticipating Social and Environmental Impacts of China’s Belt & Road Initiative in the Mountains of Central Asia*. Bishkek: Mountain Societies Research Institute, University of Central Asia. Retrieved from https://ucentralasia.org/Content/Downloads/Silk%20Roads%20Conference%20Proceedings_2018.pdf

Foggin, M., Emslie-Smith, M., Hughes, A., Lechner, A., Sternberg, T., & Dossani, R. (2018). *Conservation Geopolitics: Envisioning the future of the ‘Belt & Road Initiative’ in the Mountains of Central Asia* (MSRI Brief). Bishkek: Mountain Societies Research Institute, University of Central Asia. Retrieved from https://ucentralasia.org/Content/Downloads/OBOR_eng_oct2018.pdf

Hall, K. (2018). *Supporting energy efficiency and renewables uptake in rural communities in mountainous Kyrgyzstan* (MSRI Brief). Bishkek: Mountain Societies Research Institute, University of Central Asia. Retrieved from https://ucentralasia.org/Content/Downloads/PBEnergy_eng.pdf

Hergarten, C., Foggin, M., Adler, C., Arguello, M., Huggel, C., Kanyamibwa, S., Nanchen, E., Salzmann, N., Wester, P., Wymann, S., & Kaufmann, M. (Eds.). (2018). A Call for Mountains: from the participants of the World Mountain Forum in Bishkek, October 23-26, 2018 (pp. 1–9). Presented at the World Mountain Forum 2018, Bishkek: Mountain Societies Research Institute, University of Central Asia. Retrieved from <https://ucentralasia.org/Content/Downloads/A%20Call%20for%20Mountains%20-%20WMF%202018.pdf>

Manandhar, S., **Xenarios, S., Schmidt-Vogt, D., Hergarten, C., & Foggin, M.** (2018). Climate Vulnerability and Adaptive Capacity of Mountain Societies in Central Asia. *Research Report No.1, Mountain Societies Research Institute*. <https://doi.org/10.13140/rg.2.2.22229.32482> https://ucentralasia.org/Content/Downloads/Web-UCA%20MSRI-Research%20Report1_Eng.pdf

Murzakulova, A. (2018). Challenges of social cohesion and tensions in communities on the Kyrgyz-Tajik border. Bishkek: Mountain Societies Research Institute, University of Central Asia. *Research Report #2*. Retrieved from <https://ucentralasia.org/Research/Item/1885/EN>



Photo: MSRI UCA

Professional Service and Awards

Roy C. Sidle

- Holds a Distinguished Professorship with the Institute of Global Innovation Research, Tokyo University of Agriculture and Technology, Tokyo, Japan
- Adjunct Professor in the Geosciences Department, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia
- Adjunct Professor and advisor of PhD student at University of the Sunshine Coast, Queensland, Australia
- Editor (board member), Hydrologic Research Letters, Japanese Society of Hydrology & Water Resources
- Guest Editor, special issue of Water on “Landslide Hydrology” (with Drs. Bogaard & Greco)
- Invited Editorial Board Member, Water, MDPI journal
- Invited Editorial Board Member, Central Asia Journal of Water Resources

Christian Hergarten

- Associate Research Fellow with the Center for Development and Environment, University of Bern, Switzerland

Marc J. Foggin

- Honorary Research Associate at the Institute of Asian Research, School of Public Policy and Global Affairs, University of British Columbia

- Member of the Scientific Committee for the international conference ‘Conservation Asia 2018’
- Member of the Advisory Committee for the GCRF-supported Gobi Frameworks project led by Oxford University
- Review Editor for the Chapter ‘Drivers of Change to Mountain Sustainability’, in the regional “HKH Assessment”

Stefanos Xenarios

- Co-Editor-in-Chief in the Central Asian Journal of Water Research
- Review Editor in the Frontiers in Environmental Science
- Committee Member on the Specialist Group of Statistics and Economics in International Water Association

Maksim Kulikov

- Member of the board of trustees, Ilbirs NGO, Kyrgyzstan
- Member of the Scientific Committee for the international conference ‘Conservation Asia 2018’

Jyldyz Shigaeva

- Supervisor of MSc student (Lara Aelen) at Wageningen University, Netherlands. MSc topic: Social-ecological resilience of agro-pastoral systems to interannual climate variability: A case study of the agro-pastoral system in Naryn, Kyrgyzstan



MSRI Team

Mountain Societies Research Institute



PROFESSOR ROY SIDLE
Director

Skills and Expertise: Hydrology, Natural Hazards, Earth Surface Processes, Environmental Sciences, Sustainability, and Natural Resource Management in five continents: North America, South America, Europe, Asia, and Australia.



MARC FOGGIN
Associate Director

Skills and Expertise: Pastoralism, Rangelands, Protected Areas, Wildlife Conservation, Wetlands, and Community Development.



Photo: Marc Foggin



CHRISTIAN HERGARTEN
Senior Research Scientist

Skills and Expertise: Remote Sensing, Geospatial Analysis, Sustainable Land Management, Integrated Resource Management, and Resource Governance.



STEFANOS XENARIOS
Senior Research Scientist

Skills and Expertise: Natural Resource Economics, Climate Change, Agricultural Policy, Stakeholders Analysis, and Multi-Criteria Decision Aid Tools.



Asel Murzakulova
Senior Research Fellow

Skills and Expertise:
Social Conflicts,
Natural Resource
Management, and
Migration.



Murodbek Laldjebaev
Assistant Professor and Research Fellow

Skills and Expertise:
Energy Security,
Energy Poverty,
Energy Sovereignty,
Food Security, and
Energy-Water-Food
Nexus.



Zulfiya Bakhtibekova
Assistant Professor in Sociology

Skills and Expertise:
Poverty, Uncertainty,
Gender Relationships,
Family Dynamics, and
Women's and men's
lives and experiences
in Central Asia.



Altyn Kapalova
Research Fellow

Skills and Expertise:
Cultural Policy,
Cultural Heritage, and
Tourism Development.



Azamat Azarov
Research Fellow

Skills and Expertise:
Agricultural
Economics,
Socioeconomics,
Microeconomics,
and Participatory
and Interdisciplinary
Research.



Aziz Ali Khan
Research Fellow

Skills and Expertise:
Food Security,
Livelihoods
Improvement,
Agriculture, Forestry,
Rangelands/Livestock,
and Water Resources.



Janyl Ismailova
Research Fellow

Skills and Expertise:
ICT in Education,
International
Development, and
Project Management.



Jyldyz Shigaeva
Research Fellow

Skills and Expertise:
Natural Resources
Management and
Pasture Governance.



Lira Sagynbekova
Research Fellow

Skills and Expertise: Migration Studies, Rural Development, Regional Studies (Central Asia, Russia), Resilience, Adaptation to Climate Change, and Food Security



Maksim Kulikov
Research Fellow

Skills and Expertise: Biodiversity, Conservation, Natural Resource Management, Plant Ecology, Geographic Information System, Vegetation, Landscape Ecology, Vegetation Ecology, Ecosystems, Pasture Management, Land Use Change, and Grassland Ecology



Shodigul Mamdyorbekova
Research Fellow & Khorog Office Manager

Skills and Expertise: Water Quality, Sustainable Development, Environmental Analysis, Environmental Management, Natural Resource Management, Society and Environment, and Sustainability Management



Elnura Omurbekova
Senior Research Officer & Bishkek Office Manager

Skills and Expertise: Project Management, Legal Issues, Administrative Work, and Research Support



Matthew Emslie-Smith
Junior Research Fellow

Skills and Expertise: Biodiversity, Governance, Natural Resource Management, Protected Areas, Conservation Policy, Community-Based Conservation, and Data and Knowledge Management



Evgeniy Novikov
Software Developer & Knowledge Management systems coordinator

Skills and Expertise: Software Development, Web App Development, and Network and Servers Administration



Evgenii Shibkov
GIS Research Associate

Skills and Expertise: Cartography, Spatial Analysis, and Remote Sensing



Muslim Bandishoev
Remote Sensing & GIS Expert

Skills and Expertise: Remote Sensing, GIS, Mountain Agriculture, Glaciology, Climate Change, Spatial Data Infrastructure, and Disaster Risk Reduction



Pakiza Shirinova
World Mountain
Forum Manager

Skills and Expertise:
Community and
Regional Planning



Alma Uzbekova
World Mountain
Forum Communication
Officer

Skills and Expertise:
Journalism, Public and
Media Relations, Fund-
raising and Partnerships,
Advocacy Communica-
tions in NGO sector,
NGO Network Develop-
ment, Campaign Design
and Implementation.



Gulbara Omorova
Research Assistant

Skills and Expertise:
Tourism, Natural
Resources and Livi-
hoods, and Migration



Samat Kalmuratov
Research Assistant

Skills and Expertise:
Agricultural Manage-
ment, Natural Resource
Management, Social
Economy, Climate
Change, and Process
Engineering,

ICRAF – World Agroforestry Centre



Vincent Lalieu
Knowledge
Management Systems
consultant

Skills and Expertise:
Knowledge Manage-
ment, Bioenergy,
Sustainable Water Re-
sources Management,
Watershed Hydrology,
and Water Quality



Niels Thevs
ICRAF Central
Asia Programme
Coordinator

Skills and Expertise:
Sustainable Land Use in
Riparian Oases and Dry-
lands of Central Asia,
GIS, Remote Sensing,
Soil Science, Landscape
Ecology and Nature
Conservation, and Envi-
ronmental Education



Kumar Aliev
ICRAF Research As-
sistant

Skills and Expertise:
Forestry



The Panj River cutting through the Pamirs with Afghanistan to the right and, Gorno Badakhshan, Tajikistan, to the left.

Photo: Roy Sidle

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www.ucentralasia.org/msri/