Advances in Asian Human-Environmental Research

Hermann Kreutzmann
Teiji Watanabe *Editors*

Mapping Transition in the Pamirs

Changing Human-Environmental Landscapes

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Preface

Certain areas in the world that have gained a certain level of attention only when geopolitical interests clash, severe political crises occur and/or in the aftermath of natural disasters receive short-term attention and trigger off humanitarian support. The Pamirian Knot has formed such a temporary hotspot in the transitional zone between Central and South Asia. During the colonial period it was the arena of Great Game competition when the superpowers of the time seemed to be clashing, but avoided any direct confrontation by creating boundaries and buffer zones. During the Cold War, Soviet troops entered Afghanistan through this corridor and left from there to sound the bell of its end. In the immediate aftermath independent Central Asian states struggled to find a constellation in which power could be shared among struggling stakeholders, where new economic set-ups could be tested and where a vision for statehood outside the former Soviet Union needed to be developed. In some cases this created disastrous results such as the civil war in Tajikistan. The area addressed in this book has been confronted with major natural disasters such as earthquakes, landslides and rock falls.

The Pamirian Knot qualifies for the initial statement about short-term attention. The authors who have contributed chapters to this book look at the Pamirian interface from various perspectives and have attempted to draw the readers' attention towards a number of aspects and issues that allow regular attention for this region. The case studies cover a wide range of topics between the fascinations of earth scientists for geological features such as a mountain knot or for the hydraulic potential of the glacierised Pamirs and neighbouring mountain ranges. The other side of the spectrum draws our attention towards efforts in development and humanitarianism. The challenges of transition after independence have forced rural people in Kyrgyzstan and Tajikistan to adapt to socio-economic changes. Those changes have been severely felt and seem to affect people's lives much more than any climate change to date. Similar perceptions apply for neighbouring countries such as Pakistan where significant changes in the political ecology, development policies and infrastructure assets have affected the lives of mountain dwellers.

In the context of mapping transition in the Pamirs, two features have gained a special attention: borderlands and pastures. The process of boundary-making and giving a shifting importance to borders – once open, then hermetically closed, later on perforated or open – are challenging our understanding of cross-border communication and exchange, of cooperation and segregation and of belonging and migration. The second feature, pastoralism, has a history of cross-border mobility, but as well one of closed-frontier nomadism. The recent changes in lifestyles and living conditions are reflected in pastoral practices, resource utilisation and nature protection. International and national, regional and local interests are meeting in a supposedly remote mountain area. Remoteness is a perception that is informed by our worldview, our assessment of mobile and settled lifestyles and by disciplinary perspectives at the threshold between Central and South Asia. In this book the Pamirs have become centre stage, and we would like to stimulate an enhanced research interest for an area with a rich heritage and a challenging environment.

Berlin, Germany — Hermann Kreutzmann
Sapporo, Japan — Teiji Watanabe

Contents

About the Authors

David Butz is professor of geography at Brock University in St. Catharines, Canada, coeditor of *ACME: An International EJournal for Critical Geographies* and managing editor of *Studies in Social Justice*. He has been conducting ethnographic research in northern Pakistan since 1985, on topics including melt water irrigation, portering labour relations, political ecology, social organisation in the context of international development and, currently, the mobility implications of road construction and disaster.

Ted Callahan is a social anthropologist specialising in Afghanistan, Central Asia, pastoral nomadism and political anthropology. His PhD thesis, 'To Rule the Roof of the World: Power and Patronage in Afghan Kyrgyz Society', looked at post-Taliban tribal politics in Afghanistan through the lens of political clientelism. He has spent 2 years conducting research in Afghanistan, including 11 months living with the Kirghiz in the Afghan Pamir.

Nancy Cook is associate professor and graduate programme director in the Department of Sociology at Brock University in St. Catharines. Her research in northern Pakistan dates from the late 1990s and has focused on transcultural interactions between development workers from the global north and local populations in Pakistan. She is the author of *Gender, Identity and Imperialism: Women Development Workers in Pakistan* (Palgrave MacMillan, 2007). Dr. Cook is presently collaborating with David Butz to investigate the mobility implications of road construction and disaster in the Gojal subdistrict of Gilgit-Baltistan, Pakistan.

Andrei Dörre is a research associate in the Centre for Development Studies at the Freie Universität Berlin, Germany, and has dealt with different aspects of change in post-Soviet transformation societies. In connection with his doctorate, he carried out research on changes of pastoral practices in Kyrgyzstan. Other fields are the interrelationship between international intervention, security promotion and development activities in Afghanistan. His research interest focuses on social change and human-environmental interactions in Central and South Asia.

Wilfried Hagg is a physical geographer with a research focus on runoff modelling in glacierised catchments. His PhD thesis compared the hydrological response of glacier retreat between Central Asia and the European Alps. After a postdoc position on Bavarian glaciers, he lectured at the Geography Department of the Ludwig-Maximilians-University in Munich and was PI of a DFG-funded project on debris-covered glaciers in the Tian Shan. At the moment, he is a Heisenberg fellow at the University of Milano-Bicocca, where he investigates glaciers in the Italian Alps and in Central Asia.

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Christoph Mayer is a geophysicist who entered into glaciology during his PhD on numerical modelling of ice sheet/ice shelf coupling at the Alfred Wegener Institute, Helmholtz Zentrum für Polar- und Meeresforschung. After several postdoc contracts in Bremerhaven, Innsbruck and Copenhagen, where he dealt with field investigations of the Greenland Ice Sheet and refining remote sensing techniques, he started his work at the Bavarian Academy of Sciences and Humanities, working on glacier reactions in high mountain ranges.

Robert Middleton has been involved in international relations throughout his long career, first in trade policy and subsequently in legal affairs and third-world development. In 1985 he was appointed legal advisor of the Aga Khan Foundation. As co-ordinator of Tajikistan programmes, he initiated the Foundation's activities in Tajikistan and Kyrgyzstan and was responsible for the major humanitarian relief programme mounted by the Foundation in the Gorno-Badakhshan region during the Tajik civil war. He retired from AKF in 2003 and is currently advising local NGOs in the Pamirs in a pro bono capacity on the implementation of projects aimed at promoting responsible tourism and preserving the cultural and archaeological heritage of the region.

Kazuo Mizushima is professor at the Department of Geography, College of Humanities and Sciences, Nihon University, Japan. His field is human geography, especially agricultural geography. In Japan, he conducts research on the regional variation of crop production, and developed a method to revitalise rural and mountain agricultural practices. His research topics were applied in Northern Pakistan where he conducted field surveys in Wakhi villages since the late 1980s.

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Shigeru Shirasaka is professor emeritus of Tokyo Gakugei University, Japan. After retiring from Tokyo Gakugei University, he functioned as professor in the Department of Tourism at Rikkyo University in Saitama and the Department of Economics at Teikyo University in Tokyo. His main interests have been livestock grazing in the Alps, Transylvania, southern China and Central Asia, shifting cultivation in southwestern China, hill stations in southeastern Asia and ski tourism and related settlements in Japan.

Feng Song is a master's student at the Graduate School of Environmental Science, Hokkaido University. She has been conducting fieldwork in southern Kyrgyzstan since 2012. Her major interests are in research on livestock grazing.

Kim André Vanselow is working as a postdoc researcher at the Institute of Geography, University of Erlangen-Nürnberg. From 2007 to 2010 he was a research fellow in the project 'Transformation Processes in the Eastern Pamirs of Tajikistan', which was funded by the Volkswagen Foundation. During this project he completed his PhD thesis titled 'The high-mountain pastures of the Eastern Pamirs (Tajikistan) – An evaluation of the ecological basis and the pasture potential'. His research interest is on landscape ecology of high mountains and arid lands, remote sensing and statistics in ecology.

Teiji Watanabe is a professor at the Faculty of Environmental Earth Science and the Graduate School of Environmental Science, Hokkaido University. He is also a director of Global Land Project (GLP) Sapporo Nodal Office. Having a background in alpine geomorphology, he specialises in mountain geo-ecology, with interests in the interaction of human-environmental geo-ecosystems in high mountain areas and natural resource management in protected areas. He has conducted extensive fieldwork in the Himalaya, the Karakoram, the Pamirs and Japanese mountains.

List of Abbreviations and Acronyms

AKDN	Aga Khan Development Network
AKF	Aga Khan Foundation
AKFED	Aga Khan Fund for Economic Development
AKRSP	Aga Khan Rural Support Program
AKTC	Aga Khan Trust for Culture
asl	above sea level
CARU	Central Archive of the Republic of Uzbekistan
CE	Common Era
CIS	Commonwealth of Independent States (Sojuz nezavisimych gosudarstv)
CKNP	Central Karakoram National Park
C-USSR	Constitution of the USSR
DEM	digital elevation model
ETM	Enhanced Thematic Mapper
FBIS-SOV	Foreign Broadcast Information Service-Soviet Union
FFW	Food for Work Programme
Fig.	figure
FLU	Law of the Republic of Uzbekistan 'on forests'
FOCUS	Focus Humanitarian Assistance
ICG	International Crisis Group
IRIN	Integrated Regional Information Networks
ISAF	International Security Assistance Force
IUCN	International Union for Conservation of Nature
GAOZh	State Archive of the Province Jalal-Abad
GBAO	Gorno-Badakhshan Autonomous Oblast
GDP	gross domestic product
GIS	geographic information system
GLP	Global Land Project
GPS	Global Positioning System
ha	hectare

HMIS	Health Management Information System
IGBP	International Geosphere-Biosphere Programme
IGC	International Geographical Congress
IGU	International Geographical Union
IHDP	International Human-Dimension Programme
ISM	Indian Summer Monsoon
ka	kilo-annum
KGB	Committee for State Security (Komitet gosudarnoj bezopasnosti)
KIRGIZGIPPROZEM	Kyrgyz State Institute for Land Arrangement of the Kyrgyz SSR
KKH	Karakoram Highway
km^2	square kilometre
km^3	cubic kilometre
KNP	Khunjerab National Park
KSF	Kongur Shan normal fault
kW	kilowatt
Kyrgyz ASSR	Kyrgyz Autonomous Soviet Socialist Republic
Kyrgyz SSR	Kyrgyz Soviet Socialist Republic
LC	local council
LCKSSR	Land Code of the Kyrgyz SSR
LFCT	Lady Fatemah Charitable Trust
LGM	Last Glacial Maximum
LSO	local support organisation
m^3	cubic metre
m.w.e.	metre water equivalent
MACP	Mountain Area Conservancy Project
MICT	Madinatul Ilm Charitable Trust
MIS	marine isotope stage
MPT	Main Pamir Thrust
MSDSP	Mountain Societies Development Support Programme
N.B.	take notice *(Lat.* nota bene*)*
NASA	National Aeronautics and Space Administration
NDMA	National Disaster Management Authority Pakistan
NDVI	normalised difference vegetation index
NGO	non-governmental organisation
NIR	near infrared
PATU	Pamir Transport Trust (Pamirskoe avtotransportnoe upravlenie)
PDPA	People's Democratic Party of Afghanistan
PECTA	Pamirs Eco-Cultural Tourism Association
PHC	Primary health care
PLK	Law of the Kyrgyz Republic 'on pastures'
PPI	productive physical infrastructure
PR	People's Republic

PRDP	Pamir Relief and Development Project
PUA	Pasture Users Association
PUTIK	Decree 'On the Administration of the Turkestan Province'
RBE	Regional Bureau for Europe
RBF	Russian Federal Border Forces (Rossijskie federal'nye pogra-ničnye voiska)
SARNIGMI	Central Asian Regional Scientific and Research Hydrometeoro-logical Institute
ShOSK	Headquarter of the Independent Siberian Corps
SLC-off	Scan Line Corrector-off
SRTM	Shuttle Radar Topography Mission
SSR	Soviet Socialist Republic
SSSR	Union of the Soviet Socialist Republic
Tajik SSR	Tajik Soviet Socialist Republic
TJS	Somoní
TM	Thematic Mapper
Turkmen SSR	Turkmen Soviet Socialist Republic
UN	United Nations
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme
USGS	United States Geological Survey
USSR	Union of Soviet Socialist Republics
USWA	Jabbir Bin Hayyan Trust
Uzbek SSR	Uzbek Soviet Socialist Republic
UZGIPROZEM	Uzbek State Institute for Land Arrangement of the Uzbek SSR
VG	voluntary guidelines
VI	vegetation indices
VO	Village Organisation
WCT	Water Code of the Republic of Tajikistan
WFP	World Food Programme
WGMS	World Glacier Monitoring Service
WHO	World Health Organization
WO	Women's Organisation
WWF	World Wildlife Fund

Pamirian Spaces: Mapping Process Geographies in the Mountainous Periphery

Hermann Kreutzmann

Abstract Pamirian spaces are perceived as marginal and peripheral mountainous regions in independent states that are quite diverse and complex entities. The contested colonial space of Central Asia resulted in the formation of diverse spaces that can be related to path-dependent developments. Their relationships with the respective centres of power have been dependent on the socio-political regimes that prevail and that have changed and been transformed over time from autocratic emirates and fiefdoms to revolutionary laboratories and independent states during the last quarter century. Civilisational imaginations and developmental strategies of external actors have contributed to societal processes and economic performances that are rooted in path dependency.

Keywords Central Asia • Regionalisation • Spatial perception • Geopolitics • Exchange relations

Introduction

The Pamirian Knot marks a transitional area between different mountain ranges that join or branch out in a mountainous culmination zone. Hindukush and Karakoram in the close vicinity, Himalaya, Kunlun Shan and Tien Shan on its periphery compose this mountain area that is sometimes perceived as a separate orogenic formation or as extensive plateaux (Fig. 1). At the same time, the transition between units of subcontinental dimension—Central, East, South and West Asia meet here—has put the Pamirian area at the rim everywhere. Locating the Pamirs at the spatial edge of an area that is perceived to be of central interest has resulted in marginal attention given in academic circles, scientific endeavours and geopolitical planning. The crossroads of Asia might have connected regions that are far apart, but somehow

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Fig. 1 Since 2008 the Baroghil Valley in the Chitral District of Khyber-Pakhtunkhwa, Pakistan has been declared a national park (Photograph © Hermann Kreutzmann 14 Oct 1999)

they have remained at the disciplinary edge. The Pamirian rimlands have constituted borderlands that received attention mainly when colonial spheres of influence were stretched, creating a conflict zone with contenders of equal standing or in post-colonial and post-Cold War settings when international boundaries became permeable again and offered enhanced opportunities for cross-border exchange.

Protection of Indigenous Rights?

Borders changed all, but the establishment of borderlands was no straightforward process that found consensus among all contestants. China, Russia and Great Britain aimed for the Pamirian knot, where 'three empires meet' (Knight 1893), and expanded their spheres of influence towards each other. Only a few critics became advocates for the people living in the area. One was Gottlieb Wilhelm Leitner, a Hungarian-born linguist and founder of the Oriental Institute at Woking, an early employee of British colonial institutions, but also spokesman of the London civil society and regular writer of letters to the editors of leading London newspapers. As a stringent commentator of British imperial designs in the Pamirs, Leitner challenged and heavily criticised the imperial designs for pushing Britain's borders forward. Thus, he became a strong voice in the debates about future designs in the Pamirian region. He was convinced that the intended narrowing of imperial boundaries would have detrimental effects on the lives of local dwellers. Leitner was an early supporter of indigenous property rights and emphasised the necessity to

protect certain areas by demilitarisation and noninterference: 'The neutralization of the Pamirs is the only solution of a difficulty created by the conjectural treaties of diplomatists and the ambition of military emissaries. Left as a huge happy hunting-ground for sportsmen, or as pasturage for nomads from whatever quarters, the Pamirs form the most perfect 'neutral zone' conceivable. That the wanderings of these nomads should be accompanied by territorial or political claims, whether by Russia, China, Afghanistan, Kashmir, or ourselves, is the height of absurdity' (Leitner 1891:73). Today we know that his call for a 'region of refuge' and the provision of autonomy to affected ethno-linguistic groups did not materialise because territorial domination and the pushing of spheres of influences to their limits were fashionable for imperial powers.[1] The incorporation of different Central Asian spaces into colonial empires provided the arena for the implementation of ideas about the 'white man's burden' and civilising missions. Human beings were exposed to a variety of socio-political experiments, minority and autonomy policies in the twentieth century which significantly differed from autonomy concepts referring to self-determination, self-reliance and independent decision-making.

Only much later were Pamirian lands were discovered and considered for preservation as ecological niches when the Big Pamir Wildlife Reserve (1968), the Khunjerab National Park (1975), the Taxkorgan National Nature Reserve (1984), Tajik National Park (1992), the ZorKöl Nature Reserve (2000), the Pamir Wetlands National Nature Reserve (2005) and Baroghil National Park (2008) were established following international demands for nature protection.[2] The preserved and protected areas cover quite a substantial part of the borderlands (Fig. 2). George Schaller, the promoter of a Pamir International Peace Park—or as he would call it 'Pamir Transfrontier Protected Area'—that would exclude a number of areas from human utilisation beyond the already mentioned, has envisaged that '… Marco Polo sheep may wander across the international borders of four countries—Afghanistan, Tajikistan, China, and Pakistan—they can be successfully protected and managed only through trans-frontier cooperation and joint conservation initiatives. … An International Peace Park would, of course, benefit not just the Marco Polo sheep but all plants and animals, as well as protect the environment upon which the local peoples depend for their livelihood. After all, human economic activity benefits from ecosystems that provide services indefinitely' (Schaller 2004:19). The pastoralists' scepticism is rooted in previous detrimental experiences like those in Khunjerab National Park (Fig. 3) where areas were declared as protected zones for the 'icon of the Pamirs … the Marco Polo sheep', but where compensations were never paid.[3] Community pressure, blockades of roads and civil disobedience led to a partial success of pastoralist households.

[1] The topic of region of refuge was analysed by Gonzalo Aguirre Beltran (1979) and revived by Ronald Skeldon (1985); see Hermann Kreutzmann (2001, 2013a).

[2] Ghulam Amin Beg (2009); George Schaller et al. (1987); UNESCO 2014. http://whc.unesco.org/en/tentativelists/5535. Accessed 01 Nov 2014.

[3] See Ghulam Amin Beg (2009), Are Knudsen (1999), and Hermann Kreutzmann (1995). The 'icon' metaphor was coined by George Schaller (2012:273).

Fig. 2 Protected and preserved areas in the Alai, Pamir and Karakoram (Design: Hermann Kreutzmann; cartography: Bernd Hilberer)

Alai and Pamirs: Environmental Niche and Hub of Ecological Resources

In many respects, the wealth of natural pasture grounds in the Pamirs would not be considered worthwhile for any kind of confrontation in colonial and in contemporary times. Their importance was mainly attributed to their role as a buffer zone for the protection of more valuable assets in colonial empires. Sparsely populated areas provided appropriate grounds for boundary-making (Fig. 4). The peripheries of empires and independent states lacked a lobby in their respective administrative

Fig. 3 Signboard at the entrance of Khunjerab National Park at Dih along the Karakoram Highway (Photograph © Hermann Kreutzmann 25 Aug 2003)

Fig. 4 Zor Köl Nature Reserve in the borderlands of Afghanistan and Tajikistan in the Great Pamir (Chong Pamir) (Photograph © Hermann Kreutzmann 14 Jul 2013)

Fig. 5 Kirghiz pastoralists utilise the wetlands of Bulunkul, Kizilsu Prefecture, in Xinjiang Region (Photograph © Hermann Kreutzmann 15 Oct 2008)

entities when it came to demands for infrastructure development and participation in decision-making. Road-building resulting in the Pamir Highway and the Karakoram Highway has been a prime example of military and strategic purposes driving infrastructure projects. In recent years hydraulic assets have come into focus and gained significant importance. The 'water towers of humankind' have been identified in the high mountain regions of Inner Asia. Major rivers originate here and supply water for the irrigated oases in the mountain foreland. The thirst for irrigation water is coupled with the need for electricity. Both are managed through large dams that have been encroaching into the Pamirian regions. Thus, the extensive use of pastures and rangelands is strongly linked to the valuable hydraulic resources that support agriculture and industries in the lowlands (Fig. 5). Although exploration and reconnaissance of mineral resources have quite a long tradition in the Pamirian interface, the exploration has been limited. During the Soviet period, regular expeditions in search of fossil and mineral wealth aimed at identifying exploitable locations. Only in recent years have Chinese companies begun systematic mining with innovative technologies and long-term visions that surpasses efforts by other multinational enterprises by its size and multitude. Permeable boundaries have made cross-border cooperation and joint venture enterprises feasible.

Border Processes

Boundary-making had long-lasting impacts. Returning to Leitner's nineteenth-century adversaries, we have to acknowledge that the influential advocates of a 'forward policy' succeeded in their attempts to secure as much Pamirian space as possible during the 'Great Game'.[4] In (1875), during his tenure as president of the Royal Geographical Society, Sir Henry Rawlinson published his influential book *England and Russia in the East* in which he summarised a decade-long or even longer heated debate and profiled himself as a strong advocate of the 'forward policy' promoting the protection of the Indian subcontinent by controlling its Pamirian rim. Their Russian counterparts had encapsulating ideas and far-reaching visions for their own future endeavours in Central Asia which were articulated by Michail Ivanovich Veniukov in 1877 as a joint challenge: '… although the difference is great between the Russian and the Tadjik, Galcha, Wakhi, Kafir-siyaposh, Dard &c., yet a single glance at the vocabularies of the last-named nations … compiled by English travellers (Burnes, Cunningham, Drew and Leitner) will show that we go there to meet hundred peoples, between whom and ourselves, besides commonness of race, there exist similitude of features and even identity of certain historical traditions'.[5] He promoted common traits that should justify the movement of Russian citizens to the East which '… may be called the re-establishment of extension of the sway of the Aryan race over counties which for a long period were subject to peoples of Turk and Mongol extraction' and advocated '… this 'return' of part of the Slavs to the neighbourhood of their prehistoric home'.[6] And Michail Ivanovich Veniukov illustrated his vision: '… the suggestion that the Russian population, penetrating deeper and deeper into Central Asia, should be allowed, in no way debarred by canonical rules and common sense, to contract marriages with the natives, thereby enabling a large number of men attracted to Turkestan by military service to settle down … It is desirable that this historical result should not be forgotten also in the future, especially on our arrival at the sources of the Oxus, where we must create an entirely Russian border-country as the sole guarantee of stability of our position in Turkestan'.[7] The Pamirian region of Badakshan became a central object of imperial desires, and its salient importance was highlighted by Michail Ivanovich Veniukov: '… without Badakshan the Russians must consider themselves in Central Asia as guests, without any settled habitation and unable to form one. Badakshan, Kunduz, and Balkh in the hands of the Emir of Cabul, who is in vassal relations with England, these are the advanced posts of the English … to give Russia no place in her Central Asian possessions, and exhaust her means in putting down revolts … How history

[4] See Garry Alder (1963:166–198); Martin Evans (2010:21–26); Hermann Kreutzmann (2008).

[5] IOL/P6S/18/C 17: The progress of Russia in Central Asia by Michail Ivanovich Veniukoff (1878:2).

[6] Michail Ivanovich Veniukoff (1878:1–2).

[7] Michail Ivanovich Veniukoff (1878:2).

Fig. 6 The urban development of Murghab as a central administrative and market place is closely linked to the establishment of Pamirski Post, the Russian and later Soviet outpost in the Pamirs, from 1893 to 2005 (Photograph © Hermann Kreutzmann 12 Aug 1999)

will solve the Badakshan question of course cannot foreshadow; but it is impossible not to express admiration at the far-sightedness of British policy'.[8]

Today we know how history evolved and are aware of its outcomes for the Alai and Pamir mountains. A significant effort was made to send intelligence officers, scientists and explorers to the region in order to reconnoitre routes, ethnicity, human and fodder resources, fuel wood availability and other important information the contestants would need to know in case of conquest. For the Government of India, the existing knowledge at the time was compiled by William Robertson in his report on the 'Pamir line of advance'. It was just 2 years before the Pamir Boundary Commission demarcated the final and missing section between the earlier fixed Central Asian boundary (1872–1873) along the Amu Darya and the Durand Line (1893).[9] A book of similar intention was published by his Russian counterpart Andrei Jevgenevich Snyesreff who provided a 'military and geographical description' of Eastern Bokhara that was immediately translated by the British Intelligence Branch.[10] The demarcation of boundaries did not quench the imperial competitors' thirst for potential further advances into the Pamirs (Fig. 6). Essentially the boundaries that had been demarcated by the end of the nineteenth century have lasted until contemporary times.

[8] Michail Ivanovich Veniukoff (1878:19).

[9] William Robertson (1893); Montague Gerard et al. (1897); see Hermann Kreutzmann (2008, 2013b).

[10] Andrei Jevegenievich Snyesreff (1909).

Fig. 7 The *sistema eleketrosignalizacija*, a barbed-wire fence was introduced to separate Soviet border guards from their Chinese counterparts; it survived and marks the border between Tajikistan and Xinjiang in the Markansu (4300 m) region (Photograph © Hermann Kreutzmann 11 Jul 2013)

The crucial imperial phase resulted in outcomes that enabled powerful actors to treat Central Asia as a laboratory for (re-)settlements, social experiments with community organisation, economic exploitation of local resources and, last but not least, international boundary-making. This turning point has created Central Asian spheres of influences that divided the region in sectors dominated by China, Great Britain and Russia. Path dependency has important roots in the latter years of the nineteenth century and subsequent revolutions of the twentieth century.

The closure of frontiers by hindering commercial exchange and movement of people was supported by those borders that divided subcontinents and allowed the contest of antagonistic political and socio-economic systems (Fig. 7). At the same time disciplinary interest in the academic world stopped at those borders, lacked enthusiasm and hampered cross-boundary perspectives.[11] The mountainous rim will be put into focus here in order to shed some light on developments and processes that have affected people and places in the Pamirian interface. It might be argued that a closer look at marginal areas and peripheries of states offers insight into the performance of the centre and the structure of exchange relations between spatial entities. In the case of the Pamirian regions, we are confronted with quite a diverse

[11] See Hermann Kreutzmann (2013a, 2015); Jean Michaud (2010); James Millward (2007); Willem van Schendel (2002:661).

set of state relations—from the 'headless state' to autocratic regimes—and setups in the course of space and time.[12]

The former Central Asian Soviet Republics came a long way before gaining independence a quarter century ago when the Soviet Union was dissolved. Having been autonomous or semi-independent emirates before being integrated into the hegemonic Czarist colonial empire, they have experienced major societal transitions and reshufflings of border alignments since. In the aftermath of Amir Abdur Rahman's conquest of Badakshan and subsequent Anglo-Russian boundary-making in the late nineteenth century, Afghanistan has received a share in the Pamirian realm that is symbolised in the Wakhan corridor leading to the Little and Great Pamirs.[13] The newly established borders divided former fiefdoms and separated communities of Pamirian speakers such as the Shughni, Roshani, Gharani, Darwazi, Ishkashimi and Wakhi. 'Adaptation to closed frontiers' had to be practised in the aftermath and has been exemplified by the case of Kirghiz pastoralists.[14] From now on the fate of the Pamirian nomads and mountain farmers was directly linked to their relations with the Afghan Court and the Russian rulers, respectively (Fig. 8).

Fig. 8 Pashtun pastoralists on their way from Shewa Pamir to Kunduz; crossing Badakshan the fat-tailed sheep are driven to the livestock market (Photograph © Hermann Kreutzmann 01 Sep 2006)

[12] See Ali Banuazizi and Myron Weiner (1986); Hermann Kreutzmann (2012, 2013b, 2015); M. Nazif Shahrani (2002); David Sneath (2007).

[13] Hermann Kreutzmann and Stefan Schütte (2011:108) presented a map with the varying claims of contenders around the Pamirs.

[14] M. Nazif Shahrani (1979).

The Kirghiz and Wakhi are two important groups that exhibit similar lifestyles within their communities, but who are separated by boundaries and have had to adjust to the respective political systems. Across the borders from Afghanistan, the Chinese Pamirian regions are mainly occupied by members of the same two communities; their present-day economic activities and social life may be regarded as a path-dependent outcome of a transformation that was shaped by autocratic rule of Kashgarian rulers such as Yaqub Beg (1866–1877). The Qing dynasty's claim on Xinjiang terminated independence in Altishahr and initiated a continuing process of integrating Eastern Turkestan into the Chinese Empire and subsequently into the People's Republic.[15] After the revolutions, the Chinese Pamirs have been exposed to all kinds of reforms. Socio-political experiments including the 'great leap forward' and the cultural revolution' have substantially transformed lifestyles and production strategies prior to Deng Xiaoping's 'four modernisations' that are still showing their effects until today.[16] All these developments are quite diverse in the respective regions where collectivisation prevailed. Changes in the Pamirian regions of Northern Pakistan have been significant, but they followed completely different ideological pretexts and post-colonial modernisation strategies, resulting in quite diverse place-specific developments (Fig. 9). In the context of this volume, we try to

Fig. 9 Yak herd on Shimshal Pass (4726 m) driven from Shuwert to Gunjidur pasture by Wakhi shepherdesses (Photograph © Hermann Kreutzmann 02 Sep 2013)

[15] See Andrew Forbes (1986); James Millward (2007).

[16] See Hermann Kreutzmann (2013b, c, 2015).

identify different 'process geographies'[17] that have shaped exchange relations, socio-economic development and political structures. In addition, the environmental frame will be addressed with regard to its resource potential and its socio-ecological challenges.

Scope of the Volume

The opening query addresses the question of Pamir and Pamirs in order to negotiate the spatial extent of this volume and to decipher different approaches in defining a more or less common understanding of what a Pamir might be (Fig. 10). The endeavour is sketched from various disciplinary perspectives and in a diachronic approach.

Kim André Vanselow takes a closer look into the research history of plant and vegetation science in the Pamirs. Looking at the subjects of research, he identified a persistence of certain research questions from colonial to post-Soviet times. One leading aspect of research was human utilisation of the resource potential offered in the high mountain environment.

Tetsuya Komatsu follows a geological/geomorphological approach in defining Pamirian landscapes and understanding the differentiation between the Eastern and Western Pamirs. The latter are characterised by deeply incised narrow valleys separated by high mountain ranges. Crossing over to the east, he identifies the Pamirs as intermontane basins.

Wilfried Hagg and Christoph Mayer discuss changes in glacier area and volume affecting the water flow down the Amu Darya River. They conclude a decrease of seasonal water availability which in the long run will detrimentally affect agricultural practices not only in the Pamirs but mainly in the low-lying areas of Afghanistan, Tajikistan, Uzbekistan and Turkmenistan.

Ted Callahan takes the Pamirian example to test the Afghan state's extent of authority and its effect in the periphery. He compares the situation prior to the Saur revolution in Afghanistan with the present state of affairs. Various forms of government and changing relationships between the centre and the Pamirian periphery have called for regular adaptation of Kirghiz pastoralists to diverse regimes. Those linkages with the outside have significantly influenced the internal affairs under different expressions and forms of Kirgiz leadership. Presently, the Kirghiz are depending on external food aid, and the discussion whether they should emigrate to Kyrgyzstan is still alive.

Andrei Dörre draws attention towards pastoral practices and the impact and influences of boundary-making in the Fergana region. In a diachronic approach, he highlights the socio-political transformations that occurred from colonial times to the post-Soviet period of independent states in Central Asia.

[17] Arjun Appadurai (2000); Paul Routledge (2003:338) who focuses on the 'multi-scalar, dynamic processes of interaction and relationship'.

Fig. 10 Pamirian spaces—location of case studies (Design: Hermann Kreutzmann; cartography: Bernd Hilberer)

Jie Liu and Teiji Watanabe address the nexus between pastoral practices and vegetation cover in the Eastern Alai Valley. Differences between seasonal pasture usages are elaborated upon. Consequently, a more specific view on pasture degradation is reached by combining factors of seasonality, spatiality and slope gradients.

Shigeru Shirasaka, Feng Song and Teiji Watanabe examine seasonal pastoralism in the Alai Valley, emphasising the differences between horizontal and vertical herd migration. Unequal use of pastures is attributed to access, ownership and established practices.

Teiji Watanabe and Shigeru Shirasaka studied cooperative grazing systems in two sub-districts of the Alai Valley where they found three different systems of village or summer-pasture-based strategies that perform a three- or two-seasonal migratory cycle. Labour shortages were advocated as an incentive for promoting cooperative utilisation strategies that span short distances between 1 and 5 km of movement.

Tobias Kraudzun narrates the story of boundary-making and border regimes, of infrastructure development and supply situations in the Eastern Pamirs and their effects on local livelihoods. Connected with the major transformations of the twentieth century, local voices comment the supply situation and the changing border arrangements.

Yasuhiro Ochiai places the Wakhi combined mountain farmers of the Tajik Pamirs into perspective with their neighbours before looking into the effects of recent changes on household incomes in Rajon Ishkashim and on agricultural and off-farm strategies for regional development there. He envisages that out-migration from the Tajik Pamirs will have detrimental effects on the preservation of local cultural traits, folklore and heritage. In his vision the combination of the latter with tourism development would enable a sustainable growth based on Wakhi culture.

David Butz and Nancy Cook highlight various challenges for the people of Gojal ranging from constitutional liminality—not being full-fledged citizens of a formal province of Pakistan—to the absence of state institutions that are partially replaced by non-governmental organisations. In addition to such an unfavourable structural setup, other challenges have been added that come in the guise of transnational actors in rural development and external promoters of nature conservation. The stress faced by Gojali residents in promoting local resource utilisation in farming and pastoralism has become more severe in the framework of an interrupted road infrastructure due to the Attabad landslide and formation of a lake. Dependency on externalities has increased over time, thus supporting a dwindling share in decision-making in their own affairs.

Kazuo Mizushima has investigated the economic changes in Gojal that were stimulated by two factors: the opening of the Karakoram Highway and the Attabad Landslide. The long- and short-term effects of both events are exemplified in the case of Hussaini village where a market-oriented agriculture with potato cultivation had emerged in the aftermath of the road opening. The interruption of the road connection due to the filling of Attabad Lake caused higher transport costs and a reverse of agricultural practices in favour of a higher degree of subsistence production.

Till Mostowlansky analyses development efforts in the educational sector from a denominational perspective by emphasising the activities of faith-based Sevener and Twelver Shia organisations which are operating educational facilities in Northern Pakistan and Tajikistan. A new perspective on their humanitarian approach in relation to their sectarian imaginations is provided by comparing the different expressions of Shia organisations within Gilgit-Baltistan and by comparing the Ismaili NGO operations in Hunza and Gorno-Badakshan.

Robert Middleton traces the advent of ‘development’ from colonial contexts to post-Soviet activities in Gorno-Badakshan of Tajikistan. The civil war in the imme-

diate aftermath of independence posed significant challenges to a region that had been significantly dependent on external goods from a centralised supply system. The activities of state and private institutions in alleviating an energy and food crisis in the Pamirian environment show not only the transition from a central planning setup to a market-oriented economic system change but also the shift from relief aid to a development approach in regional uplift.

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Pamir or Pamirs: Perceptions and Interpretations

Hermann Kreutzmann

Abstract For centuries, animal husbandry in Central Asian mountain regions has been characterised by seasonal mobility over considerable distances, bridging remarkable elevation differences and commuting between precolonial states and domains. During Russian colonial rule and the socialist period, pastoral movements across the borders of the newly created colonial administrative units and the Soviet Republics were also not uncommon. In the course of the establishment of independent states in 1991, a break occurred that strongly restricted the trans-boundary mobility practices. Using examples from the Fergana Region, this chapter reconstructs historical demarcation patterns and the underlying interests of those in charge who advocated changes, while also looking at the effects of those changes on the mobility practices of the affected livestock owners. Finally, the paper compares the current and historical border regimes and links them to related socioecological challenges, which can represent serious threats to the fragile integrity of Central Asia's post-Soviet societies.

Keywords Central Asia • Pastoralism • Spatial perception • Geopolitics • Exploration

Introduction

During their annual seasonal migration, the livestock of many mountain villages in High Asia is relocated to higher pastures in order to utilise the accessible natural wealth of plentiful fodder resources. These seasonal settlements can be located well above 3500 m and some are close to 5000 m. When the Wakhi community of Shimshal takes off with their yaks, sheep and goats in May, it is a communal

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migration (*kuč*) to the *pamér*. The Wakhi mountain farmers of the villages Langar Kikhn and Vrang in Gorno-Badakhshan denote the mountain rangelands of the upper Pamir Darya as *pomir*. To these places they transfer their non-dairy cattle all year round and all the village herds during seasonal migration.[1] The Wakhi language has a word for high pastures that represents such a region. At high elevations, fodder resources can be tapped that augment the meagre grass and crop residues which are found in the valley bottoms. The term *pamér/pomir* includes the notion of a widespread and extended pasture region at the upper limits of the ecumene, the space utilised by human beings in high mountain settings. In defining such a region, a variety of criteria could be applied. The one used by remote communities is rather unusual, being a term that carries weight of definition. Other people living in the Pamirs apply a completely different set of names. The Kirghiz notion of *pamér* is connected to the term *onder/onderlar*, mainly applied to a 'series of high plateau-like valleys' in the Afghan Pamirs (Shahrani 1979:237). Here, the practical aspect of pastoral use in the valleys seems to be the dominant feature.

For most outsiders, the Pamir is a geologically and orographically defined mountain range that has been known as a toponymic reference for longer than a millennium (Fig. 1). Early Chinese pilgrims such as Faxian gave a name to the Pamirian area; consequently, the Pamir has been referred to as *tsungling* (onion mountain) since the fifth century CE.[2] In the summer of 644 CE, the great scholar Xuanzang crossed the Pamirian ranges from Central to South Asia in search of Buddhist learning (Fig. 2). For the first time, a toponym *Po-mi-lo* is mentioned in Xuanzang's detailed account. The term *Po-mi-lo* sounds similar to Pamir and has inspired early scholars to detect a historic rootedness of the toponym. In his narrative, the Pamir Valley seems to be the central location of *Tsungling Shan* – the Onion Mountains – and contains the Upper Panj up to its source. It is located between snow-covered mountains that supply ample water and where strong winds prevail.[3] For Xuanzang, this was an area without human habitations and sufficient vegetation cover where permafrost conditions dominated the environment: 'The Pamir Valley stretches for a thousand *li* from east to west and about a hundred *li* from south to north. In its narrowest part, the width is about ten *li*. It is located between two major mountain ranges. Ice-cold conditions and strong winds prevail. Even in spring and summer, snow falls. Day and night, the wind continues. The soil is saturated with salt and covered by small pebbles. Grain crops and fruit cannot mature properly; any vegetation, shrubs and trees are rare specimens. From here, one reaches barren deserts devoid of human traces'.[4] Xuanzang distinguishes other features that are found in the Pamirian environment; according to his observations, rather big lakes seem to be

[1] Ivan Ivanovich Zarubin (1935: Archive: Fond 121 Opis 1 Akt 60:fol. 99–100): kixn (längar) ailóq.

[2] Alexander Cunningham (1854:47); James Legge (1886:21); see Wilhelm Geiger (1887:5); Bernhard Stern (1893:193); Michail Ivanovich Veniukof (1866:250).

[3] Samuel Beal (1884); George Curzon (1896: 28); René Grousset (1986:219); Alexander von Humboldt (1844, II: 402); Nicolas Severtzow (1890:463).

[4] My own translation based on the German edition of René Grousset (1986:219–220).

Fig. 1 The Pamirian interface in the extremities of Central, East and South Asia (Design: Hermann Kreutzmann; cartography: Bernd Hilberer)

situated on the very high plateaux: 'The basin of this lake is located at an extreme height in the centre of the Pamir. Its waters are pure and crystal clear like a mirror; nobody has ever fathomed its depth. Its colour is black and blue; its taste is sweet and tasty. In its deeper layers sharks, dragons and turtles are living. On its surface ducks, wild geese, cranes and other birds are to be found'.[5] Xuanzang was well aware of the fact that he had crossed a major watershed; in fact, he crossed the continental watershed between the Tarim and Oxus (Amu Darya) system – both rivers constitute major water resources of Central Asia – and the South Asian Indus catchment through which he found his way to his destination at Taxila in present-day

[5] René Grousset (1986:220). My own translation based on the German edition.

Fig. 2 Xuanzang and his memorial in Bezeklik, Xinjiang (Photograph © Hermann Kreutzmann 25 Sep 2010)

Pakistan. The journey of Xuanzang marks a traverse from one area to another that contains most of the denominated Pamirs north of the watershed.

Colonial Exploration of the Pamirian Void

The borderline location is the result of nineteenth century boundary making and has contributed to the fact that these regions are stigmatised as quite remote, little-known territories that have escaped scientific attention over long periods. Disciplinary ignorance is related to the separation of regional studies into Central, East and South Asian realms. Exceptions were found in early geographical descriptions of the Oxus watershed (Ernst Behm 1879; Henry Yule 1872a, b, 1876:49) and the 'Pamirian region' (Wilhelm Geiger 1887:25–26). The map of Nicolas Severtzow, which recorded the Pamir route between Kara Köl and Alichur Pamir in August to September 1878, represents a prime example of early route exploration and representation of Pamirian environments (Fig. 3). Later on, the gathering of regional knowledge by explorers and travellers – such as Guillaume Capus (1890a, b), St. George Littledale (1892:34), Edmond de Poncins (1897:108–109) and Francis Younghusband (1892) – stimulated the systematic approaches and compilations in 'gazetteers', authored in various editions by Edmund Barrow (1887, 1888, 1893:11) and augmented by George Cockerill (1895, 1896). The regionalised gazetteers were devoted to the 'Eastern Hindukush' and contained descriptions, topographical information and routes that served the purpose of strategic considerations and military

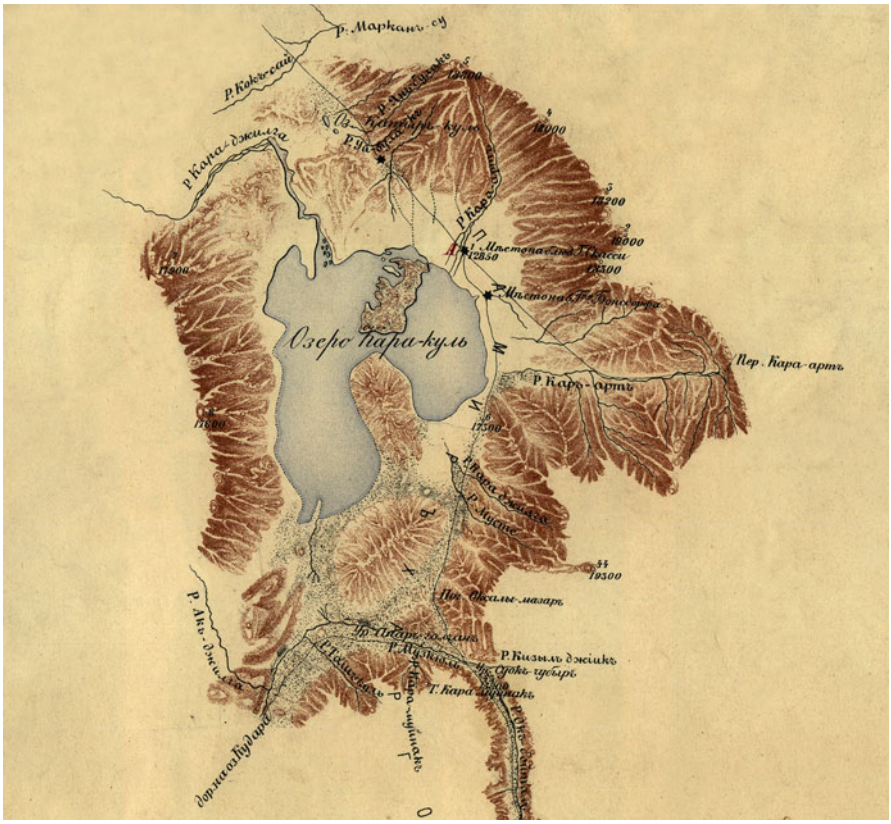

Fig. 3 Kara Köl is the largest of the Pamirian lakes and was mapped by Augustus Ivonovich Skassi during the exploration under the leadership of Nicolas Severtzov in August-September 1878 (Marshrutnaya s'yomka putei Fergansksko i uchyonoi ekspedicii doktora zoologii N. A. Severcova po pamiram Khargosh, Sarec, Rang-Kul' i Ali-Chur proizvedennaya chlenom ekspedicii Klassnym topografom A. Skassi v 1878 godu [Itinerary of the Fergana scientific expedition of N. A. Severtzov, doctor of zoology, across the Pamirs Khargushi, Sariz, Rang Köl and Alichur prepared by the member of the expedition A. Skassi, qualified topographer, in 1878]). Courtesy Pamir Archive Collection

planning for the expansion of Great Britain's sphere of influence. The cited sources devote some debate to the question of a singular or plural notion of Pamir/Pamirs.

The state of knowledge was compiled in assessment reports for diplomats and strategic planners, access being restricted to a limited readership. Their Russian colleagues did the same, and both competitors quoted from each other in their own compilations.[6] In such a British intelligence report titled 'The Pamir Line of Advance' and compiled in 1893 from a variety of British and Russian sources, it was claimed that the existing knowledge could be summarised and a comprehensive

[6] See for the history of exploration Svetlana Gorshenina (2003); Hermann Kreutzmann (2015); Robert Middleton (2010); Alexei Postnikov (1998).

definition of Pamir was given on the basis of environmental properties. It attempted to follow a scientific approach and relevant categories were specified:

> These valleys in places open out, forming flat or gently shelving troughs from one to several miles in width, covered generally with low wormwood scrub, but here and there with the richest grasses. Such flat open valleys are known as Pamirs, while deep, narrow ravines are never so described. It is therefore quite inaccurate to speak of the whole region as Pamir, though the term is a convenient expression for describing the wild uninhabited tract between Eastern Turkistan and the Upper Oxus Provinces. [The Russian Colonel Dmitri] Ivanoff defines the Pamir as the district between Alai on the north, Kashgaria on the east, Wakhan on the south, and Shighnan on the west. This definition, though a broad one, is fairly accurate. He derives the name from "the Pamir river", but this is unquestionably an error. Doubtless the Ak Su is known in places as the Ab-i-Pamir, but that is simply the oriental custom of naming a river locally according to the place it runs through or by, and that the river is named after the region and not the region after the river is the most probable. The general description of the Pamir given by Ivanoff is: "A country where spacious level valleys are formed between low mountains, and where nothing grows but grass, whose only denizens are Kirghiz nomads, yaks, ovis polii, and bears, and which is traversed by routes in every direction". It is, however, scarcely correct to say the Pamir is traversed by roads in every direction. The mountains are quite impracticable, except at certain well defined points; and, as a matter of fact, there are only few routes which are ever used. … In summer yaks are driven up to graze by Kirghiz, Wakhis, and Shighnis. The Kirghiz, however, are the only people who can be said to inhabit the Pamir, and even they only during the summer.[7]

Accessibility has changed over time, but the Pamir traverse still remains a challenge. Different visitors have contributed a variety of assessments, and perspectives on the Pamirs have certainly been transformed. In an attempt to compile the existing knowledge, George Nathaniel Curzon summarised his treatise on 'The Pamirs and the Source of the Oxus' in a three-piece contribution to the 'Geographical Journal' in 1896. The interested public and institutions of higher learning were thus supplied with a state of the art publication on the physical properties of the Pamirs. His book – which was based on his first-hand experience as a traveller in the Pamirs on a 6-month-long journey starting in August 1894 – was intended to be titled 'On the Indian Frontier'. It augmented his well-known 'The Pamirs and the Source of the Oxus' with the background on human geography and an interpretation of the political landscape. Owing to Lord Curzon's appointment as Viceroy of India in 1898, the book was not printed and remained in the archives before Dhara Anjaria (2012) recently published an edited version. Curzon devoted three of the six chapters to the Pamirs which signify the importance he attributed to the 'Pamir question'. During the climax period of the *Great Game* and the negotiations about boundary making, the Pamirs were perceived as sparsely inhabited, remote regions that seemed to be perfectly suitable for boundaries. Those would not follow the *stromstrich* or *thalweg* of rivers as was the conventional practice, but a border demarcation system that would match with mountain crests and would follow ridges (Fig. 4). The historical material from the second half of the nineteenth century can be read as source material utilised for boundary making and imperial designs by the two contesting

[7] William Robertson (1893:19–20). Colonel Dmitriy Ivanov gathered his knowledge from an extensive Russian expedition to the Pamirs in 1883.

Fig. 4 The border between Afghanistan and Tajikistan crosses Zor Köl, the former Victoria Lake. Westwards, the boundary follows the Pamir Darya; south and eastwards, the borderline follows the mountain crest (Photograph © Hermann Kreutzmann 13 Jul 2013)

partners: Czarist Russia and Great Britain. On borders, George Curzon had a different standing here than in other parts of the empire where he advocated river boundaries. The exceptional orography of the Pamirs motivated a different reckoning that led to the outcome of the Anglo-Russian negotiations:

> The Oxus was accepted, almost without demur, as boundary, simply because it was a river, and because in European countries rivers are frequently the lines of division between states; whereas in very mountainous regions, like these under discussion, watersheds and not rivers are the most invariable boundaries, while in the particular region affected, neither ethnographically, historically, nor administratively, had the Upper Oxus ever been a dividing line. From this initial error sprang quite a cluster of anomalous consequences. It has been shown that after some diplomatic fencing, the petty State of Wakhan had been included in the Afghan Commission. But it was neither stated nor guessed that Wakhan lay upon both banks of the Oxus, and that in recognising it without limitation as belonging to the Amir, while fixing the river at his frontier, the framers of the agreement had in reality stultified themselves and violated the text of their own engagement from the start. Still more did this apply to Shighnan and Roshan, both of which were also astride of the Oxus, a little lower down, and which were undoubtedly … dependent on Badakshan. Their existence and political status were at the date almost unknown either in Russia or England, and the agreement accordingly ignored them altogether.[8]

In a footnote to this paragraph, Curzon (2012:172) remarked:

[8] Curzon (2012:147–148).

> The terms Badakshan and Wakhan in the agreement were clearly used, not in an ethnographical or administrative, but in a geographical sense. Ours was the blunder, and we could not repudiate the consequence.

Quite some ambiguity about these marginalised and remote regions remained. Ole Olufsen, leader of the Danish Pamir expeditions that took place before the turn of the century, distinguished 'Mountain Bokhara' and the 'Bokharan Pamir Mountains' from the desert and steppe parts of the emirate and highlighted a number of physiognomic differences.[9] 'Through the Unknown Pamirs' was the title of the book by the Danish Lieutenant Olufsen which was published in (1904). By that time, the Pamirs were not that 'unknown' any more.

Classification of Exclusion and Inclusion

Subsequent visitors had other aspects in mind. The Pamir expeditions of Arved von Schultz (1910, 1914, 1916, 1920) had shifted attention to geomorphological and anthropological topics within the regional context. Two aspects were in focus: first, the perception of the Pamirs as a 'Landschaft' (physical landscape), second, the classification of its inhabitants in terms of physical anthropology and ethnography. Similarly, Ellsworth Huntington followed his expertise in physical geography, but did not restrain himself from qualifying the inhabitants in the most pejorative manner.[10]

> Wherever I have found the Khirghiz living unrestrictedly under their normal nomadic conditions among the mountains, whether north, west, or south of the Lop basin, they appear to have essentially the same habits and character. So far as I can learn, the Indo-European nomads to the west of the Lop basin in Wakkan and Sarikol, and the Mongol nomads of Buddhist faith to the east in northern Tibet and eastern Tian Shan, all of whom live under physical conditions similar to those of the Turanian Khirghiz, have very similar habits and character in spite of differences in race and religion. This suggests that environment is in this case more potent than either race or religion in determining habits and even character, provided, of course, that the environment is operative long enough.[11]

His superiority complex was satisfied by acknowledging the remoteness of the region and the low 'civilisational' level of its inhabitants.

It was the time of categorisation and qualification; anthropology was meant to attribute the differences of behavioural patterns to ethnic group classifications and to interpret socio-economic strategies of the Pamirian inhabitants in cultural terms. The major distinction that was applied reflected a debate that aimed at classifying and structuring Central Asia. Iran and Turan were the overarching entities that had been recognised in composing the Inner Asian territories. Terms that applied to

[9] Ole Olufsen (1911:6–46).

[10] Ellsworth Huntington (1907, 1915); Ellsworth Huntington and Sumner Cushing (1924); for a critical assessment see Hermann Kreutzmann (2004).

[11] Ellsworth Huntington (1907:107).

linguistic distinctions – Iranian and Turkish languages – were expanded in their meaning to territorial entities that were perceived as results of historical developments, socio-economic strategies and even rural-urban divides. The crude application of Iran-Turan or Tajik-Turki divisions has proved to be misleading in many cases. But the ascriptions of Tajik as speakers of Iranian vernaculars who are Muslim and settled in villages and towns in contrast to Turkic nomads of the wide steppe and desert regions have persistently survived many criticisms.[12] The cities of Samarqand and Bokhara can be named as centres of bilingual speakers and Tajik-Turki inhabitants where any distinguishing marks are difficult to find.

In the context of the Pamirian regions, similar distinctions were put forward. The Mountain Tajik or Pamir Tajik were so named to distinguish them from the Tajik of the plains and from the Turkic nomads of the mountain plateaux in the Pamir and Tien Shan highlands. The speakers of Pamirian languages – mainly inhabiting the Western Pamirs of Gorno-Badakhshan in contemporary Tajikistan, the Panj Valley and its tributaries of Afghanistan's Badakhshan, the Upper Hunza, Ishkoman and Yarkhun Valleys of Gilgit-Baltistan and Chitral in Northern Pakistan and their settlements in Tashkurgan and Zeravshan Counties of Xinjiang Region in PR of China – are not only linguistically distinct from their neighbours, but have in common among themselves that the vast majority, if not all, is following the Sevener Shia or Ismailiya denomination of Islam. The ascription 'Mountain Tajik' might have functioned as an integrative measure within the group of Tajiks during the period of the Soviet Union. In neighbouring China, the 'reform' of nationalities' groups following the anthropological census in 1953 created a group of 'Tajik' that is synonymous with speakers of Pamirian languages and Ismaili belief (Fei 1981:23, 60). No speaker of Western Iranian languages is counted in this minority (*minzu*) group.

Their Turki/Turanian counterparts in the Pamirian regions are predominantly identified by Kirghiz communities – they are to be found in the Eastern Pamirs of Tajikistan, the Alai Valley of Kyrgyzstan, the Taghdumbash and Kara Köl Pamirs of Tashkurgan County, the Kizilsu Prefecture in Xinjiang Region and the Little and Great Pamirs of north-eastern Afghanistan (Fig. 5). With regard to their nomadic heritage, a divide is easily identifiable. The distinction between permanently settled Pamirian Tajiks following a combined mountain agriculture (Ehlers and Kreutzmann 2000:14–19) and pastoral Kirghiz who had adopted a nomadic utilisation pattern in the high pastures of the Pamirian plateaux was the easily observed divide that was reported by nearly all explorers and travellers who visited the region. The denominational and linguistic classification was followed by this observation. Kirghiz has been categorised as Sunni Muslims and speakers of Turkic vernaculars. Over time, the distinctive features have been preserved although quite significant developments have taken place in the region concerned.[13] A vast majority of Kirghiz do not see themselves as nomads in any respect; a huge number of Kirghiz and Pamirian

[12] Waldemar Jochelson (1928:107); Vladimir Minorsky (1936).

[13] See Jules Brocherel (1902); Guillaume Capus (1890a, b); Hermann Kreutzmann (2003, 2007, 2012a); Till Mostowlansky (2012); Nazif Shahrani (1979).

Fig. 5 Major and minor Pamirs (Design: Hermann Kreutzmann; cartography: Bernd Hilberer)

people have adopted a variety of professions that are only remotely or not at all linked to agricultural and/or pastoral practices.

The seemingly clear-cut picture painted from the beginning of the twentieth century is significantly blurred a century later. Socio-economic and politico-historical changes in administration, political affiliation and economic participation have affected patterns of immigration and outmigration. Multi-locality is a well-known feature of the region when it comes to the composition of household incomes from residents in the Pamirian region. Administrators, bureaucrats and entrepreneurs have entered the area and settled there. Businessmen and traders from bazaar towns of Badakhshan are frequently to be found in the Afghan Pamirs where they exchange tea, clothes, drugs and other dearly needed commodities for livestock and its products; Tajik *kommersant* (Russian term for businessmen and ambulant traders), government officers and development agents visit and/or reside in Gorno-Badakhshan in Tajikistan.[14] Chinese and Uighur administrators and tradesmen/women have penetrated the autonomous districts of Tashkurgan and Kizilsu Prefecture in

[14] See Tobias Kraudzun (2011), Till Mostowlansky (2013).

Xinjiang.[15] Pathan and Punjabi government officials and traders have represented the Pakistani state in the disputed territory of Gilgit-Baltistan and the 'tribal areas' of Chitral within Pakistan.[16] In addition, all kinds of border security and military forces are posted and on inspection tours in different sections of the borderlands.

Nevertheless, the term Pamir plays quite different roles in the respective countries. Afghanistan and Tajikistan address their Pamirs in a way that it is self-explaining. Especially Gorno-Badakhshan identifies itself as the Pamirian region. In China, the usage is widely restricted to the Taghdumbash Pamir, while in Pakistan, only the inhabitants of Shimshal refer to their valuable high pastures as the Shimshal Pamir. Thus, there is a wide range of application of the term. In this contribution, emphasis is put on the insiders' perspective and the users of the natural resources and the rangelands, rather than on highlighting the geological definition that came much later and from outside; hence, the question of the Pamirian region's accessibility plays a key role.

The Pamir Highway: An Internal Artery Motivating Cross-Border Road Construction

A higher degree of integration of these remote mountain areas into the national administration and economic exchange relations of the respective (nation) states was the result of socio-political transformations of the twentieth century in the appearance of communist revolutions (Russia 1917, China 1949) and independence struggles (Afghanistan 1919, Pakistan 1947, Tajikistan 1990). Over long periods, cross-border exchange relations were enhanced. The construction of the Pamir Highway (1935) showed the modernising strength of the Soviet Union in integrating marginal mountain regions into mainstream society. The Pamir Highway was the beginning of road building in difficult mountain terrain that improved the external supply significantly. The Karakoram/Pak-China Friendship Highway (1978) has been the symbol of mutual support of two of India's neighbours who combined strategic planning with development efforts in their border regions. Kulma Pass Road (2002) and the construction and opening of four new bridges between Afghan and Tajik Badakhshan (2002–2011) have been the latest projects to overcome the hermetically closed boundaries of the Cold War (Fig. 6). Through all these projects, the Pamirian region became connected and symbolised the process of integration of the mountain regions into domestic and cross-border economies.

The observation by Robert Chambers (1983:13) that research and development projects follow networks of roads has found an early example in the construction of the Pamir Highway as a means to develop the Pamirian mountain region within the Soviet Union. The Pamir Highway began its initial operation in 1934 and was

[15] See An Sha-Zhou et al. (2011); James Millward (2007); Hermann Kreutzmann (2012b); Zhao Xinchun (2011).

[16] See Hermann Kreutzmann (2005, 2012c); Matthias Weinreich (2009).

Fig. 6 Trucks from Kulma Pass (4363 m) supply Chinese goods to Tajikistan via the Pamirs (Photograph © Hermann Kreutzmann 15 Jul 2013)

completed the next year by linking Osh in Kyrgyzstan with Khorog, the central place of Gorno-Badakhshan in Tajikistan via the 4655 m high Akbaytal pass. British spies had enviously observed how Soviet engineers tackled one of the most difficult high mountain passages across the Pamirs and built a road 'five kilometres high' (Pravda' No. 139, dated May 22, 1934:6). Their reports challenged British Indian engineers and infrastructure planners to alleviate a situation which Kenneth Mason would describe a few years later when he identified the Himalayas as a 'barrier to modern communication' (Mason 1936). Both dominant European powers in High Asia competed with their modernisation programmes. In the early days, the Soviet Union took the lead and expanded railways and roads to Fergana, the Pamirs and the Tien Shan mountains. Collectivisation changed the socio-economic setup and introduced a 'modern' farming (Fig. 7).

The strategic importance of the border regions in the mountain arc seems to have been the driving force behind developments in physical infrastructure. A monumental road across the Pamirs was planned during World War II. British blueprints existed to connect Kashmir with Xinjiang in order to support the armed units of the Guomindang General Chiang Kai-shek. The primarily strategic enterprise aimed at military support against Japanese occupation forces in China and Mao Zedong's Red Army. In addition, Soviet influences in Xinjiang were to be controlled; thus a giant project involving 70,000 labourers and army staff was to be executed. This project was not implemented as it came too late for fulfilling its purpose. It was intended to speed up the process by calculating nine million man-days within a span

Fig. 7 Alichur Pamir is dominated by the settlement of the same name that got its present shape during collectivisation (Photograph © Hermann Kreutzmann 18 Jul 2010)

of 1 year for the section Gilgit to Kilik Pass alone. Nevertheless, the ambitious project coincided with the end of the war.[17] After the lapse of half a century, this had been the first serious attempt to realise Martin Conway's dream of a railway crossing the high passes and connecting the Indian system with the Russian railways that were reaching the Fergana Basin and the roads of Xinjiang. The British pioneer of mountaineering in the Karakoram was a daring visionary when he predicted a substantial impact of rail traffic crossing the Karakoram Mountains at the end of the nineteenth century: '… Gilgit must grow to be an important trade centre, and possibly, … a railway junction on the line from India to Kashgar, where the Samarkand branch will turn off!'[18] Captain Medley formulated a similar vision in 1896 by emphasising a road which: '… will in fact become the Grand Trunk road from Central Asia to India.'[19] The implementation of their dreams was not fulfilled in imperial times. Neither a road nor a railway was built across the towering mountain ranges. The major road link between the Grand Trunk Road of South Asia and the

[17] IOL/P&S/12/4609: India Office Library & Records: Departmental Papers: Political & Secret Internal Files & Collections 1931–1947: Memorandum on the proposed motor road from North West India to Sinkiang via Gilgit, Chungking, 8.6.1944: pp. 6–15; Anonymous (1951:81).

[18] William Conway (1894:144).

[19] IOR/2/1064/45: India Office Records: Crown Representative's Records - Indian State Residencies: Kashmir Residency Files: Indo-Chinese Turkistan trade. Report by S. H. Godfrey, Political Agent Gilgit, to A. C. Talbot, Resident Kashmir, Gilgit 17.12.1896: quotation from Captain E. T. Medley, commanding the troops at Gilgit.

Central Asian highways was only realised after Pakistan's independence and the Chinese Revolution. Thus, the Karakoram Highway (KKH) has become not only a symbol of linking two major regions of sub-continental dimensions and two historical road networks, but also an effective tool for growth- and exchange-related regional mountain development.

Regionalisation of the Pamirs: Introduction of the Various Pamirian Regions

Locally, the Pamirian area appears quite homogeneous, with similar ecological conditions prevailing in both mountains and valleys. The Pamirs extend across a high plateau with overarching peaks. Hindukush, Karakoram and Kun Lun Shan originate in this knot and disperse into mountain ranges that radiate outwards in different directions. In its singular form, the Pamir is regarded as a plateau-like mountain range in morphology and structure. Furthermore, the Pamir is one of the most important mountain ranges and is on a par with and surrounded by Hindukush, Karakoram, Tien Shan and Kun Lun Shan. The plural form 'Pamirs' often refers rather to the flat stretches of extended high mountain pastures that are mere valley bottoms in close vicinity to lakes and springs. Where are *pamér* found? Nearly exclusively they are located to the north of the sub-continental watershed within the Pamirian Knot; the Shimshal Pamir poses the only notable exception at the threshold (see Figs. 5 and 8). A higher base level of erosion for the glacially modified, alluvium-filled Pamir valleys explains the gentler and more open relief of these plateaux. The precipitation can be very low; annual rainfalls of less than 130 mm recorded at the few met stations highlight the fact that the region belongs to the Central Asian arid zone. Some stations underpin the low precipitation values: Tashkurgan 71 mm, Murghab 72 mm, Misgar 129 mm, Khorog 183 mm (Fig. 8). Taking into account the precipitation gradients within the Central Asian arid mountain belt in connection with orographic mass uplift effect, extensive turf vegetation (>300 km^2 in places) developed in altitudes between 3500 and 4300 m. The green *pamér* is dependent on a sufficient water supply from melting ice and snow, and from springs and groundwater near lakes. The significant availability of biomass in form of pasturage and fuel has created its economic value.

Several authors have attempted to classify the Pamir phenomenon. Among the early structural efforts was Henry Yule (1872a, b) who identified six main Pamirs. Later on, his approach was endorsed by Delmar Morgan (1892:17). Both classifications made a sharp separation between Eastern and Western Turkestan. As they focused on Anglo-Russian rivalry in the latter, they omitted the Taghdumbash Pamir in the Chinese realm. George Nathaniel Curzon followed a holistic approach and distinguished eight principal Pamirs including the Pamir-e Wakhan and a number of smaller ones. Curzon himself compiled existing knowledge and drew from a number

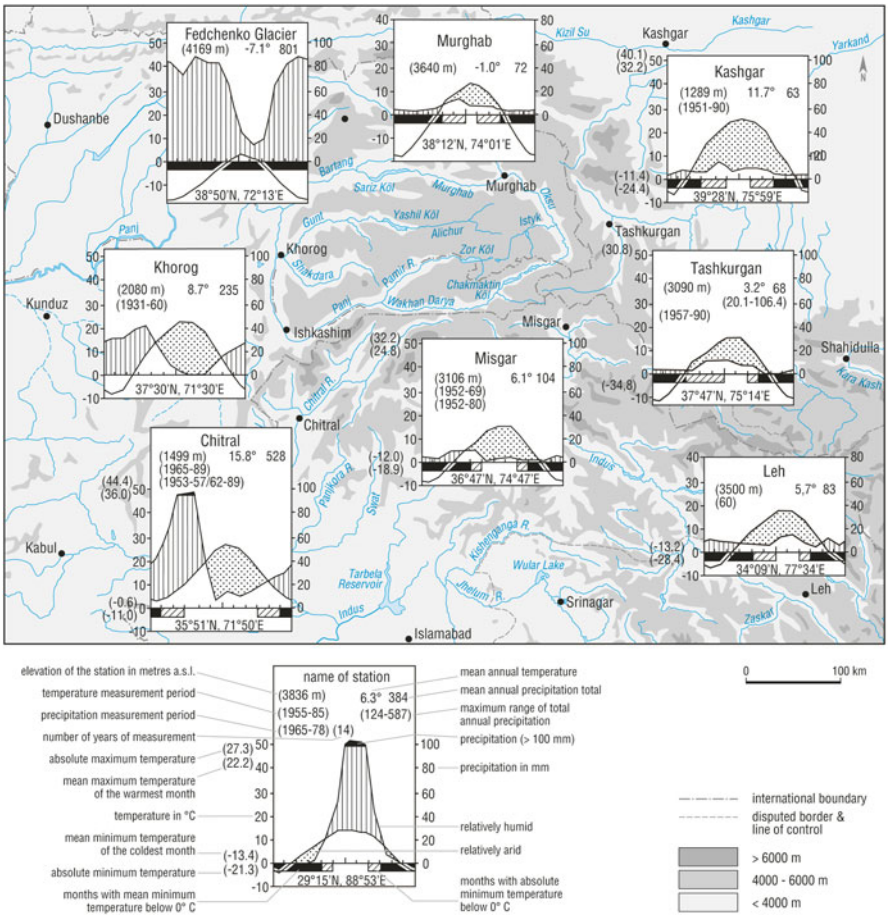

Fig. 8 Climatic data of selected High Asian meteorological stations in the Pamirian interface (Design: Hermann Kreutzmann; cartography: Bernd Hilberer)

of sources. Colonel Thomas Edward Gordon adds the Shewa Pamir in Badakhshan between Baharak and Khorog to the selection of Pamirs.[20]

For our purposes, it might suffice to distinguish seven major and seven minor Pamirs (see Fig. 5). Four of the major Pamirs are located in the Eastern Pamirs, in administrative terms in Murghab District of Gorno-Badakhshanskaya Avtonomnaya Oblast' (GBAO), Republic of Tajikistan. The basin of Lake Kara Köl (black lake) is identified as the Khargushi Pamir or the Pamir of the Hare. Close by, in the basin of Rang Köl Lake, the Pamir of the same name Rang Köl Pamir or Pamir of the Coloured Lake is found. The coloured lake of Rang Köl was sometimes identified

[20] Henry Trotter (1875:278); Thomas Edward Gordon (1876:162), for the history and present-day transformations of pastoralism in Shewa Pamir, see Hermann Kreutzmann and Stefan Schütte (2011); Herbert Franz Schurmann (1962:402, 407).

as the Dragon Lake mentioned by Xuanzang and represented 'the holiest spot in the entire Buddhist cosmogony'.[21] The headwaters of the Murghab River up to the settlement of Murghab are identified as Sariz Pamir. The Pamir of the Yellow Trail was quite severely affected by the 1911 earthquake that abruptly transformed the natural landscape of the Sariz Pamir region. The subsequent landslide buried the village of Usoi on the Murghab River, creating a 61 km long and 505 m deep lake with a surface area of 86.5 km^2 at an altitude of 3239 m.[22] The fourth and quite extensive Pamir is the Alichur Pamir located around its name-giving settlement. All four pasture regions are mainly utilised by Kirghiz pastoralists from Murghab District. Continuing towards the Western Pamirs, the headwaters of the Gunt River are known as Pamir-i-Bugrumal, which is the denomination for a minor Pamir in the Shughni region of combined mountain farmers.

In Wakhan Woluswali, the administrative denomination of the part of Wakhan that lies in Badakhshan Province within the Republic of Afghanistan, two major Pamirs are located. The Little and the Great Pamirs have been the domain of Kirghiz pastoralists. Pamir-e Kalan or Chong Pamir is the Tajik and Kirghiz names for the Great Pamir. The name is applied to the higher elevation in comparison with the Pamir-e Khurd or Kichik Pamir that has the higher number of inhabitants and a wider area of available pasturage. The Pamir-e Wakhan can be distinguished from this Little Pamir as it is comparatively small '… upon the northern bank of the Ab-i-Wakhan, or head stream of the Oxus, for about 20 miles from some distance below its source down to Bozai Gumbaz'.[23] George Curzon and Ralph Cobbold singled out the Pamir-e Wakhan as a minor one and admitted that it is 'extremely narrow' and only 'some twenty miles' long.[24] Taking this appraisal into account, Rémy Dor and Clas Naumann (1978:25) omitted this one from their list and stayed with seven Pamirs only. Within the same province, another minor Pamir needs to be mentioned. Shewa Pamir in Arghanj Khaw Woluswali, Badakhshan Province, is located in the basin of Shewa Lake. This fertile grazing ground offers some of the best pasture, attracting Pashtun and Uzbek pastoralists from as far away as Kunduz region every summer (Kreutzmann and Schütte 2011).

One major Pamir is located in Sarikol, Tashkurgan Tajik Autonomous County, Xinjiang Uighur Autonomous Region in the People's Republic of China. The Taghdumbash Pamir stretches a long way from the eastern Wakhan border to Tashkurgan and offers pasture to Kirghiz, Sariqoli and Wakhi pastoralists. Three smaller Pamirs in its vicinity are treated separately. On the eastern side across the mountain range from Dafdar lies the Mariang Pamir, named after the settlement of the same name. The Sarikol Pamir is located in the Tagarma plain north of Tashkurgan on the southern slopes of Muztagh Ata which used to be called Tagarma Peak. North of Ulugh Robat and close to Muztagh Ata (Fig. 9) begins the Kara Köl

[21] Stephen Wheeler (1889:51). This statement is based on earlier interpretations by Ney Elias (1886:24), Alexander von Humboldt (1844, II:402) and Henry Rawlinson (1872:491).

[22] Okimir Agachanjanc (1980:21–23); Yuri Badenkov (1992:270).

[23] George Curzon (1896:33–35, 2012:80).

[24] George Curzon (1896:33–35, 2012:80); Ralph Cobbold (1900:33).

Fig. 9 Muztagh Ata (7546 m) seen from Kulma Pass (4363 m) road from the elevated Chinese border post (Photograph © Hermann Kreutzmann 15 Oct 2008)

Pamir (Autonomous District of Kizil Su, Xinjiang) which is named after the Little Kara Köl Lake in its centre, shown on Chinese maps as Kalakuli or Karakul with the village of Subashi.

The only Pamir in the territory of the Islamic Republic of Pakistan is the Shimshal Pamir[25] as part of Hunza-Nager District in Gilgit-Baltistan. The main localities of the Shimshal Pamir (Edmund Barrow 1887:202–203) – sometimes called Shingshal Pamir (George Cockerill 1895:39–40) – are Shuijerab and Shuwert from where a wide area of fertile pastures opens up (Fig. 10). The whole valley area around the Shimshal Pass and all the way to the Braldu Glacier and Chinese border is part of the extensive system of grazing grounds in an arid setting. In comparison to the wide and extensive pastures of the major Pamirs, Shimshal Pamir also has to be classed as a minor one. Rémy Dor pointed out that the Pamirs should be distinguished from smaller valleys (*jılga*) and from steppe areas (*dašt, tala*).

M. Nazif Shahrani (1979:10–11) has contributed a listing of *onderlar* from the Kirghiz perspective. The inhabitants of the Afghan Pamirs call the Little and Great Pamirs Aqsu Onderi and Pamir Onderi, respectively. The other above-mentioned *pamér* are 'remembered and recognised' as 'Alchur, Aratesh [Artush], Qosh Aghel, Qara Choqor [Kara Chukur], Taghdumbash, Tagharma, Qara Kol, Su-Bashi [Little Kara Köl], Bolan Kol, Choqor-Aghel Kon-Teybus, Moujo Qeyaq Bashi [Moji] and Tashkurghan' (Shahrani 1979:11). It is obvious that besides the extensive *pamér* of

[25] See John Biddulph (1880:26); Reginald Schomberg (1936:38–59); Shipton et al. (1938:328–330); Francis Younghusband (1896:263–264).

Fig. 10 Shuwart (4700 m) in the Shimshal Pamir is the highest seasonal pasture settlement just north of the sub-continental watershed. Wakhi shepherdesses are in control of their flocks there (Photograph © Hermann Kreutzmann 14 Jul 2014)

Alichur, Kara Köl and Taghdumbash, a number of smaller ones are mentioned that other classifications have subsumed into larger spatial entities. Kara Chukur and Tashkurgan are otherwise included in Taghdumbash; Bulun Kul and Moji are not separately identified outside the Little Kara Köl Pamir. Interestingly, this is a perspective that only includes pasture areas utilised as *onderlar* by ancestors of the Kirghiz that were interviewed in the Afghan Pamirs. Various perspectives allow for different classification systems.

Importance of the Pamirian Knot

The description of the Pamirs as quite remote, green oases in an arid setting below glaciated mountain ranges makes their marginality seem obvious. At the same time, the Pamirs have been exposed as a glacis for colonial confrontation during the 'Great Game'. Exploratory attention was given because of their strategic location at the junction 'where three [or four] empires meet' (Knight 1893). The present-day separation of fourteen Pamirs into four different nation states is the result of these imperial encounters. Consequently, existing international boundaries are the legacy of nineteenth century conflicts that have become the enduring markers of separation and segregation. Following the delineation of boundaries, cross-border exchange

was significantly restricted. For two generations between 1930 and 1990, most of the borders were quite hermetically sealed. Exchange across boundaries was practically impossible from Afghanistan to the Soviet Union, from Soviet Central Asia to the People's Republic of China and from China to its southern neighbours during the Cold War. Up to 1958, China and the Soviet Union had amicable relations although their borders had been closed since 1935. After the ideological separation, the boundary became a bone of contention until the independence of the Central Asian Republics in 1990/1991 and the formation of the Shanghai Cooperation Organisation in 2001. The boundary between Afghanistan and Tajikistan was shut down after 1930; all trade exchange came to an end. The affiliation of the Pamirian region to quite different socio-political systems has contributed to socio-economic developments that have created major contrasts on each side of the borders. Initially, the Soviet Union and China applied the same system of socio-economic uplift in the area. Both introduced so-called autonomy policies on hierarchically structured administrative levels. The perception of backwardness motivated both leaderships to apply the model of modernisation through autonomy policies. In the Soviet Union, the creation of eponymous republics made the start for the introduction of an Autonomous Socialist Soviet Republic of Tajikistan within Uzbekistan in 1924. Before Tajikistan's release into equal status with other Central Asian republics 5 years later, the Pamirian regions that had been an independent district (*vilajat*) since 1923 were renamed as *Gorno-Badakhshanskaya Avtonomnaya Oblast'*, a valid denomination until today. Mountain Badakhshan occupies the eastern half of Tajikistan and is still called 'autonomous'. Across the border in Xinjiang, which is an A*utonomous Uigur Region*, the Pamirian pastures have been part of the *Kizil Su Kirghiz Autonomous Prefecture* and the *Tashkurgan Tajik Autonomous County* since 1954.[26] In all settings, autonomy aimed at providing special attention to ethnic communities – called nationalities (*narodnost*) or minorities (*minzu*) – in order to speed up the modernisation process. Collectivisation supported the establishment of administrative and production units, nationality cadres and their cultural representation. The holistic approach to societal homogenisation provided limited space for expressions of regional heritage. Consequently, infrastructure development, provision of educational and health facilities and supply schemes changed the standard of living significantly.[27] The socio-economic contrast between Afghan and Tajik Wakhan constituted a major gap. Autonomy policies restricted the movement of people and visitors to reach the Pamirs. The special status was alleviated after 1990 in Tajikistan and Xinjiang, but some remnants prevail.

The opening of the Pak-China Friendship Highway in 1982 was a first step to permit cross-border travel by Pakistani entrepreneurs. Four years later, international travellers were permitted to cross Khunjerab Pass. In the meantime, the Chinese Government has built a second version of the Karakoram Highway which has improved road conditions significantly and reduced travelling time for good

[26] Hiltrud Herbers (2001); Konstantin Flegontovich Kotov (1960); Hermann Kreutzmann (2013, 2015:384–396).

[27] Hermann Kreutzmann (2003, 2007, 2012b, 2015:456–467); Marielle Leseur (2009).

Fig. 11 The Kulma Pass (4363 m) road bypasses remote pasture settlements in an arid environment dominated by glaciated mountain ranges (Photograph © Hermann Kreutzmann 19 Jul 2010)

transports and visitors. Only the Atabad Lake that was created on 4 January 2010 by a landslide and has submerged a substantial part of the Karakoram Highway poses a new hindrance that will be bypassed by a new road alignment and some tunnels by 2016 (Kreutzmann 2010). The newly built Kulma Pass Road is the latest addition to the growth of border crossings connecting Pamirian communities in Tajikistan and China (Fig. 11). The four bridges across the Panj River and the weekly border markets in Ishkashim, Ruzvai, Tem and Vanj symbolise a connectedness between Afghan Badakhshan and Gorno-Badakhshan that in practical terms has ample scope for improvements. The inauguration of the latest bridge in Vanj in August 2011 was hailed as a continuing effort to improve and stabilise bilateral relations.[28] The Pamirian interface is mainly characterised by such segregations despite some common socio-political and heritage and similar agricultural practices in combined mountain agriculture and pastoralism.

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[28] See Aga Khan Development Network (2011), Hermann Kreutzmann (2015:445–449).

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Who Is Mapping the Pamirs? A Review on Plant and Vegetation Sciences

Kim André Vanselow

Abstract This paper is part of the aim to set up a literature and knowledge database for research on plants and vegetation in the Pamirs. The author reviewed the history of plant and vegetation sciences, including exploration during the Russian colonization, the Soviet era, and the post-Soviet era. The core part of this article is a quantitative bibliometric analysis, which focuses on the main subjects and the main contributors in this field, today and in the past. Particularly, the publishing landscapes of the czarist, Soviet, and the post-Soviet period were compared, and interconnections between authors from the Soviet Union and/or post-Soviet countries with authors from other countries were revealed. It could be shown that the importance of the different research subjects did not change considerably, that the number of authors per paper increased in the post-Soviet period, which includes many coauthorship relations between authors from post-Soviet and other countries, and that authors and institutions from the post-Soviet countries are still the most productive.

Keywords Publication history • Coauthorship relations • Plant sciences • Vegetation • Pamirs

Introduction

Plant and vegetation sciences in the Pamir Mountains have a long tradition. The earliest studies date from the late nineteenth century and were mainly linked to scientific expeditions. For example, in 1928, the joint Pamir expedition of the Notgemeinschaft der Deutschen Wissenschaft, the Academy of Sciences in Leningrad, and the Austrian and German Alpine Association provided important insights into this high mountain ecosystem and is an early example for the cooperation between scientists from the global East and West (Finsterwalder et al. 1932). During the Soviet era, research in the

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field of plants and vegetation was amplified with the establishment of the Pamir Biological Institute in the city of Khorog in 1969.

This intense focus is mainly rooted in the importance of plants and vegetation for the livelihoods of the people living in this region as well as in the high-species richness. Particularly, the Western Pamirs are a biodiversity hot spot (Akhmadov et al. 2006; Kassam 2009) with more than 2000 vascular plant species, including 160 endemics (Beg 2009). For example, the region contains a valuable genetic stock of a high number of wild progenitors of fruit trees (Breckle and Wucherer 2006; Giuliani et al. 2011) and valuable Tugai forests that play an important role in the water regulation of rivers. In addition, a high number of endemic species dominate the upper vegetation belts (>3000 m asl), which encompass many medicinal plants (Salick et al. 2009). In contrast, the vast mountain plateau of the Eastern Pamirs, with 738 different plant species, is rather poor in diversity (Agakhanjanz and Breckle 2004). However, the wide dwarf shrub steppes and riparian mountain meadows provide forage for mobile animal husbandry (Vanselow et al. 2012) and dwarf shrubs, which are the most important firewood plants (Kraudzun et al. 2014). As such, the plants and vegetation of the Pamirs perform essential ecosystem functions and provide key ecosystem goods and services for the region and the adjacent lowlands.

This paper is a review on the history of plant and vegetation sciences in the Pamirs, which is part of the development of a literature and knowledge database in this field. It aims at:

(a) Identifying the structure and dynamics of the major research topics over time (from exploration during the Russian colonization, over the Soviet, until the post-Soviet time)
(b) Identifying the most influential scholars, publications, and journals/sources (before and after the dissolution of the Soviet Union)
(c) Identifying the most productive research institutions and countries (before and after the Soviet collapse)
(d) Identifying research interconnections between authors, institutions, and countries (including the share of Soviet literature cited in post-Soviet publications)

To achieve these purposes, a quantitative bibliometric analysis is applied (Börner et al. 2003; Janssen et al. 2006) that includes statistics and visualizations on the major publications and journals as well as the most productive and connected authors, countries, and institutions.

Data Collection

The considered literature was taken from the Bibliografija Pamira (Part I: Nature) (Agachanjants and Sinkovskaja 1968, 1972) and was complemented by a literature query on the Web of Science (apps.webofknowledge.com) performed on 14 August 2014.

The Bibliografija Pamira is a bibliography, which lists physical-geographic studies related to the Pamirs published in Russia and the USSR between 1835 and 1964 (Täubert 1976). The book is divided into two volumes: The first volume contains 321 papers of the czarist era, published between 1835 and 1919. The titles contained in this volume were manually checked for keywords related to plant and vegetation sciences. Twenty-nine papers were identified as relevant and considered in the analysis. The second volume lists 1826 papers of the Soviet era from 1920 to 1964. It is divided into eight sections (History of Science, Geology, Physical Geography, Soil Sciences, Flora, Fauna, Anthropology, Regional Medicine). In this study, only the 523 publications of the section Flora were included. This section is further subdivided into seven categories (Basic Questions; Taxonomy and Floristics; Geobotany and Phytocoenology; Physiology, Biochemistry, Biophysics, Ecology; Plant Breeding, Cultural Vegetation, Introduction; Pastures; Zonation/Distribution).

The literature query on the Web of Science was performed as a keyword-based search using the combination Pamir or Pamirs (TOPIC: (Pamir) or TOPIC: (Pamirs)) refined to the relevant research areas, which resulted in 933 articles. These automatically retrieved documents were manually checked by the author. Studies that do not deal with plant and vegetation sciences were excluded. The decision to include or exclude was based on title, keywords, and abstract. In doubt, the document was included. Finally, 396 documents were retained and considered in the analysis.

For each paper, the following information were collected if available: title, year of publication, author names, first author's affiliation, country of first author, journal/source, publisher name, country of publisher, language, number of cited references, number of cited Soviet references, and times cited. Additionally, each paper was assigned to one of the categories used in the Bibliografija Pamira, based on information from the title, keywords, and abstract. Finally, the two subsets (Bibliografija Pamira and Web of Science query) were merged.

Discussion of the Dataset

The assembled dataset has one essential shortcoming. The Web of Science predominantly contains journal articles. Books and book chapters might be missing to a large extent after 1964. Particularly, the slump of the publication numbers after 1964 (Fig. 1) may be a result of this issue. Therefore, the data should be regarded separately (until and after 1964). Nevertheless, the author believes to have a comprehensive dataset that is suitable for reviewing research on the Pamirs and to achieve the goals of this study.

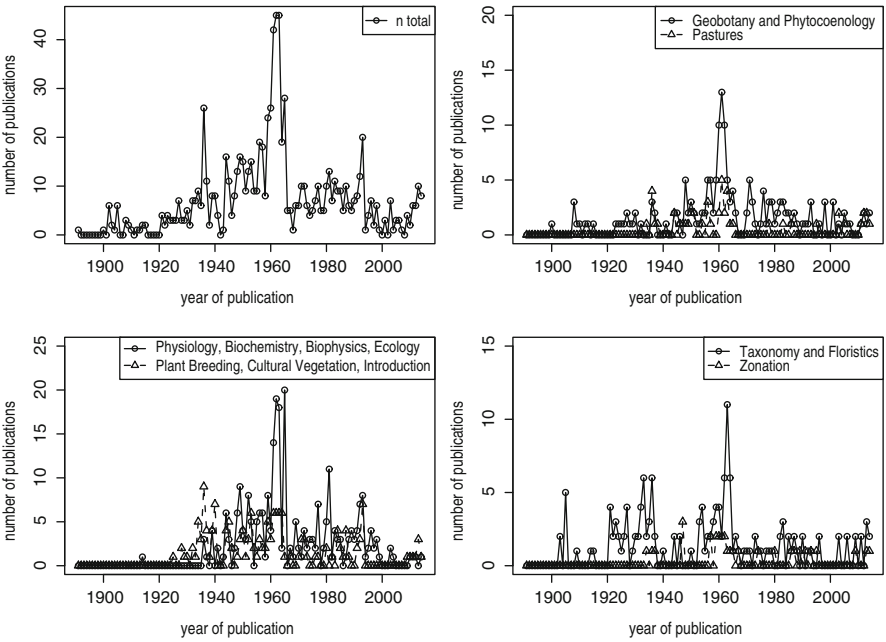

Fig. 1 Number of publications versus year of publication

Results

Paper Statistics

After data cleaning, the dataset contained 896 articles by 483 authors published between 1891 and 2014. Fifty-two papers that are included in the Bibliografija Pamira are also listed in the Web of Science. Most papers of the dataset were published during the Soviet era ($n=760$, 85%), while 29 (3%) were published before 1919 and 107 (12%) after the Soviet collapse in 1991.

Figure 1 shows the number of publications versus time. Regarding all categories, there is a first peak in 1936 ($n=26$) and a second from 1961 to 1963 ($n=42/45/45$). The clear slump after 1963 might be due to a shortcoming of the dataset and was discussed in section "Discussion of the dataset". A third peak can be found in 1993 ($n=20$) after Tajikistan's independence. Within the different categories, the most distinct peaks could be identified for Geobotany and Phytocoenology in 1961 ($n=13$); for Physiology, Biochemistry, Biophysics, and Ecology in 1965 ($n=20$) and 1981 ($n=11$); for Taxonomy and Floristics in 1963 ($n=11$); and for Plant Breeding, Cultural Vegetation, and Introduction in 1936 ($n=9$). After the dissolution of the Soviet Union, the category Physiology, Biochemistry, Biophysics, and Ecology shows a peak in 1992/1993 ($n=7/8$). In general, there is no clear trend toward a distinct increase or decrease in one of the categories. The majority of the

papers, in the czarist and Soviet as well as in the post-Soviet era, deal with physiology, biochemistry, biophysics, and ecology followed by geobotany and phytocoenology (Table 1).

Overall, articles were published in six different languages (Table 2). Before the Soviet collapse, Russian was the dominant language for publishing and was used in 96.7% of all papers. Today, English (53.3%) and followed by Russian (42.1%) are most important.

During the czarist and Soviet period, 98% of all articles were by Soviet or Russian authors (Table 3). The remaining 2% came from authors of 11 other countries. In the post-Soviet period, authors from 18 countries published articles, whereas Russia (28%), Tajikistan (27%), Poland (14%), and Germany (1%) were the most productive.

Among the 107 papers published in the post-Soviet period, 62 (58%) have a first author from a post-Soviet country, while 45 (42%) were written by first authors from other countries. Furthermore, 54 (50%) articles are exclusively by authors from post-Soviet countries, 37 (35%) are exclusively by authors from other countries, and 16 (15%) are the result of cooperation between authors from post-Soviet and other countries (Fig. 2).

The publications in the dataset have a mean of 1.4 authors per paper (median 1, range 1–7). However, this number increased over time. In the czarist period, exclusively single-author papers were published. In the Soviet era, still single-author papers dominate; however, the mean is 1.3 (median 1, range 1–7). In the post-Soviet period, the mean further increased to 2.3 (median 2, range 1–7).

Among these articles, the mean is 2.0 (median 1, range 1–6) if the first author is from a post-Soviet country. Papers with a first author from another country have a mean of 2.8 (median 3, range 1–7).

For the post-Soviet publications in the database, the mean number of times cited was 2.7 (median 0, range 0–39). The two papers with the greatest number of times cited were both by Pyankov et al. (1999, 1997), which were cited 39 and 33 times, respectively (Table 4).

Table 1 Number (and percentage) of publications in the different categories

Category	Czarist and Soviet period *n* papers (%)	Post-Soviet period *n* papers (%)
Total	789 (100)	107 (100)
Basic questions	25 (3.2)	0 (0)
Taxonomy and floristics	139 (17.6)	17 (15.9)
Geobotany and phytocoenology	158 (20.0)	22 (20.6)
Physiology, Biochemistry, Biophysics, Ecology	243 (30.8)	35 (32.7)
Plant breeding, Cultural vegetation, Introduction	146 (18.5)	18 (16.8)
Pastures	46 (5.8)	10 (9.4)
Zonation, Distribution	32 (4.1)	5 (4.7)

Table 2 Languages used in the analysed papers

Papers of the czarist and Soviet time ($n=789$)			Papers of the post-Soviet time ($n=107$)		
Rank	Language	n (%)	Rank	Language	n (%)
1	Russian	763 (96.7)	1	English	57 (53.3)
2	English	17 (2.2)	2	Russian	45 (42.1)
3	German	6 (0.8)	3	French	2 (1.9)
4	French	1 (0.1)	3	Chinese	2 (1.9)
4	Chinese	1 (0.1)	4	Belorussian	1 (0.9)
–	Belorussian	0	–	German	0

Table 3 Top ten number of papers according to country (of first author)

Czarist and Soviet period ($n=789$)			Post-Soviet period ($n=107$)		
Rank	Country	n (%)	Rank	Country	n (%)
1	USSR	744 (94)	1	Russia	30 (28)
2	Czarist Russia	29 (4)	2	Tajikistan	29 (27)
3	Germany	3 (<1)	3	Poland	15 (14)
4	Austria	2 (<1)	4	Germany	9 (1)
5	Australia	1 (<1)	5	China	4 (<1)
5	China	1 (<1)	5	Switzerland	4 (<1)
5	CSSR	1 (<1)	7	USA	3 (<1)
5	Denmark	1 (<1)	7	France	2 (<1)
5	Finland	1 (<1)	9	UK	2 (<1)
5	4 more countries	1 (<1)	10	9 more countries	1 (<1)

Among the 107 post-Soviet papers, 37 cite Soviet literature, 16 do not, and for 54 papers this information was not available. Particularly, the Polish working group around Marcin Nobis recognized the Soviet literature in their publications (Table 5).

Journal Statistics

The 896 papers were published in 338 different journals/sources, whereas the 107 articles of the post-Soviet period were released in 52 different journals. During the Soviet period, the journal with the greatest number of papers was the *Izvestiya Akademii Nauk Tadzhikskoi SSR* (The News of the Academy of Sciences, $n=103$), followed by the *Botanicheskii Zhurnal* (Botanical Journal, $n=72$), and the *Doklady Akademii Nauk Tadzhikskoi SSR* (Reports of the Academy of Sciences, $n=41$). After the Soviet breakdown, still the *Izvestiya Akademii Nauk*, now of the Republic of Tajikistan, is the most important source for scientific papers ($n=22$), followed by Mountain Research and Development ($n=9$), and the *Botanicheskii Zhurnal* ($n=7$; Table 6).

Regarding the number of citations, three journals published in the USA are at the top of the list. However, this information was not available for 54 out of 107 post-Soviet papers, including the articles published in the most productive post-Soviet journals. The most cited post-Soviet journals are New Phytologist ($n = 39$) and the American Journal of Botany, which is due to the two most highly cited papers in this review by Pyankov et al. (1999, 1997).

Author Statistics

In a next step, the most productive authors and institutions were identified. The authors with the greatest number of articles published all during the Soviet period and belonged to Soviet institutions. Ilariya A. Raikova (1896–1981) published the greatest number of papers ($n = 40$), followed by Kirill V. Stanyukovich ($n = 30$), and Okmir E. Agakhanyants ($n = 28$). Vladimir I. Pyankov from the Ural State University at Ekaterinburg, Russia, published 13 papers, which is the greatest number among the post-Soviet authors (total rank 15). He is followed by Marcin Nobis from Jagiellonian University Krakow, Poland ($n = 12$, total rank 16, Table 7).

The most productive institution of the post-Soviet period is the Pamir Biological Institute (Khorog, Tajikistan) with 26 articles (v). It is followed by two institutions from Russia (Ural State University in Ekaterinburg, where V. I. Pyankov was professor, and Komarov Botanical Institute in St. Petersburg, where S. S. Ikonnikov was professor and E. V. Voznesenskaya is senior researcher) and two from Poland (Opole University, where A. and S. Novak are senior researchers, and Jagiellonian University in Krakow, where M. Nobis is senior researcher).

Coauthor Networks

Finally, the coauthor networks within the database were analyzed in order to identify scholarly interactions and to understand the structure of the research community working on plant and vegetation sciences conducted in the Pamirs, today and in the past. Therefore, coauthorship relations were mapped with the package igraph (Csardi 2014) of the R Project for Statistical Computing (www.r-project.org). Figure 2 represents the authors as nodes and their coauthorship relations as edges. Altogether, 483 authors and 464 coauthorship relations were detected. Authors on the left of the dashed line published until the collapse of the Soviet Union, authors on the right of it during the post-Soviet era. Twenty-two authors published in both periods, whereupon only J. C. Klein is from a non-(post-) Soviet country (France). They are located on the dashed line in Fig. 2. Ten authors published articles during the czarist period (shaded upper left corner in Fig. 2), mostly in single-author articles. The papers of the Soviet era are by 342 authors, those from the post-Soviet

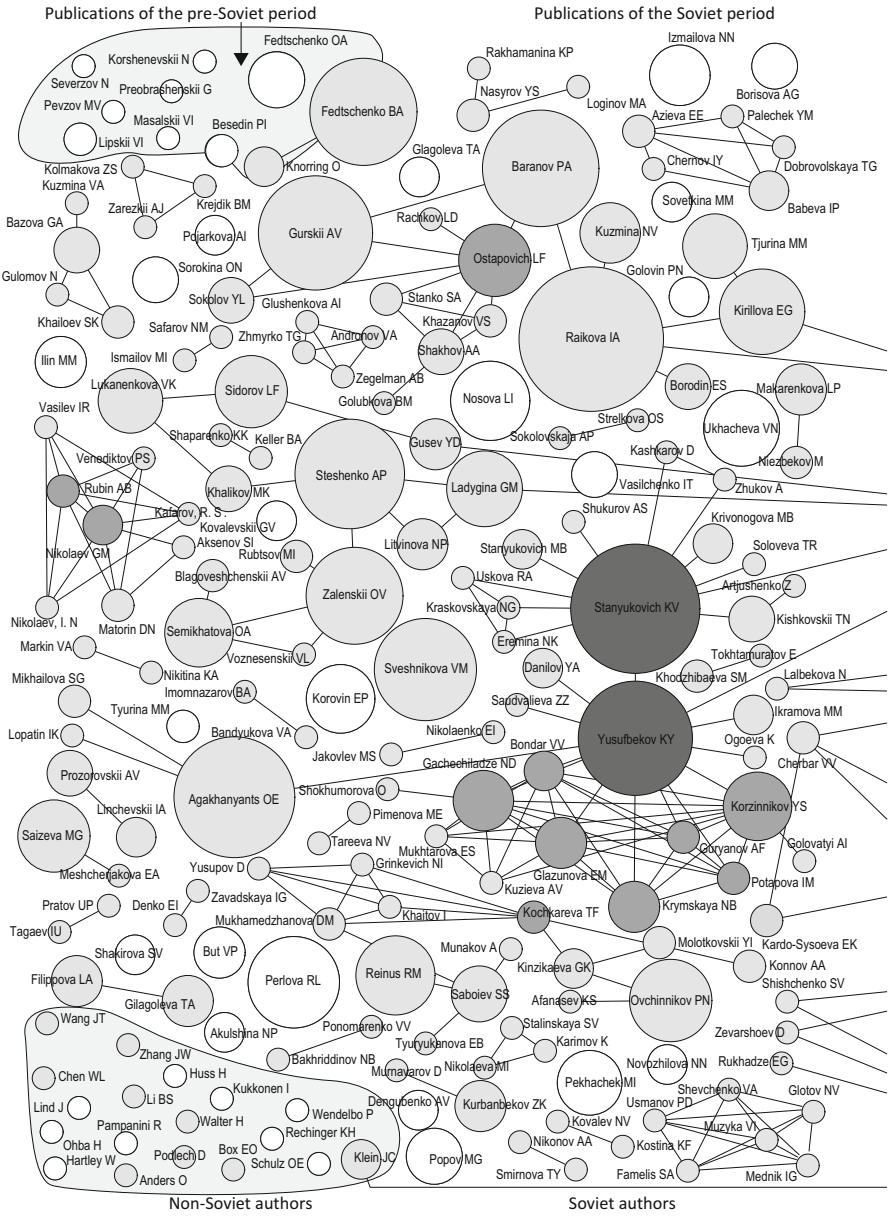

Fig. 2 Coauthor network. Authors without coauthors and only one publication were excluded for Soviet authors and authors of the post-Soviet period. *Circles* mark author nodes and are labeled by the authors' name. The larger the node, the more publications. The *darker* the node, the more coauthors (see legend)

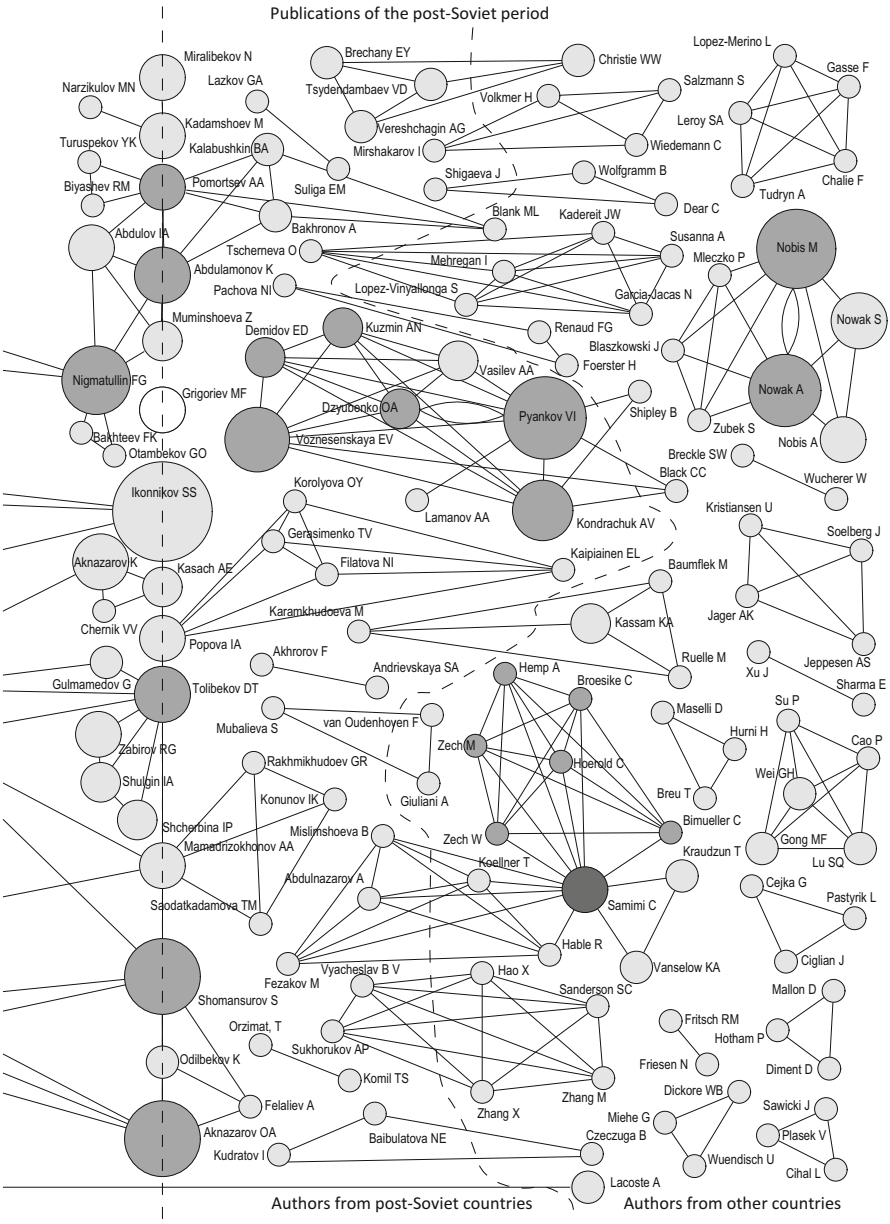

Fig. 2 (continued)

Table 4 Top five cited post-Soviet publications in the database

Rank	Paper (country of first author)	Journal	Language	*n* citations
1	Pyankov et al. (1999) (Russia)	New Phytologist	English	39
2	Pyankov et al. (1997) (Russia)	American Journal of Botany	English	33
3	Zonneveld (2009) (Netherlands)	Plant Systematics and Evolution	English	19
4	Nobis (2011a) (Poland)	Nordic Journal of Botany	English	15
4	Nobis (2011b) (Poland)	Nordic Journal of Botany	English	15

Table 5 Top ten post-Soviet publications which include Soviet literature (for 54 out of 107 papers, this information was not available; in 16 papers, no Soviet literature was cited)

Rank	Paper	Country	*n* references	*n* Soviet references	% Soviet references
1	Nowak et al. (2013b)	Poland	100	23	23
2	Nowak et al. (2014a)	Poland	96	22	23
3	Nowak et al. (2014b)	Poland	96	22	23
4	Nobis (2013)	Poland	90	21	23
5	Pyankov and Kondrachuk (2003)	Russia	34	19	56
6	Pyankov et al. (1997)	Russia	38	18	47
7	Nowak et al. (2013a)	Poland	108	17	16
8	Fritsch and Friesen (2009)	Germany	35	16	46
9	Nowak and Nowak (2013)	Poland	115	16	14
10	Nobis (2011b)	Poland	30	15	50

period by 156. Three authors (P. I. Besedin, O. Knorring, B. A. Fedtschenko) published in the czarist and the Soviet period. Seventeen authors from non-Soviet countries released articles about the Pamirs during the Soviet era, exclusively as single-author papers (shaded lower left corner in Fig. 2). In general, a great number of single-author papers were identified ($n=699$, 78%), particularly before the collapse of the Soviet Union ($n=652$). Only three authors were identified that have more than ten coauthors. These are Kirill V. Stanyukovich (Academy of Sciences of the Tajik SSR) and Khudoer Y. Yusufbekov (the first director of the Pamir Biological Institute in Khorog) in the Soviet period as well as Cyrus Samimi (Professor for Climatology at the University of Bayreuth, Germany) in the post-Soviet period. The most productive authors of the post-Soviet period (3.3) have isolated midsized coauthor networks with ten (V. I. Pyankov, E. V. Voznesenskaya, A. V. Kondrachuk) and seven authors (M. Nobis, A. Novak, S. Novak, A. Nobis), respectively. In total, for the post-Soviet period, 31 isolated coauthor networks (i.e., a minimum of two authors who have at least published one paper together) were identified. Twelve of these (39%) were cooperations between authors from post-Soviet and other countries. For Soviet authors, 30 coauthor networks could be detected, with the most densely linked group around Stanyukovich and Yusufbekov.

Table 6 Top ten journals with the greatest number of papers and the greatest number of citations for post-Soviet publications

Papers published, 1891–1991			Papers published, 1992–2014			
Rank	Journal	*n*	Journal (country)	*n*	Journal (country)	*n* cit. (*n* pub.)
1	Izv Akad Nauk Tad (SSR)	103	Izv Akad Nauk Resp Tad (TJK)	22	New Phytologist (USA)	39 (1)
2	Bot Zhurnal	72	Mt Res Dev (CH/USA)	9	Am J of Bot (USA)	33 (1)
3	Dokl Akad Nauk Tad (SSR)	41	Bot Zhurnal (Russia)	7	Nordic J of Bot (USA)	33 (3)
4	SbTad Fil Akad Nauk (SSR)	40	Acta Soc Bot Poloniae (PL)	3	Pl Syst & Ev (Austria)	25 (2)
5	Tr Pamirsk. Biolog. St.	36	Fiziol Rastenii (Russia)	3	Mt Res Dev (CH/USA)	23 (9)
6	Bot Mat Herb Bot Komarov Akad Nauk (SSR)	25	Nordic J of Bot (USA)	3	Acta Soc Bot Poloniae (PL)	18 (3)
7	Nauka	17	Phytocoenologia (GER)	3	Phytochemistry (UK)	13 (1)
8	Tr Bot Inst Akad Nauk Tad (SSR)	16	Rast Resursy (Russia)	3	Taxon (Austria)	12 (1)
9	Rast Resursy	16	Russ J of Plant Phys (USA)	3	Geogr. Journal (USA)	10 (1)
10	Ekologiya	12	Dokl Akad Nauk (TJK)	2	Phytocoenologia (GER)	9 (4)

For 22 post-Soviet journals (a.o. *Izvestiya Akademii Nauk*), information on the number of citations were not available

Table 7 Top-ranked authors of the complete dataset (according to number of publications; for post-Soviet authors, also number and rank of citations are listed)

Czarist and Soviet period			Post-Soviet period			
Rank	Name	*n*	Rank	Name	*n*	Cit. (Rank)
1	I. A. Raikova	40	1	V. I. Pyankov	13	98 (1)
2	K. V. Stanyukovich	32	2	M. Nobis	12	67 (3)
3	O. E. Agakhanyants	28	3	A. Novak	10	33 (7)
4	P. A. Baranov	26	4	E. V. Voznesenskaya	8	47 (4)
5	A. V. Gurskii	25	5	A. V. Kondrachuk	7	85 (2)
5	K. Y. Yusufbekov	25	6	S. Nowak	6	11 (19)
7	A. P. Steshenko	23	7	S. S. Ikonnikov	4	NA
8	B. A. Fedtschenko	22	8	A. Nobis	4	6 (29)
9	V. M. Sveshnikova	20	8	C. Samimi	4	
10	S. S. Ikonnikov	19	10	O. A. Aknazarov	3	

Table 8 Top five most productive institutions for post-Soviet publications (since 1992; according to affiliation of the first author)

Rank	Institution (country)	*n* publications
1	Pamir Biological Institute, Khorog (Tajikistan)	26
2	Ural State University, Ekaterinburg (Russia)	13
3	V.L. Komarov Botanical Inst., St. Petersburg (Russia)	10
4	Opole University, Opole (Poland)	8
5	Jagiellonian University, Krakow (Poland)	5

Discussion

Continuous numbers of publications since the collapse of the Soviet Union until the present day show that the field of plant and vegetation science is still a research focus in the Pamirs. A shift in the different research topics could not be detected. The publishing landscape of the post-Soviet era is still dominated by researchers from Russia and post-Soviet countries (particularly Tajikistan); however, English as the dominant publishing language and leading Western journals have increased in importance. Interconnections between Soviet and non-Soviet scientists could not be revealed with this dataset, although there existed a considerable number of cooperations, e.g., between Heinrich Walter and Siegmar W. Breckle with Soviet colleagues. Today, most authors are better connected compared to the czarist and Soviet periods, including cooperations between authors from the post-Soviet countries with authors from other countries. However, the coauthor networks are rather small and form many islands. This study might be a first step to increase the visibility of plant and vegetation studies and researchers working in the Pamirs and enhance cooperations between the identified networks.

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Geomorphic Features of the Eastern Pamirs, with a Focus on the Occurrence of Intermontane Basins

Tetsuya Komatsu

Abstract The geomorphic landscape of the Pamirs differs distinctly between the western and eastern areas. The Western Pamirs (west of ~73°E) are characterised by a combination of predominantly west–east-trending mountain ranges with altitudes of 5000–7000 m and deep, narrow valleys. In contrast, the Eastern Pamirs (east of ~73°E) are generally distinguished as broad valleys and basins bordered by more subdued mountain ranges with altitudes of 5000–6000 m. Twelve intermontane basins—Khargush Pamir (Lake Karakul Basin), the basin at the confluence of the Kokuibel and Zartosh Rivers, Muji Basin, the upper reaches of the Gez River, Karasu Valley, Taghdumbash Pamir (Tashkurgan Valley), Rangkul Pamir, Sarez Pamir, Aksu Valley, Alichur Pamir, Great Pamir, and Little Pamir—are identified in the Eastern Pamirs. I deduced from previous studies and observations of landforms using Google Earth that the occurrence of such basins is associated with regional tectonics, downstream damming, and glaciation. Khargush Pamir, the basin at the confluence of the Kokuibel and Zartosh Rivers, Muji Basin, the upper reaches of the Gez River, Karasu Valley, and Taghdumbash Pamir are extensional basins bounded by active normal faults, and the Rangkul Pamir likely originated from a Cenozoic tectonic basin. Sarez Pamir, Aksu Valley, Alichur Pamir, Great Pamir, and Little Pamir have been protected from fluvial incision because of downstream-damming-related upstream aggradation. Alichur Pamir, Great Pamir, and Little Pamir were primarily formed by extensive glacial denudation.

Keywords Intermontane basin • Tectonics • Damming • Glaciation • Eastern Pamirs

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Introduction

The Pamirs are a high-mountain region in Asia, located within the territories of Tajikistan, Afghanistan, Kyrgyzstan, Pakistan, and China (Fig. 1). The extent of the Pamirs is described in Chap. 1 from a geographical point of view. By contrast, many geological and geomorphological studies (e.g. Brockfield 2008; Schmidt et al. 2011; Mechie et al. 2012; Robinson et al. 2012; Burtman 2013; Schurr et al. 2014) delineate the boundaries as follows:

Eastern boundary: northwest-striking topographic boundary with the Tarim Basin. The Kashgar Range and the West Kunlun Shan comprise this boundary.

Western boundary: topographic boundary between mountainous regions and basin regions. The boundary is situated approximately along 70°E.

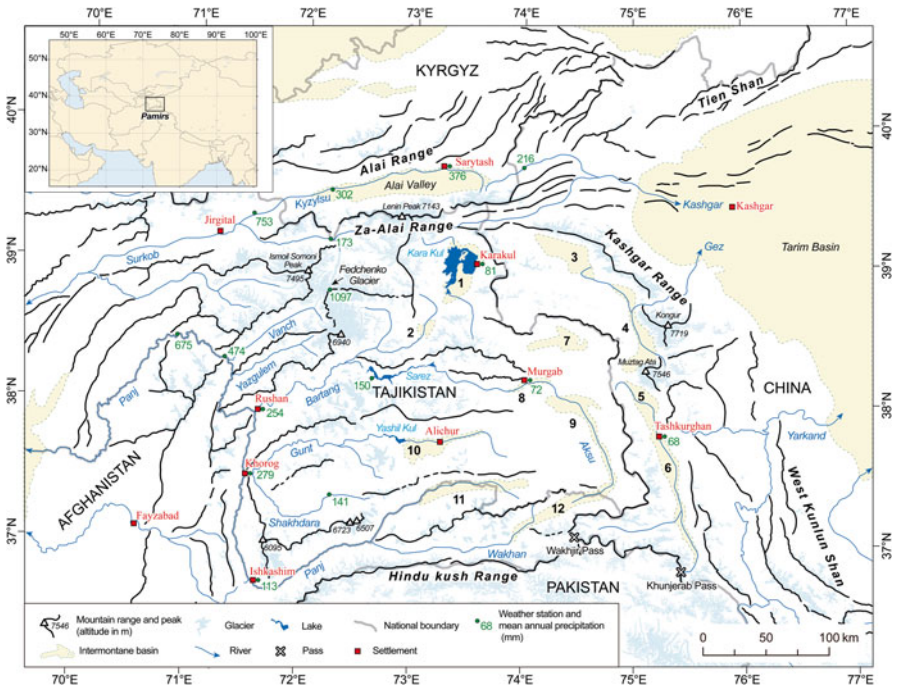

Fig. 1 Overview map of the Pamirs. Place names are based on the 1:500,000 map of Hauser (2004). The names of the numbered intermontane basins are as follows. *1*: Khargush Pamir (Lake Karakul Basin), *2*: basin at the confluence of the Kokuibel and Zartosh Rivers, *3*: Muji Basin, *4*: upper stream reaches of the Gez River, *5*: Karasu Valley, *6*: Taghdumbah Pamir (Tashkurgan Valley), *7*: Rangkul Pamir, *8*: Sarez Pamir, *9*: Aksu Valley, *10*: Alichur Pamir, *11*: Great Pamir, *12*: Little Pamir. Glacier outlines were delineated using the Randolph Glacier Inventory, version 3.2 (Arendt et al. 2012). Mean annual precipitation (for ~30 years) at the sites, except for the Tashkurghan, was calculated using the Central Asia Temperature and Precipitation Data, 1879–2003 (Williams and Konovalov 2008); Precipitation data for the Tashkurghan were derived from Owen et al. (2012)

Southern boundary: the area east of Fayzabad (Afghanistan) up to the northeastern bend of the Yarkand River (China) via Wakhan Corridor and Wakhjir Pass (Fig. 1).

Northern boundary: piedmont line in front of the northern side of the Za-Alai (Trans Alai) Range, i.e. the boundary between the Za-Alai Range and the Alai Valley.

According to this definition, the Pamirs can be recognised as a salient-shaped quasi-rectangular area extending ~300 km from north to south and ~300–400 km from west to east between 36–40°N and 70–76°E.

The landscape of the Western Pamirs differs distinctly the eastern part (Fig. 2). The Western Pamirs (west of approximately 73°E) display a terrain with a high relief consisting of a combination of predominantly west–east-trending ranges (~5000–7000 m above sea level (asl)) and deeply incised valleys (~2000–3000 m asl). In contrast, the Eastern Pamirs (east of approximately 73°E), apart from the easternmost area, which is surrounded by the Kashgar Range and the West Kunlun Shan, consist of a plateau-like terrain, characterised by broad valleys and basins (~3500–4200 m asl) that are bordered by subdued ranges with altitudes of ~5000–6000 m. There are 12 such intermontane[1] basins as shown in Figs. 1 and 2.

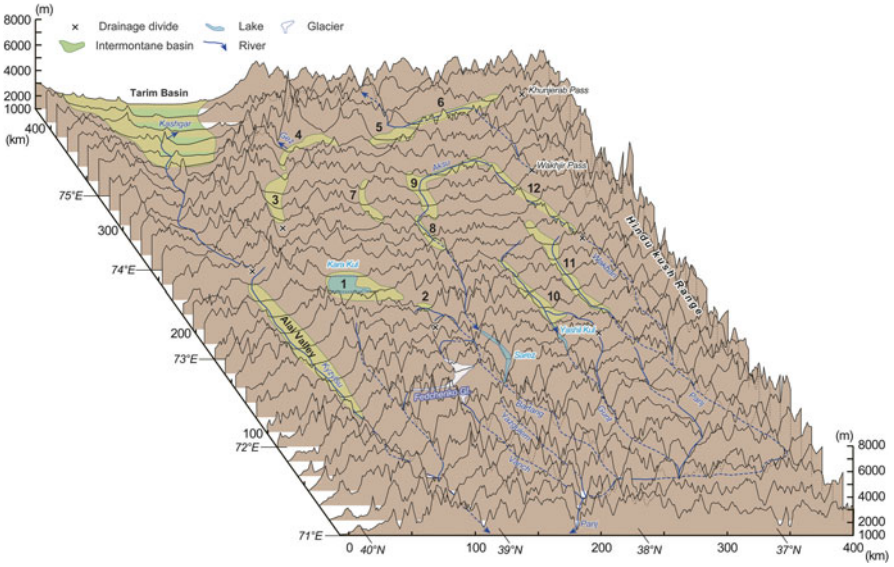

Fig. 2 Projected profiles showing the topographic relief of the Pamirs. The *vertical* exaggeration is ten-fold. Numbers 1–12 for the intermontane basins correspond to those in Fig. 1

[1] 'Intermontane' is an adjective that means 'situated between or surrounded by mountains, mountain ranges, or mountain regions' (Bates and Jackson 1987). Following to this definition, this chapter uses the term 'intermontane basin'.

Why are there 12 intermontane basins within the Eastern Pamirs? The answer to this question is key to understanding the mountain landscape in the Pamirs. However, the answer cannot be found by simply referring to previous geological and geomorphological studies (e.g. Burtman and Molnar 1993; Strecker et al. 1995; Brockfield 2008; Fuchs et al. 2013), mainly because little is known about the geomorphic characteristics of some of these basins. To this end, this study has resulted in the construction of geomorphological maps based on Google Earth observations of the basins. The aim of this study is an explanation of the origin of the intermontane basins in the Eastern Pamirs.

Regional Setting

Tectonic Features

The Pamirs have experienced ~300 km crustal shortening induced by the northward propagation of the India Plate, caused by the India–Asia convergence that began in the Cenozoic (Burtman and Molnar 1993; Fan et al. 1994). A map view of the Pamirs shows that the northward salient shape of the Pamirs is driven by Cenozoic deformation (Figs. 1, 2, and 3), which is kinematically asymmetric in its western and eastern parts: radial thrusting is predominant in the west, and right-handed slip faulting is predominant in the east, respectively (Cowgill 2010).

Active deformation at the arc-shaped front of the Pamirs is represented by the Main Pamir Thrust (MPT), which thrusts the Za-Alai Range over the Alai Valley to the north (e.g. Burtman and Molnar 1993; Strecker et al. 1995; Arrowsmith and Strecker 1999; Coutand et al. 2002). GPS measurements documented that crustal shortening rates are 20 mm/year or more across the MPT (Reigber et al. 2001; Mohadjer et al. 2010). Cenozoic northward translation of the Pamirs along the MPT suggests that the Alai Valley is the remnant of a sedimentary basin formerly connecting the Tajik depression and the western part of the Tarim Basin (Burtman 2000; Strecker et al. 2003).

Present and Past Climatic Features

The climate of the Pamirs is characterised by a subcontinental to arid continental climate. Moisture advection into the Pamirs is mainly driven by the Westerlies, although the Indian summer monsoon (ISM) occasionally reaches the Southeastern Pamirs as well (Aizen et al. 2009). Two-thirds of the annual precipitation occurs during the winter and spring seasons (Aizen 2011). Because Westerlies-induced precipitation currently dominates in the Pamirs, the mountainous area occupying the northwestern part of the Western Pamirs receives greater amounts of precipitation (~700–1100 mm/year, Fig. 1). Precipitation decreases towards the east and

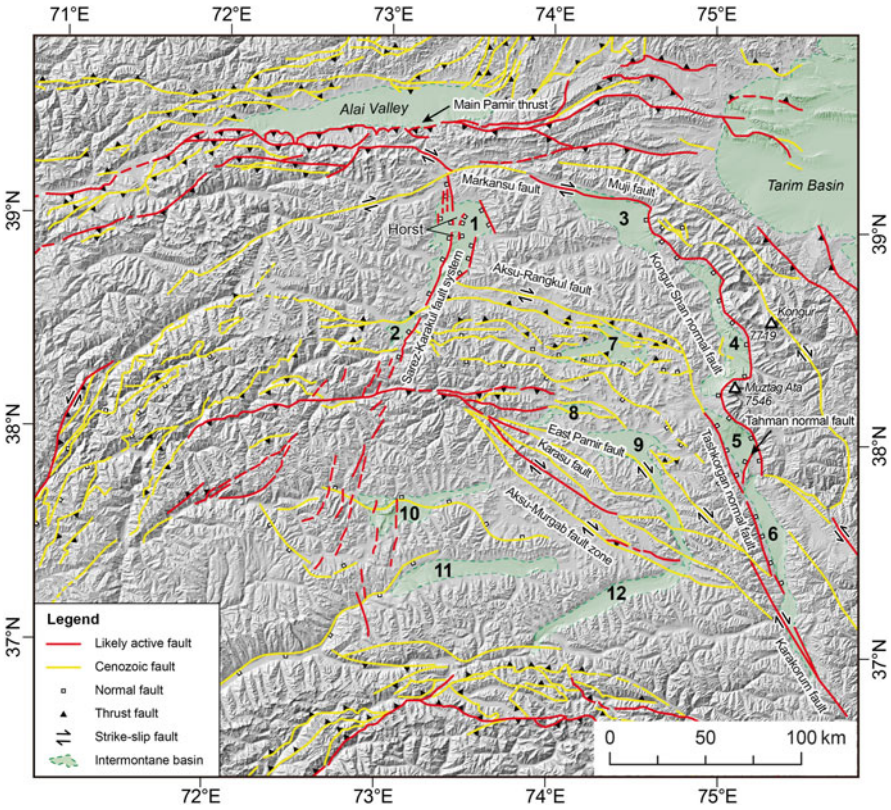

Fig. 3 Major Cenozoic tectonic features of the Pamirs, modified from Strecker et al. (1995), Robinson et al. (2007), Cao et al. (2013b), and Schurr et al. (2014). Definition of likely active faults and Cenozoic faults was primarily based on Schurr et al. (2014). Numbers 1–12 for the intermontane basins correspond to those in Fig. 1. Shaded map was constructed from a Shuttle Radar Topography Mission (SRTM) digital elevation model (DEM; 90-m horizontal resolution; Jarvis et al. 2008)

south: ~200–400 mm/year in the Alai Valley, 110–250 mm/year in the southwestern part of the Western Pamirs, and ~150 mm/year in the centre of the Pamirs. In the leeward areas, eastwards of the ranges at ~73°E, a drastic decrease in precipitation occurs due to the influence of the orographic rain shadow effect; average precipitation in this region is ~70–80 mm/year.

The present distribution of glaciers roughly reflects the west–east and north–south gradient in precipitation (Fig. 1). The Western Pamirs are dominated by scattered cirques and small valley glaciers, which are gradually replaced by larger valley glaciers towards the northeast of the main valleys. In the northeasternmost portion of the Western Pamirs, large glacier complexes consisting of two or more individual valley glaciers are common. For example, the Fedchenko Glacier, which is recognised as the largest glacier in the Asian high mountains (Iwata 2009), is one such

glacier. In contrast, the Eastern Pamirs are largely occupied by smaller valley glaciers or slope niche glaciers due to an arid climate. In the southeastern area between 37.5°N and 38.5°N and between 74.0°E and 74.8°E, no glaciers are presently observed (Fig. 1).

The timing and extent of past glaciations in the Pamirs were reconstructed only for the Eastern Pamirs (Zech et al. 2005a, b; Abramowski et al. 2006; Seong et al. 2009; Owen et al. 2012; Röhringer et al. 2012; Komatsu and Tsukamoto 2015). The oldest and most extensive glacial advance (the Dabudaer glacial stage) that dates to the penultimate glacial cycle and/or earlier was confirmed in the Tashkurgan Valley, Southeast Pamir (Owen et al. 2012). In the Eastern Pamirs, extensive glaciations that stretched beyond piedmont lines also occurred during MIS 4 and earlier during MIS 5–6 (Zech et al. 2005a, b; Abramowski et al. 2006; Owen et al. 2012; Röhringer et al. 2012). Additionally, Komatsu and Tsukamoto (2015) reported that a glacier surrounding Lake Karakul, in the northernmost area of the Eastern Pamirs, advanced beyond the piedmont at ~15 ka.

With regard to paleoclimatic conditions in the Eastern Pamirs, the following two points are of particular interest: (1) glacier advances in the Central Pamir (western part of the Eastern Pamirs) during MIS 5 and MIS 3 (Zech et al. 2005a, b; Abramowski et al. 2006; Röhringer et al. 2012), corresponding to an increased influence of ISM, suggest the possibility that moisture was supplied by the ISM in this region during these periods, and (2) since the global LGM, glacier variations around Muztag Ata and Kongur Shan have responded to Northern Hemisphere climate oscillations (Seong et al. 2009) such as rapid climate changes during the Holocene that were identified by Bond et al. (1992, 2001) and Mayewski et al. (2004).

Intermontane Basins in the Eastern Pamirs

Twelve intermontane basins can be identified in the Eastern Pamirs based on their representation on maps (Figs. 1 and 2). These basins correspond to Khargush Pamir (Lake Karakul Basin), the basin at the confluence of Kokuibel and Zartosh Rivers, Muji Basin, the upper reaches of the Gez River, Karasu Valley, Taghdumbash Pamir (Tashkurgan Valley), Rangkul Pamir, Sarez Pamir, Aksu Valley, Alichur Pamir, Great Pamir, and Little Pamir, respectively; Khargush Pamir and Rangkul Pamir are closed basins. Formation of these basins is likely tied to the following three factors: regional tectonics, downstream damming, and glaciation. A detailed description of the intermontane basins associated with these factors is given below.

Tectonic Basins

Previous tectonic studies and a neotectonic map of the Pamirs compiled from these studies (Fig. 3) indicate the occurrence of seven intermontane basins in the Eastern Pamirs originating from regional tectonics. The Muji Basin, the upper reaches of the

Gez River, the Karasu Valley, the Taghdumbash Pamir, the Khargush Pamir, the basin at the confluence of the Kokuibel and Zartosh Rivers, and the Rangkul Pamir are such intermontane basins.

North–south-trending active normal faults are present in the Eastern Pamirs (e.g. Strecker et al. 1995; Robinson et al. 2004, 2007) and are related to the formation of the following six depressions: the Muji Basin, the upper reaches of the Gez River, the Karasu Valley, the Taghdumbash Pamir, the Khargush Pamir, and the basin at the confluence of the Kokuibel and Zartosh Rivers (Fig. 3). The Muji Basin, the upper reaches of the Gez River, the Karasu Valley, and the Taghdumbash Pamir belong to a 250-km long north–south-trending graben, i.e. the active Kongur Shan extensional system (Robinson et al. 2004, 2007), which is bounded by the Muji fault (changing from right slip at its western end to normal slip at its eastern end), the Kongur Shan normal fault (KSF), the Tahman normal fault, and the Tashkurgan normal fault (Fig. 3). The Kongur Shan and Muztag Ata massifs, rising to more than 7700 m asl, are situated at the footwall of the KSF. The evolution of this extensional system has been examined through numerous bedrock and detrital thermochronological studies (Arnaud et al. 1993; Robinson et al. 2004, 2007, 2010; Sobel et al. 2011; Cao et al. 2013a, b). For instance, Robinson et al. (2004, 2007) revealed that the onset of extension occurred at 7–8 Ma in the northern part of the KSF and at ~5–6 Ma along southern end of the KSF and argued for a southward propagation of the east–west extension. Contrary to the model of a diachronic onset of extension along the KSF from north to south, Cao et al. (2013a) proposed that extension along the entire KSF was initiated at ~4–6 Ma. Additionally, Cao et al. (2013a) suggested the possibility that glacial denudation and fluvial incision on the massifs at the footwall of the KSF were enhanced during ~1–3 Ma, which may indicate that at least up to this period, the massifs reached an altitude at which glaciers could have developed.

Khargush Pamir is the other active extensional basin in the Eastern Pamirs (the Karakul graben), which is defined by high-angle east- and west-dipping normal faults (Fig. 3; Strecker et al. 1995; Blisnuik and Strecker 1996). The island and peninsula of the Karakul, located at the centre of this basin, exhibit horst structures with heights of ~50–380 m above the present lake level. The northern and southern ends of the basin are bounded by strike-slip faults such as the Markansu fault and Aksu–Rangkul fault (Strecker et al. 1995). The timing of extensional faulting within this basin and the temporal linkage with the active Kongur Shan extensional system has yet to be sufficiently elucidated (Amidon and Hynek 2010).

The basin at the confluence of the Kokuibel and Zartosh Rivers is located southwest from Khargush Pamir (Fig. 3). The eastern boundary of this basin stretches along a northwest-dipping active normal fault (the Sarez–Karakul fault system; Schurr et al. 2014) extending from the Karakul graben. This indicates that the basin has subsided relative to the mountains on the eastern side of the fault and therefore can be identified as a half graben.

Contrary to the six basins mentioned above, the Rangkul Pamir, situated between the active Kongur Shan extensional system and the Karakul graben, is not bounded by the north–south-striking active normal faults. Instead, the Rangkul

Pamir is bordered by a Cenozoic thrust fault to the north and a Cenozoic normal fault to the south (Fig. 3). Therefore, the Rangkul Pamir can be classified as a tectonic basin.

Basins Related to Downstream Damming

In addition to the seven tectonic basins, five intermontane basins in the Eastern Pamirs are situated at the upstream reaches of rivers running from the east to west (Aksu–Bartang River, Alichur–Gunt River, and Panj River). In their downstream reaches, which belong to the Western Pamirs, numerous landslides can be identified. Some of these landslides have formerly blocked or are currently blocking the main valley to form dammed lakes. For instance, the Sarez and the Yashilkul are known to be landslide-dammed lakes (Storm 2010, 2013; Schneider et al. 2011). Long-lasting landslide dams lead to a rise of the local base level, which brings about upstream aggradation, and therefore shields the bedrock from fluvial incision (e.g. Korup and Tweed 2007). Accordingly, the occurrence of five intermontane basins in the Eastern Pamirs should be associated with such geomorphic settings. On the other hand, outburst floods of landside-dammed lakes are believed to strongly incise valley fills and/or bedrocks in downstream areas. This process might be responsible for the high-relief topography in the Western Pamirs.

Glaciated Basins

I classified three basins (Alichur Pamir, Great Pamir, and Little Pamir) as glaciated basins: basins that primarily formed by glaciation and, more specifically, by glacial denudation. Here, I document the geomorphic evidence for such glaciations, based on preliminary geomorphological maps constructed from Google Earth observations and map interpretations.

Alichur Pamir

Alichur Pamir is situated upstream from the Yashilkul (Fig. 4). The altitude of the basin floor is about 3700–3900 m asl. The basin is ~3.5–13.5 km wide and ~70 km long, trending in an east–west direction; the basin width reaches its maximum around Sasyk Kul.

Several sets of terminal moraines are present near the mouth of the tributaries within the basin. Considering the glacial chronology established in the Bogchigir Valleys (Röhringer et al. 2012) and the geographical position of moraines, these moraines were probably formed during MIS 4 and/or earlier during MIS 5–6.

The largest of these terminal moraines, exhibiting a hummocky surface with a gentle relief, occurs adjacent to the Sasyk Kul. The moraine stretches into the left

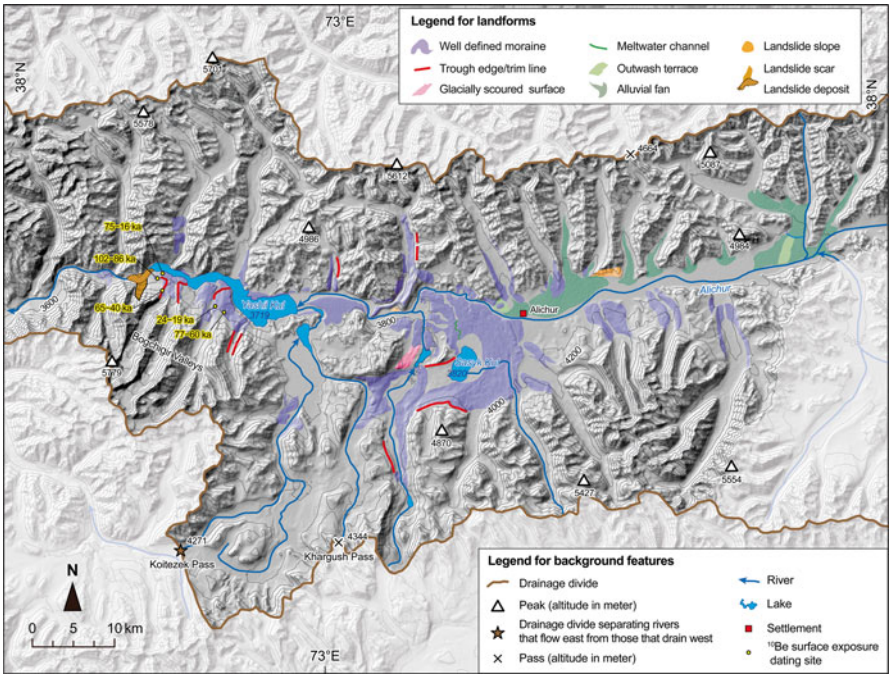

Fig. 4 Geomorphological map of the Alichur Pamir (see Fig. 1 for location). Base map was constructed from SRTM DEM (Jarvis et al. 2008). Contour interval is 200 m. ^{10}Be-derived moraine ages are based on Röhringer et al. (2012), Zech et al. (2005a), and Zech et al. (2005b)

bank of the Alichur River, but its fragment also can be observed in the right bank up to an altitude of 3960 m asl. The distribution of the moraine suggests that the broad valley around the Sasyk Kul was formerly filled by a glacier, which probably blocked the main valley to dam up the Alichur River to an elevation of ~3960 m asl. However, whether a glacier-dammed lake was formed during glacial advances is subject to further studies.

Great Pamir

Great Pamir occupies the uppermost position of the Panj River and is represented by a west–east-trending basin ~85 km long and ~10–15 km wide (Fig. 5). The altitude of the basin floor ranges from 3700–4200 m asl.

Multiple arcuate hummocky moraines, marking the limits of former piedmont lobes, are clearly visible at the mouth of the tributaries (Fig. 5) and are accompanied by a number of moraine-dammed lakes (e.g. Zorkul). The outermost of these moraines extends to nearly block the main valley.

Glacial landforms outside the moraine complex are identified as trough edges or trim lines that stretch along the sidewalls of the main valley. These landforms incline

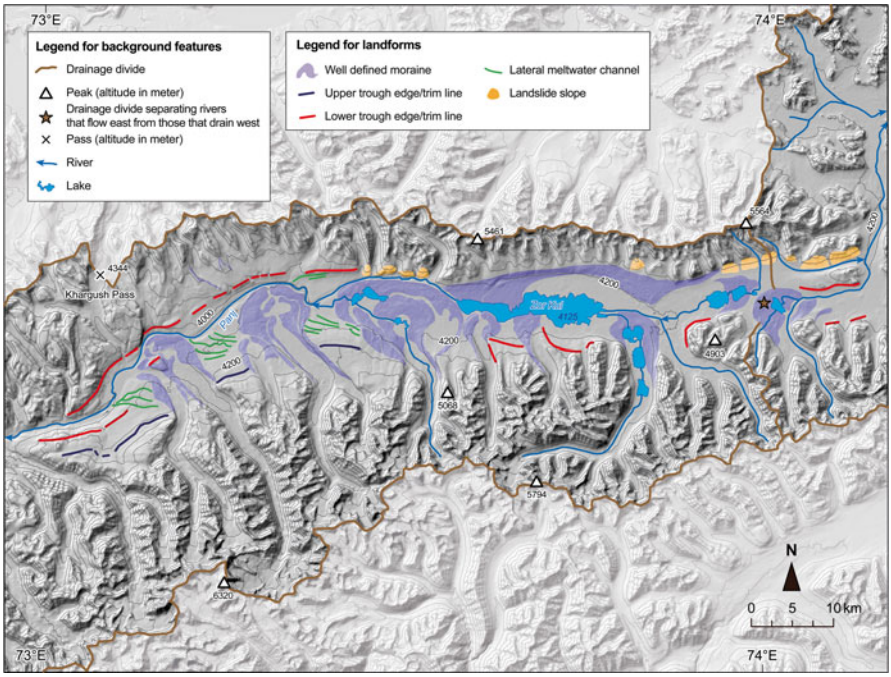

Fig. 5 Geomorphological map of the Great Pamir (see Fig. 1 for location). Base map was constructed from SRTM DEM (Jarvis et al. 2008). Contour interval is 200 m

to west and have developed at two different elevations. The higher ones (4280–4400 m asl) are observed only on the left sidewall of the valley. In contrast, the lower ones (4000–4080 m asl) can be traced along both sidewalls. Oblique gullies, probably originating from glacial meltwater channels, can be observed on the slopes below the lower trough edges/trim lines. Distribution of such glacial landforms suggests paleoglaciers, which advanced beyond the piedmont lines of the tributaries, were compounded to occupy the Great Pamir at least twice, and flowed westwards.

Little Pamir

Little Pamir, a southwest–northeast-trending basin ~90 km long and ~6–10 km wide, covers the uppermost reaches of the Aksu and Panj Rivers (Fig. 6). The drainage divide of both rivers is located at the eastern margin of the Chakmatkyn Kul. The basin floor (~4040 m asl) is dissected by the headward erosion of the Wakhan River that progresses towards the west.

Unlike in the Alichur Pamir and the Great Pamir, terminal moraines near the mouth of the tributaries are not observed in this basin (Fig. 6). However, the main valley shows a clear trough-like shape. The trough edge/trim line, mainly developed on the north-facing valley slope, can be traced from the confluence of the Wakhjir River and the Wakhan River to the northern bending point of the Aksu River.

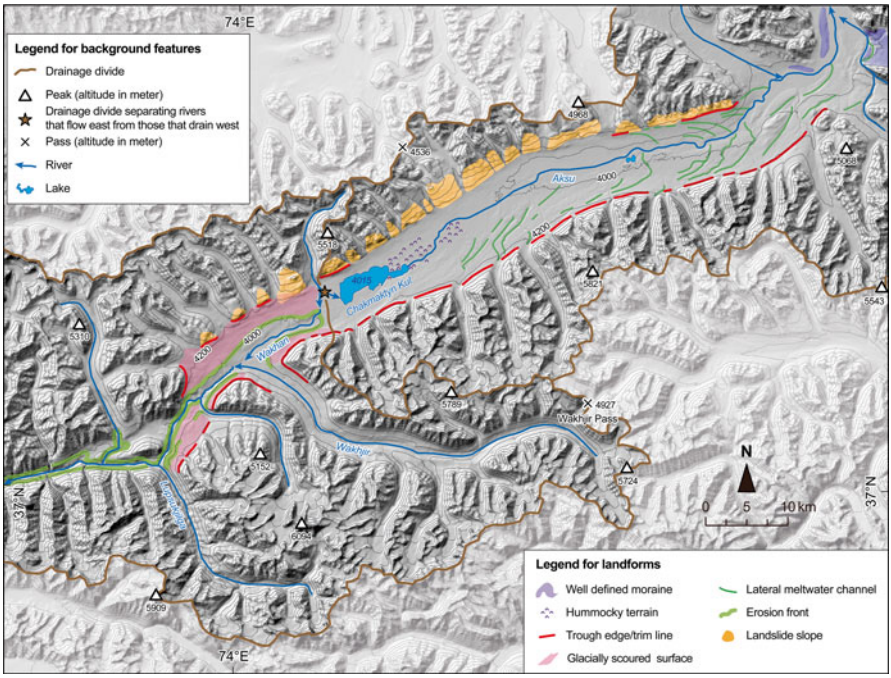

Fig. 6 Geomorphological map of the Little Pamir (see Fig. 1 for location). Base map was constructed from SRTM DEM (Jarvis et al. 2008). Contour interval is 200 m

Furthermore, glacially scoured terrain, which is characterised by northeast-striking elongated mounds (Fig. 6), can be observed on the main valley slope from the mouth of the Lupsukjilga Valley to that of the Wakhjir Valley. This landform slopes towards the east opposite to the flow direction of the Panj River. These geomorphic features suggest that paleoglaciers, originating from the Lupsukjilga Valley, filled the Little Pamir to flow eastwards across the present drainage divide.

Marginal moraines that recorded the extensive glaciation in the Little Pamir are difficult to identify on the basin floor. Instead, the valley sides below the trough edge/trim line are incised by oblique valleys, which are regarded as lateral meltwater channels of paleoglaciers. Arcuate patterns in these valleys indicate the margins of paleoglaciers during the glacial retreat phase, because lateral meltwater channels are known to be a good indicator for the ice marginal slope along the land surface (e.g. Sawagaki and Koaze 1996; Syverson and Mickelson 2009).

Concluding Remarks

This chapter described the origin of intermontane basins that can be recognised as notable landscape features in the Eastern Pamirs, mainly based on existing tectonic maps and original geomorphological maps. As a result, the occurrence of these

basins can be considered to be largely controlled by regional tectonics, downstream damming, and glacial denudation.

Another remarkable point is that geomorphological maps may help to reveal the geomorphic characteristics of a study area, as shown here. Therefore, geomorphological maps are potentially useful for various applications beyond purely scientific interests. For instance, one of those applications is to better understand the spatial distribution and movement patterns of humans and livestock, which are strongly related to geomorphological settings. Another application is the development of geo-ecotourism in the Pamirs, since geomorphological maps can be used for providing basic information for guidebooks and maps explaining features and origin of mountain landscapes. Yet another important issue is hazard assessment and mitigation in the Western Pamirs, where the risks of glacier-related and landslide hazards were pointed out by numerous studies (e.g. Schneider et al. 2010; Mergili and Schneider 2011; Komatsu and Watanabe 2013; Storm 2013). This issue can be adequately examined only through understanding of site-specific or local geomorphic settings around each of the impacted settlements. In this context, geomorphological mapping should be carried out in the entire area of the Pamirs.

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Water of the Pamir – Potential and Constraints

Wilfried Hagg and Christoph Mayer

Abstract High mountains in arid regions are known to act as water towers which generate runoff and redistribute it over time and space. Snow and glaciers play important roles as water storages but currently undergo changes in a warming climate. A recession of glacier area was observed in the Pamir during the last four decades of the twentieth century, while recent results indicate slight mass gains during the first decade of the twenty-first century. Fedchenko Glacier, the largest valley glacier in the Pamir, shows a continuous but small volume reduction over the past eight decades. After a period of peak flow will be passed in the near future, a further glacier wastage will reduce annual discharge and change seasonal water availability towards higher streamflow in spring and a runoff reduction in summer. These changes will cause water shortages during the main growing season and cause negative effects for agriculture which highly depends on irrigation.

Keywords Glacier changes • Meltwater • Runoff scenarios • Tajikistan

Introduction

The Pamir mountains belong to the catchment of Amu Darya river, the main tributary to the Aral Sea; 68% of total runoff in the Aral Sea basin is formed in its catchment (UNEP 2006). Characteristic for this river basin is the sharp contrast between the humid conditions in the high mountains and the strong aridity in the lowlands. According to UNEP (2006), almost 90% of the total annual discharge of 78 km^3 is formed in the Pamir (Tajikistan, Afghanistan), whereas most of the water is

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consumed in the dry zones of the downstream riparians (Turkmenistan, Uzbekistan). The mountain chains force air masses to uplift, which leads to condensation of water vapour and eventually to precipitation and runoff generation. Due to the low temperatures in high elevations, a big fraction of this precipitation falls in solid form. If the terrain is high enough, the snow pack does not entirely melt in summer and is slowly compacted to glacier ice. Such climatic conditions occur in extensive parts of the Pamir, where 72 peaks are higher than 6000 m asl. As a consequence, the Pamir is among the most heavily glacierised mountain systems in the mid latitudes.

The Amu Darya is formed by the confluence of the rivers Panj and Vakhsh. According to the World Glacier Inventory (WGMS 1989) prepared in the mid-twentieth century, the Panj and Vakhsh catchments have glacier covers of 3913 km^2 and 3675 km^2, which corresponds to glacierisations of 3.4% and 9.4%, respectively. Long-term mean annual streamflow at the confluence is 986 m^3/s (Panj, 1965–1992) and 650 m^3/s (Vakhsh, 1932–1967). When flowing through the lowland part, the flow reduces through evaporation, infiltration and withdrawal for irrigation. In 2010, 58 km^3 of water were withdrawn in Uzbekistan and Turkmenistan, 92% of which for irrigation (UNEP 2011), causing the areal reduction of the Aral Sea from 1960 to 2013 by 84% (UNEP 2014).

The share of glacier melt in total runoff increases with glacierisation and aridity and is therefore exceptionally high in the Amu Darya basin. Kaser et al. (2010) found that in the Aral Sea basin, the contribution glacier meltwater to total runoff is by far the highest in 18 large river catchments investigated around the globe. They conclude that a population of more than 10 million would suffer from water shortages if the glaciers disappeared.

By hydrograph separation, Kemmerikh (1972) assessed the share of firn and ice melt in the Panj (5.8% glacierised) as high as 25%, reaching 55% during in the period July to September. For the Vakhsh at Garm (16.6% glacierised), annual and summer shares are 40% and 67%, respectively. Konovalov (1985) calculates annual shares of glacier melt with a hydrological model and reports 58% for Muksu (31.5% glacierised) and 37% for Kudara (13.8% glacierised). In the European Alps, a glacierisation of 35% is required to reach the glacier melt contribution of Kudara (Weber et al. 2009).

Thanks to the seasonal runoff delay caused by glaciers, the maximum water discharge is observed in July and August, when glacier melt is most intense. This seasonal peak coincides with the growing period of cotton and other crops in the Tajik lowlands and also with the driest period in this region. Thus, the storage capacity of Pamir glaciers and their seasonal delay of runoff are vital for the socio-economic welfare of downstream users. The large water resources in the Pamir, combined with the distinct topography, offer a great potential for hydropower generation. Tajikistan is the highest per capita generator in the world, and hydropower is its greatest economic resource (UN 2004). Nurek Dam (304 m) in the Vakhsh River is currently the highest one on the globe, and the Rogun Dam, which is under construction, is planned to become even higher (334 m). Far from being completed, it is already the cause for a latent crisis between Tajikistan and the downstream riparian Uzbekistan, which fears summer shortages and winter floods when Tajikistan produces energy in the cold season.

In the past 60 years, mean air temperature increased by 1 °C in Tajikistan, and a further warming by 1.5 °C is expected until 2030 (UNEP 2011). The major impacts on the cryosphere are a reduction of snowpack in thickness, extent and duration and a decrease of glacier area and volume. In 2003, the total glacier area in the Panj and Vakhsh catchments were reduced to 3592 km^2 (−8.2%) and 3399 km^2 (−7.5%) compared to the mid-twentieth century, containing estimated ice volumes of 166 km^3 (−11%) and 211 km^3 (−4%), respectively (Hoelzle et al. 2010). The volume loss additionally contributes to streamflow and currently causes increased discharge compared to balanced conditions. After a prolonged reduction of glacier area in the future, a tipping point will be reached after which the increased runoff from glacier wastage will turn into reduced meltwater flows. This effect will at first be observed in summer due to shift towards earlier melt in spring, but as soon as the excess runoff is reduced, also annual discharge will decrease. This trend is supported by increased evapotranspiration in a warmer atmosphere, further reducing water availability downstream.

Observed Glacier Changes

Glacier observations have a long history in the Pamir and date back to the expedition of V. F. Oshanin who discovered Fedchenko Glacier in 1878 (Oshanin 1879). Some decades later, Rickmer Rickmers in 1913 and Rickmers and Gorbunov in 1928 focussed on Garmo glacier and Fedchenko Glacier with extended glacier surveys (Rickmer-Rickmers 1914; Finsterwalder 1932). A first inventory of all Pamir glaciers was made in the framework of the "Catalogue of glaciers in the USSR" during 1965–1982. Unfortunately, this glacier mapping is based on images from several decades, so that no unique date can be given for the glacier covered area. The Catalogue of glaciers contains 9108 glaciers in the Pamir, covering an area of 9828 km^2 (Khromova et al. 2014, Fig. 1). According to Konovalov (2011), and based on the Catalogue of glaciers, surveys of Shchetinnikov (1998) and Konovalov and Desinov (2007), the glacier area of the Vakhsh and Panj catchments showed a somewhat higher glacier cover of 10,399 km^2 in 1980 but states a considerable reduction in glacier area of this region between 1961 (11,597 km^2), 1991 (9992 km^2) and 2000 (9273 km^2). The total area reduction for the last four decades of the twentieth century therefore was rather constant in time with a total area loss of 20% (about 5% per decade). In contrast, the glacier area reduction in the Eastern Pamir seems to have intensified with time between 1978 and 2001 (7.8% during 1978–1990 and 11.6% in 1990–2001; Khromova et al. 2006).

The only glacier with long-term records of mass balances in this region is Abramov glacier in the Alai range, just north of the Pamir in the transition zone to the Tian Shan (area: ca. 26 km^2, elevation range 3620–4960 m). In the period between 1968 and 1998, the cumulative mass balance of this glacier was −15,800 mm, resulting to a mean annual balance of −0.527 m water equivalent per year (m w.e. a^{-1}) (Glacier mass balance bulletin, 6, 2001). The last measured mass balance period 1997/1998, however, was slightly positive with 0.21 m w.e. a^{-1}. Since

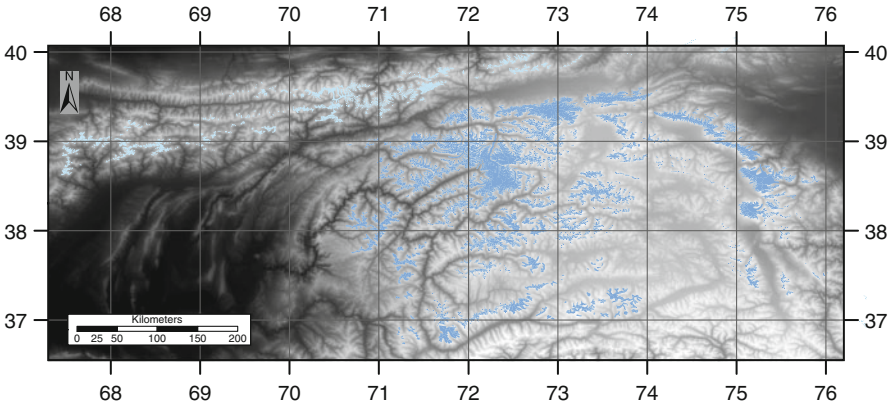

Fig. 1 Glacier coverage of the Pamir (*blue outlines*) for the period 2001–2004, as available from the Randolph Glacier Inventory (RGI, v.3.2, Arendt et al. 2012)

2011, new efforts have been made to re-establish the mass balance observations at this glacier (Barandun et al. 2013).

In contrast to this general trend of glacier area and mass reduction during the second half of the twentieth century, recent studies of geodetic mass balance (the volumetric difference between two digital elevation models) based on remote sensing data reveals a positive mass balance of 0.14 ± 0.13 m w.e. a^{-1} during 1999–2011 (Gardelle et al. 2013). This increase of glacier mass was observed in the Central Pamir, including the high plateau of Pik Somoni and Fedchenko Glacier, covering about 34% of the total glacier area in the Pamir.

Observations of volume changes provide a more accurate estimate of the changes of ice resources, because area changes can also be biased by surging glaciers, which redistribute mass along the valley, indicating a glacier area increase, without change of the glacier volume. Especially in the Pamir, a large number of surging glaciers exist. Kotlyakov et al. (2008) identified 51 surge type glaciers in 1991 and more than 20 large-scale surges occurred during the period 1960–1990.

For the largest glacier in the Pamir, and possibly also the rest of the world outside polar regions, the Fedchenko Glacier, a more detailed analysis of the long-term evolution is available (Lambrecht et al. 2014). This glacier shows a continuous but rather small area reduction between 1928 and 2007 of 2.92 km^2 (0.5% of the total area of 580 km^2), where the changes were somewhat larger between 1928 and 1958 than after 1958. During eight decades, the glacier lost about 5 km^3, which is 4% of the total glacier volume, almost entirely in the ablation zone (Fig. 2). Both results indicate that Fedchenko Glacier shows a low but continuous mass loss and is probably close to an equilibrium state. The rather small area losses, compared to the volume loss, can be explained by the extensive debris cover of the lower glacier tongue. There, melt rates are very low, and ice loss leads to a reduction in surface elevation of the glacier, rather than a retreat of the glacier snout.

Still, the area reduction is considerably smaller than the total loss of glacier area in the entire Pamir (0.6% per decade compared to 5% per decade). This fact, together

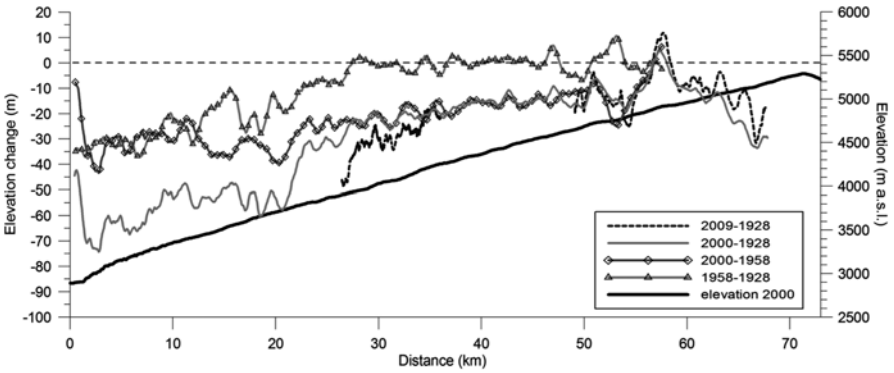

Fig. 2 Elevation change along the central flow line of Fedchenko Glacier for different observation periods between 1928 and 2009 (Lambrecht et al. 2014)

with the observation of even higher area losses in the Eastern Pamir in 1978–2001, indicates that large and debris-covered glaciers seem to show lower area reductions than smaller, clean-ice glaciers.

After a long time of moderate negative mass balances in the Pamir, it seems that glaciers are rather close to equilibrium state. Our own analysis for the Central Pamir reveals a slightly negative balance of −0.2 m w.e. a^{-1}, based on a comparison of the SRTM elevation model and elevations calculated from the TanDEM satellite mission (A. Wendt, pers. comm. 2014, Fig. 3). This is in contrast to findings of a slightly positive mass balance in the first 10 years of this century (Gardelle et al. 2013). However, both results show large uncertainties, and the discrepancy needs further research in order to identify the differences and limit the errors. A possible explanation for a recent change towards more positive conditions is the sensitivity of Pamir glaciers to precipitation variations. A slight trend towards higher winter accumulation is observed in meteorological data and general circulation simulations (Yao et al. 2012).

Observed Runoff Changes

After the collapse of the Soviet Union, the Hydrometeorological Service of Tajikistan was unable to maintain its network of meteorological stations and hydrological posts. As a consequence, many stations, especially those in the mountainous parts of the country, stopped operating by the mid of the 1990s (Finaev 2009). Furthermore, those observations which are still carried out are not revised and processed anymore, a task that was carried out by the formerly existing Central Asian Regional Scientific and Research Hydrometeorological Institute (SARNIGMI).

Figure 4 displays three time series from hydrological stations with differing glacierisations. Muksu River is the most heavily glacierised (31.5%) catchment with long-term runoff observations and shows a distinct positive trend between the 1960s

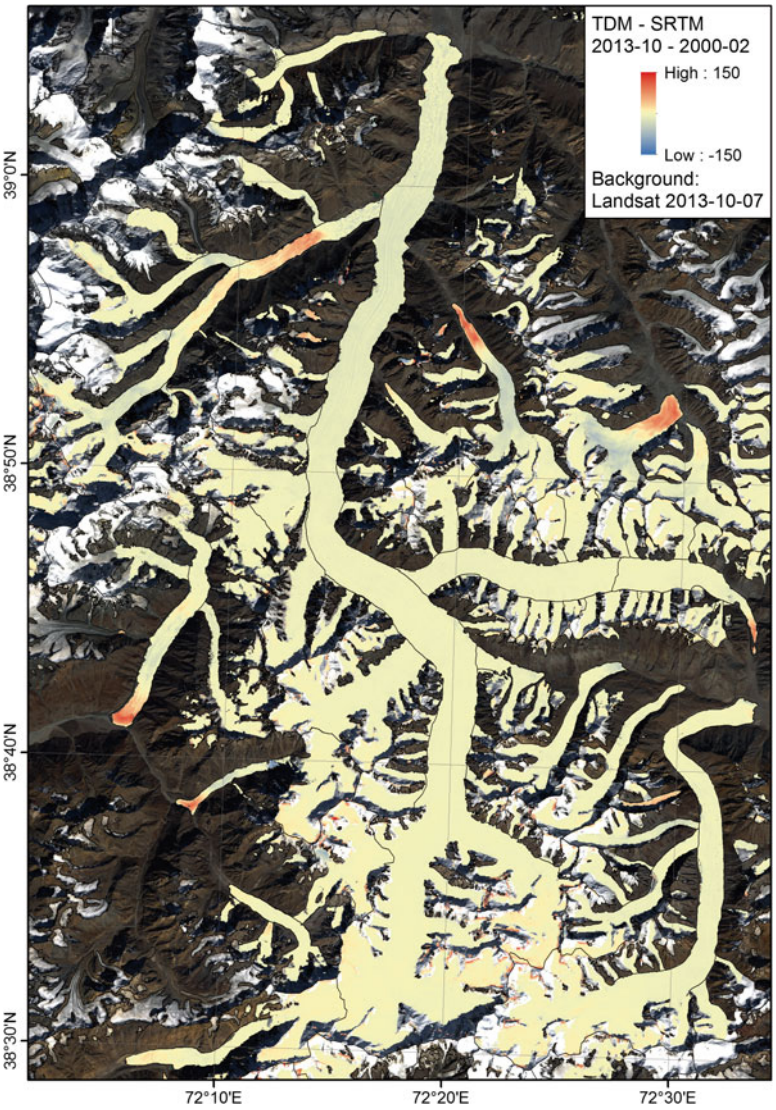

Fig. 3 Elevation changes calculated from radar satellite information for the period February 2000–October 2013. The visible red regions on glacier tongues show active surging glaciers in this period. Fedchenko Glacier (in the centre of the figure) shows a volume loss for regions below 4200 m elevation, while in higher regions, the glacier surface elevation increases since 2000

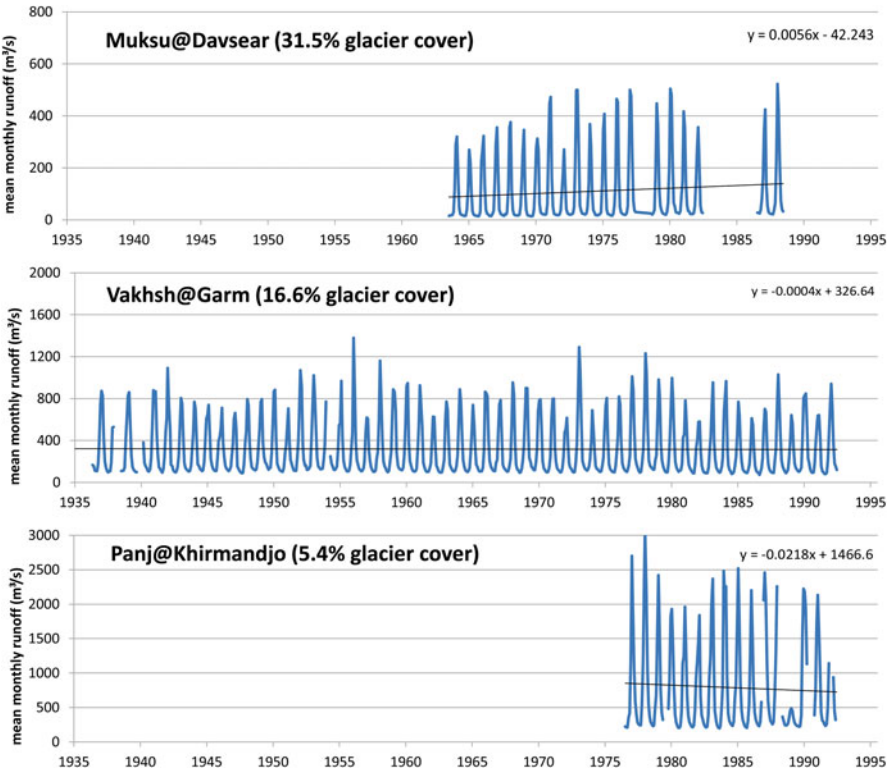

Fig. 4 Monthly runoff series of Pamir rivers with different degrees of glacierisation

and the late 1980s. The data from Vakhsh River at Garm (16.6% glacierisation), which starts in the 1930s already, shows no trend instead, and Panj River at Khirmandjo (5.4% glacierisation) reveals a slight runoff decrease from the 1970s to the early 1990s. This decline is also immanent in the Vakhsh series, if only the corresponding period (1977–1992) is considered.

Finaev (2009) analysed some of the remaining, mostly fragmentary discharge series from 1990 to 2005 and reports an average runoff increase for the Syr Darya, Zeravshan, Varzob, Vanch and Gunt Rivers of 13%.

Future Trends

Assuming a temperature rise of 1.8–2.9 °C, which seems to be realistic according to the results of regional climate scenarios until 2050 (Makhmadaliev et al. 2003), Hoelzle et al. (2010) predict a further reduction of glacier extent to 1160 km² (−68% compared to 2003) and 1887 km² (−45% compared to 2003) in the Panj and Vakhsh catchments, with ice volumes reduced by 76% and 53%, respectively (Hoelzle et al. 2010).

Hagg et al. (2013) assessed the hydrological response to climate change and glacier recession until 2050 in the Tanimas river, a 4300 km^2 large and 10% glacierised sub-catchment of the upper Panj. They assumed temperature rises of 2.2 °C and 3.1 °C, which mark the extreme values of regional climate scenarios (Agaltseva et al. 2005), and extrapolated glacierisation by a simple parameterization scheme into the future. Modified climate and glacierisation served as input to a hydrological model to identify changes in the water balance and in the seasonal water availability.

The results revealed that annual runoff will decrease only slightly by 5% until 2050, because the areal glacier reduction is almost compensated by enhanced melt rates in the warmer atmosphere (Hagg et al. 2013). A possible interpretation of the annual flow reduction is that the peak flow period, where excess runoff from glacier wastage is at its maximum, is already over in this catchment in 2050. In other words, the turning point when total glacier area recession dominates over enlarged ablation zones and intensified melt in a warmer atmosphere is passed. Since the retreat rate depends on several factors such as glacier type, size and debris cover, it varies between individual parts of the mountains and so does the timing of the aforementioned turning point. From the results of a watershed hydrological model applied in the whole Vakhsh and Panj catchments, Kure et al. (2013) expect an increase in annual streamflow until 2060 and a decrease from 2080 onwards.

Future seasonal water availability at Tanimas river is shifted towards the early melt season, creating a surplus of water (+15–100%) in May–June and a shortage (−18–34%) in July–September (Fig. 5). This general pattern was also confirmed for the entire Pamir by Kure et al. (2013).

The runoff increase in spring and early summer is caused by an earlier and more intense snowmelt. In July, the glacier area depletion in the two scenarios overcompensates enhanced melt rates due to warming, resulting in lower runoff values compared to the period with observations (1980s).

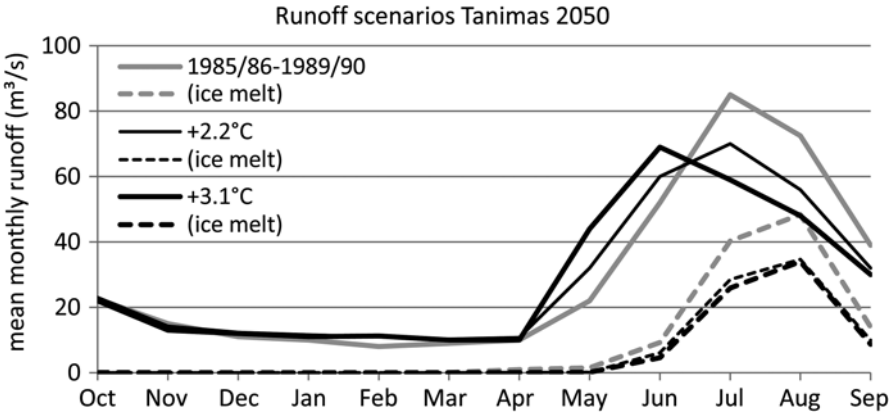

Fig. 5 Baseline and future scenarios for Tanimas River. Total runoff (*solid lines*) and ice melt (*dashed lines*) at the basin outlet (Rukhk hydrological post) are displayed (Reprinted from Global and Planetary Change, Vol 110/part A, Hagg et al. 2013, p. 62–73, with permission from Elsevier)

The mean shares of glacial runoff at the basin outlet, calculated as ice melt minus evapotranspiration of melted ice, are 21% (+2.2 °C) and 24% (+3.1 °C).

Conclusions

The expected runoff reduction in July and August will raise major problems for agriculture and drinking water supply. Irrigation capacities are already limited by summer streamflow, and a further decrease will sharpen the situation in the lowlands. Furthermore, evapotranspiration losses in the downstream regions will be significantly higher than in the headwaters, which will further shorten water availability during the growing season. The trans-boundary character of the Amu Darya requires multilateral planning of adaption and impact mitigation strategies to secure the livelihood of the population.

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Khans, Kings, Communists, Warlords and Presidents: Afghan Kirghiz Socioeconomic Strategies for Extorting and Extracting from the State

Ted Callahan

Abstract The Afghan state, for most of its existence and in its various forms, has attempted to exert sovereignty over the whole of its territory while constrained by its limited ability to directly administer unproductive, marginal areas. The political history of the Kirghiz of the Afghan Pamirs illustrates how this core-periphery model of state control has affected local governance. The resources controlled by the state as well as the state's willingness to expend them in the Pamirs have resulted in new forms of political capital for Kirghiz leaders to exploit. In the post-Taliban period, a highly centralized government in Kabul, supported by huge amounts of international assistance, has offered unprecedented incentives for active cooperation with the state in exchange for patronage. In response, Kirghiz leaders have come to depend on access to external rather than domestic resources to maintain their influence. Declining levels of international aid to Afghanistan will render this system increasingly unstable and threaten to undermine Kirghiz strategies for negotiating with the state.

Keywords Encapsulation • Patronage • Kirghiz • Pamirs • Afghanistan

Introduction

Marginality is often a central characteristic of highland populations living in nation-states with historically weak central governments, poor transportation and communication infrastructure, limited regional integration and difficult terrain. In Afghanistan, such marginality has historically been most pronounced in the political relationship between core and periphery, with the state exerting nominal authority over the whole of its territory while concentrating its hold on the productive, surplus-generating areas. The resulting political geography mirrored the terrain: fertile

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valleys and river basins where the state exercised continuous authority surrounded by vast stretches of deserts and mountains where government presence was at best occasional. This uneven core-periphery dynamic has also affected state-society relations through the encapsulation and cooptation of local authority structures by the state and the response of communities to state penetration. The accommodation of the relative presence or absence of formal government institutions on the part of local communities has been most apparent in the political sphere, where the underlying goal has been to minimize state interference while maximizing the benefits derived from interaction with the state.

Because until quite recently the Afghan state was fundamentally extractive, collecting taxes and conscripting soldiers, there were few benefits to be had from interacting with it. The main service provided by the state was the implicit Hobbesian bargain in which the state, acting as Leviathan, would provide a check on banditry and massive violence. Under such a system, avoidance was the most sensible strategy, and marginality became an advantage, since it meant that the state had limited interest and ability to project its authority into the hinterlands. So long as the minimal demands of sovereignty were met, state interference was likely to be limited. The benefits enjoyed by favoured marginal communities often reflected this contract: rather than receiving services, such communities were granted exemptions, whether from taxes, conscription or both.

There were minimal costs associated with the avoidance strategy that archaeologist Louis Dupree termed ‘the mud curtain’, in which ‘The village builds a ‘mud curtain’ around itself for protection against the outside world, which has often come to the village in the past. Sustained relations with the outside world have seldom been pleasant, for outsiders usually come to extract from, not bring anything into, the village’ (1980:249). This calculus has changed over the past 14 years, as the new post-Taliban Afghan state has been thrust into the role of service provider by virtue of having resources and at least a professed desire to distribute them among the population. Following the overthrow of the Taliban in November 2001, a huge state-building endeavour, flush with international money, commenced. As the neo-patrimonial Afghan state developed, local leaders, who had formerly been responsible for keeping the government out of community affairs, were now expected to attract the attention of the government and other actors, including non-governmental organizations (NGOs), in the expectation that resources would follow. Suddenly, the proven strategy of avoidance now entailed more costs than benefits, at least in those places where an increased government presence did not increase the threat of insurgent violence.

State-Society Relations: The Kirghiz Experience

The nearly century-long relationship between the Kirghiz of the Afghan Pamirs and the various permutations of the Afghan state offers an example of these shifting state-society dynamics in historical context. Following the Russian Revolution of

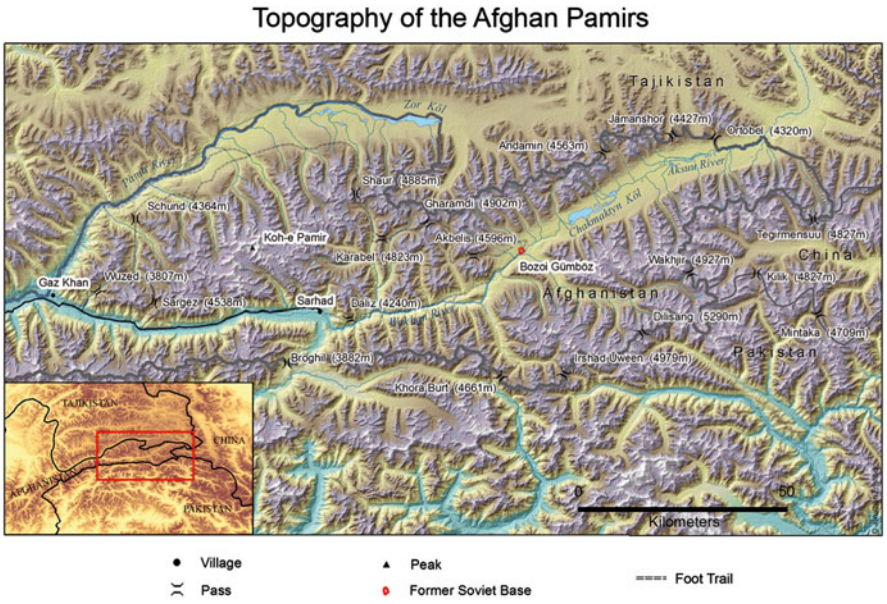

Fig. 1 The topography of the Wakhan-Pamir region

1917 and the eventual sealing of the border between Afghanistan and the Tajik Soviet Socialist Republic (SSR) by the late 1930s (Bliss 2006:195), as well as the Chinese Revolution of 1949, the nomadic Kirghiz were restricted to their summer pastures in the Afghan Pamirs (Fig. 1). Fenced in by international borders, the Kirghiz responded to the challenges of 'closed frontiers nomadism' (Shahrani 2002:170)—losing access to their winter pastures and cut-off from their traditional markets in Soviet Central Asia and Chinese Turkestan—through a number of adaptations. The collective Kirghiz response to these new conditions, in addition to various economic reorientations (Callahan 2012:74), also necessitated political accommodation with the Afghan state.

These political accommodations have continued into the present day, a result of Afghanistan's torturous modern history, in which there have been six different types of government: two emirates (1901–1919, 1919–1926), four monarchies (1926–1929, 1929, 1929–1933, 1933–1973); a republic, headed by a strongman prime minister (1973–1978); four communist regimes (1978–1992); civil war, involving a weak formal presidency, a theocracy and widespread warlordism (1992–2001); and a highly centralized presidency (2001–present). During two of these periods, 1979–1989 and 2001–present, Afghanistan has been occupied by foreign military forces (the Soviet Union and the UN-mandated International Security Assistance Force, or ISAF, respectively).

The year 1978 divides Afghan Kirghiz political history into two periods. Prior to 1978, Kirghiz relations with the government in Kabul had been managed by their khans, who were mainly concerned with minimizing state encapsulation. In 1921,

General Mohammad Nadir Khan, the future king of Afghanistan, visited the Pamirs as King Amanullah's Minister of War and exempted the Kirghiz from conscription (Reut 1979:172). In the 1950s, the Kirghiz khan, Haji Rahman Kul, had a fortuitous encounter with another Afghan monarch, King Mohammed Zahir Shah, during a hunting trip to the Pamirs by the latter. In lieu of dispatching troops, Zahir Shah entrusted Rahman Kul with securing this sensitive border region, just as his father, Nadir Khan, had entrusted Rahman Kul's father three decades earlier. Even after Zahir Shah was overthrown by his cousin, Sardar Mohammad Daud Khan, in 1973, little overt change occurred in the Kirghiz's relationship with the state despite the loss of their patron.

However, on 27 April, 1978, the Saur Revolution put into power a communist government led by the People's Democratic Party of Afghanistan (PDPA), shattering the modus vivendi between the Kirghiz and the Afghan state. Fearful of repercussions owing to their long enmity with Soviet forces just across the border in the Tajik SSR, as well as concerns related to the secular nature of the PDPA government, 1330 Kirghiz (out of a total population of 1825), including Haji Rahman Kul, fled to Pakistan. Those who remained in Afghanistan, as well as the 300 who returned from Pakistan over the next 2 years, led by a man named Abdul Rashid, were at least able to profit from a contrived narrative of having rejected their 'feudal khan' in favour of socialism (Akhmedzyanov 1978).

A second major disruption occurred in May 1980, when Soviet forces occupied the Afghan Pamirs, effectively usurping the role the state economically and politically. The Soviet troops offered not just exemptions but also tangible aid, in addition to providing a ready venue for trade. Subsidized flour and other commodities were exchanged at favourable terms for Kirghiz livestock and livestock products. Kirghiz leaders, such as Abdul Rashid, acting as liaisons between the Kirghiz community and the Soviet forces, were also granted preferential treatment, such as advanced medical care in Tajikistan. The heavy military presence, including armour and artillery, limited any leverage the Kirghiz might have in their dealings with the Soviets, as the Kirghiz were powerless to threaten them in any way. Despite dubious claims that the Kirghiz khan, Abdul Rashid, 'had played a delicate game that involved…secretly channeling provisions and logistical support to the Afghan mujahedeen' (Mortenson 2009:359), the Kirghiz were in fact more than happy to cooperate with the Soviets, and today the Soviet occupation is recalled as a time of peace, security and relative prosperity.

For the Kirghiz, the Soviet occupation simply continued their earlier bargain with the Afghan state: in exchange for not causing trouble, they would receive benefits but would otherwise be left alone. However, the encapsulating military presence also incentivized active Kirghiz cooperation with the state, especially for the politically ambitious, who now had an alternate route to gaining positions of status and authority somewhat independent of their personal wealth: '…an encapsulated society (such as a tribe) will not be unaffected by its contacts with the encapsulating society… These contacts will provide access to various kinds of new resources which can and will be drawn on by tribesmen in their various intra-community and intra-tribal social, economic, and political struggles' (Salzman 1971:333).

The Soviets withdrew from Afghanistan in 1989, and in 1992 the anti-Soviet mujahideen overthrew the PDPA government. Civil war among the various mujahideen factions soon followed. Beginning in 1994, the Taliban movement arose in the south and spread north, taking over Kabul in 1996. During this entire period, most of Badakhshan Province, including the Pamirs, was controlled by various warlords, many of them former mujahideen: 'These local warlords dispensed justice, maintained the law and order, and crucially fought the communists and Taliban regime. It is the latter function that allowed them to maintain their legitimacy. The role of the warlords, however, did not extend only to security matters. Through their control of territory they became involved in the economy, controlling trading routes, levying taxes and benefitting from illegal activities, such as the opium trade. They also confiscated governmental land which they distributed to their clients and subordinates. In the absence of the state, and under the guise of the Jihad against the communists and the Taliban, many warlords gradually extended their control over all spheres of public life' (Orsini 2007:46).

Lacking much of a government with which he could liaise and draw resources, Abdul Rashid Khan was primarily concerned with minimizing any harm the Kirghiz might suffer at the hands of the poorly disciplined sub-commanders and their men, who became notorious for 'looting or seizing control of resources…Others found their livestock herds subject to predation by commanders and so rapidly reduced their herds' (Pain 2010:10–11). By establishing and maintaining contact with the more senior commanders, Abdul Rashid was at least able to avoid the more serious repercussions faced by the neighbouring Ismaili communities, many of which had actively supported the Soviets and the PDPA government against the same mujahideen who now controlled Badakhshan.

The overthrow of the Taliban and the centralization of reconstruction efforts, including the state-building project, in distant Kabul, created something of a dilemma for the Kirghiz. Like many marginal communities in Afghanistan, they were more adept at keeping the state out of their affairs that they were at soliciting aid and assistance from it. But the international resources flooding into Kabul were unlikely to make it up to the Pamirs without some effort on the part of the Kirghiz. Additionally, since Badakhshan had never been conquered by the Taliban, the system of local commanders, many of them predatory and incompetent, wielding political power and effectively acting as the government remained largely unchanged. Working through them to reach Kabul was likely to prove ineffective at best so the Kirghiz sought to bypass this impediment by establishing direct links with the highest levels of the state in Kabul.

First arriving in Kabul in 2003, the Kirghiz discovered that there was no shortage of marginalized communities contending for governmental assistance, many of which had suffered far worse than the Kirghiz during the civil war and Taliban period. In reaction, the Kirghiz adopted a simple strategy of narrating, and often exaggerating, their plight: the lack of infrastructure (especially roads, clinics and schools) in the Pamirs, the incredibly harsh environmental conditions, the high levels of maternal, infant and child mortality and the rampant warlordism in Badakhshan. The apparent severity of their circumstances, together with their ethnographic

celebrity (the Kirghiz are one of fourteen ethnic groups specifically mentioned in the 2004 Afghan constitution as comprising the Afghan nation and have been the subject of numerous books, films and magazine articles), set them apart from other supplicants.

The result, over time, was that the Kirghiz received attention and resources far beyond what would be expected given their population size, their marginal location and their overall lack of importance as an Afghan polity. Kirghiz leaders established a direct line to the Afghan president, Hamid Karzai, as well as with various ministers, influential members of parliament and officials at the provincial and district level. A Kirghiz was appointed to the Meshrano Jirga, or upper house of parliament (also known as the Afghan Senate), holding one out of a total of only 102 seats. They have received considerable attention (and some resources) from at least seven NGOs and international organizations, including significant food aid provided since 1998 and which, in 2005, was increased to nearly half a year's worth of food for most households. They also have had two healthcare workers as well as 11 teachers working in the Pamirs, all provided by the state. Though many of the Kirghiz's needs are genuine and much of the assistance they receive is warranted (and too often insufficient), the degree to which they have marshalled support, with minimal reciprocal obligations, is astounding, considering that they are one of the numerically smallest (0.004% of the total Afghan population), most far-flung and politically marginal ethnic groups in the entire country.

Political Capital

Kirghiz population transfers, the Soviet occupation of the Pamirs, warlordism and post-Taliban state-building efforts in Afghanistan have had far-reaching effects upon Kirghiz politics, primarily by reconstituting access to political capital. In contrast to the pre-1978 period, when it was derived mostly from pastoral wealth, political capital has been increasingly accumulated through the process of extracting and redistributing exogenous resources, via patron-client networks, by Kirghiz leaders seeking to establish, maintain, legitimize or contest political authority. Under such a system, the outside resources that a leader (or aspirant) can mobilize are more important in the context of political authority than whatever domestic assets he already possesses. Of course, these two processes are linked: without any domestic support, a leader is unlikely to find any external resources to mobilize in the first place. And a certain measure of wealth is still a prerequisite, if only to meet the hospitality obligations incumbent on any Afghan leader.

The Kirghiz khan represents the community to the outside world and is assumed by outsiders to enjoy a measure of popular backing, as well as influence (if not authority or outright power) over his constituency. For example, the letterhead and seal of Abdul Rashid Khan, stated that he was the 'Khan of the Tribes, Directorate of the Afghan Pamirs' (Fig. 2). The anthropologist Noah Coburn observed a similar dynamic at work among a community of potters, living north of Kabul, and their

Fig. 2 Abdul Rashid Khan's letterhead (*top*) and seal (*bottom*), "Khan Abdul Rashid, Khan of the Tribes, Directorate of the Pamirs of Afghanistan." The Persian year listed on the seal is 1386, corresponding to 2007–2008

representative, Malik Abdul Hamid: 'As the potters' main voice with the district governor and other outsiders, the Malik had a serious incentive to preserve group unity. Since his power came from the group, he was only as powerful as he could make the group appear' (2011:77). It is this community support—implied or, in the case of Abdul Rashid's letterhead, explicit—which comprises the leader's perceived influence, but in order to maintain it, his followers must realize some benefit as the price of their support.

Combined with other factors, this is an inherently unstable system, predicated as it is on a constant inflow of exogenous resources. The Kirghiz leader does not collect tax revenue or control productive capital but, like his nomadic predecessors, is instead engaged in a 'seemingly endless pursuit of wealth [or other resources] to redistribute as political capital' (Barfield 2010:87). It is certainly less stable than the pre-1978 system, in which the Kirghiz khan, Haji Rahman Kul, already possessed most of the resources (mostly livestock) he needed to ensure the support of his followers. Today, nearly all of the resources utilized by a khan to maximize his political capital, and thus his leadership and legitimacy, exist outside of his environment and are completely beyond his control. As a result, the entire patronage structure suffers from the possibility of sudden collapse. The only outcomes that Kirghiz leaders can really influence revolve around finding alternative, often non-state, sources of patronage, and maintaining access to state power (and thus resources) in Kabul.

Non-state Sources of Patronage

Most of the Afghan state's resources, financial and otherwise are provided by external actors (foreign countries, NGOs, international financial institutions, the United Nations, etc.), but much of the aid going to Afghanistan is not channelled through the government at all: 'International aid, which is part of a war economy, has created a *rentier* society where foreign money is considered an entitlement. In some places, people rely on foreign subsidies (of which a small part is directed at infrastructural development) distributed by…international bodies. Far from appeasing social tensions, this has created high expectations, growing discontent, and a great deal of local jealousy between communities' (Dorronsoro 2009:17)

Because the state does not have a monopoly on the redistribution of patrimonial resources, groups such as the Kirghiz have found alternative sources from which they can seek patronage. For example, during the civil war, Abdul Rashid Khan's political role increasingly involved reaching out beyond the commanders and the Afghan government to various aid agencies. This aspect of his leadership became crucial from 1998 onwards, as the regional economy had collapsed and the Kirghiz were struggling just to subsist, especially since wheat had become scarce and expensive due to supply disruptions caused by the conflict (Norwegian Afghanistan Committee 1995:9). With Badakhshan increasingly besieged by the Taliban, the Kirghiz found an unlikely source of assistance: Focus Humanitarian Assistance (FOCUS), an NGO, affiliated with the Aga Khan Development Network, specializing in emergency relief across the Afghan border in the Gorno-Badakhshan Autonomous Oblast of Tajikistan.

FOCUS' efforts drew the notice of the Kirghiz and in 1998 Abdul Rashid appealed to them for assistance. FOCUS conducted a survey of both Pamirs in August to September 1998 and began an initial food distribution of 35 kg flour per person, brought overland from Tajikistan, that same year. FOCUS provided food relief to the Kirghiz for six more years, until 2004. In 2005, the United Nations World Food Programme (WFP), which had funded FOCUS' efforts, took over food distribution directly following a visit by the WFP country director to the Pamirs. The seeming desperation of the Kirghiz made an impression upon the country director, who instructed the WFP office in Badakhshan to make preparations (collecting demographic information, establishing distribution systems, etc.) for a fall delivery, just before the onset of winter.

The WFP food aid to the Kirghiz was initially drawn from their contingency stock of emergency food aid, which is intended to be used in the event of natural disasters or other acute crises that carry the risk of starvation. These emergency food rations, intended to prevent starvation, were designed to feed one household for 1 month and consist of one 50 kg bag of wheat flour, 3.7 kg of vegetable oil, 6 kg of pulses (usually yellow split peas) and 0.5 kg of iodized salt. The Kirghiz received 3 months of rations entirely gratis. But because the population numbers for segments of the Kirghiz community were so inflated (by 186%, in some cases), most households received more than 5 months' worth of food aid (Fig. 3).

Fig. 3 WFP food aid distribution to the Kirghiz. Sarhad-e Broghil, Wakhan district, September 2006 (Photograph © Ted Callahan)

In 2005 and 2006, the justification for emergency food assistance to the Kirghiz was based on a combination of drought, resulting in poor pasture conditions, and livestock losses. By 2007, WFP officials were seriously considering implementing a food-for-work (FFW) programme for the Kirghiz, in which a member from each household would need to work 21 days to receive 1 month's ration. However, according to a WFP official, 'the issue has been politicized in Kabul' and the Ministry of Rural Rehabilitation and Development, together with Karzai's office, pressured WFP to distribute it again as aid rather than FFW. And when WFP suggested suspending food aid to the Kirghiz in 2008, due to surging demand nationwide in the face of skyrocketing food prices, the Kirghiz again mobilized their patrons in Kabul. A government delegation visited the WFP office in Kabul and told them to find a way to continue supplying the Kirghiz, stating 'Make it your priority'. Essentially being coerced into provisioning the Kirghiz led one WFP regional director to bemoan, 'For the Kirghiz, food aid is not an emergency. It's more like an obligation'. According to this official, the Kirghiz are the only population in the entire country who receive emergency food aid as humanitarian assistance according to a scheduled annual delivery.

One reason that WFP wanted to make food distribution to the Kirghiz based on reciprocal obligations was because they realized that the Kirghiz had manipulated the programme to their advantage. For example, one WFP survey estimated that

there were 338 Kirghiz households (the Kirghiz claimed that there were 438 households; the actual figure is closer to 235), a figure obviously inflated in an effort to get additional food supplies. Nor is the excess of food aid the sole issue. Because all of the legumes and much of the cooking oil that the Kirghiz receive are exchanged for other goods (including opium), critics of the programme have described it as akin to an opium subsidy (Schaller 2004:16).

A Direct Line to Kabul

Although NGO patronage has been an important source of political capital for Kirghiz leaders, the Kirghiz also believe that the state's presence, in whatever form, will be more enduring than that of the NGOs, which is why they continue to concentrate their efforts on Kabul. For them, NGOs offer less a hedging strategy than an opportunistic source of patronage: '…the goods and services the international community provided, and the stability they created, were never reliable enough to be perceived by residents [of Istalif, a town near Kabul] to constitute a viable alternative to the state' (Coburn 2011:137).

Following the reestablishment of central authority in Afghanistan after 2001, the Kirghiz, like many other ethnic and solidarity groups in Afghanistan, sought to establish direct relations with the national government. Because provincial and district officials do not control substantial resources, in part because they lack the ability to raise revenue locally and so are dependent upon the national government for their budgets, local leaders realized that their parochial interests would be best served by direct appeal to the powers in Kabul.

The first two Kirghiz missions to Kabul, in 2003 and again in 2004, were only marginally successfully, and neither one resulted in a meeting with the president. In February 2005, after waiting at a government guesthouse for several months, they were finally able to get an audience with Karzai. This first meeting, occurring on the grounds of Karzai's palace, the *Arg-e Shahi*, where various local leaders and supplicants were offered an irregular, informal audience with the president, was witnessed by Jon Lee Anderson, a journalist writing for *The New Yorker*:

Karzai noticed a Mongol-looking elderly man who had stood up, and urged him forward. The man had been sitting quietly with several companions, all of them wearing high tasseled fur hats and long black leather boots with their trousers tucked in, Cossack style.

The old man introduced himself as Abdul Rashid, the khan of the Small Pamir… He said that he and his companions had waited 3 months to see Karzai, and it had taken them 4 weeks to reach the capital from their village; they had made much of the journey on foot.

'There are no roads where I live,' the khan explained. 'I am thinking that the Afghan government has forgotten us.' There were no schools or hospitals, or policeman to guard the frontier against smugglers or terrorists. After several years of drought, his people had little food. He was ashamed to say it, but they were also afflicted by opium addiction, and needed clinics.

Karzai interrupted him. 'Don't worry. I am going to arrange food—I will send you back with food on helicopters,' he said. 'You will not go home without a solution to your problems. We will arrange what documentation is needed for the clinics, and we will get you your food'. (Anderson 2005:66)

The presence of the Kirghiz at the *Arg* that day was possible mainly thanks to the assistance of Alhaj Fazal Azim Zalmai Mujaddadi (aka Zalmai Khan), an influential figure from Badakhshan who had become a close confidant and trusted lieutenant of Karzai. In the early 1990s, Mujaddadi had spent 3 weeks living with the Kirghiz, which allowed him to witness first-hand the challenges they faced:

It was August and even then it was really cold…The Pamiris [Kirghiz] live really remote from one another—families are 2 and 3 km apart. I asked why the population was so small and not increasing, and they told me it was because 80% of their babies died before tasting their mother's milk. They have no doctors to guide them, no health care. (quoted in Anderson 2005:70)

Upon hearing that Mujaddadi had joined Karzai's government, the Kirghiz sought him out in the hope that he would broker an introduction to the president and assist them in lobbying for support in Kabul. In the transactional world of Afghan politics, it was an obvious move, since Mujaddadi's position in Kabul and his closeness to the president, in addition to his familiarity with the Kirghiz, made him the ideal patron; as Anderson (2005:70) noted, 'The Pamiris [Kirghiz] seemed to have tapped some dormant sense of feudal responsibility in him'. ('They look to me,' he [Zalmai Khan] said.)

Following their audience with Karzai, the Kirghiz eventually received several truckloads of supplies, consisting of clothes, food, medicine and other items. The relative success of this mission—the Kirghiz met the president, were granted audiences with and received promises of assistance from various ministries, and eventually were given a considerable amount of aid—set the stage for future endeavours. It also made clear that since the locus of power was in Kabul, the road to success for any politically ambitious Kirghiz lay outside of the Pamirs and was largely dependent upon access to the central government. The major gate-keeper in this regard was Zalmai Khan and a relationship with him became *de rigueur* for anyone looking to accrue political capital by acting as a middleman between Kabul and the Pamirs.

The Politics of State Patronage

Because patronage and corruption 'within the ranks of the Afghan government, in fact, [have] functioned as the glue that holds Karzai's base of support intact' (Hess 2010:184), the careful allocation of patrimonial resources is one of the most important decisions facing state actors intent on maintaining and/or expanding their influence. An obvious question, and one of great significance for the Kirghiz's ability to extract resources from the state in the future, is why anyone in Kabul would expend valuable, limited governmental resources on them.

The first, and least cynical, possibility is that Karzai actually cares about the Kirghiz. This interpretation accords with the public persona of being a khan that Karzai likes to project, which requires him to demonstrate concern (often over local, trivial matters) and act charitably towards his constituents, in a personal rather than a bureaucratic manner. Holding court at the *Arg*, listening to various supplicants plead their case and personally instructing his assistants and ministers to address the problem, which usually involves the redirection of patrimonial resources, are all hallmarks of a khan.

Another explanation is that the Kirghiz offer Karzai an image of the ethnically inclusive, pluralistic government that he wants to project, one free of the tensions increasingly extant between the main ethnic groups. The Kirghiz are also (in theory) an excellent demonstration piece for the expanding writ of the central government and its effectiveness in providing basic services for the people of Afghanistan. For example, in a 2008 interview with the Chicago Tribune, Karzai stated that: 'While this is the first time in the history of Afghanistan where we have a government that has reached more than half of Afghanistan's nearly 40,000 villages. This is the first time in the history of Afghanistan where you have gone as far as the Pamir mountains of Afghanistan with a mobile clinic, and health facilities and schools. This is the first time in Afghanistan where you've reached the farthest parts of the country with roads. This is the first time in Afghanistan where your health services have gone beyond 85% of the population' (Barker 2008).

In both cases, the Kirghiz provide a risk-free example of inclusivity, one largely immune from accusations of ethnic favouritism or pandering. And, since the Kirghiz are far more interested in receiving assistance than taking any sort of partisan stand, they can be counted to reciprocate for any aid they receive by voicing support for the government.

A third reason harkens back to the Afghan political tradition of co-opting remote and marginal areas and using the population there as proxies rather than providing any sort of direct administration and services, what anthropologist Thomas Barfield calls the 'Swiss cheese model of the polity' (Barfield 2010:68) in which the goal was 'to control the best bits themselves, and leave at arm's length territories deemed unprofitable to rule or of little strategic value' (ibid). According to this logic, the Kirghiz offer an inexpensive and readily available means of securing a distant border region, in contrast to the difficulty and considerable expense that would be involved in garrisoning regular forces there. Additionally, by remaining in the Pamirs, the Kirghiz presence deters any ideas of annexation that neighbouring countries, most notably Pakistan, might entertain were the Pamirs unoccupied. For example, one reason Zalmai Khan gave to *The New Yorker* for providing aid to the Kirghiz in 2005 was that 'the insecurity of the region's border [with Pakistan], which was used as a crossing point by Al Qaeda and Uzbek terrorists, meant that the government could not afford its traditional neglect' (Anderson 2005:70).

A Last Migration for the Afghan Kirghiz?

On their part, the Kirghiz appear to believe that the last reason is the most likely one. At least they hope so, since it is central to their negotiating strategy with Kabul. Abdul Rashid, as well as many other Kirghiz I interviewed, believed that the threat of 'voting with their feet' was a trump card they held in their demands for greater assistance from the central government. During the civil war in the 1990s, given all the challenges they were facing, and with no end in sight, the Kirghiz began to consider yet another exodus from Afghanistan. The Kyrgyzstani government had made contact with the Afghan Kirghiz in 1996 as part of an outreach programme to the Kirghiz 'diaspora' in China, Tajikistan, Uzbekistan, Afghanistan and Turkey (IRIN 2001). By offering them inducements to repatriate to Kyrgyzstan, the Kyrgyzstani state hoped to tilt the demographic balance in favour of the titular nationality. It was also hoped that these immigrants could be settled in depopulated areas, including the southwest, where Tajikistani and Uzbekistani irredentism was feared (Schuler 2007:79–80). The difficult and oppressive situation in Afghanistan convinced a number of Kirghiz to formally request repatriation, which Abdul Rashid did in 1999 (Kreutzmann 2000).

Although the repatriation scheme eventually foundered and the Kirghiz remained in Afghanistan, it did give them the idea that they could, at any time, simply emigrate en masse. They understand that if all or most of their community were to decamp from the Pamirs for China or Kyrgyzstan (the two most commonly cited destinations), its main impact would be to undercut the Afghan state's multiple narratives—Karzai as a caring man of the people, a government increasingly effective at providing basic services, an ethnically all-inclusive state—and force the government to replace the Kirghiz emigrants with other inhabitants as well as border forces. The departure of several hundred colourful nomads astride their horses and yaks, with thousands of livestock in tow, would be big news—and a public relations disaster for Kabul. Even if the Kirghiz don't appreciate this, Karzai does, and while he most likely does not count it as at all probable, it costs him relatively little to prevent it from happening in the first place, by acceding to some of the Kirghiz's demands for aid.

The idea of repatriating the Afghan Kirghiz also generated popular interest in Kyrgyzstan about the plight of their ethnic brethren trapped in Afghanistan, and a small but vocal and politically savvy number of Kyrgyzstanis have dedicated themselves to bringing the Afghan Kirghiz home. One such group is Kyrgyz Butagy, a Bishkek-based NGO that has visited the Afghan Pamirs and produced a short video[1] highlighting the many difficulties faced by the Afghan Kirghiz. Although easily dismissed as a quixotic, insignificant initiative, 'in a country where ethnic identity, linguistic nationalism and patriotic fervour have grown stronger since ethnic violence in 2010, the question of relocation is easily politicized, and Kyrgyz-language media coverage of the diaspora in Afghanistan is emotionally charged' (Rickelton 2012).

[1] http://www.youtube.com/watch?v=qZT_8rnUwvk

The efforts of Kyrgyz Butagy and various Kyrgyzstani politicians have already resulted in some small but tangible benefits for the Afghan Kirghiz, including several deliveries of aid from Kyrgyzstan. Kyrgyzstan's Ministry of Labour, Employment and Migration formally requested the Afghan government to open, on the Tajik border, 'four checkpoints to allow [Afghan] Kyrgyz compatriots to sell products from livestock operations and buy necessary manufactured goods, communicate with their relatives and the outside world [sic]' (Karimov 2011). More recently, in February 2014, the Kyrgyz Republic opened an embassy in Afghanistan, and according to the Kyrgyzstan Foreign Ministry, 'Humanitarian aid for the ethnic Kyrgyz of Great and Small Pamir was discussed among other issues. Afghanistan supported all Kyrgyz initiatives' (AKIpress 2013).

This international support for the Kirghiz is valuable primarily in terms of extracting development aid from the Afghan state by lending credibility to their threats to emigrate. As Afghanistan continues to fade from international (and the media's) consciousness, it is probable that not only will the Kirghiz lose what limited attention and assistance they currently receive from the Afghan state and various NGOs but that what they consider their trump card, the threat of emigrating, will prove to be of little value. The assumption the Kirghiz make is that the Afghan state wants them to remain in the Pamirs would be greatly embarrassed by their departure and thus is willing to offer them various incentives to stay there. But faced with more existential concerns, the state might decide that another Kirghiz exodus is not worth pre-empting, which would shift the onus onto the Kirghiz to make good on their threat.

Besides undercutting what little, and constantly diminishing, leverage they have with the Afghan government, such a response would force them to actually make some tangible effort to emigrate, which, regardless of their intended destination, is not likely to be either quick or painless. The last thing that China wants is a sudden influx of 1150 Muslims into Xinjiang. Tajikistan, a failing state, is hardly prepared to absorb a large number of dependent refugees. Kyrgyzstan would probably welcome the Afghan Kirghiz but would most likely want to locate them somewhere other than an urban centre and may well try to use them as pawns to establish more of a Kirghiz presence in Uzbek areas in the south, much like the Turkish government did with the Afghan Kirghiz refugees who were resettled in a majority Kurdish area in 1982. If there is a 'last migration' for the Afghan Kirghiz (Denker 1983:89), no one knows where it will be.

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Changes in the Relationship Between Borders and Pastoral Mobility in Mountain Regions of Central Asia

Andrei Dörre

Abstract For centuries, animal husbandry in Central Asian mountain regions has been characterised by seasonal mobility over considerable distances, bridging remarkable elevation differences and commuting between precolonial states and domains. During the Russian colonial rule and the socialist period, pastoral movements across the borders of the newly created colonial administrative units and the Soviet Republics were also not uncommon. In the course of the establishment of independent states in 1991, a break occurred that strongly restricted the transboundary mobility practices. Using examples from the Fergana Region, this chapter reconstructs historical demarcation patterns and the underlying interests of those in charge who advocated changes while also looking at the effects of those changes on mobility practices of the affected livestock owners. Finally, the paper compares the current border regimes and those from the historical examples and links to related socioecological challenges, which can represent serious threats to the fragile integrity of Central Asia's post-Soviet societies.

Keywords Pastoralism • Socioecological challenges • Fergana • Colonialism • Planned economy • Post-Soviet Central Asia

National Independence: An Obstacle for Transboundary Pastoral Mobility in Central Asia?

Central Asia's rangelands represent a resource with marginal value for agronomic valorisation, which for centuries were mainly used by pastoralists as seasonal grazing grounds for livestock farming purposes. The extensive resource utilisation strategy for the rangelands was characterised by spatial mobility related to the uneven spatiotemporal distribution of the basic livestock farming production factors – water

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and plants suitable as animal fodder – as well as people's responses to diverse societal processes such as adaptation to changing market relations or escaping from armed conflicts and unwanted tax collections. In this regard, mobile pastoralists historically traversed not only remarkable distances and covered notable altitude ranges between their winter camps that were often located in valleys, lowland steppes and deserts and the rich summer pastures in Central Asia's high mountain belt. Many of them also repeatedly commuted between land under different political domination such as the Emirate of Bukhara, the Khanate of Khiva and Kokand and their subordinated dominions and administrative units. Although the sociohistorical conditions were very different, pastoral movements across the borders of the newly created administrative units also took place during the Russian colonial rule and during the Soviet period. In this regard, historical Central Asia can be seen as a widely interwoven region with permeable boundaries.

Against this background, the independence of the Central Asian nation states achieved in the course of the dissolution of the USSR in 1991, and their following dissociation from each other, represents a remarkable break. Manifold conflict-ridden obstacles from the local micro level up to the regional, macro level were generated by the new state boundaries and restrictive border regimes (UNDP RBE-CIS 2005). The lacking political willingness to compromise and the exclusionary character of the legislations of the newly independent post-socialist countries for natural resources such as forests, water and pastures are fuelling the new competition for resources (e.g. FLU 1999: Art. 4; WCT 2001: Art. 5; PLK 2009: Art. 3). Transboundary conflicts about water are commonly known but are only one of the several long-standing resource-related challenges in the region (ICG 2014; Bernauer and Siegfried 2012; The Economist 2012). Others are relatively unfamiliar. For example, awareness of border-related rangeland problems is comparatively less widespread. Though, the altered features of the post-Soviet political-administrative borders, in combination with pasture-related legislation, appear to be challenges that have far-reaching negative implications for the pastoral performances and their outcomes in the whole region.

First, the specific relationship between boundaries and pastoral mobility will be sketched. The paper will look at the shifts in this relationship in the course of fundamental social transitions by focussing on the respective rationales and effects of border demarcation and pasture territorialisation processes in colonial and Soviet times, as well as the effects of these measures on mobility practices of the affected livestock owners. Finally, post-Soviet developments will be contrasted with the historical examples and the findings related to current pasture-related socioecological challenges, which in the medium- and long-term represent threats to the fragile integrity of the post-socialist societies in the Central Asian Region.

Spatial Boundaries and Pastoral Mobility: A Tricky Relationship

The specific relationship between spatial boundaries and pastoral mobility on marginal rangelands has been addressed by both geographers and social scientists for decades. It arises from the boundaries' character of being potentially barriers for

mobility practices on the one side. On the other side, the ability of being mobile as a response to the generally insecure supply of the basic production factors in the course of their uneven spatiotemporal distribution, as well as diverse societal processes such as violent upheavals, armed conflicts or changing market relations is vital for pastoralists. Only a few studies that focus on this tense relationship will be mentioned here for illustration. One is a study by the American geographer Owen Lattimore, who showed that in the Asian context, the pastoralists' ability to be flexible in spatial terms and to procure reliable agreements on temporal land utilisation should be recognised as the central assets for utilising marginal grassland resources:

> No single pasture could have any value unless the people using it were free to move to some other pasture, because no single pasture could be grazed continuously. The right to move prevailed over the right to camp. 'Ownership' meant, in effect, the title to a cycle of migration. (Lattimore 1951:66)

The Afghan anthropologist M. Nazif Shahrani published research in 1979 on the adaptation strategies of people living in Afghanistan's Wakhan to the challenges of closed frontiers and war. He showed that the grade of permeability of borders has remarkable influences on pasture utilisation. Years later, and with a larger geographical focus, the German geographer Hermann Kreutzmann (2011) studied the effects of boundary making and other external interventions on pastoral practices in Central Asia's high mountains, especially the Pamirs. The British anthropologists Caroline Humphrey and David Sneath (1999) analysed shifts in mobile livestock farming in the course of collectivisation, state border delimitation and post-socialist transition in Mongolia, northern China and Russia's southern Siberia. They were able to show that even if the natural conditions in the region of 'Inner Asia' are relatively similar the pastoral mobility patterns differ remarkably due to the diverse organisational forms of livestock farming in the three countries.

In this chapter, boundaries are studied from a deconstructive perspective as social constructions and spatial institutions. From this critical point of view, practices of boundary making and the related processes of identity creation are closely connected to questions of power, domination and control over territory (Newman and Paasi 1998:188; Kreutzmann 2008:202). Colonial, Soviet and post-Soviet bordering processes are discussed using examples from the Fergana Region to expose the respective hidden ideologies, assumptions and interests of the respective powerful actors in charge. The study region with the densely populated intramountainous Fergana Basin at its centre – commonly labelled as the Fergana Valley – is historically characterised by a centuries-long relationship between mobile and sedentary populations. While the grasslands of the surrounding mountain ranges of Chatkal and Fergana of the western Tien Shan in the basin's north and of the Alai in the south were predominantly used by the mobile population for extensive animal grazing, the sedentary population practised intense land cultivation on wide irrigated areas at the bottom and river valleys of the basin. The close relationship comprised of both partially destructive competition over land resources and political power and constructive divisions of labour and collaboration in the fields of trade and exchange (Batrakov 1955:118). Nowadays, the region is divided between the three post-Soviet sovereign states of Kyrgyzstan, Uzbekistan and Tajikistan.

‘Containment of Chaotic Land Use’ under Russia’s Colonial Rule

Before Russia conquered the Fergana Region in 1876 and included it as a subdivision into its Governor-Generalship of Turkestan, Fergana was ruled by the Khans of Kokand (Curzon 1889:313–381; Terent’ev 1906; Holdsworth 1959:5–8). Since the rulers of Kokand were constantly threatened by external enemies such as the Emir of Bukhara and internal enemies, the maintenance of armed forces and loyal supporters within the societal elite was crucial (Weljaminov-Sernjow 1857; Schuyler (1876) [2004]:1–60). This was impossible without the ability to collect taxes and to claim compulsory military services from their subordinates. Both did not happen automatically but had to be enforced through tax collectors, the so-called *zakatchi*, at the least possible cost. The taxes for pasture utilisation were calculated based upon the amount of animals a pastoral household had (Kun 1876:441; Ploskikh 1968:108). While the usage rights for winter grazing areas, which often were located on cultivated lands after harvest, were often formally documented by the rulers or other sedentary land owners, the utilisation of summer pastures was much more dependent on cooperation, custom and informal agreements between the pastoralists themselves (Troickaya 1955; Dörre 2014:207). Since delimited boundary lines between administrative subdivisions hardly existed in precolonial times, the summer segments of the annual mobility patterns were much more flexible in time and space. In this respect, the pastoralists’ ability and necessity to be mobile in spatiotemporally flexible cycles aggravated the tax collection campaigns. Since the success of tax collections at the summer camps in the mountains that were far and difficult to access was much less secure and predictable, the tax collectors tried to conduct tax collection mostly in the early spring at the lowland winter camps after the cubbing season, when the calculation base was particularly high (Emel’yanov 1885:139; Ploskikh 1968:109–110). The pastoralists’ mobility patterns were far more affected by the availability of water and fodder plants and the capability to procure reliable formal and informal agreements on land utilisation rights for animal grazing than by the khanate’s permeable political boundaries and barely existing internal administrative borders between the territorial subdivisions (Fig. 1).

Additionally, the decisions of pastoral groups to move and spatiotemporal migration patterns were considerably influenced by differing levels of acceptance of the need to pay taxes to the authorities.

The conditions changed radically in the course of Russia‘s conquest of Central Asia in the second half of the nineteenth century, which was seen by the colonisers as a ‘project of modernity’ (Baberowski 1999:482) and a ‘mission civilisatrice’ (Hauner 1989:1), especially towards people practising a mobile way of life. The Russian Minister of Foreign Affairs and confidential adviser to the Tsar, Prince Gorchakov, gives a colourful example of this missionary and power hungry ideology in a circular from November 21, 1864:

> The position of Russia in Central Asia is that of all civilized states which are brought into contact with half-savage nomad populations possessing no fixed social organization. […]

Fig. 1 Central Asian Dominions, mid-nineteenth century (Based on Dörre 2014: XV; ShOSK 1841; Lyusilin ca. 1880; Holdsworth 1959; Pierce 1966; Kreutzmann 1997; Bregel 2003; Gorshenina 2009a, b)

> the tribes on the frontier must be reduced to a state of submission. (English translation cited in Krausse 1900:224)

Since the logic of spatiotemporal, flexible animal husbandry contradicted the modernist logic of ruling clearly defined spatial entities and spatially fixed people, the colonial administration branded the flexible and undocumented pasture utilisation practices as being 'unregulated' and 'chaotic'. The colonial missionary discourse on nomads was spread and fuelled by articles published in popular newspapers and journals such as the 'Turkestanskiya Vedomosti':

> Of course it is not possible to see the nomadic economic production in any way than as being a rest of the former uncivilised state of the people. And, in the course of the development and the growth of the population such a chaotic land use has to be transferred into an accurate and sound system. (VG 1910:78, translated by A. Dörre)

Therefore, it is not a surprise that Russian rulers introduced a new system to administer land resources and property rights, the local people and their economic activities. The dominion of Kokand became part of the *oblast'* (province) Fergana, which comprised several spatially delimited *uezdy* (districts) and *volosti* (administrative subdivisions) (Fig. 2).

Mobile pastoralists were forcefully organised as community groups (*volosti*) and communities (*auly*) within the new container-like administrative system. They were

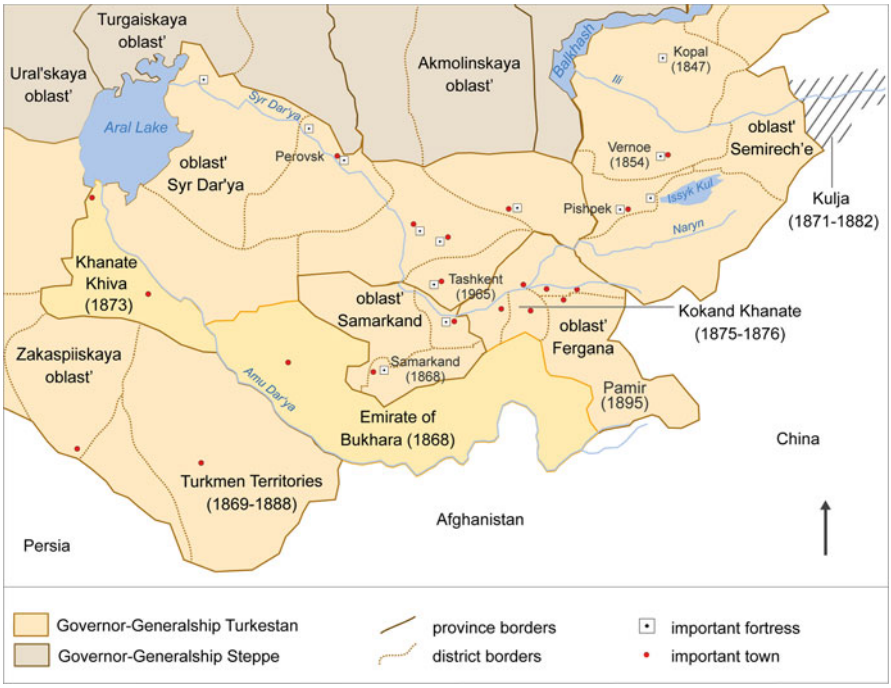

Fig. 2 Colonial Administration in Central Asia, end of nineteenth century (*time of conquest in brackets*) (Based on Dörre 2014: XVI; ShOSK 1841; Lyusilin ca. 1880; Holdsworth 1959; Pierce 1966; Kreutzmann 1997; Bregel 2003; Gorshenina 2009a, b)

entitled to only use areas within one district, which were specifically allocated to them, and the annual spatiotemporal grazing cycles had to be adjusted with the authorities. For the first time in southern Central Asia, such regulations were legally codified within an administrative act – the decree 'On the Administration of the Turkestan Province' (PUTK 1886: Art. 255, 270, 272). For example, within the newly created Fergana Province, with its diverse and new internal administrative boundaries, pastoralists using winter grazing grounds located at the basin's floor within the Karakalpak Steppe and cultivated lands with crop residues of the Kokand and Skobelev Districts were officially not allowed to visit the summer pastures of Osh, Andijan and Namangan Districts any more (Fig. 3).

Several rationales can be identified for this strategy. The first was a continued motivation to collect taxes at the lowest possible cost. In this regard, the newly created administrative system and supervised mobility patterns were a means to serve the specific tax interests of the new rulers. They were also seen as effective mechanisms for the control of mobile pastoralists and their practices, which were both judged as threats to the colonial project. The spatial organisation would also initialise the sedentarisation of the pastoralists for the same reason. Finally, supposedly 'free' land plots (*izlishnie zemli*) were to be identified for the colonisation by Slavic farmers (Dshokhovskii 1885:89–92). In this regard, the member of the

military district council Colonel Mikhail Nikitich Nikolaev commissioned by the governor-general von Kaufmann to investigate the precolonial legal regulations on land stated already in 1868:

> [A]fter the consolidation of our power it is necessary for the division of agricultural lands, to weaken and to eliminate the tribal custom […]. (cited in Savickii 1963:20, translated by A. Dörre)

The whole approach would prove to be problematic. The organisation of the pastoralists within spatially fixed communities and community groups with formalised land-use rights contradicted the naturally fluctuating availability of water and fodder plants and the requirements of livestock farming practices, which are characterised by flexible mobility.

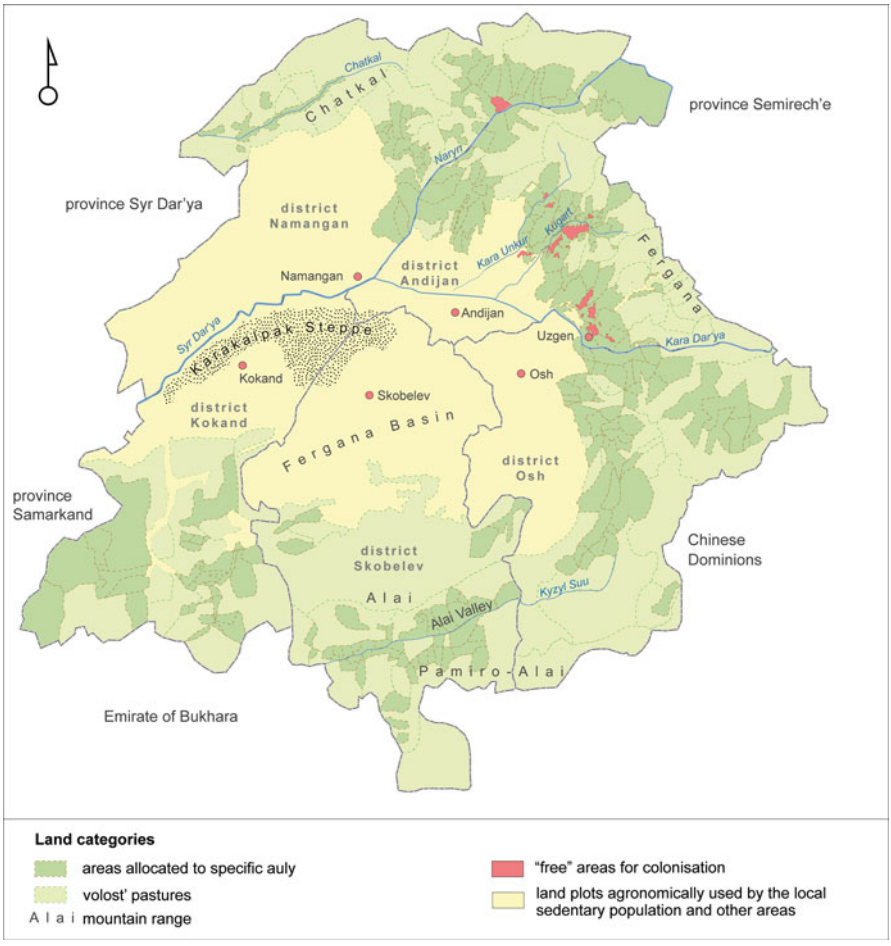

Fig. 3 Colonial administrative system and land categories in the Fergana Province (Based on Dörre 2014: XVII; GUZZ PU 1913a, b, 1915)

Additionally, the new concept disregarded the established social relations and mutual dependencies between distinct pastoral groups and the resulting importance and potential of pasture use-related solutions achieved through negotiations (CARU I– 1/11/783; Jacquesson 2010:105–111). Therefore, many pastoralists continued to utilise grasslands in traditional pattern. For example, a Russian land tax commissioner complained years after the introduction of the new legislation that some pastoralists were still using the pastures of the Alai Valley according to old patterns by crossing administrative boundaries, which was not approved by the new rulers (cited in Ploskikh 1968:84). Mobile pastoralists from Fergana and other provinces continued to commute between winter and summer pastures, passing district, provincial and even state boundaries (Kushelevskii 1891:26–28, 38; GUZZ PU 1913c:42–43, 58–59). Additionally, colonial land confiscations, and the subsequent fencing of land plots fuelled the rivalry between pastoralists and the new settlers for scarce land resources. As a result, violent conflicts repeatedly occurred with the colonial administration and with Slavic settlers, such as in the Andijan District of the Fergana Province or the Kuramin District of the Syr Dar'ya Province (G 1885:121; Baldauf 2006:187). Boundaries, clearly delimited territories and exclusionary land titles obviously appeared to be hindrances for flexible movements and pasture use. Against this background, the establishment of borders and spatial fixation of pastoralists can be interpreted as an instrument of control and power that was only partially successful when looked at from a colonial perspective.

'Nationalisation of the Means of Production' and Planned Economy in Soviet Times

Years later, in the course of the establishment of the socialist regime in the Soviet Union after the October Revolution in 1917 and the end of the civil war in 1922, the Marxist-Leninist-Stalinist ideology postulated a supposedly universal paradigm of development stages for human societies beginning with the primeval stage and ending with communism. The early decades of the Soviet Regime were characterised by several notable political campaigns of change. The *razmezhevanie* process of the delimitation of national republics in 1924–1927 was seen as one of the first of several necessary steps towards socialism. In this regard, the Fergana Basin was divided between the Uzbek Socialist Soviet Republic, the Tajik Autonomous Socialist Soviet Republic and the Kara-Kirgiz Autonomous Province. The latter two gained the status of proper Soviet Republics in 1929 and 1936, respectively.

The national delimitation was complemented by the well-known campaigns of forced sedentarisation and collectivisation of mobile pastoralists and farmers during the so-called 'reconstruction period' of the national economy in the 1920s and 1930s. Similar to during colonial times, mobile pastoralism was repeatedly branded by the advocates of the socialist model as being a 'primitive' and 'stone-age' (*pervobytnyj*) mode of economic activity that had to be replaced by a scientifically based livestock production (Vorobeichikov and Gafiz 1924:112; SREDAZGOSPLAN 1932:103–104). At the same time, it was acknowledged that the uneven spatiotemporal

distribution of water and fodder plants demands specific adaptation strategies. Therefore, 'nomadism as way of life' (*bytovoe kochevanie*) was replaced by a so-called production-oriented nomadism (*proizvodstvennoe kochevanie*), where only professional shepherds accompanied the animals seasonally, while other household, community and enterprise members stayed at the newly created collective and state farms year-round (Malabaev 1982:145).

The social transitions during the early socialist era cannot be understood without taking into consideration the overarching ideological pillars of the Soviet model. The pivotal political leitmotifs were as follows: the central role of the communist party in planning, leading and conducting societal development; and the socialist – ergo national and collective – proprietorship of the means of production and infrastructure and a centrally planned economy.

These concepts were reproduced within the Soviet pasture sector: According to the constitution, land, and consequently also pasture areas, was defined as a national and collective property and, therefore, couldn't be private property (C-USSR 1936: Art. 5 & 6, 1977: Art. 11). Corresponding regulations were fixed in the respective land codices of the Soviet Republics (e.g. LCKSSR 1971: Art. 4). Planning commissions assigned, and partially occupied, by the communist party allocated clearly demarcated agricultural lands, forested areas and rangelands to collective (*kolkhozy*) and state-run agricultural (*sovkhozy*) and forestry (*leskhozy*) enterprises and supplied them with exclusive unlimited utilisation rights. Since the fulfilment of the plan was the priority, the production-related details were predetermined by planning commissions and farm administrations, including the compositions and sizes of the herds, the spatiotemporal mobility patterns, and the grazing duration and intensity on the pastures, as well as the feeding and vaccination schedules for the stable season in winter. Carrying capacities of the seasonal pastures were calculated for each individual farm by geo-botanical experts and were documented within 'geo-botanical pasture evaluations'. This information together with 'fodder botanical maps' formed the basis of the annual grazing cycles of the respective farms (e.g. KIRGIZGIPROZEM 1983a, 1984; Interviews AN 2008; ChO 2008; TM 2008).

As a result of the national delimitation in the Fergana Basin, the seasonal pastures were unevenly distributed between the Soviet Republics spatially. While the majority of the winter pastures was located in the lowlands belonging to the Uzbek SSR, large parts of the regional spring, summer and autumn pastures could be found in the foothills and the mountains of the adjacent Kyrgyz SSR and Tajik SSR (Fig. 4). One might suspect that the new borders prevented the transboundary mobility of the herds of the socialist agricultural farms. However, since the fulfilment of the top-down production plans for each enterprise was of crucial importance to the national economy, the state provided the *kolkhozy* and *sovkhozy* with perpetual entitlements over clearly delimited pasture territories irrespective of which specific republic, province or district they were part of (C-USSR 1936: Art. 8, 1977: Art. 12; KIRGIZGIPROZEM 1983b). Consequently, the state secured the officially approved spatiotemporal livestock mobility patterns of the *kolkhozy* and *sovkhozy*, which were the main users of agricultural land in the USSR. At the same time, the state gave support to ensure the usage of remote pastures. Thousands of animals comprising the herds of the Uzbek SSR-based collective farms, for instance, could commute

without being hindered by republic, provincial or district borders between the more than 2,500 km^2 of winter pastures; the over 5,500 km^2 of spring-autumn pastures and the close to 11,000 km^2 of summer pastures of the Fergana Basin (AN Uzbek SSR et al. 1951:11–12; UZGIPROZEM 1965; Fig. 4). Tajik SSR-based *kolkhozy* used selected grassland parcels of the western part of the Fergana Basin, which were located in the Uzbek SSR and the Kyrgyz SSR, respectively (AN Tajik SSR and SIPS 1968:161; Robinson and Whitton 2010:203, 204).

The demarcation of pasture territories and their allocation to distinct enterprises was seen by the Soviet Regime as an instrument to be used to systematise the utilisation of the nationalised means of production, and in doing so, to assure the success of the socialist project. Instead of political and administrative borders, top-down introduced policies and decisions held the greatest importance for socialist livestock production practices. The pastoral mobility patterns of the farms were primarily determined by the production output specifications of the superior planning commissions and the approval of the annual mobility cycle schemes created by the respective regional 'Councils of People's Deputies'. These schemes, developed by geo-botanical experts, were generally based on specific features of the distinct pasture territories, such as the seasonal utility and productivity of edible biomass. The shepherds employed at the farms were obliged to follow these specifications and to fulfil the plans provided by the planning commission (Interviews AA 2007; NS 2008; TM 2008). Contrary to the huge flocks of animals of the *kolkhozy* and *sovkhozy*, private households were generally allowed to possess only a small number

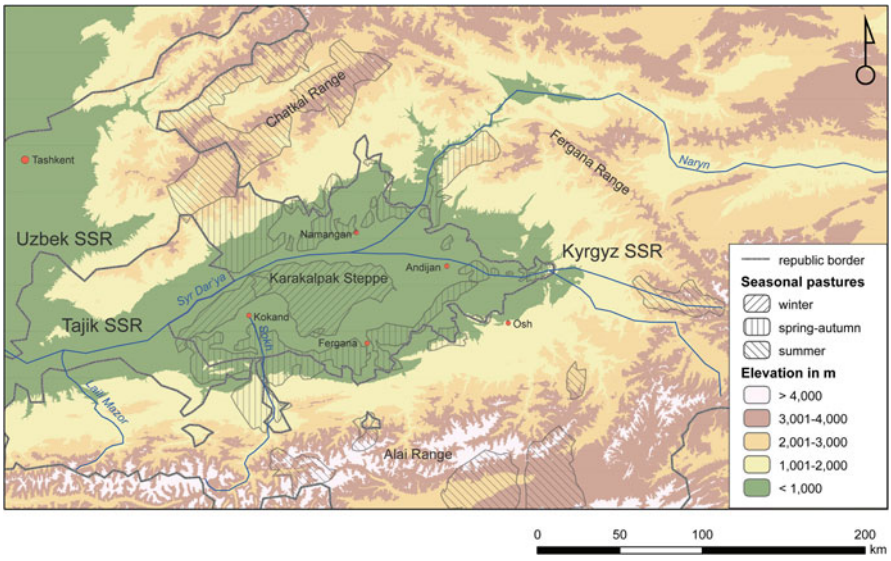

Fig. 4 Republican borders in the Fergana Region and seasonal pastures of Uzbek SSR-based *kolhozy*, as in the 1950s and 1960s (Based on Jarvis et al. 2008; AN USSR et al. 1951: 11–12; UZGIPROZEM 1965)

of animals, and independent mobile pastoralism was mostly suppressed, with violators punished (GAOZh 461/1/1: 3-3v, 462/1/48: 1–2; Interviews AA 2007; NS 2008; TM 2008).

Contemporary Suppressed Transboundary Mobility

The social transition caused by the dissolution of the USSR in December 1991 was directly connected to the decline of the central political power and ideology, as well as the command economy with all its institutions, restrictions and directions. Despite this, revived transboundary activities are not visible in the Fergana Region. This is not surprising, since the newly created borders between the former Soviet Republics had become international militarised fortifications, partially secured with fences, barbed wires and mines. Complemented by harsh visa regulations, the restrictive border regimes significantly aggravated the transboundary economic and social relations and mobility prospects of the people (UNDP RBE-CIS 2005; Kreutzmann 2011:188). Beyond the conflict-laden water-energy nexus, the dissociation of Central Asia's post-socialist states also remarkably narrowed the opportunities to sustain pastoralist production systems based on transboundary mobility, even if formal agreements between the successor were placed (e.g. GKR 1992). This seemingly antagonistic development becomes particularly clear in the case of the historically integrated Fergana Region, where several border-related pasture conflicts have happened since 1991 (Fig. 5).

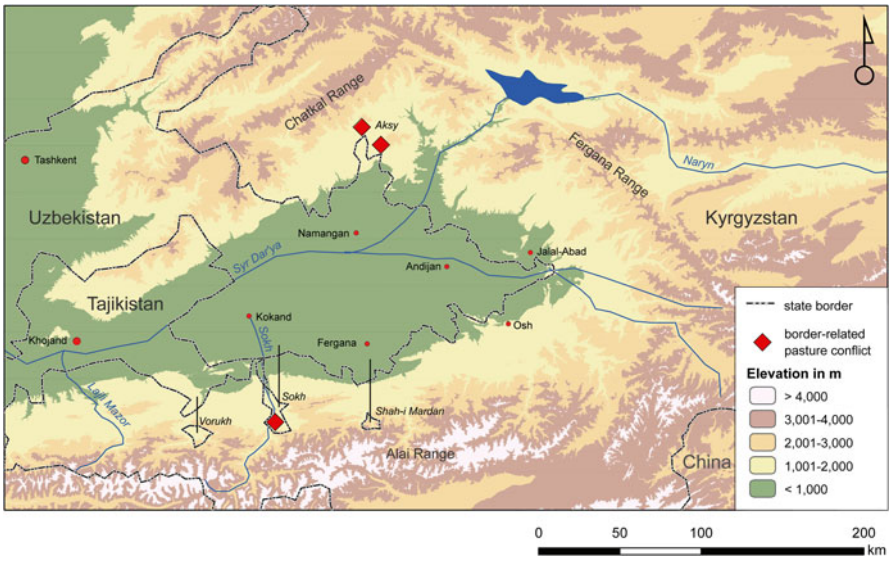

Fig. 5 International boundaries in the Fergana Region and location of selected border-related pasture conflicts after 1991 (Based on Jarvis et al. 2008, and sources mentioned in the text)

In April 2014, the news agency AKIpress reported the latest violent outbreak over a long-lasting transboundary conflict between the inhabitants of Sokh, an Uzbek exclave in Kyrgyzstan, and citizens of Kyrgyzstan living in the surrounding areas. The topic of the yet unsolved conflict is the restricted access to grasslands on Kyrgyzstan's territory, which had been used by the inhabitants of Sokh for years as a summer pasture and on which they rely economically (AKIpress 2014). In 2010, this conflict had already developed close to an international military skirmish between the two countries (Fergana.ru 2010; Dörre 2012: 230). Another cross-border pasture rivalry exists in the Aksy Rural Municipality of the Jalal-Abad Oblast' between citizens of Kerben, a Kyrgyz settlement, and inhabitants of Uzbekistan's Namangan Region (Urumbaev 2004). These examples are neither a complete list of recent pasture-related social conflicts nor of other pasture problems in the Fergana Region. They should instead be seen as evidence that the new sovereignty of Central Asia's states represents a hindrance for transboundary pastoral mobility.

Several factors contribute to the circumstance that today there is hardly any transboundary pastoral activity detectable. The problem can be explained partially by the structural shortage of financial and physical assets of the individual farmers, as well as the bad condition of the technical infrastructure – especially roads and bridges, since the realisation of annual migration can be pretty cost-intensive. Lacking expert knowledge and qualified staff also contributes to the problem. However, the problem of the continuous dissociation of the former Soviet Republics from each other seems to be much more important. In this regard, growing nationalism can be seen as being a specific form of 'othering' (Spivak 1985), which with reference to natural resources leads directly to the expulsion of non-citizens from the utilisation of 'national' resources. In such a setting, state borders are an effective tool of spatial exclusion.

Conclusion: Effects and Risks of Resource-Related 'Othering' Strategies

Despite large differences between the colonial and the Soviet examples, there are some specific commonalities. First, although Central Asia's colonisation and the establishment of the socialist regime took place under dissimilar sociohistorical conditions and were informed by differing ideologies, both approaches were grounded in certain modernisation theory-based rationales. A central aspect of modernisation ideologies is a specific form of 'othering': the assumption of binary opposition between the 'own,' supposedly higher developed society, and the 'other,' ostensibly backward counterpart. In this sense, mobile pastoralism was assessed by both the colonial and the socialist leaders as a manifestation of backwardness *par excellence* and as a threat to the colonial and Soviet projects, respectively. The dispossession of the affected pastoralists from their ability to make autonomous decisions regarding their independent spatiotemporal mobility and economic activities seems to be a disciplinary technique to disempower and control these people. In both cases, the adopted measures can be seen as external and top-down directed

interventions, which took place without any appreciable participation of the mobile livestock owners. The colonial administration's central motivations were to secure tax income, as well as to establish an effective authority over the people and the land. The Soviet Regime tried to systematise the utilisation of the nationalised means of production to make them fruitful for the national economy. Contrary to precolonial times, when administrative boundaries played only a marginal role for pastoral practices, the demarcation of borders and pasture plots became more important, as did their allocation to certain groups, communities and farms. In colonial times, pastoral mobility transgressing administrative borders was, therefore, seen by the authorities as a violation of administrative regulations. The Soviet regime, in contrast, promoted transboundary mobility within a narrowly defined frame. Being powerful interest-driven instruments, the described measures were expected to help implement both the colonial and the Soviet Ruler's goals to categorise, formalise, legalise and control land resources and land utilisation.

In post-socialist times, nationality became a crucial category of 'othering' and mutual distinction in Central Asian Countries sharing the historically integrated Fergana Region. Uzbekistan's and Kyrgyzstan's media discourses on dangers are often loaded with narratives about threats coming from their respective neighbouring countries (Megoran 2012, 2004). Resource-related legislation excludes non-citizens from resource appropriation. State borders were exploited as spatial instruments to prevent interested parties from outside the country from obtaining access to 'national' resources.

What do these strategies of exclusion mean for the pastoral production systems of the Fergana Region's post-socialists countries that actually 'never meant to become independent' (United Nations coordinator for south Kyrgyzstan, Bruno Decordier, cited in Makarenko 2001:24)? Closed borders and the exclusion of people from pasture appropriation on the base of their national affiliation leads to a reduced seasonal mobility and promotes the overexploitation of accessible pastures and their consequent ecological damage. Ecological damages, notably degradation, which means a 'substantial decrease in either or both of an area's biological productivity or usefulness due to human interference' (Johnson and Lewis 1995), endanger the fulfilment of the ecological functions of grasslands and intensifies the man-made shortage of rangeland resources. Logically, this process stimulates the emergence of pasture-related conflicts. At this point it becomes clear how a critical social process can be connected to ecological problems. The relationship between boundary making, pastoral mobility and the unintended environmental impacts is a socio-ecological challenge, which in the medium and long term can represent serious threats to the fragile integrity of the Fergana Region.

Interview Partners

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AN (2008) A. Nozhiev, Former director of the *kolkhoz* "60 Years of October" (Bazar Korgon District), Interviewed 10 Oct 2008

ChO (2008) Ch. Olokbaev, Former livestock technician of the *kolkhoz* "22. Party Congress" (Bazar Korgon District). 21 Oct 2008
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Seasonal Pasture Use and Vegetation Cover Changes in the Alai Valley, Kyrgyzstan

Jie Liu and Teiji Watanabe

Abstract This chapter discusses the relationship between seasonal grazing activities and changes in the vegetated area (1990–2013) in the eastern Alai Valley, Kyrgyzstan. The results of interviews with local inhabitants showed that the study area is classified into three types of pastures based on seasonal use: (1) spring and autumn pastures (SA-type pastures) located in the western part of the study area, (2) summer pastures (S-type pastures) located in the centre of the study area and (3) all-season (except the snowfall period) pastures (A-type pastures) located in the east part of the study area. The normalised difference vegetation index (NDVI) value derived from Landsat satellite imagery has been used to analyse changes in vegetation cover during the post-Soviet era. The map showing changes in the distribution of vegetation cover indicates that some degraded pastureland has been recovered from 1990 to 2013. Moreover, vegetation cover remained relatively stable in SA-type and A-type pastures from 1990 to 2013, because more than 70% of these two pasture types presented no change. Great amount of densely vegetated area increased in A-type pasture (38.4%). The vegetation cover of SA-type pastures increased, primarily due to the plantation of winter fodder (rye). The decrease amount in the entire area is not noticeable (1.3%). Vegetation cover mainly decreased on S-type pastures (2.1%) and near the main river across the entire area. This result may be due to higher grazing intensity in these areas. S-type pastures had the highest grazing intensity, with these pastures being characterised by the highest percentage of overgrazed slopes (53.8%) and the lowest percentage of slopes without terraces (34.6%). SA-type pastures had the lowest grazing intensity and were characterised by the lowest percentage of overgrazed slopes (29.5%) and the highest percentage of slopes without terraces (60.0%). Compared to the other two pasture types, the use of S-type pastures exerted a more negative influence on the sustainability of vegetation cover.

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Introduction

To make use of variation in pasture resources and climate at different altitudes, inhabitants of high mountain areas with severe climatic conditions preferentially use pastoral practices for livestock grazing. As a result, there is seasonality in the use of pastures located at different altitudes. Previous studies have investigated factors that influence different types of seasonal pastures, worldwide. For instance, the effects of seasonal grazing activity on plant species diversity and vegetation structure were studied in a semiarid region of east Africa (Metzger et al. 2005). The effects of summer grazing by caribou on the composition and productivity of vegetation (community and landscape level) were analysed in the Torngat Mountains of Canada (Manseau et al. 1996). Pastoral activities have been practised in Central Asia since time immemorial. Since the Soviet era (30 December 1922–31 August 1991), people have grazed livestock at high altitudes by following an ascending and descending annual migratory cycle in response to climate variability. In addition to the common ascending type of pastoralism, a horizontal migratory cycle of transhumance exists in the Alai Valley, which is located in Northern Pamir, Kyrgyzstan (Shirasaka et al. 2013). Some pastures near to settlements are used year-round (except on days with snow cover) by household inhabitants, who own small numbers of livestock, even before 1991 when Kyrgyzstan won independence.

Since 1991, socio-economic changes have occurred in Kyrgyzstan, including a massive decline in the number of livestock. As a result, more households tend to graze their livestock near their settlement because of small livestock numbers, insufficient properties (motorised transport and some forms of shelters) (Kerven et al. 2006) and limited labour. Consequently, the nearby pastures have been used more intensively than before 1991. The widespread degradation of vegetation and soil on such pastures in the Pamir has been discussed by Ludi (2003).

Vegetation indices (VIs) integrate surface reflectance at two or more wavelengths to stress the special properties of vegetation. VIs derived from satellite imagery have been widely used to analyse changes in vegetation cover worldwide. Normalised difference vegetation index (NDVI) data, calculated by a nonlinear combination of red and near infrared (NIR), from Landsat with worldwide cover and 30 m resolution, have been applied to numerous vegetation studies worldwide. For instance, a study conducted in northeastern Colorado demonstrated a high degree of association between green biomass and the NDVI in semiarid rangeland (Anderson et al. 1993). The greenness vegetation index derived from Landsat TM was found to be the best for discriminating among grassland management types (Price et al. 2010). Liu et al. (2009) analysed changes in vegetation cover (1979–2005) in the mountainous areas of western Beijing (China) areas using Landsat NDVI and spectral mixture analysis (NDVI-SMA).

This study aims to delineate pasture use patterns in the Alai Valley, Kyrgyzstan, and discuss how the use of different types of seasonal pastures affect vegetation cover in this region. The NDVI, derived from Landsat imagery, was analysed to understand changes in vegetation cover under different types of seasonal pasture use in the post-Soviet period (1991–2013). The grazing intensity under different types of seasonal pasture use was examined by the grazing model (Howard and Higgins 1987). Finally, the influence of seasonal pasture use on vegetation cover was considered in relation to grazing intensity. This study also discusses the potential forces that drive variation in vegetation cover in the study region.

Study Area

The Alai Valley covers an area of 7910 km^2 and is located in the southernmost part of Kyrgyzstan (39°30′N–39°45′N, 72°00′E–74°00′E) (Fig. 1). The altitude of the valley bottom ranges from 2340 m in the west to 3536 m in the east. The Alai Valley is under continental mountainous influence, with cold winters and cool summers (average air temperature from 1963 to 2000 in January is −16.2° and in July is 10.1°) (Williams and Konovalov 2008; Gaunavinaka 2010). The annual precipitation in Sary-Tash (an urban settlement in the Alai Valley) is 45.5 mm (1963–2000) (Williams and Konovalov 2008). The predominant vegetation type is high mountain meadow steppe and mountain forest meadow steppe (Arase et al. 2013).

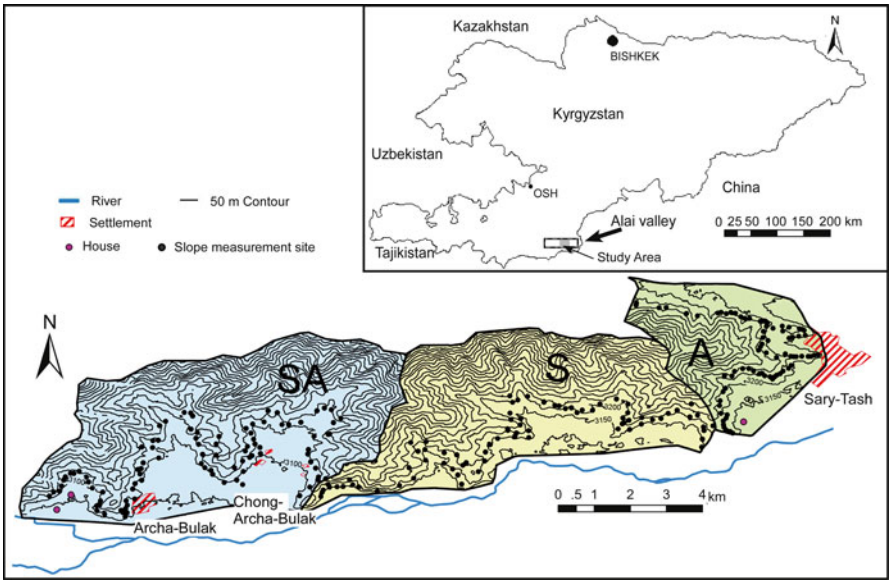

Fig. 1 Study area

This study was conducted in the east part of the Alai Valley. The study area (39°40′N–39°45′N, 72°02′E–73°15′E) covers 64.8 km^2. The main types of livestock are sheep and goats. Cows are also raised near the settlements to provide dairy products to meet local needs. The settlements of Archa-Bulak and Chong Archa-Bulak are located in the western part of the study area. Unpublished data obtained from the local administrative office showed that 82 families lived in Archa-Bulak and 10 families lived in Chong Archa-Bulak in 2013. The settlement of Sary-Tash (3170 m) is located in the eastern part of the study area. This settlement was initially constructed to house technicians, such as roadmen and electrical engineers. In 2012, Sary-Tash contained 421 households with 2287 inhabitants and 5550 registered sheep and goats (data obtained at the Sary-Tash village office). The main river, Kyzyl-Suu, is located in the southern part of the study area and serves as a water resource supporting the daily life of local households.

Data Set and Methods

Interviews

Interviews were conducted with local households and officials during the fieldwork carried out in 2011, 2012 and 2013. Interviewees were asked to describe the patterns of stock ownership, livestock number, pasture use period and annual grazing pattern. Based on the livestock information collected from the interviews and the area calculated in geographic information system (GIS), the livestock density (head/ha) on the different main types of pastures was obtained.

Satellite-Based Vegetation Index Data

Landsat 5 TM and 7 ETM, both with 30 m resolution, were selected and downloaded from the United States Geological Survey (USGS) and were used to understand changes in vegetation cover during the post-Soviet period. Landsat 5 imagery (2 June 1990) was assumed to represent the amount of vegetation cover at the end of the Soviet era. Landsat 7 ETM imagery (25 June 2013), the scan line corrector-off (SLC-off) image with gaps was assumed to represent the current vegetation cover. Because both data sets were obtained in June and are cloud-free in the study area, the vegetation cover was assumed to be comparable. The gaps of Landsat 7 ETM imagery (25 June 2013) were filled in ENVI. The data set was cut to encompass the extent of the study area and was georeferenced and preprocessed (radiometric restoration and atmospheric correction) in ArcGIS.

NDVI values were calculated as a nonlinear combination of red and near-infrared (NIR) reflectance: (NIR−RED)/(NIR + RED). The NDVI of Landsat may be calculated as (Band 4−Band 3)/(Band 4 + Band 3), due to the wavelengths of the bands in

Landsat. NDVI values range between −1 and 1. The value increases with increasing chlorophyll (in other words, vegetation cover) (Fang et al. 2004). Areas with NDVI values of less than 0 do not have any chlorophyll, indicating they are bare ground, snow-covered areas, bedrock, water or obscured by cloud. Because snow, water and cloud were not present in either image, areas with values of less than 0 were considered to be bedrock or bare ground. Areas with NDVI values of more than 0 are regarded as vegetated areas. According to the NDVI thresholds methods (Sobrino et al. 2011), the pixels can be classified into three classes: (1) $-1 \leq \mathrm{NDVI} < 0.2$, bare ground and sparsely vegetated area; (2) $0.2 \leq \mathrm{NDVI} \leq 0.5$, moderately vegetated area; (3) $0.5 < \mathrm{NDVI} \leq 1$ densely vegetated area.

Changes in vegetation cover are detected by overlapping the NDVI distribution of the two Landsat imageries. Three types of changes in vegetation cover from 1990 to 2013 were documented and classed as: (1) increase in vegetation cover, in which bare ground and sparsely vegetated areas have become moderately vegetated areas, bare ground and sparsely vegetated areas have become densely vegetated areas or moderately vegetated areas have become densely vegetated areas; (2) decrease in vegetation cover, in which densely vegetated areas have become moderately vegetated areas, densely vegetated areas have become bare ground and sparsely vegetated areas or moderately vegetated areas have become bare ground and sparsely vegetated areas; and (3) no change, in which bare ground and sparsely vegetated areas, moderately vegetated areas and densely vegetated areas have remained unchanged between 1990 and 2013.

Grazing Intensity

Grazing terraces, which form through the trampling and feeding behaviour of livestock, were examined in the field, and the data were plotted on the optimal use curve produced by Howard and Higgins (1987). Watanabe (1994) used the grazing model of Howard and Higgins (1987) to examine grazing intensity in the upper valley of Langtang Himal, central Nepal.

Slope measurement ($N = 251$) data were acquired from fieldwork carried out in 2011, 2012 and 2013. Slope measurements were conducted in the following steps: (1) grazing terraces created by livestock were identified (Fig. 2), with the absence of terraces on slopes implying insufficient grazing intensity to develop the grazing terraces on slopes, and (2) slopes with terraces were classified into overgrazed slopes and slopes that could support more livestock based on the grazing model of Howard and Higgins (1987).

For each slope with terraces created by livestock, slope distance (S) and slope degree were measured for a section (around 10–30 m) by a micro total station (TruPulse 360°B, Laser Technology Inc.), and the number of terraces was counted. The mean slope distance between successive steps (SD) was obtained by dividing slope distance (S) with terrace number (Fig. 3). Howard and Higgins (1987) used SD and slope degree to understand the degree of grazing intensity of measured slopes based on the grazing model for sheep, cattle and horses. Because the main

Fig. 2 Example of grazing terraces created by sheep and goats (Photograph © Jie Liu, 29 Sept 2013)

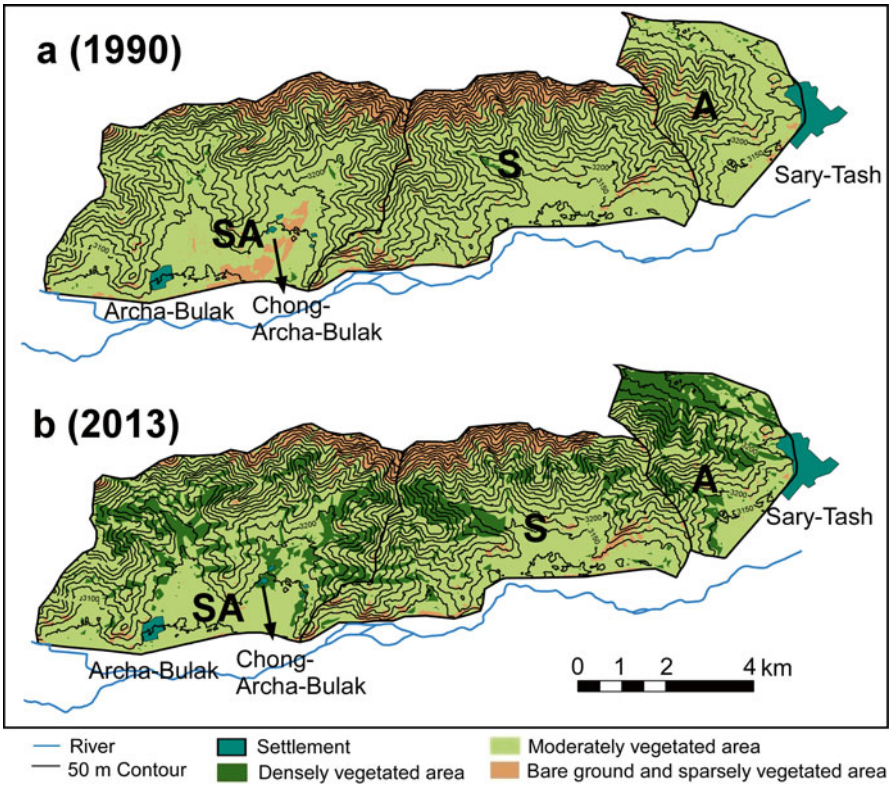

Fig. 3 Land cover classification by the NDVI values of 1990 (**a**) and 2013 (**b**)

livestock in the current study area are sheep and goats, the sheep model of the optimal use curve of SD vs. slope degree was used in the study. After adding the data of the measured slopes to the grazing model, the slopes plotted on the left side of the optimal curve were regarded as 'overgrazed' (Watanabe 1994), although the original model examined the stocking status on the right side of the optimal curve only.

GIS

The areas covered by different types of pastures were calculated in GIS based on the Landsat satellite imagery. The digital elevation model (DEM) of the study area was derived from the file of Shuttle Radar Topography Mission (SRTM), with 30 m resolution, which was downloaded from the NASA website (http://asterweb.jpl.nasa.gov/gdem.asp). The contour lines were generated from the DEM by the spatial analyst tool in ArcGIS.

Results

Seasonal Pasture Use

The interview results with inhabitants indicated that the three western basins (covering an area of 29.5 km^2) were used as spring and autumn pastures (SA-type pastures), the five middle basins (covering an area of 23.9 km^2) were used as summer pastures (S-type pastures), and the three eastern basins (covering an area of 11.4 km^2) were used as all-season pastures (A-type pastures), except on snowy days (Fig. 1). All areas were covered by snow in winter. Livestock were kept in shelters attached to the houses in winter and were fed with winter fodder of rye (*Arpa*), which is planted near the houses or bought from market.

The grazing pattern in each type of pasture is as follows:

SA-type pastures: Local households (around 94 families in 2012) had permanent settlements and lived in the SA-type pastures year-round. The households grazed their livestock, around 5736 head of sheep and goats, on the SA-type pastures in spring and autumn. To keep the livestock away from rye planted near the houses, the livestock were taken to the remote summer pastures to graze from the beginning of May until the middle of September. Because SA-type pastures are covered by snow in winter, the livestock were kept in the shelters attached to the houses and were fed rye during this period.

S-type pastures: None of the households used S-type pastures from autumn to the next spring. Livestock were grazed on S-type pastures, with users occupying the settlement in the lower altitudes SA-type pastures or the settlement located to the west of the study area around the beginning of May. Some users own permanent houses in the S-type pastures and graze livestock there every summer. Other users inhabit portable *yurts* or wagons (Fig. 4), giving them the opportunity to

Fig. 4 A wagon used by a shepherd family in an S-type pasture (Photograph © Jie Liu, 13 Aug 2011)

graze livestock elsewhere in other years. Twenty-four families with 1750 head of sheep and goats used S-type pastures in 2012.

A-type pastures: The majority of households that used A-type pastures were from Sary-Tash (around 37 families with 1106 head of sheep and goats). Moreover, one household who is from the south of the A-type pastures graze livestock (around 20 head of sheep and goats) independently. In winter, the livestock were kept in shelters attached to the houses and were fed with winter hay on snowy days.

Changes in Vegetated Cover

Landsat NDVI analysis showed that A-type pastures had the largest percentage of densely vegetated area in both 1990 (0.9%) and 2013 (39.3%). In contrast, S-type pastures had the largest percentage of bare ground and sparsely vegetated area in both 1990 (17.1%) and 2013 (13.7%) (Table 1). Vegetation cover has recovered during the post-Soviet period, densely vegetated area increasing by 20.8% over the entire area (Fig. 3a, b; Table 1). From 1990 to 2013, all three types of pastures

Table 1 The three types of land cover based on the NDVI values of different types of pastures

	Bare ground and sparsely vegetated area $-1 \leq NDVI < 0.2$ (%)				Moderately vegetated area $0.2 \leq NDIV \leq 0.5$ (%)				Densely vegetated area $0.5 < NDVI < 1$ (%)			
	SA	S	A	Total	SA	S	A	Total	SA	S	A	Total
1990	13.9	17.1	6.1	13.7	85.8	82.4	93.0	85.7	0.6	0.6	0.9	0.6
2013	7.5	13.7	1.4	8.7	72.0	72.3	59.3	69.9	20.4	14.0	39.3	21.4
Change	−6.4	−3.4	−4.7	−5.0	−13.8	−10.1	−33.7	−15.8	+19.8	+13.4	+38.4	+20.8

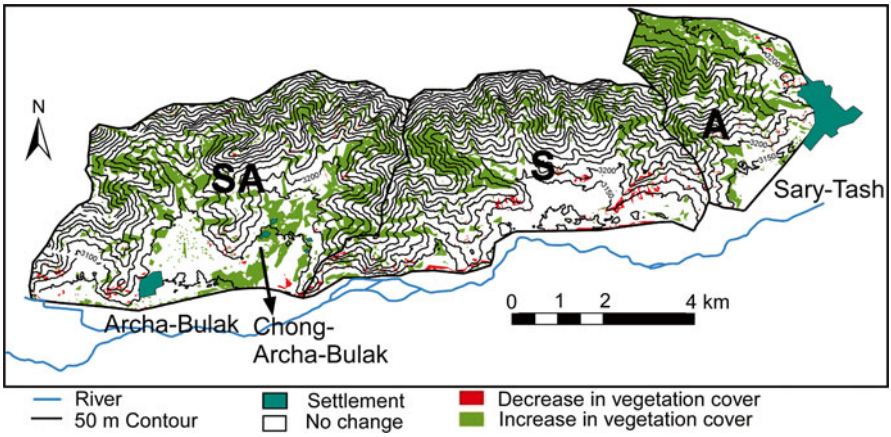

Fig. 5 Changes in vegetation cover distribution from 1990 to 2013

exhibited a similar increasing tendency in densely vegetated area and a decreasing tendency in bare ground and sparsely vegetated area and moderately vegetated area. The increase in densely vegetated area was greatest for A-type pastures (38.4%), followed by SA-type pastures (19.8%) and S-type pastures (13.4%). The smallest loss in bare ground and sparsely vegetated areas occurred in S-type pastures (−3.4%). Therefore, the change in vegetation cover was more positive in SA-type and A-type pastures compared to S-type pastures.

The change in vegetation cover was determined by overlapping the two satellite images. Of note, vegetation cover remained unchanged in over 70% of the entire study area from 1990 to 2013, which indicates that most of the area is in a relatively steady condition. Only 1.3% of vegetation cover decreased in the entire area during 23 years. Noticeable amount of vegetation cover increased in A-type pastures (42.9%). The distribution of the changes of vegetation cover indicates that most of increased vegetation cover distributes on the flat areas of SA-type pastures. Vegetation cover mostly decreased on S-type pastures (2.1%) and on flat areas near the main river across the entire study area (Fig. 5).

Analysis of Grazing Intensity

Analysis of grazing intensity showed that 45.4% of the measured slopes did not have grazing terraces ($N=114$). The grazing intensity data plots in the optimal use curve (Howard and Higgins 1987) show that 43.4% of the measured slopes ($N=109$) were overgrazed, while 11.2% ($N=28$) could support more livestock (Figs. 6 and 7). No major difference was found in the percentage of grazing intensity in the three types of pastures (Table 2). S-type pastures had the highest percentage of overgrazed slopes (53.9%) and the lowest percentage of slopes without terraces (34.6%) (Table 2). Therefore, the highest grazing intensity occurred in S-type

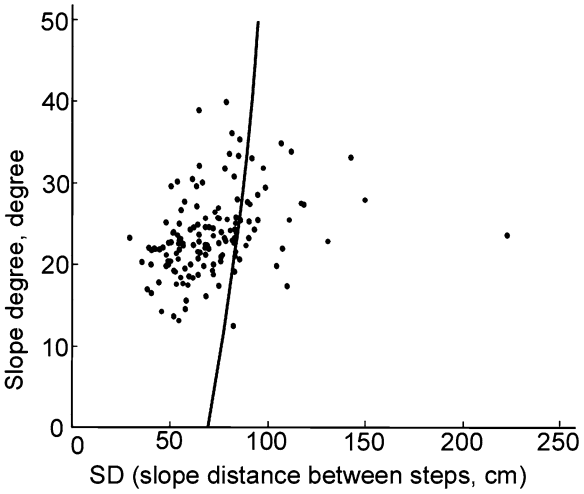

Fig. 6 Slope distance between steps (SD) vs. slope degree for the sheep-grazing slopes in the study area ($N=89$). The curve, called the optimal curve (Howard and Higgins 1987), indicates the grazing intensity of the slopes

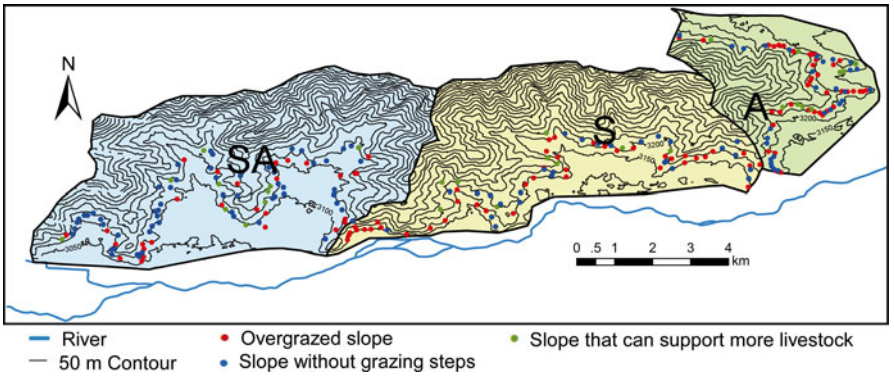

Fig. 7 Slope measurement sites and slopes that were classified based on the grazing model of Howard and Higgins (1987)

Table 2 Percentage of slopes classified based on grazing intensity ($N=251$), area (ha), livestock number (head) and livestock density (head/ha) on the three types of pastures. The number of livestock (sheep and goats) compiled from the data obtained by the interviews

Pasture type	Slopes without terraces (%)	Slopes that could support more livestock (%)	Overgrazed slopes (%)	Area (ha)	Livestock number (2012)	Livestock density (head/ha)
SA	60.0	10.5	29.5	3014	5736	1.9
S	34.6	11.5	53.9	2432	1750	0.7
A	38.5	11.5	50.0	1161	1126	1.0
Total	45.4	11.2	43.4	6607	8612	1.3

pastures among the three pasture types. SA-type pastures had the lowest grazing intensity as they had the highest percentage of slopes without terraces (60.0%) and the lowest percentage of overgrazed slopes (29.5%) (Table 2).

Discussion

Between 1991 and 2013, the densely vegetated area classified by the NDVI values increased by 20.8% (Table 1), and the vegetation cover increased by 26.7% (Table 3) in the study area, which demonstrates that some of the degraded pasture-land has been recovered during this period. This recovery is most likely to be the result of a decrease in grazing pressure due to a major decline in the number of livestock grazed during the post-Soviet period. Several previous studies stated that this vast area had become susceptible to or had already been affected by overgrazing during the Soviet era. For instance, Zonov (1974) showed that livestock rearing resulted in overgrazing and land degradation in the Soviet Union during the 1970s and 1980s. Song (2014) concluded that around 400000 sheep had been grazed in the eastern Alai Valley during the summers of the Soviet era. In contrast, the results of interviews from the current study show that less than 10000 sheep and goats are now grazed in the whole study area (Table 2). This dramatic decline in the number of livestock has probably contributed to vegetation recovery. However, the area with increased vegetation cover corresponds to the flat SA-type pastures. Large quantities of rye are planted on these flat areas (Fig. 8), so this increase in vegetation cover is attributed to rye, rather than natural vegetation.

Even the decreased amount is not noticeable in the entire area (1.3%). Figure 5 highlights that vegetation cover mostly decreased on flat areas close to the main river for all three types of pasture. Because livestock prefer grazing on land near rivers, due to the physiological dependence (Pringle and Landsberg 2004), grazing pressure from the frequent use of pastures near the main river probably caused the decline in vegetation cover. This result is consistent with that of previous research (Liu and Watanabe 2013), in which higher grazing pressure was found in the vicinity of the main river, with pressure decreasing with increasing distance from the main river in the Alai Valley.

Fig. 8 Rye (*Arpa*) plantation in an SA-type pasture (Photograph © Jie Liu, 29 Jul 2012)

Table 3 Percentage change in vegetation cover on the three types of pastures from 1990 to 2013

Change in vegetation cover (%)	SA	S	A	Total
No change	72.3	79.2	56.4	72.0
Increased	26.8	18.7	42.9	26.7
Decreased	0.9	2.1	0.7	1.3

This study identified the major characteristics of grazing intensity, in combination with changes in vegetation cover and livestock density, between 1990 and 2013. In summary, S-type pastures had the highest loss (2.1%) and smallest increase (18.7%) in vegetation cover (Fig. 5 and Table 3). Even though these pastures had the lowest livestock density (0.7 head/ha; Table 2), grazing intensity was high due these pastures containing the highest percentage of overgrazed slopes (53.9%) and the lowest percentage of slopes without terraces (34.6%; Table 2). Thus, livestock number was not the key factor driving the decline in vegetation cover; rather, it was grazing pressure from summer pasture use. This result is similar to that obtained by previous studies, which observed that the growth of grasses in pastures during summer might not be sufficient to meet the daily feed requirements of animals. Therefore, pastures are often subjected to overgrazing during the summer (Brougham 1960). Consequently, summer pasture use exerts a more negative influence on the sustainability of vegetation than other types of seasonal pasture use.

Conclusions

The study area of the eastern Alai Valley was classified into three types of pastures based on seasonal pasture use: spring and autumn pastures (SA-type pastures), summer pastures (S-type pastures) and all-season pastures (A-type pastures). This study analysed Landsat NDVI (1990, 2013) to characterise changes in vegetation cover in pastures that are grazed in different seasons. The grazing model of Howard and Higgins (1987) was used to determine the grazing intensity of different seasonal pasture use in different types of pastures.

In most of the study area (72.0%), vegetation cover remained in a stable status between 1990 and 2013. Over the 23-year period, bare ground and sparsely vegetated areas and moderately vegetated areas (classified from NDVI values) declined by 5.0% and 15.8%, respectively, whereas densely vegetated areas increased by 20.8%. This result indicates that vegetation cover has generally recovered since 1991, following the independence of Kyrgyzstan. The huge decline in livestock numbers probably contributed to vegetation recovery. The rye crops planted by local households explain part of the increase in vegetation cover for SA-type pastures (26.8%). Vegetation cover primarily decreased in S-type pastures and on flat areas near the main river, which was explained by frequent grazing activity (Liu and Watanabe 2013). Moreover, the highest grazing intensity during summer was recorded on S-type pastures, which are characterised by the highest percentage of overgrazed slopes (53.9%) and the lowest percentage of slopes without terraces (34.6%). This result indicates that summer pasture use exerts a more negative influence on the sustainability of vegetation. To understand the sustainability of vegetation in this region, future research should focus on the relationship between biomass production and pasture use seasonality.

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Diversity of Seasonal Migration of Livestock in the Eastern Alai Valley, Southern Kyrgyzstan

Shigeru Shirasaka, Feng Song, and Teiji Watanabe

Abstract This chapter is devoted to examining the diversity and dynamics of seasonal pastoralism in the Alai Valley, on the northern edge of the Pamir. The seasonal pastoralism practised in the eastern area of the valley is characterised by the coexistence of two forms: (1) vertical (ascending) grazing conducted by outsiders (average vertical movement, $V = 1053.8 - 1295.9$ m; average horizontal movement, $H = 58.2 - 102.1$ km) and (2) horizontal grazing conducted by in-valley residents ($V = 53.3 - 89.9$ m; $H = 4.4 - 16.2$ km). In addition, vertical (ascending) grazing is practised by in-valley residents ($V = 393.3 - 735.0$ m; $H = 14.1 - 22.5$ km) in the western valley. The vertical grazing by outsiders is practised between winter quarters located towards the northern part of the valley and the higher summer rangelands (*jailoo*) in the eastern valley. Outsiders possessing a use right for the pastureland bring sheep and goats to *jailoo* in late spring and stay there until late autumn. The high slopes of the mountains near the villages in the valley lack vegetation cover, while the areas on and near the valley bottom are a flat, vast pastureland. This topographic characteristic does not allow the in-valley residents to practise vertical grazing. In the western valley, on the other hand, the in-valley residents can practise vertical grazing, a condition attributed to the great altitudinal differences between summer pastures and the low-altitude villages on the valley bottom. Inequality of pastureland use was identified as a problem in the eastern valley, because the freedom to select pasture for use occurred after independence in 1991. The recently introduced system of local *Jailoo* committees has proven ineffectual in addressing the serious problem of unequal use.

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Keywords Seasonal grazing • Pastureland use • Topographic factors • Politico-economic factors • Pasture management

Introduction

The Pamir is a hot spot for pastoralism studies, and there has been a sharp increase in the number of publications produced, especially in the past decade. These studies cover issues ranging from traditional nomadic movements to ongoing transitions of pastoral practises. In the mountain pastures of the Pamir, there is vertical movement of livestock between near-village pastures and remote pastures, at different elevations, in different seasons (Ludi 2004; Farrington 2005; Robinson 2005; Kreutzmann 2007; Kreutzmann et al. 2011; Rahim and Maselli 2008). Robinson et al. (2012) examined the evolution of pastoral land tenure and user rights in Kyrgyzstan and Tajikistan and found that livestock mobility and pasture access are the two main issues. Kraudzun (2012a, b) examined uneven use of pastureland in the Tajik Pamir. Vanselow et al. (2012a) also discussed the overuse and underuse of pastures in the Tajik Pamir, where the current livestock population exceeds the carrying capacity of pastureland (Vanselow et al. 2012b).

Livestock husbandry is by far the most important activity in the present economy of Kyrgyzstan (Wilson 1997). After the collapse of the Soviet Union, the local herders began to use near-village pastures all year round, because of the deterioration of transport capabilities and infrastructure and the discontinuation of state subsidies for migration and water supplies. Livestock keeping is the major and often the only kind of land use possible in the Pamir, as a result of the severe climatic conditions (Kassam 2009). Dörre (2012) examined pastureland degradation, and Undeland (2005), Steimann (2011, 2012), and Dörre and Borchardt (2012) discussed pasture-related conflicts in southern and central Kyrgyzstan.

The Alai Valley in southernmost Kyrgyzstan has been regarded as one of the centres of pastoralism since the Soviet era. The area, however, has not necessarily attracted scientists and politicians because of its marginality. Pastoralism in the eastern Alai Valley has recently been examined by Shirasaka et al. (2013), who found diversified forms of grazing practise. This chapter first describes the current status of the seasonally migrating pastoralism practised in the eastern half of the Alai Valley and secondly examines livestock (sheep and goats) movements in the eastern and western Alai Valley and discusses relationships between the forms of movement and the surrounding topography.

Study Area and Method

This study focuses on the Alai Valley, in southern Kyrgyzstan, on the northern edge of the Pamir (Fig. 1). Climatic data for different periods between 1934 and 2000 (Williams and Konovalov 2008) show that the annual precipitation and average

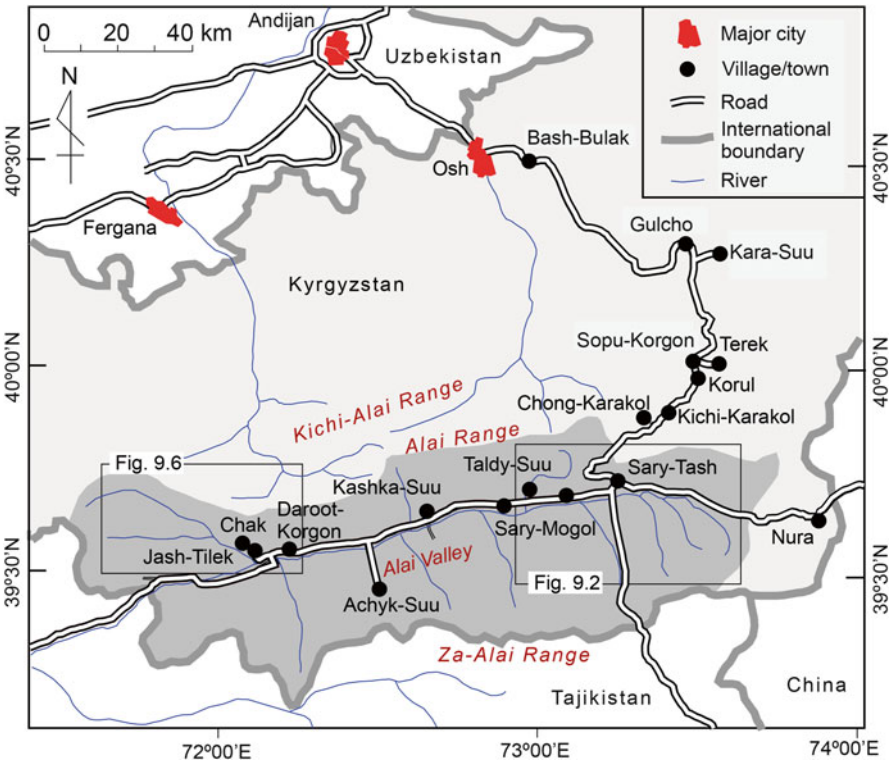

Fig. 1 Study area of Sary-Tash and Taldy-Suu *AA* (subdistricts). The light-shaded area denotes Kyrgyzstan and the dark-shaded area denotes the Alai Valley

monthly air temperature are 366.2 mm and −2.7 °C in Sary-Tash (3153 m asl) and 311.3 mm and 3.1 °C in Daroot-Korgon (2470 m asl). The eastern valley, exceeding the agricultural limit because of its lower air temperature, is characterised by pastoralism, whereas the western valley is characterised by pastoralism combined with agriculture. The population and household numbers of the villages studied are 2287 and 421 in Sary-Tash (2012) and 1907 and 327 in Taldy-Suu (2011) in the eastern valley and 530 and 135 in Archa-Bulak (2011), 40 and 10 in Chong-Archa-Bulak (2011), 2206 and 405 in Chak (2014), and 1153 and 218 in Jash-Tilek (2014) in the western valley.

The Sary-Tash subdistrict (*AA*:*Aiyl Aimak*[1]) is composed of two major villages, Sary-Tash and Nura (Fig. 1). Nura is located near the international border between Kyrgyzstan and China and outside the watershed of this study. Therefore, Nura was excluded from the study. The Taldy-Suu *AA* is composed of three villages called Taldy-Suu, Archa-Bulak, and Chong-Archa-Bulak.

[1]*Aiyl Aimak* (*AA*) is a subdistrict or local municipality composed of one or more villages. *Aiyl Ökümötu* (*AÖ*), a local executive body, governs *AA*.

Fig. 2 Kara-Kindik *jailoo*, a typical *jailoo* or summer rangeland, in the Alai Valley, 3261 m asl (Photograph © Shigeru Shirasaka, 27 Jul 2012)

This study adopted two levels of field surveys: the first field survey was designed to help researchers understand the movement forms of livestock in Sary-Tash and Taldy-Suu *AA*, and the objective of the second field survey was to compare the different movement forms in the west-east: i.e. Sary-Tash and Taldy-Suu in the eastern valley and Chak and Jash-Tilek in the western valley.

Interviews with 183 households[2] in total were carried out in the summer rangelands (*jailoo*[3]) at the *yurts* (movable tent)/wagons in Sary-Tash and Taldy-Suu in the summers from 2012 to 2014 (Fig. 2). Among them, ten households reside in Sary-Tash, 87 households reside in Taldy-Suu, and the remaining 86 households that reside in other *AA* used the pastures in the Alai Valley. The survey questions gathered information on current and former pasture use information, livestock numbers, *jailoo* locations, and household information. The interview locations were numbered, marked on a topographic map, and recorded by micro-GPS devices.

Additional interviews were carried out in two *AA* (Sary-Tash *AA* and Taldy-Suu *AA*) and two *Jayit Komitet* (*Jailoo* Committee or Pasture Committee) of the same *AA*. The questions related to the locations and names of *jailoo*, the total number of

[2] The number of households denotes those of herders. One herder often takes care of other households' livestock; therefore, the actual number of households examined in this study is much larger.

[3] *Jailoo* is normally translated as 'summer pasture' in most literature. However, the notion of *jailoo* contains not only 'summer pastureland' but also *yurt* (movable tent) or wagon or often even *uei*, i.e. a simple fixed house and *jurt* (enclosures with *koroo* or fences to keep livestock) (see Fig. 2). This study therefore uses the term *jailoo* to denote 'summer rangeland' instead of 'summer pasture'.

livestock, pastureland use information, household numbers, and pastureland user fees.

Through these interviews, distribution maps of *jailoo* (pasture maps) and location maps of *yurts* were prepared to help researchers better understand the seasonal movement patterns of livestock in the eastern valley. Each *AÖ* office in Kyrgyzstan should now have a pasture map, but the map was not available when the field surveys were conducted.

For the west-east comparison, in addition to the information collected in the eastern valley, comparable information was collected from ten households in the two villages of Chak and Jash-Tilek in the western valley, in 2014. The altitudinal differences between the villages and summer camps (*yurts*/wagons) and the horizontal movement distances were obtained by Google Earth's path measurement tool.

Movement Patterns of Livestock Grazing in the Eastern Alai Valley

Interview surveys with the chairpersons and secretaries of the *Jailoo* committees and pastureland users show that there are 14 *jailoo* in Sary-Tash *AA* and 13 *jailoo* in Taldy-Suu *AA* (Fig. 3). Many of the 27 *jailoo* are used by seasonally migrating grazing animals (Table 1). The ownership of the *jailoo* is each *AÖ*, and outsiders from other *AÖ* can obtain the use right of the pastureland in the *jailoo*. That is, outsiders from other *AÖ* need permission from the Sary-Tash *AÖ* or the Taldy-Suu *AÖ* when they want to use the pastureland for grazing.

Sary-Tash

Figure 4 shows the distribution of *yurts*/wagons, which means the distribution of pastureland users in the 14 *jailoo* of Sary-Tash *AA*. Among them, four *jailoo* of Yioit-Ashuu (S10), Kapish-Dor (S11), Kurpak (S12), and Korumdu (S13), which had been used in the Soviet era, are not used for grazing nowadays. These *jailoo* are used mostly for cutting natural grass for winter hay. The squares in Fig. 4 show the locations of the *yurts* (movable tents) and wagons of in-village users, and circles show those of outside users. Outside users come from the winter quarters (mother villages/towns) of Chong-Karakol, Kichi-Karakol, Korul, Sopu-Korgon, Terek, Kara-Suu, and Gulcho (Fig. 1), to use *jailoo* belonging to Sary-Tash *AA* in the spring, and they return to their villages/towns in the autumn (Fig. 5). Atjol (S1), Kara-Döbö (S2), and Kök-Bulak (S3) are mainly used for nonseasonal grazing (*kezüü*; see Chapter "*Kezüü* and *Novad*: A Form of Pastoralism in the Eastern Alai

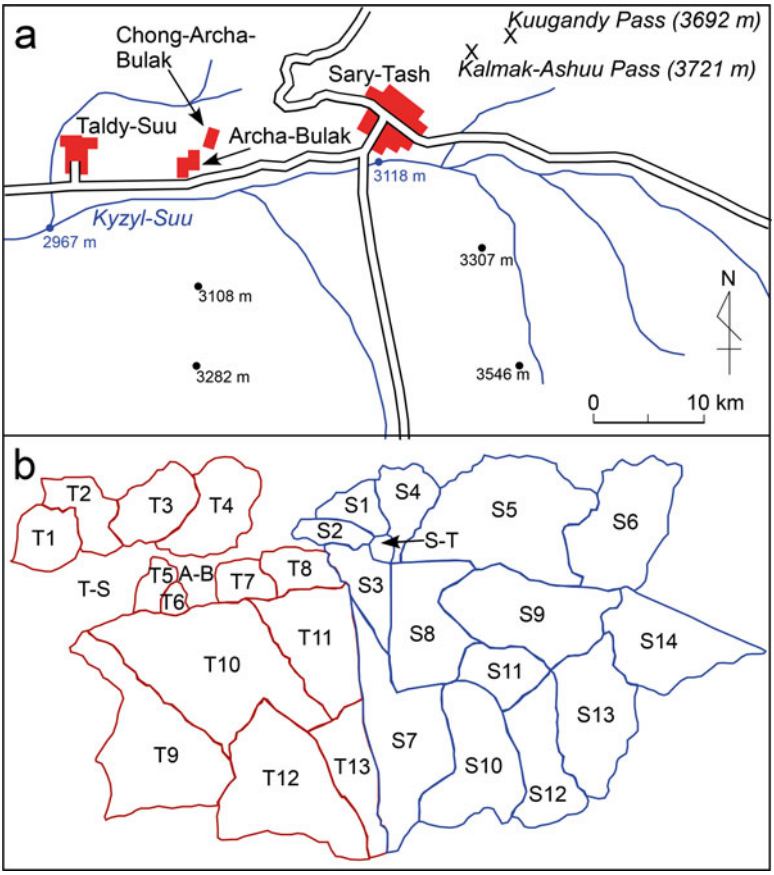

Fig. 3 Distribution of Sary-Tash and Taldy-Suu *AA's jailoo*. Location map of the two *AA* (**a**) and distribution of the *jailoo* mapped by field surveys in 2012 and 2013 (**b**). (villages' names) *T-S* Taldy-Suu, *A-B* Archa-Bulak, *S-T* Sary-Tash. (*jailoo*'s names) *S1* Atjol, *S2* Kara-Döbö, *S3* Kök-Bulak, *S4* Tumanchy, *S5* Demie, *S6* Kara-Kindik, *S7* Nichike, *S8* Kamai-Döbö, *S9* Mashaly, *S10* Yioit-Ashuu, *S11* Kapish-Dör, *S12* Kurpak, *S13* Korumdu, *S14* Kurgak, *T1* Karabel, *T2* Kalto-Öz, *T3* Kichi-Kashka-Suu, *T4* Chong-Kashka-Suu, *T5* Kurgak, *T6* Küiko-Tash, *T7* Tar-Bulung, *T8* Tura-Bulak, *T9* Kyzyl-Agyn, *T10* Güdür, *T11* Alai, *T12* Tosh-Bulak, *T13* Bor-Döbö

Valley, Southern Kyrgyzstan" in this volume), and Tumany (S4) is used only by *kezüü*.

Demei *jailoo* (S5) is used by 24 households and 5447 head of sheep and goats, among which seven are from Sary-Tash (862 head), five are from Chong-Karakol (310 head), two are from Sopu-Korgon (280 head), one is from Gulcho (210 head), and two are from Terek (120 head). They stay in the *jailoo* from the end of May to early October. Twenty households using the Kara-Kindik *jailoo* (S6) in the same period are all outsiders: two are from Chong-Karakol (490 head), seven from Kara-Suu (3939 head), eight from Sopu-Korgon (1300 head), and three from Gulcho (500

Table 1 *Jailoo* users and vertical and horizontal distances of livestock movements involving seasonal migrations to and from the eastern Alai Valley

Site number	Name of *jailoo*	Number of households using *jailoo*			Average vertical movement distance (m)		Average horizontal movement distance (km)	
		Outsiders	Insiders	Total	Outsiders	Insiders	Outsiders	Insiders
S1	Atjol	0	1	1	–	123.0	–	4.09
S2	Kara-Döbö	0	1	1	–	96.0	–	4.21
S3	Kök-Bulak	0	1	1	–	–31.0	–	4.18
S5	Demei	17	7	24	982.5	49.3	38.62	4.47
S6	Kara-Kindik	20	0	20	1279.9	–	71.34	–
S7	Nichike	16	0	16	782.8	–	57.07	–
S14	Kurgak	3	0	3	957.0	–	86.23	–
Subtotal for Sary-Tash		56	10	66	1053.8	53.3	58.15	4.40
T1	Karabel	0	2	2	–	33.0	–	2.41
T2	Kalto-Öz	0	6	6	–	74.2	–	7.30
T3	Kichi-Kashka-Suu	0	27	27	–	151.1	–	10.27
T4	Chong-Kashka-Suu	13	0	13	2127.7	–	165.74	–
T5	Kurgak	0	2	2	–	16.5	–	5.5
T7	Tar-Bulung	2	5	7	482.5	62.0	49.17	8.98
T8	Tura-Bulak	4	14	18	724.3	91.4	59.10	19.18
T9	Kyzyl-Agyn	0	7	7	–	126.7	–	38.24
T10	Güdür	3	16	19	731.3	35.6	51.75	15.64
T11	Alai	4	8	12	496.0	30.4	43.33	15.85
T13	Bor-Döbö	4	0	4	794.0	–	61.16	–
Subtotal for Taldy-Suu		30	87	117	1295.9	89.9	102.09	16.18
Total or average		86	97	183	1127.6	86.2	73.65	22.04

See Fig. 3 for locations of the site numbers. The following *jailoo* were excluded from the calculation: Kamai-Döbö and Mashaly (unknown users only) and Kapish-Dör, Kurpak, Korumdu, Küiko-Tash, and Tosh-Bulak (not used)

head). Nichike *jailoo* (S7) is used by 14 households from Chong-Karakol (815 head) and two from Kichi-Karakol (355 head).

There were 32 *yurt* sites in the three *jailoo* of Kamai-Döbö (S8), Mashaly (S9), and Kurgak (S13) in the autumn of 2013, when these households had already returned to their villages/towns. These sites are shown as 'unknown' in Fig. 4, except for three from Sopu-Korgon to Kurgak *jailoo*. Some nearby users said that many of them are from Chong-Karakol, and Sary-Tash users said that no Sary-Tash residents use these sites.

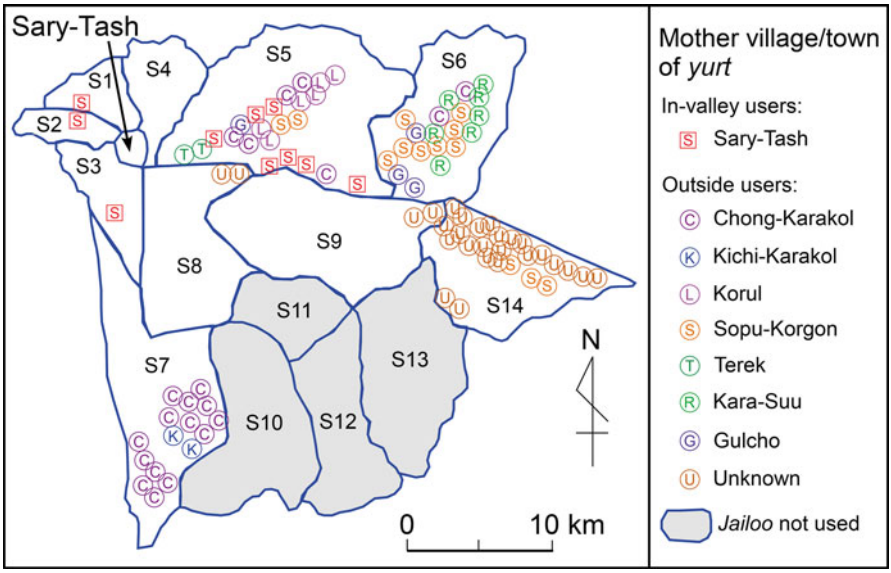

Fig. 4 Distribution of *yurts* in the *jailoo* of Sary-Tash *AA*. See the caption for Fig. 3 for the names of *jailoo* for S1–S14 (Based on surveys conducted in 2011, 2012, and 2013)

Fig. 5 A flock of sheep and goats walking on a vehicular road as they return from the Kara-Kindik *jailoo* of the Alai Valley to the winter quarters in Kara-Suu (Photograph © Teiji Watanabe, 4 Oct 2013)

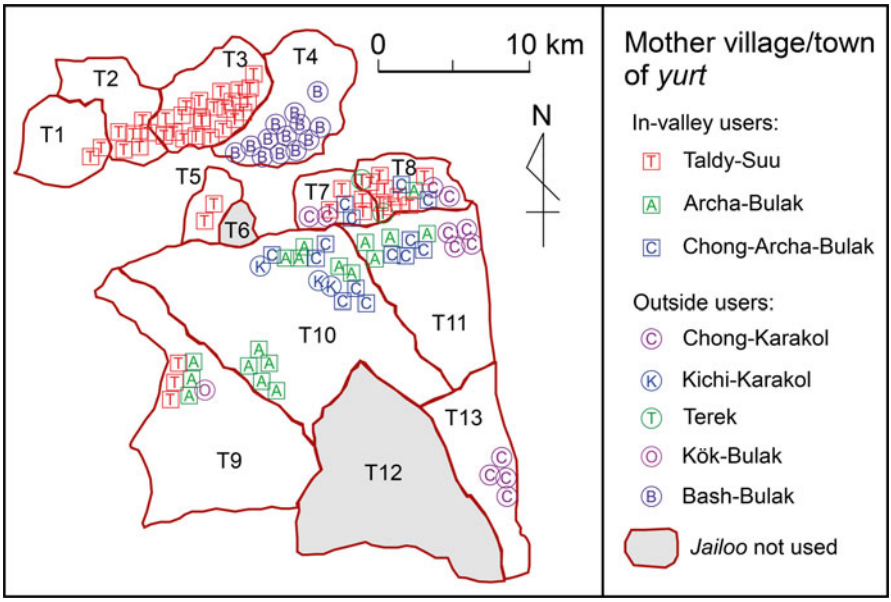

Fig. 6 Distribution of *yurts* in *jailoo* of Taldy-Suu *AA*. See the caption for Fig. 3 for the names of *jailoo* for T1–T13 (Based on field surveys in 2011, 2012, and 2013)

Taldy-Suu

Figure 6 shows the distribution of pastureland users in the 13 *jailoo* of Taldy-Suu *AA*. The squares in Fig. 6 show the locations of the *yurts*/wagons of in-village users, and the circles show the locations of outside users. Outside users come from the villages/towns of Chong-Karakol, Kichi-Karakol, Terek, Kök-Bulak, and Bash-Bulak (Figs. 1 and 6). Among the 13 *jailoo*, two *jailoo* of Küiko-Tash (T6) and Tosh-Bulak (T12) are not used for grazing nowadays. These *jailoo* are used for cutting winter hay.

Karabel *jailoo* (T1), Kalto-Öz *jailoo* (T2), Kichi-Kashka-Suu *jailoo* (T3), Kurgak *jailoo* (T5), and Kyrzyl-Agyn *jailoo* (T9) are used only by the households of the Taldy-Suu *AA* (4334 head in total). Chong-Kashka-Suu *jailoo* (T4) is used by herders from Bash-Bulak (5000 head in total), and Bor-Döbö *jailoo* (T13) is occupied by herders from Chong-Karakol (316 head in total). Tar-Bulung *jailoo* (T7), Tura-Bulak *jailoo* (T8), Güdür *jailoo* (T10), and Alai *jailoo* (T11) are used by households from both the Taldy-Suu *AA* (4134 head in total) and from the outside (931 head in total) (Table 1).

Seasonal Pastoral Practise and Natural Environments in the Eastern and Western Alai Valley

The foregoing section identified two forms of seasonal migration patterns of livestock to and from the eastern Alai Valley. Using the results from the eastern valley, the seasonal migration patterns in the western valley are compared below. Here, the grazing practises in Chak *AA* and Jash-Tilek *AA* are used for the comparison. Table 2 summarises livestock grazing with seasonal migrations in the eastern and western valleys. The eastern valley is characterised by the coexistence of vertical migration by outsiders and horizontal migration by in-valley residents, whereas the western valley lacks these two forms, and instead in-valley residents practise vertical grazing. Figure 7 illustrates these seasonal migration patterns.

Table 1 shows the vertical movement distances between the winter quarters and pastureland in the eastern valley. The outsiders (86 households in total), who reside in eight villages/towns such as Bash-Bulak and Gulcho, migrate to the *jailoo* in Sary-Tash or Taldy-Suu in May and return from the *jailoo* to their villages/towns in late September/early October. This seasonal migration involves large vertical movement distances with an average of 1127.6 m (Table 1), ranging from 482.5 to 2127.7 m. Pastureland use by the outsiders is likely not to be practised in a *jailoo* belonging to other subdistricts (*AA*) in the valley.

In the eastern valley, a large number of livestock move from the outside villages/towns to the *jailoo* of Demei, Kara-Kindic, and Chong-Kashka-Suu (Figs. 4 and 6, Table 1). In general, it takes 4 or 5 days for livestock to move from Gulcho to Demei *jailoo* in Sary-Tash *AA* and 6 or 7 days to move from Bash-Bulak to the Chong-Kashka-Suu *jailoo* in Taldy-Suu *AA* on foot. For the outsiders who use the *jailoo* of Sary-Tash *AA* (Demei and Kara-Kindik *jailoo*), the route through the Kalmak-Ashuu Pass or Kuugandy Pass (Fig. 3) minimises the time required to move their livestock between the winter quarters and the *jailoo*: these *jailoo* are advantageous for the outsiders in terms of access. Also, Nichike (S7) and Bor-Döbö (S13) *jailoo*

Table 2 Livestock grazing with seasonal migrations in the eastern and western Alai Valley

Pasture users	Movement types	Subdistrict (*AA*) where pastureland is located			
		Chak	Jash-Bulak	Taldy-Suu	Sary-Tash
Outsiders	Vertical	No	No	Yes (V = 1295.9 m, H = 102.1 km)	Yes (V = 1053.8 m, H = 58.2 km)
In-valley residents	Vertical	Yes (V = 735.0 m, H = 22.5 km)	Yes (V = 393.3 m, H = 14.1 km)	No	No
	Horizontal	No	No	Yes (V = 89.9 m, H = 16.2 km)	Yes (V = 53.3 m, H = 4.4 km)
Location in the valley		Western	Western	Eastern	Eastern

V average vertical movement distance, *H* average horizontal movement distance. Based on field surveys in 2012, 2013, and 2014

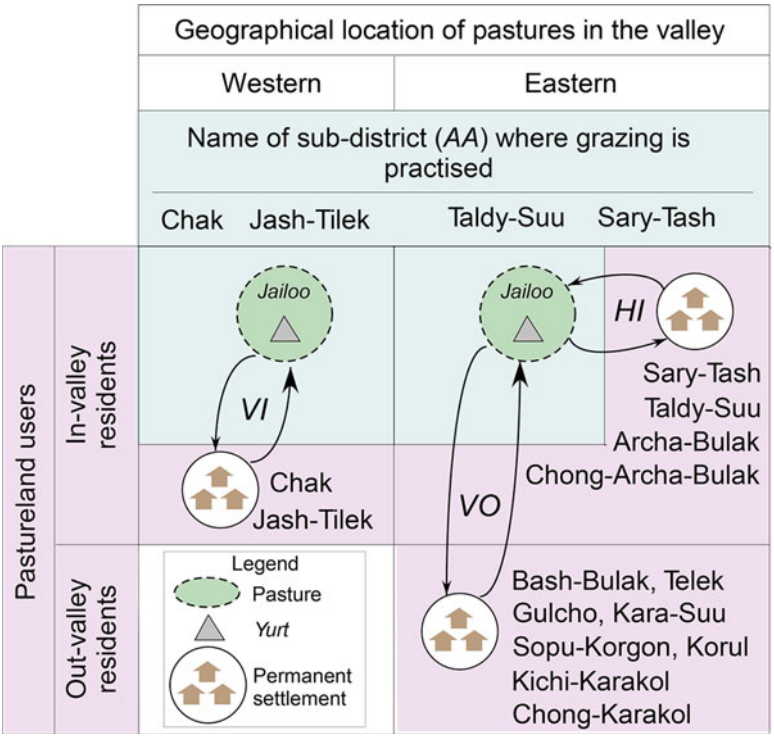

Fig. 7 Comparison of the types of seasonal livestock migrations in eastern and western Alai Valley. *VO* vertical grazing by outsiders, *VI* vertical grazing by in-valley residents, *HI* horizontal grazing by in-valley residents

are used by outsiders, because these *jailoo* are located near the main road. *Yurts* and household effects are brought by truck on a vehicular road in 1 day. Consequently, herders prefer *jailoo* with easy access.

The second form of seasonal livestock migrations in the eastern Alai is 'horizontal grazing' practised by the in-valley residents (97 households in total) (Fig. 7). They use 13 *jailoo* (Table 1), after ascending a short distance of 86.2 m (range from 31.0-m descent to 151.1-m ascent) and moving a short horizontal distance of 22.04 km (range from 2.41 to 38.24 km).

The third form of seasonal migration occurs in the western valley: i.e. vertical migration by in-valley residents (Fig. 7). Today, in-valley residents practise vertical grazing in the Kök-Suu Valley, which is the largest tributary valley of the area (Figs. 1 and 8). The altitudes of Chak and Jash-Tilek are 2435 m and 2450 m, respectively. They move their livestock (more than 1000 head in total) to *jailoo* of Putoo (2820 m asl), Archa-Kechuu (2704 m asl), Ayjan-Ödlu (2755 m asl), Cholok-Kayin (2755 m asl), Kosh-Töbö (2866 m asl), and Shagdar (3160 m asl), along the Kök-Suu River (Fig. 8), from May/June to October/November. Some households hire a professional herder to care for their livestock.

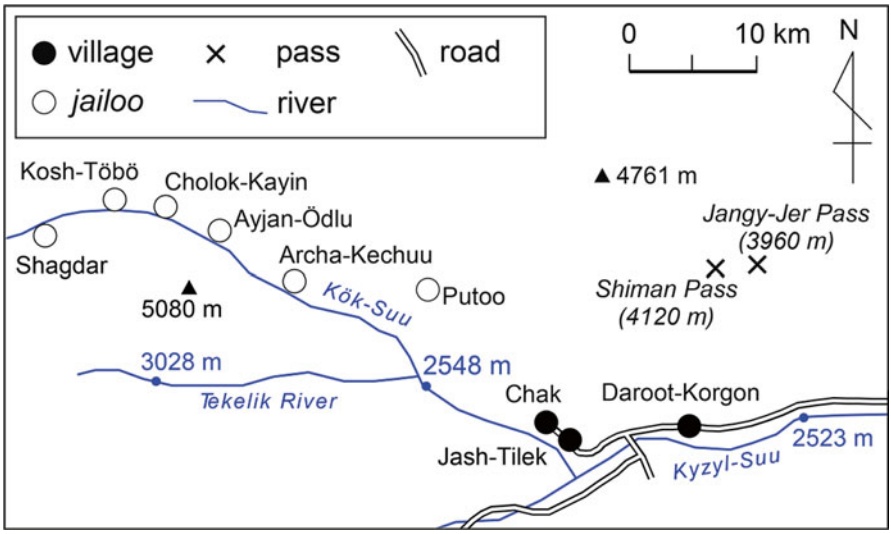

Fig. 8 *Jailoo* in the Kök-Suu basin used by the in-valley residents of Chak and Jash-Tilek. Some *jailoo* along the Tekelik River used by Chak residents are not shown here because they have not been surveyed

Thus, the vertical migration patterns in the eastern and western parts of the valley are similar in terms of the ascending movement, but the origins of the pastureland users are different. Also, movement distances in the western valley are smaller (the average vertical distance is 735.0 m in Chak and 393.3 m in Jash-Tilek, and the average horizontal distance is 22.5 km in Chak and 14.1 km in Jash-Tilek) than those in the eastern valley (the vertical distance is 1053.8 m in Sary-Tash and 1295.9 m in Taldy-Suu, and the horizontal distance is 58.2 km in Sary-Tash and 102.1 km in Taldy-Suu) (Table 2).

General surveys suggest the possibility of the coexistence of vertical and horizontal grazing in Achyk-Suu and Kashka-Suu (Fig. 1). However, details of the forms of vertical livestock grazing movements in the villages between Sary-Mogol and Daroot-Korgon are unknown and should be studied in the future.

Discussion

Comparison Between the Eastern and Western Valleys

While the annual precipitation in Sary-Tash (measured at a 3153-m station from 1934 to 2000) is 366.2 mm, those in Gulcho (1561 m, 1938–1997) and Osh (1016 m asl, 1891–1996) near Bash-Bulak are 504.2 mm and 356.7 mm, respectively (calculated from data in Williams and Konovalov 2008). Differences in precipitation or

aridity, therefore, seem not to be the main reason for the seasonal migration to and from the eastern Alai Valley by the outsiders, although extremely high air temperatures in the winter quarters may contribute to the stay in the eastern Alai Valley in the summer. The topography of the northern areas is in general very steep, which develops only a small pastureland. This is likely to be one of the reasons the outsiders go to the eastern Alai Valley in the summers.

Horizontal grazing with short movement distances is practised, but vertical grazing is not practised in the eastern Alai Valley. Because of the small altitudinal differences between the valley bottom (i.e. the locations of the villages) and the ridges and peaks of the Alai Range (4000–5000 m asl) to the north and the Za-Alai Range (5000–7000 m asl) to the south, the vegetation-covered slopes (pasturelands) are confined in a narrow belt (Fig. 9). Above the belt with vegetation cover is exposed bedrock or snow/ice. The in-valley pastureland users naturally take their livestock, *yurts*, and household effects to *jailoo* at almost the same altitudes as their villages in late spring and graze their livestock in the pastures in summer. The approximate upper limit of vegetation-covered slopes in the eastern Alai Valley is 3600–3800 m asl, with some exceptional sparse cover up to 4000 m asl. The altitudinal differences between the village locations (3050–3150 m asl) and the upper limit of vegetation cover, i.e. 450–750 m, are a potential vertical extent of pasturelands. In reality, the in-valley residents use only lower parts of the potential vertical extent of the pasturelands because higher slopes are steeper. The movement over small distances in the eastern Alai Valley suggests that the seasonal migration is not related to ecologi-

Fig. 9 Landscape of Kurgak *jailoo* of Taldy-Suu in the Alai Valley, 3159 m asl. Note the upper limits of the grass-covered slopes, which prohibit the development of vertical grazing practises by the in-valley residents (Photograph © Shigeru Shirasaka, 5 Aug 2012)

Fig. 10 Landscape in the upper reaches of the Kök-Suu Valley. Pastures are spread at altitudes as high as 3600–3800 m asl, whereas the villages are located at altitudes of 2435 m asl (Chak) and 2450 m asl (Jash-Tilek) in the western Alai area (Photograph © Teiji Watanabe, 13 Jul 2014)

cal differences unlike the cases observed in other parts of Central Asia (Kerven et al. 2006).

On the other hand, the altitudes at the valley bottom (i.e. the locations of the villages) in the western valley are much lower than those in the eastern valley. There is a wide altitudinal belt of pasturelands above the valley bottom as low as 2435–2450 m asl in the western valley. The altitudes of the ridges and peaks of the Alai Range are almost the same in the eastern and western areas. The upper limits of vegetation-covered slopes in the eastern and western valleys are also similar. This geographical setting enables even in-valley residents of Chak and Jash-Tilek to practise vertical grazing (Figs. 7 and 10).

Vertical grazing by outsiders is not practised in the western valley (Fig. 7, Table 2). This is attributed to its difficult access for outsiders. Livestock in eight villages such as Bash-Bulak and Gulcho are easily brought to the eastern valley, but not to the western valley. Large numbers of sheep were brought from Fergana through the Shiman Pass and Jangy Jer Pass to the western Alai Valley (Fig. 8) in the sovkhoz period until 1991. However, independence from the Soviet Union resulted in termination of the long-distance migration between Fergana and the western Alai Valley.

Inequality of Pastureland Use and Future Sustainability

One interviewee said that Tosh-Bulak and Kyzyl-Agyn *jailoo* are seldom used or are not used for grazing today, although about 60000 sheep from Andijan of the Fergana Basin had stayed in the *jailoo* from mid-April to mid-September/early October. This implies that the current uneven use of pastures is in part related to the termination of use by Uzbek herders after independence in 1991. Even if the outsiders had terminated their pasture use, in-valley residents have shown no interest in using the remote pasturelands. If they were to use such remote pasturelands, they would have to spend more time and money to transport their *yurts* and household effects. Improving access to unused remote pasturelands would be a driving factor for sustainability.

Some elderly shepherds have experienced working for sovkhoz in the *jailoo* of Sary-Tash or Taldy-Suu *AA* in the Soviet era, so they have local knowledge of the pasturelands in the eastern Alai Valley. Some young shepherds, who had no jobs in Kyrgyzstan, joined pastoralism in the eastern Alai Valley in the 2000s. Their choice of *jailoo* is often based on the experiences of their fathers and grandfathers, who used the *jailoo* in the eastern Alai Valley in the Soviet era. The choice of *jailoo*, therefore, is related not only to pastureland access but also to their own experiences or those of their family members.

These politico-economic changes resulted in inequalities of pastureland use (Figs. 4 and 6). Inequality of pastureland use has already led to conflicts among pastureland users elsewhere in Kyrgyzstan (Undeland 2005; Dörre 2012; Dörre and Borchardt 2012), and pastureland users in the Alai Valley may experience a similar result in the near future. Such an outcome should be avoided. The local *Jailoo* Committee was established for the entire country of Kyrgyzstan after 2009, on the basis of the new law 'On Pastures' passed in the same year. The *Jailoo* Committee is an executive body of the local Pasture Users Association (PUA). The *Jailoo* Committee should include elected and executive members of the local government, and all pasture users should join the PUA (Robinson et al. 2012). In Sary-Tash and Taldy-Suu, the *Jailoo* Committee was established in 2009. The committee in Sary-Tash is composed of two members: one head and one accountant. However, they were appointed by the then-village chief simply because they were his close friends, not because of their knowledge or experiences with pastures or pastoralism. Interviews with the committee members clearly show that they have no idea about the names and locations of the 13 *jailoo* in Sary-Tash *AA*. The committee members in Taldy-Suu, on the other hand, know the names and locations of their own *jailoo*, but they are confused about their responsibilities as members of the *Jailoo* Committee. The reallocation of users and more suitable pasture management have not been considered in Sary-Tash or Taldy-Suu so far, and the *Jailoo* Committee should address this gap. Similar issues have also been observed elsewhere in Kyrgyzstan (Dörre 2012; Steimann 2012). Improving access to unused pasturelands is none of the urgent tasks of the *Jailoo* Committee. Without the improvement, the pastureland users would not accept reallocation of pasturelands. To achieve balance

among the existing diversified pastoralism practises in the Alai Valley, empowerment of the *Jailoo* Committee and the involvement of outsiders in a pastureland management plan are essential.

Conclusions

Three forms of seasonal pastoralism were identified in the Alai Valley:(1) vertical grazing by outsiders from eight villages/towns to the north of the valley, (2) horizontal grazing by in-valley residents, and (3) vertical grazing by in-valley residents. Among these, the vertical grazing by outsiders and horizontal grazing by in-valley residents are practised in the eastern valley, while the vertical grazing by in-valley residents is practised in the western valley. The high slopes of the mountains near the villages in the valley lack vegetation cover, while the footslopes and valley bottoms have vast pasturelands. This topographic characteristic disfavours vertical grazing by the in-valley residents in the eastern valley. The western valley, where the in-valley residents practise vertical grazing, is characterised by great altitudinal differences between summer pastures and their low-altitude villages on the valley bottom.

The outsiders pay pastureland user fees to obtain a use right for the pastureland, which belongs to either Sary-Tash or Taldy-Suu *AA*. They use the pastureland which has good access or land that had been used by their fathers or grandfathers. This creates inequality of pastureland use in the eastern valley, due to the freedom to decide which pastureland to use. The *Jailoo* committees, which were formed in every *AÖ* after 2009, have not introduced any systematic pasture management practices, although the Sary-Tash and Taldy-Suu *AÖ* receive the pastureland user fees from the outsiders. Due to the negligence of the local *Jailoo* committees, the inequality of pastureland access has become unmanageable.

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Kezüü and *Novad*: A Form of Pastoralism in the Eastern Alai Valley, Southern Kyrgyzstan

Teiji Watanabe and Shigeru Shirasaka

Abstract This study explored the daily cooperative grazing system of sheep and goats in the Alai valley, southern Kyrgyzstan, through fieldwork conducted primarily in the two subdistricts of Sary-Tash and Taldy-Suu, where 14 villages were examined: among these residents in five villages located in the east refer to the daily cooperative grazing system as *kezüü*, whereas residents in nine villages in the west use the term *novad*. Cooperative daily grazing is practised by families that possess small numbers of livestock. Three types of *kezüü* were found in Sary-Tash and Taldy-Suu: (1) three-seasonal, village-based; (2) two-seasonal, village-based; and (3) three-seasonal, *jailoo*-based (summer pasture-based). There were 5550 sheep and goats registered in Sary-Tash in 2011, among which 1981 head were grazed in the form of three-seasonal, village-based *kezüü*, which is practised by four groups from spring to autumn. One group of two-seasonal, village-based *kezüü* was also found in Sary-Tash. In Taldy-Suu, *kezüü* can be classified into two types: two-seasonal (spring and autumn), village-based and three-seasonal, *jailoo*-based. The temporal and spatial types are further diversified when the entire valley is considered, as the general field survey suggests that at least five types exist throughout the Alai Valley. The occurrence of these types is related to the situation of fodder/agricultural fields in and around the villages. The daily horizontal movement distance of *kezüü*, which was recorded by micro-GPS for 66 livestock, was rather small: it ranged from 6.8 to 17.3 km. The radius of the daily horizontal movement from the villages only ranged from 1.3 to 5.4 km. The major benefit of participation in the *kezüü*/*novad* system is the sharing of limited labour resources among households possessing small numbers of sheep/goats. Such reciprocal labour resource sharing in daily grazing results in the maintenance of small herds in order to form one component of the diversified pastoralism found in the Alai Valley.

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Introduction

Pastoralism with seasonal migration of livestock characterises high mountain landscapes in the Pamir (e.g. Wilson 1997; Ludi 2003; Farrington 2005; Kerven et al. 2011, 2012; Dörre 2012; Dörre and Borchardt 2012; Kraudzun 2012; Steinmann 2012; Vanselow et al. 2012), although another form of pastoralism has also been found there. Steinmann (2011:175) described this system of pastoralism that is practised in winter in Naryn *oblast* (province) of the Kyrgyz Republic, or Kyrgyzstan, referring to it as *mal kesüü*; *kezüü* refers to a daily grazing system where several families herd their livestock in rotation (Shirasaka et al. 2013). Robinson et al. (2012:248–249) also described the winter practice of *kezüü* (*kezu*) in Kyrgyzstan in addition to the year-round practice of *kyzyk* in Kazakhstan (Robinson et al. 2012:258). Vanselow et al. (2012) described a similar rotational grazing system in the eastern Pamir without mentioning the name of it. However, its details have not been explored as of yet, and there is no study detailing the entire picture of such a small-scale, cooperative daily grazing system. This study aims to understand the *kezüü*[1] system in the Alai Valley of southern Kyrgyzstan.

Development of the Cooperative Daily Grazing System of *Kezüü/Novad* in the Alai Valley

Two names for the daily grazing system exist: five villages in the eastern half of the Alai Valley use the term *kezüü* and nine villages in the western half use the term *novad* (Fig. 1). It should be noted that although Kara-Kabak belongs to Kashka-Suu *AA*, the residents there use the term *kezüü*. *Kezüü* is also used in the wide area between Sary-Tash and Osh, which is connected to the eastern Alai Valley by a main road. Interestingly, Kara-Kul (Karakul) village in northern Tajikistan, which is also connected to the eastern Alai Valley by a main road, uses the term *novad*.

The system of *kezüü/novad* started in many villages during the Soviet era when kolkhoz (collective farms) and sovkhoz (state farms) were operated. In general, small-scale *kezüü/novad* originated in the 1950s and 1960s in Kyrgyzstan (Prof. K. Oryibek, personal communication, 13 February 2014), although in some villages they were not established until the 1990s (e.g. there was no *novad* in Jayilma during the Soviet era as it was formed only after 1991).

[1]This study adopted the spelling of *kezüü* because local informants in the eastern Alai Valley as well as Kirghiz researchers all refer to this cooperative grazing system, independent of practical seasons, as so. The western Alai residents refer to it as *novad* instead of *kezüü*.

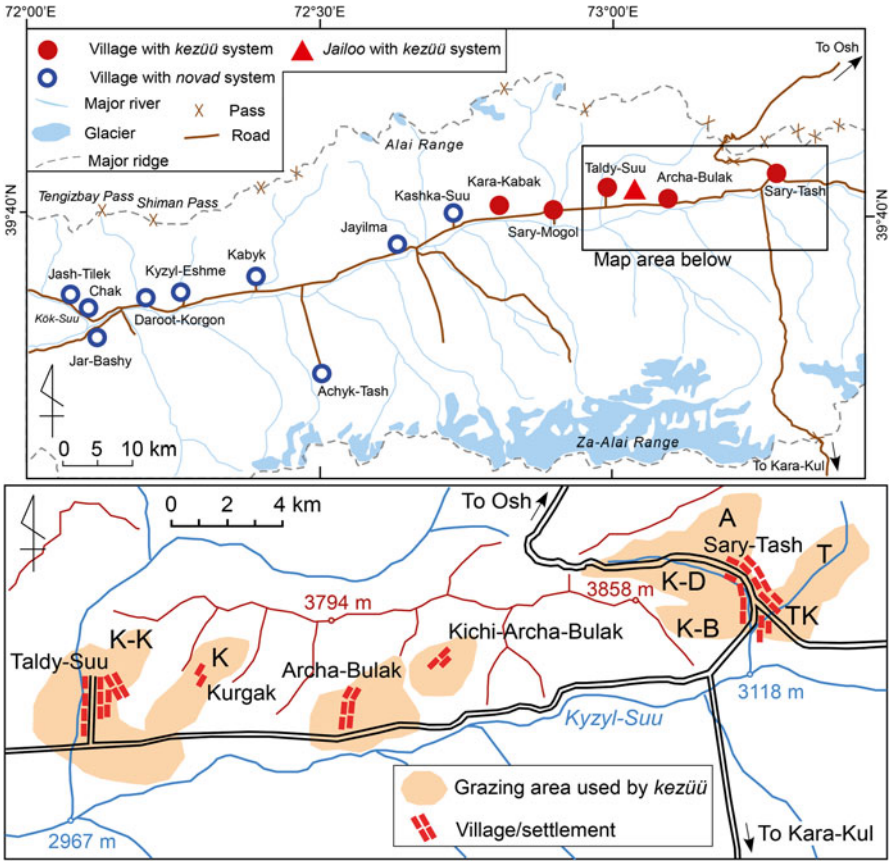

Fig. 1 Study area and village distribution showing *kezüü* and *novad* (*top*) and the pasturelands for *kezüü* in Sary-Tash and Taldy-Suu *AA* (*bottom*). (Name of *jailoo*) *A* Atjol, *K-D* Kara-Döbö, *KB* Kok-Bulak, *T* Tumanchy, *TK* Temir-Korgon, *K-K* Kich-Kashaka-Suu, *K* Kurgak

At that time, individual families were allowed to keep only small numbers of livestock. For the purpose of effective use of family labour, some neighbouring families started to take care of one another's livestock on a rotational basis. For instance, *kezüü* in Sary-Tash originated in 1982–1983, although one local resident recalled its establishment in the 1960s. There had been two groups of *kezüü* in Sary-Tash in 1982–1983: (1) Jogorku *kezüü*, which means 'upper *kezüü*', and (2) Tömönkü *kezüü*, which means 'lower *kezüü*'. Each group of *kezüü* comprised 20–25 families, and each family had 10–15 head of sheep and goats with a maximum of 50. In 1984, the third group of *kezüü* (Öiüz *kezüü*, which means 'other side of the river *kezüü*') was added.

After Kyrgyzstan's 1991 independence from the former Soviet Union (i.e. after privatisation of livestock), some families purchased livestock from other families who preferred not to keep them, although other families such as those with other occupations or low incomes simply maintained their livestock without increasing

the number. Such families continue participating in *kezüü/novad* because of their limited available labour as in most cases, household heads have other occupations.

Study Area and Method

The study area, Alai Valley (39° 25′–39° 45′ N, 72° 00′–74° 00′ E), is located in the southern part of Kyrgyzstan (Fig. 1). It stretches east to west, its valley bottom ranging in altitude from 2435 m (Chak) in the west to 3150 m (Sary-Tash) in the east.

Fieldwork consisted of three 1-month durations and several short visits carried out in 2012, 2013 and 2014. For the purpose of a general survey of the entire valley, 14 major villages were visited (Fig. 1), where the existence of the daily grazing system was confirmed through interviews with more than 70 local residents who participate in this practice. The interview questions included the number of sheep/goats, name of *kezüü/novad* group, period of pastureland use, location of pastureland, daily grazing routes and occupation.

In-depth surveys were conducted in the two subdistricts (*Aiyl Aimak*: *AA*)[2] of Sary-Tash and Taldy-Suu. Sary-Tash village (3150 m) belongs to Sary-Tash *AA* and is located in the easternmost part of the study area with a population of 2287 inhabiting 421 households. The registered number of sheep and goats possessed by the residents was 5550 as of 2012 (data obtained at the Sary-Tash *AÖ* office). The village of Sary-Tash was initially constructed for special functions such as road construction, electricity transfers and communication during the Soviet era, and so the occupations of residents still vary, although the largest industry is pastoralism. Taldy-Suu *AA* is composed of three villages: Taldy-Suu (2935 m), Archa-Bulak (3030 m) and Chong-Archa-Bulak (3070 m). The village of Taldy-Suu was established in 1978, and the population of these villages as of 2012 was 2410 inhabiting 572 households (unpublished data from the Taldy-Suu *AÖ* office). These three villages combined had 5271 head of sheep and goats that were registered in Taldy-Suu *AA* in 2012 (data obtained at the Taldy-Suu *AÖ* office).

This study also used micro-GPS devices to confirm the daily grazing routes of livestock (Fig. 2). The micro-GPS devices (Holux wireless GPS logger by HOLUX Technology, Inc., Model M-241) were dangled from the necks of 29 sheep and goats in Sary-Tash from 20 to 27 July 2012 and to six, 30 and one head of sheep and goats in Taldy-Suu, Archa-Bulak and Kurgak, respectively, between 31 May and 4 October 2013. The daily grazing routes were used to analyse the daily moving distance and lowest and highest altitudes of daily movement, from which altitude difference was obtained. Further, the radius of daily horizontal movement from a village (i.e. the horizontal distance between the furthest point of daily horizontal movement and the village) was calculated.

[2] *Aiyl Aimak* (*AA*) is a subdistrict or local municipality composed of one or more villages. *Aiyl Ökümötu* (*AÖ*), a local executive body, governs *AA*.

Fig. 2 A part of the Kara-Döbö *kezüü* group of sheep and goats in Sary-Tash before leaving for their daily grazing. Note that the front goat has a GPS device dangling from its neck (Photograph © Teiji Watanabe, 20 Jul 2012)

The Cooperative Daily Grazing System of *Kezüü* in Sary-Tash and Taldy-Suu

Livestock kept through *kezüü* do not follow seasonal movements, but rather typically are gathered at a certain site on the street every morning (Fig. 3) and return at night to shelters (barns) attached to their owners' houses in the villages (Fig. 4). According to the interview surveys, in total 6131 head of sheep and goats were grazed in the form of *kezüü* in Sary-Tash *AA* and Taldy-Suu *AA* in the summer, spring and autumn of 2012.

Kezüü *in Sary-Tash* AA

As previously stated, Sary-Tash *AA* had 5550 registered head of sheep and goats in 2012. Among them, 1918 head were grazed in the pastures in the spring, summer and autumn in the form of *kezüü* that this study refers to as 'three-seasonal, village-based *kezüü*' (Fig. 5). In 2013, another 388 head were grazed in the spring and autumn in the form of *kezüü* recognised as 'two-seasonal, village-based *kezüü*' (Fig. 5).

Fig. 3 Gathering of the Kamachatka *kezüü* group of sheep and goats in Sary-Tash before leaving for their daily grazing in the morning. Every participating family takes their livestock to the gathering site in the morning (see Fig. 6), and one adult or a few children from one of the families take care of all of the livestock in the pasture during the daytime (Photograph © Teiji Watanabe, 21 Jul 2012)

Fig. 4 Taldy-Suu village and the Za-Alai Range with Lenin Peak (7145 m), the highest peak of the range. Note that most of the houses (*white* and *grey roofs*) have attached shelters (*brown* in colour) to keep livestock in at night (Photograph © Teiji Watanabe, 20 Sept 2013)

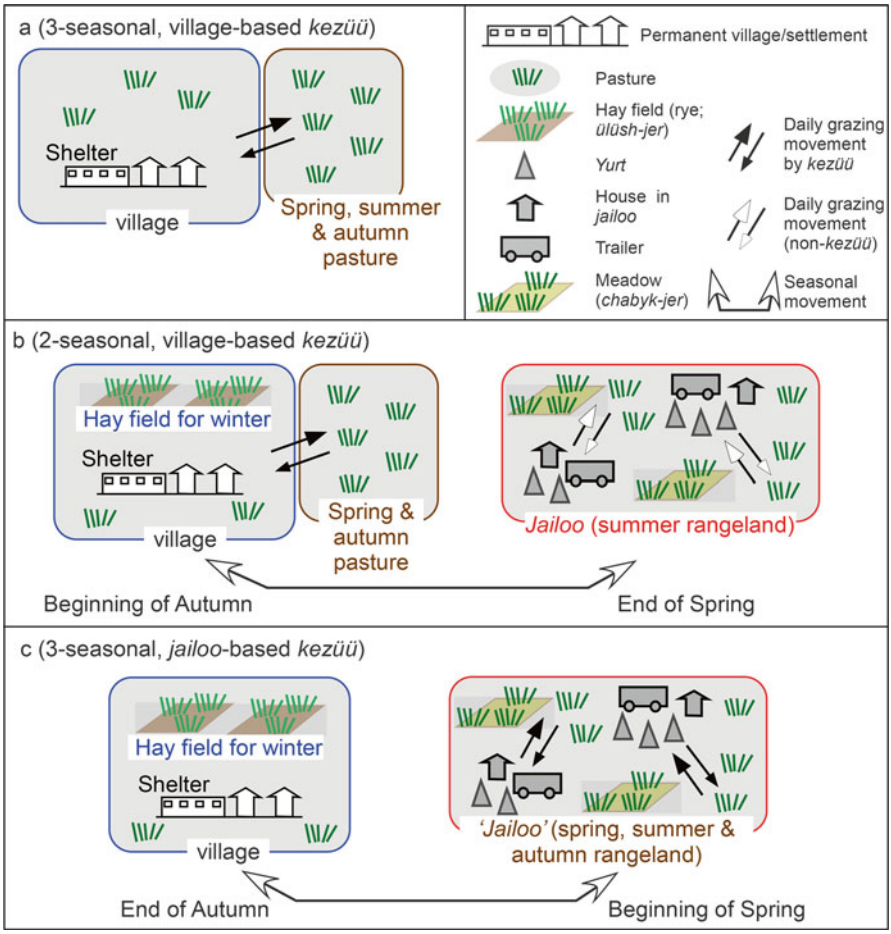

Fig. 5 The three types of *kezüü* found in Sary-Tash and Taldy-Suu

Sary-Tash has four groups of three-seasonal, village-based *kezüü* (Table 1): (1) Kamchatka *kezüü*, (2) Kara-Döbö *kezüü*, (3) Ödöngku Maala *kezüü* and (4) Erkeshtam *kezüü*. Kamchatka *kezüü* comprised 15 families and 347 sheep and goats, Kara-Döbö *kezüü* comprised 21 families and 609 head of sheep and goats, Ödöngku Maala *kezüü* comprised 13 families and 300 head of sheep and goats and Erkeshtam *kezüü* comprised 14 families and 710 head of sheep and goats.

As of the summer of 2013, 18 of the 63 families that participated in one of the four groups of three-seasonal, village-based *kezüü* lived off their pension. Heads of other families worked as teachers, security guards, accountants or cleaning ladies for schools and daycares; truck drivers; construction workers; and officers in a national-border security station and weather station. Only one single man aged 80,

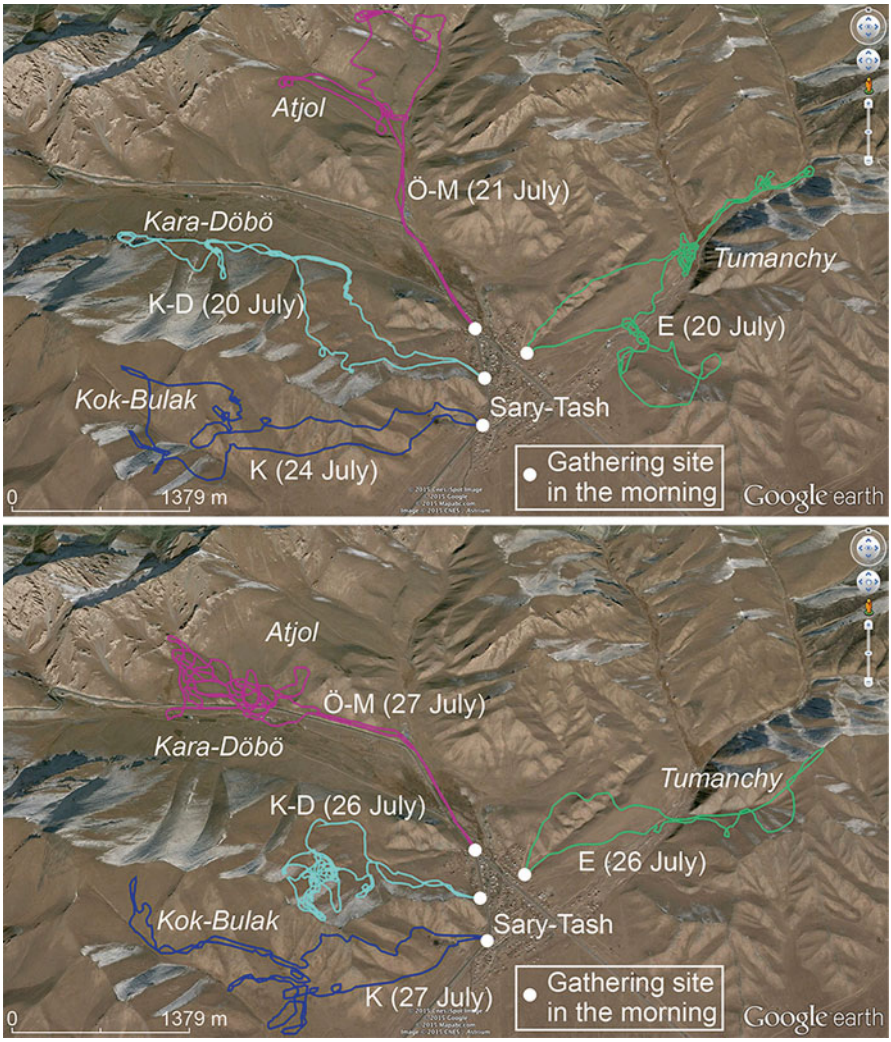

Fig. 6 The daily grazing routes of the three-seasonal, village-based *kezüü* groups of Sary-Tash traced by micro-GPS collars in July 2012. Eight examples are shown among 30 data sets. *K* Kamchatka, *K-D* Kara-Döbö, *Ö-M* Ödöngku Maala, *E* Erkeshtam (base image: Google Earth)

who owned 80 head of sheep and goats in Erkeshtam *kezüü*, answered that his main occupation was pastoralism.

In total, 29 GPS data were collected from sheep and goats belonging to the four *kezüü* in July and August 2012 (Figs. 2 and 6, Table 2). Figure 6 shows that Kamchatka *kezüü* uses the Kok-Bulak *jailoo*[3] in the west of Sary-Tash, Kara-Döbö

[3] Although *jailoo* denotes summer pasture in a strict sense, local residents practising *kezüü* in Sary-Tash usually refer to the four pasturelands as *jailoo* for three-seasonal use.

Table 1 Four groups of three-seasonal, village-based *kezüü* (July 2012) and one group of two-seasonal, village-based *kezüü* (September 2013) in Sary-Tash

Types of *kezüü*	Name of groups	Name of pasture	Number of families	Total number of sheep/goats	Average number of sheep/goats per family (range)
Three-seasonal, village-based	Kamchatka	Kok-Bulak	15	347	23 (10–45)
	Kara-Döbö	Kara-Döbö	21	609	29 (10–60)
	Ödöngku Maala	Atjol	13	300	23 (8–35)
	Erkeshtam	Tumanchy	14	710	51 (15–100)
Two-seasonal, village-based	Piyomka	Tumanchy and Temir-Korgon	15	388	26

Source: From interview surveys in 2012 and 2013

Table 2 Geographical characteristics of the *kezüü* routes in Sary-Tash and Taldy-Suu derived from the micro-GPS surveys in 2012 and 2013

Village	Name of *kezüü* group	Number of samples	Average horizontal moving distance (range) (km)	Radius of daily movement from village (range) (km)	Altitude of grazing routes (m)		
					Average of lowest	Average of highest	Average difference
S-T	Kamchatka	9	11.1 (8.3–15.3)	3.4 (3.2–3.7)	3152	3669	518
S-T	Kara-Döbö	7	9.5 (7.7–15.3)	2.5 (1.8–4.1)	3161	3456	295
S-T	Ödöngku Maala	7	11.4 (8.8–16.4)	3.6 (3.5–3.8)	3170	3389	219
S-T	Erkeshtam	6	11.2 (8.2–13.0)	3.2 (2.1–3.7)	3175	3392	217
T-S	Group E	4	8.6 (8.3–10.8)	3.3 (3.2–3.3)	2994	3057	63
T-S	Group W	2	12.7 (12.3–13.1)	5.3 (5.3–5.4)	2959	3048	89
A-B	Group NNE	2	16.6 (16.0–17.3)	3.0 (2.9–3.0)	3050	3290	240
A-B	Group NE	4	8.2 (8.1–8.5)	2.0 (1.9–2.0)	3049	3105	56
A-B	Group NW	5	7.7 (6.8–8.2)	1.3 (1.3–1.3)	3050	3278	228
A-B	Group W	8	8.7 (8.0–9.3)	2.7 (2.4–2.8)	3032	3049	17
A-B	Group S	7	8.2 (7.6–9.3)	2.7 (2.5–3.0)	3033	3051	18
A-B	Group SW	4	9.3 (8.3–10.8)	1.7 (1.6–1.8)	3029	3087	59
Kurgak	Kurgak	1	13.6 (–)	2.6 (–)	2998	3127	129
All groups		66	9.9 (6.8–17.3)		–	–	165.2

S-T Sary-Tash, *T-S* Taldy-Suu, *A-B* Archa-Bulak

kezüü uses the north-western pastureland (Kara-Döbö *jailoo*), Ödöngku Maala *kezüü* uses the north of Sary-Tash (Atjol *jailoo*) and Erkeshtam *kezüü* uses the eastern area (Tumanchy *jailoo*). The average daily horizontal moving distances are 11.1 km, 9.5 km, 11.4 km and 11.2 km, respectively (Table 2). In addition, the

radius from the village to the furthest point of daily movement ranged from 1.8 to 4.1 km (Kara-Döbö group).

In Sary-Tash, there is one group of two-seasonal, village-based *kezüü*, which is called Piyomka *kezüü* (Table 1). 'Piyomka', the name of the construction organisation during the Soviet era, is essentially two seasonal (spring and autumn), but depending on the conditions of new snow (when new snow is heavy), some families skip 'autumn *kezüü*' and move their livestock directly to their shelters. However, skipping 'autumn *kezüü*' has occurred only once in the past decade. This *kezüü* is practised from March until the onset of the seasonal movement to *jailoo* and then from autumn to snowfall. The most significant characteristic of Piyomka *kezüü* is the use of 'professional' shepherds (nonfamily members) in summer, which means that this group does not practise *kezüü* during the summer months.

The number of participating families in Piyomka *kezüü* varied, but the average was 9–15; as of 29 September 2013, Piyomka *kezüü* comprised 15 families and 388 head of sheep and goats (Table 1). When a family member cannot take care of their livestock, he/she pays someone else Som 100 (USD 2) per day to take care of them. They start daily grazing near the hospital in the village, but there is no set gathering site in the morning, unlike the other four groups of three-seasonal, village-based *kezüü* (Figs. 3 and 6); instead, when other sheep and goats pass each owner's house, they let their livestock join the group. The daily destination of Piyomka *kezüü* is Tumanchy and Temir-Korgon, east of the village (Fig. 1).

Kezüü *in Taldy-Suu* AA

As stated above, Taldy-Suu *AA* had 5271 registered head of sheep and goats in 2012, among which 3825 head were grazed in the form of *kezüü*. *Kezüü* in Taldy-Suu *AA* is classified into two types: (1) 'two-seasonal, village-based *kezüü*' practised in the villages of Taldy-Suu and Archa-Bulak and (2) 'three-seasonal, jailoo-based *kezüü*' practised in the Kurgak *jailoo* (Fig. 5).

The two-seasonal, village-based *kezüü* in Taldy-Suu comprised more than 10 groups, sometimes up to 15 depending on the time of year because families go to *jailoo* and return to the village separately on different days. These *kezüü* groups have no name, which is most likely because the groups are changed temporarily.

The daily grazing routes of two *kezüü* groups in Taldy-Suu were traced by micro-GPS devices for six head of sheep and goats in October 2013 (Table 2). One group (Group E in Table 2) uses the north-eastern slope, while another (Group W in Table 2) uses the lower pastureland on the alluvial fan down to the main river of Kyzyl-Suu (Fig. 1).

The village of Archa-Bulak has four groups of two-seasonal, village-based *kezüü*. These groups have no name because the number of participating families in the four groups is seasonally flexible; each group comprises five to eight families which vary throughout the year because families go to *jailoo* and return to the village separately on different days. Each group comprises 200–250 head of sheep and goats.

In total, 30 micro-GPS devices were installed to sheep and goats belonging to five groups of *kezüü* in May, September and October of 2013 (Table 2). Because the pasturelands around Archa-Bulak are flat, the average altitudinal difference of daily grazing routes was as small as 17–240 m (Table 2). The radius between the village and the furthest movement point ranged from 1.3 to 3.0 km.

Another type of *kezüü* (three-seasonal, *jailoo*-based *kezüü*) was observed in Kurgak, one of 13 *jailoo* in Taldy-Suu *AA* (Fig. 5). Seven families have houses in Kurgak; two of these live in Kurgak throughout the year, and five live in Kurgak from spring to autumn and in Taldy-Suu during the winter. They own 225 head of sheep and goats between them and also take care of 240 head of sheep and goats for other families living in Taldy-Suu.

One of the seven families grazes their 350 head of livestock in the flat surrounding area in spring and autumn. In addition, two families with 210 head of sheep and goats only stay in Kurgak during the summer for grazing, but do not participate in *kezüü*. In total, 1025 head were grazed in Kurgak in spring and autumn. During the summer, 350 head go to a *jailoo* located in the south, leaving 675 head in Kurgak. Among these 675, 465 are grazed in the form of *kezüü* and 210 head are grazed by their owners in Kurgak.

Micro-GPS devices were installed to six sheep and goats in October 2013, but only one of them was retrieved (five devices lost). The radius from the houses in the *jailoo* to the furthest movement point was 2.6 km (Table 2).

Types of *Kezüü* and *Novad* Throughout the Entire Alai Valley

Although *kezüü* is normally practised around villages (village-based *kezüü*), a total of 465 head of sheep and goats and four families practise *kezüü* in the pastures of Kurgak, about 10 km away from the village of Taldy-Suu (Fig. 1). They graze sheep and goats of their own and of other families from spring to autumn in the Kurgak *jailoo* and keep livestock in shelters attached to their houses in Taldy-Suu village in the winter (Fig. 4). There are vast rye fields for winter hay in and around Taldy-Suu, where grazing is not allowed in summer to avoid disturbing the growth of rye. Because of this, the *kezüü* groups in Taldy-Suu as well as Archa-Bulak cannot practise *kezüü* in summer: as a result, the *kezüü* groups in Taldy-Suu adopt either two-seasonal, village-based *kezüü* or three-seasonal, *jailoo*-based *kezüü* (Table 3, Fig. 5). On the other hand, the *kezüü* groups in Sary-Tash adopt three-seasonal, village-based and two-seasonal, village-based *kezüü*. Sary-Tash is located at an altitude beyond the cultivation limit in terms of air temperature: no vegetables are grown, and only a small field for fodder exists in the eastern margin of the village. The fodder field is so small that the local residents can install fences around the field. There, *kezüü* practice is possible even in summer (Table 3, Fig. 5).

Our general survey shows that the types of *kezüü*/*novad* increase when the entire valley is considered (Table 3). In Kara-Kabak, eight to nine groups with about 200 head in total practise *kezüü* in autumn only (one-seasonal, village-based type; 1-V

Table 3 Five types of *kezüü*/*novad* in the Alai Valley

Village	Altitude (m)	Name of grazing	Type of *kezüü*/*novad*
Sary-Tash	3150	*Kezüü*	3-V, 2-V
Archa-Bulak	3050	*Kezüü*	3-V, 2-V
Taldy-Suu	3040	*Kezüü*	3-V, 2-V, 3-J
Sary-Mogol	2930	*Kezüü*	n/a
Kara-Kabak	2855	*Kezüü*	1-V
Kashka-Suu	2810	*Novad*	2-V
Jayilma	2765	*Novad*	2-V*
Achyk-Suu	3050	*Novad*	3-VJ
Kabyk	2695	*Novad*	3-VJ, 2-V
Kyzyl-Eshme	2595	*Novad*	n/a
Daroot-Korgon	2480	*Novad*	n/a
Chak	2435	*Novad*	3-VJ*
Jash-Tilek	2450	*Novad*	3-VJ*, 1-V
Jar-Bashy	2460	*Novad*	2-V

Source: From interview surveys in 2012 and 2013
3-V (three-seasonal, village-based), *3-J* (three-seasonal, *jailoo*-based), *3-VJ* (three-seasonal, village- and *jailoo*-based), *2-V* (two-seasonal, village-based), *1-V* (one-seasonal (either spring or autumn), village-based), *n/a* (not studied) and * (also practised in midwinter when snow is minimal). All villages are located on gently sloped valley floor. Only Achyk-Suu is situated on the north-facing side, and others are all on the south-facing side

in Table 3). In Jayilma, six to seven groups practise *kezüü* in spring and autumn (two-seasonal, village-based *novad*), but they also continue *novad* in midwinter when snow depth is minimal (2-V in Table 3). *Novad* in Achyk-Suu was active during the Soviet era, although at present the number of participating families in Achyk-Suu has declined, and only some 300 head are grazed in this form. Their *novad* follows three-seasonal practice, but they do practise *novad* in and around the Achyk-Suu village in spring and autumn as well as in *jailoo* (3-VJ type in Table 3). The same type of *novad* is also practised for 1200 sheep and goats in the Kabyk village and its *jailoo*. In the farther west, Chak and Jash-Tilek also practise the form of three-seasonal village- and *jailoo*-based *novad* (3-VJ), but they continue *novad* even in midwinter when snow depth is minimal. They use three *jailoo* in the Kök-Suu valley in summer. In addition, there is another type of *novad* practised by 16 families in Jash-Tilek that is one-seasonal (spring only), village-based *novad* (1-V).

Therefore, at least five types of *kezüü*/*novad* are proposed for the major 14 villages of the Alai Valley, although their details should be studied in the future. Most villages in the western valley have three-seasonal, village- and *jailoo*-based *novad* (3-VJ in Table 3). There, the *novad* livestock are taken to *jailoo* located far away from the villages in summer, because fodder and agricultural fields spread in and around the villages.

Types of *Kezüü* and *Novad* Throughout the Entire Alai Valley

This study found the occurrence of three types of *kezüü* in the two subdistricts (*AA*) of Sary-Tash and Taldy-Suu (Fig. 5): (1) three-seasonal (spring to autumn), village-based; (2) two-seasonal (spring and autumn), village-based; and (3) three-seasonal (spring to autumn), *jailoo*-based.

The existence of three types of *kezüü/novad* systems in the eastern Alai Valley, or at least five types of *kezüü/novad* systems in the entire Alai Valley, will both negatively and positively affect sustainability in the area in the near future. Specifically, ecological impacts caused by the intensive use of pasturelands around the villages should be studied using long-term tracking of grazing patterns with GPS collars. Song (2014) discussed overgrazing resulting from *kezüü* due to the concentrated use of pasturelands near villages that can be easily accessed (see Shirasaka et al. in this volume). This concentrated use occurs because daily grazing is only possible within a short horizontal movement distance (Table 2); the radius of the daily horizontal movement from the villages in Sary-Tash and Taldy-Suu only ranges from 1.3 to 5.4 km (Table 2). The practice of *kezüü/novad* was not examined for the entire Pamir, which is important where the sustainability of this area is concerned.

Meanwhile, the practice of *kezüü/novad* has benefits as well. The existence of *kezüü/novad* is important for families possessing small numbers of sheep and goats in order to maximise their limited labour resources. Further, *kezüü/novad* is regarded as only one component of the diversified pastoralism found in the Alai Valley (Shirasaka et al. in this volume), and the livestock grazing in this form can also be regarded as ecotourism resources (Watanabe et al. 2013).

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External Support and Local Agency: Uncertain Transformations of Livelihoods in the Pamirian Borderland of Tajikistan

Tobias Kraudzun

Abstract Russian and Soviet (geo-)political interests rendered the Pamirs as a borderland place. This persisting functional perspective framed the people's experiences and development agency towards the region. This chapter exemplifies how realities of the Soviet economic system's breakdown, persisting border institutions, as well as external humanitarian relief and development projects influenced individual decisions of people during the transition period. It argues that persisting local narratives about a region dependent on external support combined with uncertainty about economic frame conditions shape peoples' decisions about coping and adaptation strategies and constrain their livelihood trajectories.

Keywords Post-socialist transformation • Geopolitics • Closed borders • Livelihood trajectories • Humanitarian relief

Introduction

> The hostile climate is responsible for our bad life here. It is always cold, nothing can be grown, even the oxygen isn't sufficient for us. We live worse than anybody else in the world. … In the Soviet time it was ok, we were directly supplied by Moscow, it was sufficient for everybody. Herder in Bash-Gumbez (2008)

This chapter deals with people living in a harsh environment who are heavily dependent on the interregional exchange of goods for their basic needs. It will discuss which opportunities and restrictions arose on the transformation of their livelihoods, given the persisting status of a closed frontier region.

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After the end of the Cold War, the iron curtain was lifted, and the prototype of a sealed border, the impermeable dividing line between the East and West, was promised to be history. The predominant discourse of globalisation and deterritorialisation promised a borderless world with tremendous advantages resulting from unlimited transborder trade (Ohmae 1990; Caney 2005).

However, not all borders became permeable after the great ideological antagonism had disappeared. The global change's impact on borders is, like Newman rightly states, '… as geographically and socially differentiated as most other social phenomena' (Newman 2006:181). Although the borderlands in the converging European Union became the arena of transborder cooperation, subdividing the fading Soviet Union meant that international borders were established between the successor republics merely along the pre-existing administrative boundaries between the Soviet republics. These borders constitute now major obstacles to economic relations in contrast to the inner-Soviet boundaries which were no hindrance of an intensive exchange.

In addition to the creation of new borders, the perpetually sealed Tajik-Afghan boundary was challenged by frequent penetrations during the Civil War in Tajikistan (Halbach 1993, 1997; Borcke 1994). This boundary has remained in focus because of the recent surge in Afghan drug production and trafficking through Central Asia (Kreutzmann 2007:618–620; Iskandarov and Lewington 2009).

The promises of the market system, which spread quickly throughout the post-Soviet world, did not reach the people in the Pamirs. Instead, the people just felt uncoupled from the post-Soviet economic developments, when the halting of the Soviet supplies came along with the isolation of the Pamirs due to the emerging civil war in Tajikistan's west.

Also, no recommendations or encouragement was heard from the new political rulers of the independent Tajikistan, who claimed to know how to create economic development of the country and prosperity of the people. The reality on the ground was dominated by constraints, as one Murghab inhabitant remembered: 'All we knew was war, drugs, and humanitarian aid!'

The aim of this chapter is to understand how the realities of the Soviet economic system's breakdown, the persisting regional setting of a frontier zone, as well as external humanitarian relief and development projects influenced the individual decisions of people during the transition period.

It will exemplify how persisting local narratives about a border region deserving external support because of its geopolitical significance, combined with uncertainty about the economic frame conditions shape peoples' decisions about coping vs. adaptation strategies of their livelihood systems.

The findings in this chapter are based on extensive fieldwork conducted in the Eastern Pamirs since 2003, including several long field stays between 2007 and 2009 (14 months) and repeated visits up until 2014 in the Eastern Pamirs. Information is derived from topic-specific interviews with key and knowledgeable informants about the changing state institutions, borderland experiences, the local economy and political frame conditions. Examples to illustrate the interdependency of border status and individual decisions about livelihood strategies were drawn from a sample

of 70 households which were selected to record their life histories to gather information about personal experiences and livelihood decisions, their rationales and their outcomes during the phases of change in the Eastern Pamirs. Details about historical contexts are based on data collected from regional archives and provided helpful insight into the current situation.

Borderlands as Social Space

Boundaries are crucial for the sovereignty of territorial nation states and became increasingly a matter of scholarly interest in the twentieth century. First underestimated as merely 'natural barriers' by Friedrich Ratzel (1897:471), then categorised with defined terminologies of geographical separation lines (Hartshorne 1936; Boggs 1940; Jones 1943; Kristof 1959), and finally disaggregated into the different roles they play for nation states to fulfil legal, fiscal, control, military and ideological functions (Raffestin et al. 1975), listed in (Leimgruber 2005:240), boundaries have been studied separately from the people who live adjacent to them.

Later views widened their focus from the dividing line to the social interactions that take place in relation to it. In this perspective, the border is to be regarded first and foremost as an institution of the modern nation state. The boundary is created, legally sanctioned and maintained by the state (Kristof 1959). In everyday social reality, the boundary is represented by the state border as a structural precondition that poses as the arena for social and cultural practices (Albert 1998:63–64).

Borders as state institutions interplay with the social reality of people living along the border. They are created, sustained and enforced by state structures, but (social) practices around the border are performed by a mesh of actors, determined by their socioeconomic categories (occupation, business ideas, etc.). This moves the focus from the physical boundary to the interplay of the border institutions with the everyday practices of people.

The interaction between border institutions and people has been conceptualised in different ways. The term 'borderland' was often used to describe the special history of border regions as a relation between the central power and the social reality of the people living at the margins – either from the central powers' perspective of examining the function of the border for creating and maintaining the nation state or from the borderland peoples' perspective of challenging the state's hegemonic claims.

Borderlands as a meaningful social space to scrutinise are a good alternative to the social 'container' of the nation state. Territorially, Wilson and Donnan understand it as

> … [a] region bisected by the boundary line between states, which in comparative perspective is presumed to encapsulate a variety of identities, social networks and formal and informal, legal and illegal relationships which tie together people in the areas contiguous to the borderline on both of its sides. (Wilson and Donnan 2012:9)

However, the permeability of borders enables or prevents contact and interaction. To describe the degree of interaction, Oscar Martinez (1994:6–10) derived four types of borderlands: alienated, coexistent, interdependent and integrated. Given the Pamirian boundaries' historical function as a geopolitical frontier until the end of the Cold War, in the continuum of openness vs. closeness, it is one example of a closed border where exchange is very limited and the borderland people are – despite their belonging to the same ethnic group – kind of alienated from each other.

People in the Pamirs are significantly affected by the existence of the border. Although Kyrgyz pastoralist groups constitute the majority of the people in the Pamir border region, interacting across the border became impossible during the Soviet period. As a legacy of that time, the border's *depth* as '… degree of difference occurring in that area between the two sides of the border' (Zartman 2010:6) increased considerably.

Therefore, the agency of the borderland people in the Pamirs should not be conceptualised as challenging the nation state but should be understood as a making of use of the additional resources directed by the (Soviet-) Russian or the Tajik nation state to the border region in order to involve the people in the quest for controlling the border. On the other hand, the dividing of ethnic groups by closed borders imposed constraints on the borderland people. The amount and kind of resources directed to the sensible border region changed over time and determine if the constraints of living in a closed border region are outbalanced by the advantages of living in a border region of special attention by the state.

Historic Legacy: The Pamirs as a Soviet Borderland

The location and meaning of the Pamirian border are historically connected with the encroachment of the Russian Empire into Central Asia during the last decades of the nineteenth century. Two agreements between Russia and the United Kingdom were enacted in 1873 and 1895. They transformed the contested frontier zone between the Russian Empire and British India into a boundary delimiting Russia's area of influence and defining the territory of Afghanistan as a neutral buffer zone between the empires. Starting with the permanent presence of Russian troops in 1892, people and movements in the Pamirs were increasingly controlled.

Controlling border traffic proved to be crucial for the victory of Soviet power, when in the aftermath of the October Revolution a struggle for power broke out in the region. Communist party commissars were sent from Tashkent, the centre of Soviet Turkestan, and counter-revolutionary groups crossed the border from Afghanistan. Both tried to convince the people in the Pamirs of the socioeconomic advantages of one or the other politico-economic systems (Taipov 2002:48–51).

By that time, border control was hardly a hindrance to the frequent illicit crossings. Numerous people escaped the Tajik Pamirs to avoid persecution or their compulsory dispossession by the Soviet authorities, and others joined them due to socioeconomic dependencies within pastoralist groups (Audouin-Dubreuil

2008:182). Many of them returned after some time. They were mostly welcomed by the Soviet authorities, as they could present remigration as argument in favour of the socialist approach (Shaw 2011:337–338).

The transport of popular contraband was another reason for undocumented border crossings. Subsidised, and therefore cheap, goods from the emerging Soviet supply organisations became preferred items for smuggling. Opium and tea were the main trading commodities in the opposite direction. During the late 1920s and early 1930s, the Soviet power was trying desperately to contain the frequency of border crossings and the amount of contraband goods transported (Shaw 2011:341; Kreutzmann 2013:13).

The establishment of a socialist economy required full control over economic activities via the allocation of resources and could not tolerate unregulated transborder flows of private capital, labour and goods. The distribution of internal passports to Soviet citizens starting in 1932 came with the attachment of a special status to the buffer zones along the border, restricting the residence of unwished possibly disloyal social groups. This status was formalised in 1934 by the introduction of a border zone (*pogranichnaja zona*) where even economic activities had to be monitored by the border troops under the Chief Directorate of Border Troops and later under the supervision of the Committee for State Security (KGB, Shaw 2011:340–342).

Gaining control over the 5000-km southern border of Soviet Central Asia was no easy task for the Soviet border forces. In most sections of the Pamirs, the boundary stretched through inaccessible terrain unknown to the nonlocal border guards. The Soviet planners realised that it was unrealistic to seal the border while forcing the people to dismiss their regional transborder supply networks against their will. Their strategy was rather to win the local population over by identifying them with the vision of a secure border. The Soviet propaganda would have remained largely ineffective if it had not been backed by material support. Every endeavour was made to improve the supply of food and the provision of goods, channelled via the railheads of Andizhan and Osh.

The Soviet power tried hard to escape the dilemma of affronting the people by brutally punishing border crossings and not winning them over because of the prevalent counter-revolutionary influence. On one hand, the Soviet power was aware that the nonlocal border guards were dependent on local peoples' knowledge to effectively guard the border and were also aware that their support was not sure without winning the *hearts and minds* of the local people. On the other hand, they would not win their *hearts and minds* as long as the people were influenced by counter-revolutionary forces which were frequently infiltrating the border. Although the Boundary Commission of the *Sredazburo* certainly did not like the frequency of incursions across the border, they urged the commanders of the Pamir border forces to act very carefully, avoiding affronting the people who were still sceptical about the new system and mass migrations to Afghanistan (Bergne 2007:91–92; Latypov 2013:27–28).

Finally, the reorganisation of the border guards, including the equipment of several border posts along the boundaries with Afghanistan and China made attempts

for a total border closure successful. After some years of frequent skirmishes between border guards and people trying to cross the border unofficially, the border control regime seemed to work by the end of the 1930s (Taipov 2002:104–105).

The Soviet administration was aware that the control of a vast border region like this was dependent on appropriate infrastructure, efficient administration and, last but not least, the peoples' loyalty and knowledge.

Consequently, the Pamir Highway, the first metalled road in this high mountain region, was advanced over a distance of more than 700 km from Osh to Khorog. This considerably eased the continuous efforts to supply the remote region with sufficient amounts of goods. Prior to the road, in 1930, desperate and demanding requests to accelerate the forwarding of the needed goods that were sent out by the GBAO administration in Khorog met slow camel caravans en route. Then, after the opening of the Pamir Highway in 1933, countless trucks could be observed transporting goods to the Pamirs. In contrast to the usual budget allocation via the administrative level of the Soviet republics, the transport trust 'Pamirskoe avtotransportnoe upravlenie' (PATU), exclusively founded for the Pamir supplies, was financed and controlled by the supranational administrative level of the Soviet Union – vernacularly called 'Moscow supply'. Given bad mountain roads and scarce means of transport, bringing more than 7500 tons (GosArkhiv-GBAO 1936:1/3/27) of goods into the Pamirs in the planning year 1936/1937 to supply about 29000 people was still a tremendous task.[1]

To streamline the administration, Murghab District was established in the eastern Pamirs. Modern buildings with administrative, educational and social infrastructure were erected in the district centre of Murghab. To establish a modern administration and maintain the infrastructure, the region was in need of a variety of professions. Many young specialists, mainly Pamiris originating from the western Pamirs, came to work in the eastern Pamirs (AA 28.05.2008, BT 31.03.2009, LH52 13.05.2009).[2] These development efforts led the administrational centre of Murghab to grow with people employed in non-agrarian sectors to encompass about half of the eastern Pamirs population. As an effect, the importance of livestock breeding became secondary in this region traditionally used by Kyrgyz pastoralists.[3]

Apart from the infrastructure for administration and supply, much manpower was needed to guard the border that stretched through inaccessible terrain. Still, the

[1] Although the official state statistics claim that there were more than 55200 inhabitants in 1932 (Bushkov and Kalandarov 2003, 106), regional archive documents show a population of 39320 for 1935 and only 28924 for 1936 (GosArkhiv-GBAO: 1/3/27). The latter number was collected by a special brigade activated jointly by the communist party and the government of the Tajik Soviet republic that was sent in order to speed up collectivisation in the Pamirs. The sharp decline gives a hint of the amount of forced migrations during the high time of the Stalin repression.

[2] The full names of quoted interview partners are listed below. All biographical interviews (marked with LH) were conducted with the household elder and have been anonymised.

[3] The huge district with an area of 38300 km^2 is sparsely populated with 14000 residents, around 77% of them being Kyrgyz. The immigration of many young specialists during the Soviet period resulted in the district's share of 23% Pamiri people (Statkom GBAO 2002:8). Mostowlansky describes the dramatic cultural and social change felt by young Pamiris relocated to Murghab as 'Modernisation of belonging' (2011:174)

border guards were undermanned and in need of intelligence. In this respect, pastoralists with a good knowledge of mountain paths and passes, and dispersed on the Pamir pastures, were crucial people to fulfil surveillance tasks. The pastoralists were wooed in this role by the border guards:

> In the twenty years after the Great Patriotic War the most reliable and best friend and helper of the border guards appeared to be the Pamir population. Every third border violator was arrested directly or indirectly by these loyal followers. (Lapin 1965:25)

To make the region attractive for living, privileges were granted to all people in this sensitive area. Although the specialists were directed by the state after their professional education, most of them became pleased by the favourable treatment. The allowance paid for living under high mountain conditions attributed an additional 50% to their income. Together with a comparably rich provision with consumer goods (vernacularly called 'Moscow supply'), this resulted in satisfying living standards (BT 18.05.2009).

On the other hand, the Pamirs' location in relation to the unsettled Sino-Soviet boundary was responsible for some constraints. When the boundary between the Czarist Russian Empire and China was agreed upon in 1884, it has been delimited legally binding only in the northern part, where the empires then met. When Russia occupied the whole of the Pamirs, it continued to take the watershed of the Sarikol range as the dividing line, ignoring China's claims of large parts of the area (Garver 1981:115). This was tolerated by China, until in the aftermath of the Sino-Soviet border conflicts in the Far East tensions increased in all regions with disputed territories.

Consequently, the Pamir border guards were restructured and reinforced again in 1973. The result of these measures is still visible today: beginning in the 1970s, an electrically secured, barbed-wire fence was set up adjacent to the external boundaries of the Soviet Pamir. Due to the unsettled territorial claims, it was built at a distance of several kilometres from the Sarikol Range, constituting the de facto boundary (cf. Figs. 1 and 2).

This buffer zone excluded the collective farms from pasture areas, which comprises a substantial 14% of the district's territory (Fig. 1). Later, limited access was granted to those sovkhoz workers who were checked and approved by the KGB. Only in 2004, after the end of the Soviet Union, Sino-Tajik negotiations resulted in a final demarcation of the provisional boundary between the states. One item of the agreement was the cession of a territory of about 980 km^2 to China, with disagreeable effects for the pastoralists of the dzhamoat Rang-Kul who had used the pastures on the land handed over to China (Fig. 1).

Persistence and Change in Tajikistan's Borderland During the Transition Period

The transitional setup in the Eastern Pamirs differed from that of adjacent regions in post-Soviet republics. Its location adjacent to war-torn Afghanistan and the outbreak of the civil war in Tajikistan perpetuated the significance of the Pamirian

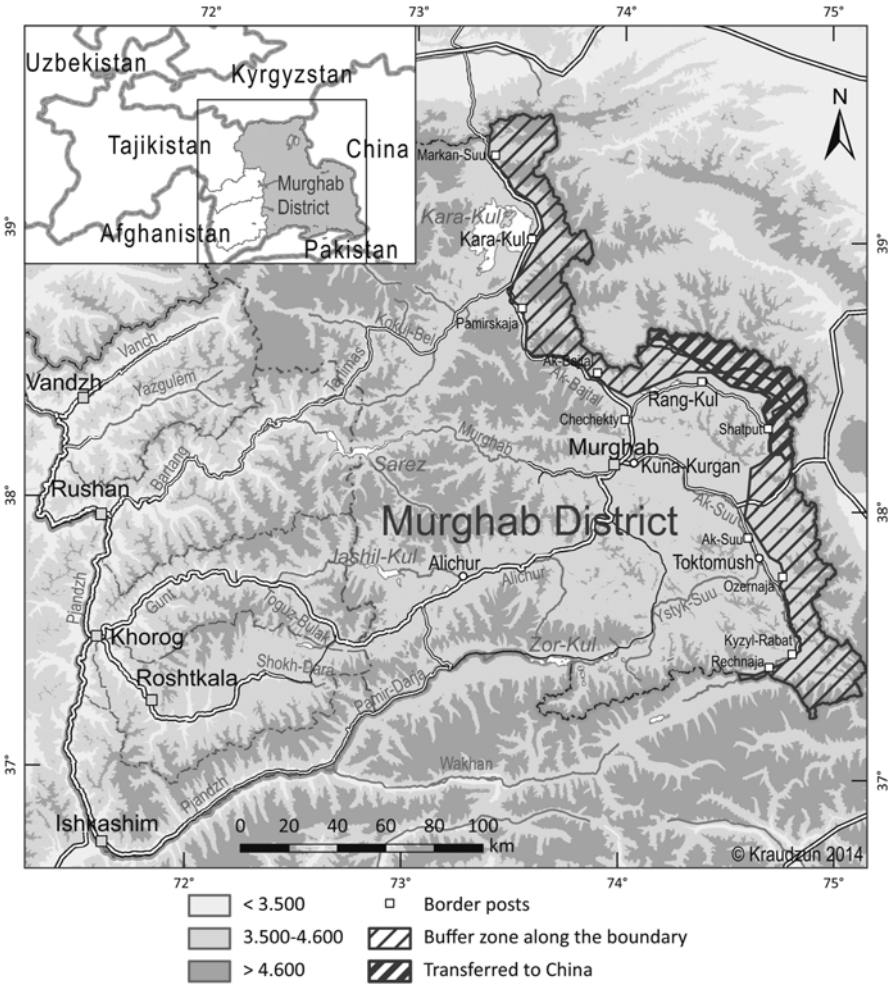

Fig. 1 Map of the buffer zone and the territory transferred to China located in Murghab District (Own design, based on SRTM3v4 elevation data, own field observations and satellite images taken on 20.10.2007, 8.3.2008, 23.08.2011, 7.9.2011, 12.11.2011, 4.1.2012, 9.10.2012, 10.04.2013, 20.10.2013)

border region to Russia and attracted the attention of the international community. This setup influenced how individuals perceived constraints and opportunities during the transition period[4] and how they translated this into economic decisions altering their livelihoods.

[4]The transition period is understood here as roughly the first decade after Tajikistan has gained independence.

Fig. 2 Closed borders in the open mountain landscape of the Koshagyl area of the Eastern Pamirs with the Muztagh-Ata in the background: The electrically secured, barbed-wire fence, referred to as 'sistema elketrosignalizacija' (called vernacularly 'the system'), delimits the buffer zone adjacent to the Sino-Tajik and Afghan-Tajik boundaries (Photograph © T. Kraudzun, Sep 2007)

Russian Border Forces: Persisting Role after the Soviet Dissolution

Even after the independence of the post-Soviet republics from the Soviet Union, Russia's security interests continued to stretch to the Soviet Union's former limits. One focus was Central Asia, where Russia was particularly worried about the spreading of Islam as a political movement. Two developments gave additional rise to the concerns. The downfall of President Najibullah strengthened the Mujahidin forces in Afghanistan, and a Civil War broke out in Tajikistan just after it gained its independence. Although the latter was caused by internal political instabilities in Tajikistan and was triggered by a conflict between regional elites about power, Russia was increasingly involved in the conflict with the aim of repelling the Islamic forces in the conflict (Splidsboel-Hansen 1997:1502).

Russia continued to control the borders after Tajikistan's independence. The 1992 Collective Security Treaty signed by the members of the Commonwealth of Independent States (CIS) laid the foundation for a 1993 bilateral agreement assigning the mandate for securing Tajikistan's border with Afghanistan and China to the

Russian Federal Border Forces (RBF).[5] Accordingly, Russia as an external actor played a leading role for the local economy by financing and running the infrastructure needed to control Tajikistan's share of what was seen as the southern CIS border until 2003 (Splidsboel-Hansen 1997:1508–1509).

The considerable impact on the local economy resulted from the policy to draw about 75% of the forces from the local population. Therefore, many local people were hired as contracted border guards, as well as civilians. With an extraordinary high salary by local standards, employed soldiers and labourers were usually able to support their whole household. A former head of Murghab District assessed that in the district centre of Murghab, 20–30% of the households benefitted in this way. Furthermore, many products were purchased by the affluent Russian border guards at the local market. A considerable share of support consisted of supplies (mainly fuel and coal) originally intended for the RBF but sold by soldiers for their own gain. Above all, RBF supplies often made it possible to operate public infrastructure like the landline telephone system whose generators worked with fuel supplied by the RBF (AA 28.05.2008, JI 19.04.2009).

The external inputs to the local economy ceased with the pull-back of the RBF. The poorly financed Tajik border forces took over the task of guarding the border after the end of Russia's mandate. Local border guards quit their contracts as their compensation in the Russian forces has been many times higher. This created a significant income gap in many local livelihoods. The funds of the Tajik border forces were insufficient to maintain the extensive infrastructure for controlling the border. Additionally, the informal supplies ceased as well (Fig. 3).

The buffer zone adjacent to the boundary played a crucial role for the self-supply of the undersupplied Tajik border guards. As they were in charge of excluding access for most local people, they were able to hunt protected wildlife for meat and trophies unpunished – like the world renowned Marco Polo sheep (*Ovis ammon polii*) and the endangered snow leopard (*Uncia uncia*) – then and now.

Post-Soviet Economic Realities: Humanitarian Relief and Dissolution of Exchange Relations

Powered by the political instabilities of independent Tajikistan and triggered by a conflict between regional elites about power, in 1992 a Civil War broke out in Tajikistan. Being a main target of the warring factions, Pamiri people fled Tajikistan's war-torn southwest to their former homeland in the Pamirs. This mass exodus resulted in a dramatic increase of the population there just at the moment when the local economy could not cope at all. The influx of 54800 people forced to migrate into the Pamirs (Herbers 2006:213) increased the population by about one-third

[5] The formerly Soviet Border Troops stationed in Tajikistan came as the 'Group of Russian Border Troops in Tajikistan' under the command of the Russian Federal Border Forces (re)organised in 1993 (Decree No. 2318 of the President of the Russian Federation, 30.09.1993).

Fig. 3 Anandoned border post 'Ozernaja' of the Russian Border Forces (RBF), Tokhtamysh area of the Eastern Pamirs. After the pulling-back of the RBF, funds for the Tajik border forces were insufficient to maintain existing border infrastructure (Photograph © T. Kraudzun, Jun 2010)

according to official sources (the real figures are probably higher). This happened just at the moment, when the former state supply structures had collapsed. Above all, the Pamir region was completely isolated, as individual traffic on the former supply line from Osh was impeded by the RBF and on the road connection from Dushanbe by the fighting of the civil war.

Food self-sufficiency rates were low as an effect of the Soviet exchange system. During the Soviet era, agricultural production and the economy of the region were transformed to meet external needs; in exchange, the Pamirs were supplied with all necessary goods from the outside. This production and exchange system resulted in low rates of self-sufficiency. Just after the Soviet dissolution, less than 20% of the cereal needs could be met by local agricultural production (Herbers 2006:80).

Additionally, within Tajikistan in times of the civil war, the administration was paralysed and not able to maintain activities of state organisations by paying salaries or to organise the supply with basic goods. As a result, the Pamiri people were not able to supply themselves with food.

In order to alleviate the disastrous supply situation, in 1993, the Aga Khan Foundation founded the 'Pamir Relief and Development Programme' (PRDP) and gathered several donors to fund big amounts of food. After 2 years, in 1995, the amount of humanitarian relief increased to about 25000 tons of goods yearly. Murghab District's share in this humanitarian relief reached a peak of 1800 tons in

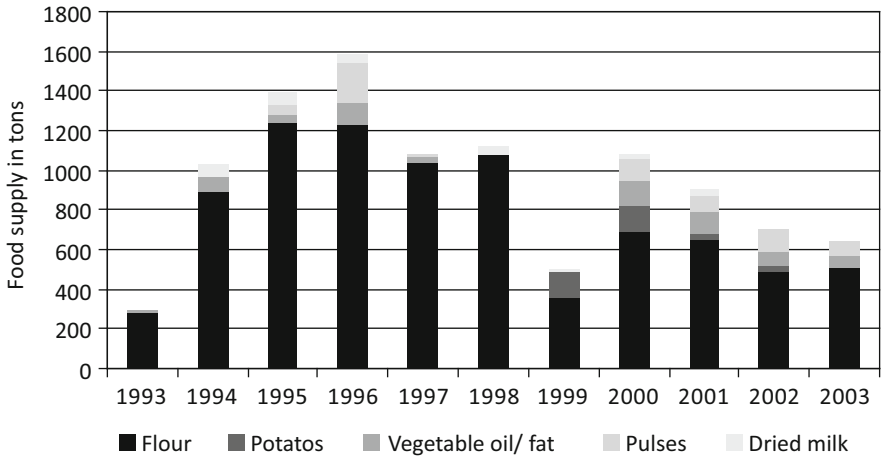

Fig. 4 Food supply for Murghab District organised by the Pamir Relief and Development Programme (Data provided by the Murghab office of the Mountain Societies Development and Support Programme)

1996 and lowered from year to year until this humanitarian relief programme ended completely in 2004 (Fig. 4).

The distribution of food provisions taking into consideration the actual needs in settlements was discussed with the participation of all administrative levels. Newly created state committees for humanitarian relief of the provincial, district and municipal level provided the PRDP with population and socioeconomic data. The distribution formula among the municipalities of the Pamirs was discussed at the provincial level. Based on socioeconomic indicators, the biggest shares were allocated to the settlements of the Murghab District. From 1994 to 1997, 5–8 kg of flour, 0.2–0.4 litres of vegetable oil and 0.2–0.3 kg of dried milk powder were distributed per person per month here. Additionally, they received 1.1 kg of rice in 1996 and 1.1 kg of lentils in 1997.

In the first years, food supplies were distributed in equal quantities per registered person of a given municipality. From 1998 onwards though, many donor organisations wanted to focus on the poor households and demanded a consideration of the socioeconomic stratification of the population. However, humanitarian committee representatives in the villages were often reluctant to subdivide their communities into three poverty levels. A PRDP project manager remembers:

> … the [representatives of the] villages did not like it, they said, 'we distribute equal amounts to everyone and if people have problems – we will solve them'. And that was actually much better, because with a differentiation there have been frequent conflicts in the village: he got 2 kilo, and I got 1.5 - why? (RM 14.03.2010)

This thinking of both the administration's representatives as well as the people is not surprising after several decades of Soviet rule. The sharp decline after the disin-

Fig. 5 Used up stocks of humanitarian relief located in a former state shop in Shajmak village. Aid was distributed in considerable quantities over roughly a decade (Photograph © T. Kraudzun, Oct 2003)

tegration of the Soviet exchange and supply system was felt by (almost) all citizens equally. Why should one person get more products than his neighbour? (Fig. 5).

Livelihood Trajectories in the Border District

There is no doubt that the humanitarian relief enabled households to cope with the food crisis in this region that had been accustomed to external supply during the Soviet period and dependant on its exchange and supply system. At the same time, it influenced the way people decided or did not decide to try to adapt to the new conditions in the transition period. Adylbek, a former district representative of the hard years following the Soviet dissolution, stated:

> I see two effects. The good one is that the migration [of 1993] stopped. The Kyrgyz people stayed in the Pamirs. This is most important. On the other hand, like during the former Soviet period, the people again forgot how to work. You have to work. Only since 2003, 2004, they started to learn it, we see now many entrepreneurs, the women became traders … all started to trade – this is a common practice in the whole world! The Murghab people are backward – if they would have been in a whirl during the 1990s, the life in Murghab would be much better now. (AA 28.05.2008)

In today's Pamirs, entrepreneurship is still less common than in other post-Soviet regions. Since the perestroika period, entrepreneurial activities spread throughout

the Soviet Union. Especially in Central Asia, a considerable share of fruits, vegetables and livestock products was produced in the private sector. Households were able to supply themselves with these products on the so-called collective farm markets (*kolkhoznyj rynok*). These markets were created by the Soviet power in order to overcome continuous insufficiencies of the food supply state system (Giese 1983; Stadelbauer 1991).

All communication to and from the Pamirs was restricted and closely monitored. To enter the region, a permit issued by the border guards was required, which was not issued for individual transport. Therefore, cars of the diverse state organisations were the only available means of interregional transport.

So it were exclusively state organisations who managed to bring in enormous amounts of building materials, foodstuffs, goods and fuel necessary for collective farms, state shops, administration and numerous border guards. To fulfil this task, different state transport organisations were established. Most of them were financed and controlled by the supranational administrative level. Running hundreds of trucks on the route of Osh-Murghab-Khorog, the transport of supplies was of the highest priority.

With the powerful state supply as an argument, it was possible to ban all individual trade, even in small quantities:

> The shops were full, there was no need for [private] trading, and any privately organised distant trade was outlawed as '*spekulacija*'. (KK 06.05.2008)[6]

As a result, the people of the Pamirs had no experience with trade at the end of the Soviet supply system – in contrast to other regions.

Even privileged people, like the drivers of the state organisations who were able to cross the border regularly, mostly did not use their status for private economic activities, as was common throughout the late Soviet Union. Among them, only the small group of Uzbeks originating from Kyrgyzstan's south used the possibility to engage in activities of individual trade. They are still known for selling needed *tandyrs* in Murghab.[7]

The sudden disruption of the Soviet exchange and supply system found the people in the Soviet Pamirs unprepared. They have witnessed and adapted to an egalitarian societal organisation with widely equal living conditions and opportunities. The comparably well-organised supply system in combination with the strict rules of the border district impeded private activity, even during the perestroika period.

The absence of a local bazaar in Murghab during and after the Soviet period[8] is not surprising. In practice, the strict border regime was perpetuated when the, now Russian, border guards conducted rigorous searches on numerous road blocks along

[6] *Spekulacija* is understood as the reselling of goods for the sake of profit and was a subject to a penalty (Criminal Code of the Russian Socialist Federal Soviet Republic, issued 27.10.1960, §154).

[7] This commodity seemed not to be on top of the state planners' priority list of deliverables, because instead of individual 'bakeries' in every household, the state saw itself as responsible for the baking of bread.

[8] Only in 1997 was a local bazaar founded in Murghab.

the Pamir Highway. In addition to these difficulties, the official status of the Tajik-Kyrgyz border was not clear before the regulations were decreed by the Tajik state in the late 1990s, after it had recovered from the Civil War. This caused confusion concerning permissiveness, checking and customs clearance of traded goods beyond the humanitarian and military supplies at the border. This situation made it very risky to transport livestock to Osh in order to buy goods to bring home, resulting in very infrequent private trading activities (Kraudzun 2011:178–182).

The sharp decline after the disintegration of the Soviet exchange and supply system was felt by all citizens of the Pamirs. The 1990s were marked by negative trends in the regional economy and external emergency aid. It is not surprising that very few of them anticipated the importance of private initiatives to secure their livelihoods, because most of the people trusted their experience of being supplied by external sources. This shall be illustrated in the following with some examples.

Less Urgency for Economic Success

The three-person household of Aman, 55 (LH01),[9] father of a daughter and two sons, includes his 23-year-old son and is based in Kuna Kurgan. A trained breeding expert (*zootekhnik*), he was not successful in maintaining a herd after the end of the Soviet system.

After getting his degree, he worked for many years in responsible positions of the kolkhoz 'Murghab', such as in the department of cadres, chief accountant, warehouse manager and finally in his profession as a breeding expert. At the end of the Soviet period, he had already gathered a comparably well-sized herd of 30–40 small and five to six big livestock.

Usually, people working in positions responsible for the allocation of goods managed to use their access to funds for their own use – especially during the first post-Soviet years when the state's control over its enterprises disappeared. However, Aman seemed to be not very successful economically, as all his livestock was lost in 2000.

We had the humanitarian aid, this was enough for living. And slowly we ate up our livestock. Prices for livestock were quite miserable, and petrol was not to be found, so we could not send a shepherd with our cattle to the summer pastures (LH01, 15.04.2008).

During the first years of humanitarian relief, Aman's five-person household received 25–35 kg of flour, 1–2 litres of vegetable oil and 1–1.5 kg of dried milk, as well as 1.5–6 kg of pulses monthly. Then, the amount of food lowered from

[9] All biographical interviews were conducted with the household elder. Other household members often helped out with specifying dates and adding to memories. Nevertheless, the biographies merely reflect the assessments of the household head, disregarding the intra-household variations.

year to year until the end of the humanitarian relief programme in 2004 (SG 18.08.2008).

Despite this humanitarian food supply, other goods had to be organised individually. Above all, the severe shortage of combustibles to heat the homes was pressing since the ample Soviet supplies ended abruptly. Hiring a shared truck with others, Aman travelled once a week to nearby and distant pastures where he collected two to three bundles of dwarf shrub for individual use.

Lacking entrepreneurial luck, Aman took the opportunity to get a job as teacher, regardless of the insufficient remuneration, which was equivalent to monthly 12 US dollars in 2001. Still comparably low today, it is the only source of income for the household.

'Hidden' Emergency Assistance

Many households were able to use of the opportunities granted by the massive presence of military and border guards. Ismail (LH36) was working as a driver for the Soviet Border Troops in the years before and after the Tajik declaration of independence. When the local economy collapsed around him because supplies were missing and salaries were not paid, he was still remunerated by the Soviet Border Troops. Moreover, during the absence of cash,[10] livestock became the main currency for local exchange.[11]

So, it was easy for him to use his salary to set up a herd. Investments were quite low in the period of weak control, when many animals were extracted from the kolkhoz herds and offered at reasonable prices. Another witness remembers:

> The *sovkhoz* sheep were very cheap. To tell the truth, for 4–5 bottles of vodka you got a big sheep … or for 20 packs of cigarettes.… 1991, 92 – in those days there was still much *sovkhoz* livestock, but the law enforcement was not active anymore. (LH37, 24.05.2009)

Similarly, Alikhon (LH65) worked for the border guards, but for the Russian Federal Border Forces from the late 1990s until their pull-back, as a contracted driver. Their payments of equivalently 250–400 USD monthly were many times higher than those paid to employees of Tajik state organisations. This helped him to not only earn a livelihood for his household during a time period that was still hard but also to diversify his income structure. He managed to establish a herd of 80–100

[10] The hyperinflation of the Russian Ruble impeded all trade relations. The vast majority of goods needed to be imported and became very expensive, while cash was scarce and losing rapidly in value.

[11] By this time, due to the lack of external funds, the managements of farms directions have rented out the animals to livestock tenants, who had the animals at their disposal on the pastures. They took opportunities to appropriate state livestock, either for immediate consumption or to barter for their daily needs. Usually, the appropriated animals of the sovkhoz herds were declared by the herders as a loss. The oblast' level criticised the sharp decrease in livestock and tried to intervene with repeated inspection teams.

small livestock starting from zero, although the livestock prices were already higher. Additionally, he was able to buy several cars to offer transportation services as shared taxis to Khorog and Osh, as well as to offer supply transports to distant pastures.

Similarly, the fate of Kozubay (LH17) was connected to the Russian Border Forces. When the Russian Border Guards took over, the former arrangements between the sovkhozy and the border forces for supplying them with fresh local animal products stopped working. Just at this moment, Kozubay as former head of the kolkhoz Chechekty near Murghab had the corresponding knowledge to offer the RBF a steady supply of meat and milk products, being easily extractable from the kolkhoz herds given the loosened state control. The connections to the RBF headquarters increasingly helped him to be one of the first suppliers of fuel and coal which were sought by the local people desperately. This was the base of his presence today as one of the biggest traders in the Murghab Bazaar, not to mention his establishment of a growing herd of livestock since the early 2000s.

Exclusive Buffer Zone Access

Access to the buffer zone along the border changed over time. During Soviet times, it was granted to a deliberate group of herders that were necessary to ensure the use of the vast pastures behind the fence at least partly. After the dissolution of the sovkhozy and kolkhozy, who was allowed to enter the zone and who is not became a matter of nontransparent negotiations. Azimbek (LH40) was one of the people who managed to gain access long time ago.

At the turn of the millennium, the four still existing collective farms were dissolved; the successive collective structures were called associations of dekhan farms.[12] Azimbek, as former kolkhoz director, was elected as one of the association's head, so that he continued to have the contacts and the knowledge of how to get behind the fence. He used this position to secure pastures in the buffer zone for himself. After the opening of the Kulma border, he managed to use his exclusive buffer zone presence to open up a lucrative restaurant for the drivers waiting for the border procedures.

Access to additional pastures in the buffer zone can prevent livestock losses. Large parts of the buffer zone consist of pastures that remain free of snow on a regular basis. In Soviet times, they were used as reserve pastures for exceptionally harsh winters. Today, given the scarcity of stored dried forage and highly nutritious imported feed to compensate for shortfalls, they play an even greater role in this respect. In the harsh winter of 2009, snow had covered the pastures for several months especially in the Alichur valley whereupon many livestock starved. Due to the nontransparent rules of the border forces about access, only a few herders man-

[12] In this case, each member household of the dissolved *kolkhoz* was regarded as a *dekhan* farm (literally peasant farm). De jure, a formally registered business was addressed by this denomination; de facto it just referred to a household as an economic unit (cf. Kraudzun 2012:98). For an overview of other types of *dekhan* farms, see Robinson et al. (2010).

aged it to get the permission to access these pastures and to save their livestock by an emergency removal of herds to these productive pastures.

Conclusions

In the eastern Pamirs, economic and institutional transformations were delayed for roughly one decade, as compared to neighbouring successor republics of the Soviet Union. This was not only influenced by Tajikistan's particularity of the civil war but largely determined by the Pamir's borderland status.

The Soviet power to some degree needed the Pamirian peoples' collaboration to control the border. Controlling transborder movements and flows was a precondition for the Soviet state to demonstrate its capabilities to improve peoples' living conditions in this harsh mountain region known as the 'southern display window' of the Soviet Union.

The post-Soviet livelihood trajectories of the transitional decade were influenced by Russia's persistent understanding of the Pamirs as a sensitive border region, its isolation during the 1990s and the corresponding reaction to mitigate its effects by supplying the region with humanitarian relief for a whole decade. Uncertainties about the legal framework and economic institutions due to lack of clear messaging of Tajikistan's political centre, combined with the abundance of humanitarian relief, seemed to delay individual decisions about coping or adaptation strategies.

The endowment of the Soviet and Russian Border Forces with ample funds helped many households and the local economy as a whole during the chaotic years of the Soviet breakup and of the Tajik Civil War. In addition to the official humanitarian relief programmes, the resources diverted from the border force can be interpreted as a kind of unintended emergency aid.

The steady supply of humanitarian relief during a whole decade, the big economic impact of the Russian Border Forces' funds and the persistent large-scale subsidies for the local administration from the national level endorsed the peoples' perception of being first and foremost dependent on external support.

However, since the late 1990s, the transformation of the post-Soviet Tajik-Kyrgyz border from a boundary controlled by irregular foreign border forces into a 'regular' border operated by state authorities eased regular trade of goods considerably and evoked labour and educational migration. Additionally, a new border crossing with China was opened at the Kulma Pass in 2004. It connects the Pamir Highway with the Friendship Highway between China and Pakistan and is the only direct connection of Tajikistan with the Chinese market. Although many goods now entering from this crossing flow through the region, the economic effects remain below expectations.[13]

[13] Instead of this, the flow of (presumably harmful) Chinese products after the opening of the border crossing, and the cession of a territory of about 980 km² to China nourishes anxiety towards the powerful neighbour China (Mostowlansky 2014:161–162)

Although the Pamirs are still a sensitive border region, its isolation has eased today. The Eastern Pamirs are linked to national and regional exchange networks and are part of the domestic and international labour market. The increasingly multilocal households earn their livelihoods from activities in diverse economic sectors and regions. Generally, livestock managed in a revived system of mobile pastoralism is a major contribution to household livelihoods, though augmented by migrants' remittances, trade and commerce.

However, everyday constraints like restrictions of access to the vast buffer areas or the permit requirement for external visitors still demonstrate the perpetuated legacy of Russian and Soviet (geo-)political interests which rendered the Pamirs as a borderland place.

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JI (2009) Jurmat Ismailov, Murghab, Interviewed 19 Apr 2009
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The Current Status of Lifestyle and Occupations in the Wakhan Area of Tajikistan

Yasuhiro Ochiai

Abstract Since the demise of the Soviet Union, major changes have occurred in the local economy of the Wakhan area of Tajikistan. The inhabitants of this area now face several problems in economic enterprises, employment, and lifestyle. Most of the people are unable to survive on the incomes they derive from agriculture, and many young people have migrated to cities in Tajikistan or Russia in search of work. A promising industry for this area is tourism because of its beautiful landscapes and unique culture. Although tourism may be the most effective way to address the region's financial crisis, there are several problems in the promotion of the tourism industry. Improvements to infrastructure are necessary before suitable lodging can be built for tourism purposes. Moreover, the sustainable development of tourism should include the preservation of the traditional agriculture of the Wakhi mountain farmers. The formation of independent tourism organizations is important to the accomplishment of these goals.

Keywords Traditional culture • Tourism industry • Sustainable development • Wakhan area • Gorno–Badakhshan Autonomous Province

Introduction

The Wakhan area is located in the southern part of the Pamir Mountains in Central Asia along the Panj River, which serves as a border between Tajikistan and Afghanistan. The valley of the Wakhan area stretches between the Pamir and the Hindu Kush. Historically it was one of the areas through which the Silk Route led, which connected Eastern Asia with Europe. The Tajikistan Wakhan area north of the Panj River includes the main part of Ishkashim District, which is the

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southernmost area of the Gorno–Badakhshan Autonomous Province of Eastern Tajikistan. The inhabitants of the area are referred to as the Wakhi, and their population spreads out into the four countries of Afghanistan, Pakistan, China, and Tajikistan (Fig. 1). Although the Wakhi people in these countries originally shared a common heritage, time and the geographical distances separating them have contributed to different lifestyles and cultural traits among them (Kreutzmann 2003, 2007). Differences are particularly evident for the Wakhi in Tajikistan, who experienced the influence of the era of the Soviet Union and witnessed recent drastic changes to their independent country's economy (Kreutzmann 2007, 2009). The people have developed distinctive cultural patterns, and they face several unique problems regarding industry and lifestyle. In this chapter, we examine the current state of the lifestyle of the inhabitants in the Wakhan area of Tajikistan and discuss the details of the changes to traditional industry, employment, and culture that they now face as well as issues that the local society needs to resolve.

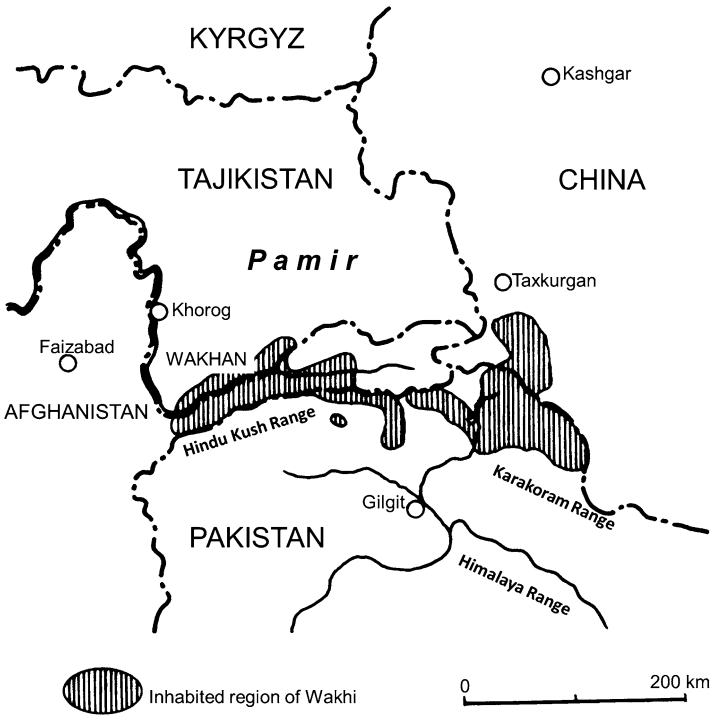

Fig. 1 Inhabited region of Wakhi

General Description of the Wakhan Area and Its Inhabitants

Gorno–Badakhshan Autonomous Province (*oblast*) covers the southeast portion of Tajikistan and includes the entire central area of the Pamir Mountains. Ishkashim District is in its extreme southwest. The Tajikistan Wakhan area includes part of this province and is on the south side of the Shakhdara Range, in Ishkashim District (*rayon*), except for the western part of the district where the Ishkashim town is located. The Tajikistan Wakhan area and the Wakhan Corridor on the Afghan side of the Panj River originally formed the Wakhan principality. Although the steep slopes of the Hindu Kush run behind the Afghan side of the area, the width of the Wakhan valley is approximately the same as the width of the valleys of the Pamir Mountains[1] (Fig. 2).

At the lowest point of the valley, where the people live, the altitude is about 2500–3000 m above sea level, and the climate is extremely arid. There are 26 villages located in the area with a total population of almost 20000 persons. Almost all of the inhabitants of this area are Wakhi, and they speak the same language as the Wakhi who live on the south side of the river. The traditional culture and lifestyle of these

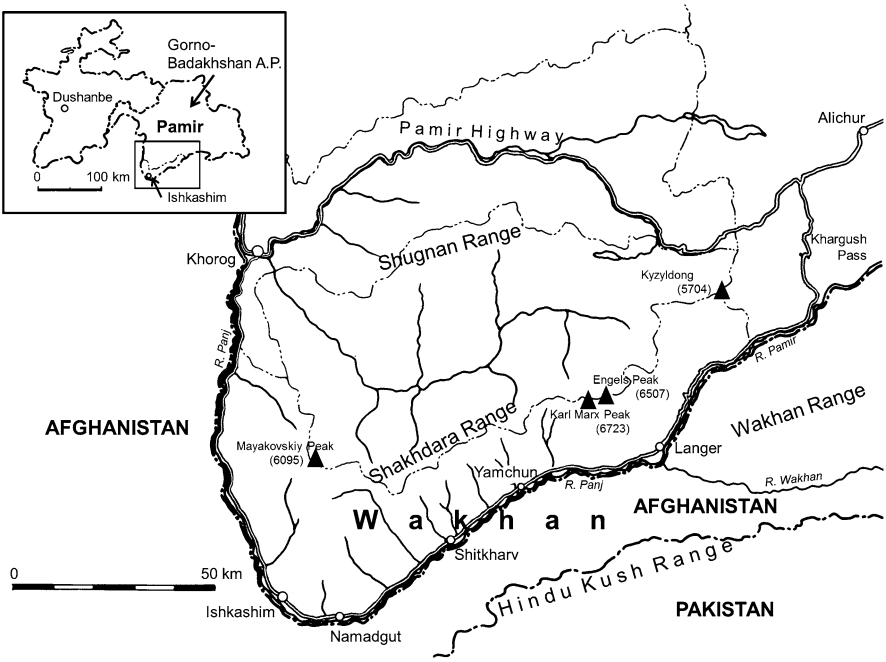

Fig. 2 Gorno–Badakhshan Autonomous Province and Tajikistan Wakhan area

[1] In the case of Gojal in Northern Pakistan, which is another residential area of the Wakhi, most of the villages are located at the bottom of the narrow Karakoram valleys (Ochiai 2008).

Wakhi are similar to the culture and lifestyle of the Wakhi in other countries, such as Pakistan (Mizushima 2008; Mizushima and Ochiai 2008). For example, the building style of their houses and the interior ceilings are traditional Wakhi or Pamirian style (Fig. 3a, b). The technique that they use to make the walls with whole stones is their traditional method as well (Fig. 3c).

The Wakhi people in this area usually speak the Wakhi language, which belongs to the Eastern Iranian branch within the Indo-European language group (Backstrom and Radloff 1992; Kreutzmann 2003, 2005). The vast majority of the people belong to the Ismaili denomination of Shia Islam, and they revere the Aga Khan as their imam. Although the Jamáat-khana generally prevails as the community centre in other Ismaili areas, it has not reached the Tajikistan Wakhan yet. Each village has some old religious structures, but they have been used for nonreligious purposes since Soviet times; sometimes they have been declared as museums (Iloliev 2008). This situation is quite different from the Wakhi's residential areas in Northern Pakistan (Kreutzmann 2003, 2006; Ochiai and Mizushima 2004; Breu et al. 2005). The difference is due to the Soviet treatment of religions and the slow recovery of community practices since the 1990s.

Historically, the Wakhi people have lived a traditional agrarian lifestyle relying on irrigated cultivation and pastoral practices. This combined mountain agriculture (Ehlers and Kreutzmann 2000; Kreutzmann 2004) continues to be prevalent in the Ishkashim District. The villagers cultivate wheat, barley, and peas in their irrigated fields and, more recently, potatoes and some varieties of vegetables. There are fruits, such as apricots or apples, planted in each village. In the Tajikistan Wakhan, irrigation water is tapped from numerous sources, such as springs, streams, or the river, and brought to the cultivated land through a network of canals. The villagers control the use of irrigation water (Fig. 4a). Figure 4b shows a calendar with the schedule for water distribution posted on the trunk of a large willow tree in Yamchun village. In a sectional case of this village, the people distribute the water from one irrigation canal to two houses each day, which results in a rotation among the villagers every 7 days. Animal husbandry augments and is linked to farming. There are several summer pastures, and there are permanent stables for livestock in the northern region of the Shakhdara Range and other Pamirs. However, during the summer season, there often are herds of sheep, goats, or cattle grazing the land adjacent to the main route or along the Panj River at the bottom of the valley.

Status of Agriculture and Local Society

Agriculture and Other Employment

The status of agriculture and the local society can be understood by examining the circumstances of two households: one in the village of Namadgut (household A) and the other in the village of Shitkharv (household B). The cases paint a picture of contemporary Wakhi lifestyle and agriculture in the area. Namadgut is a village

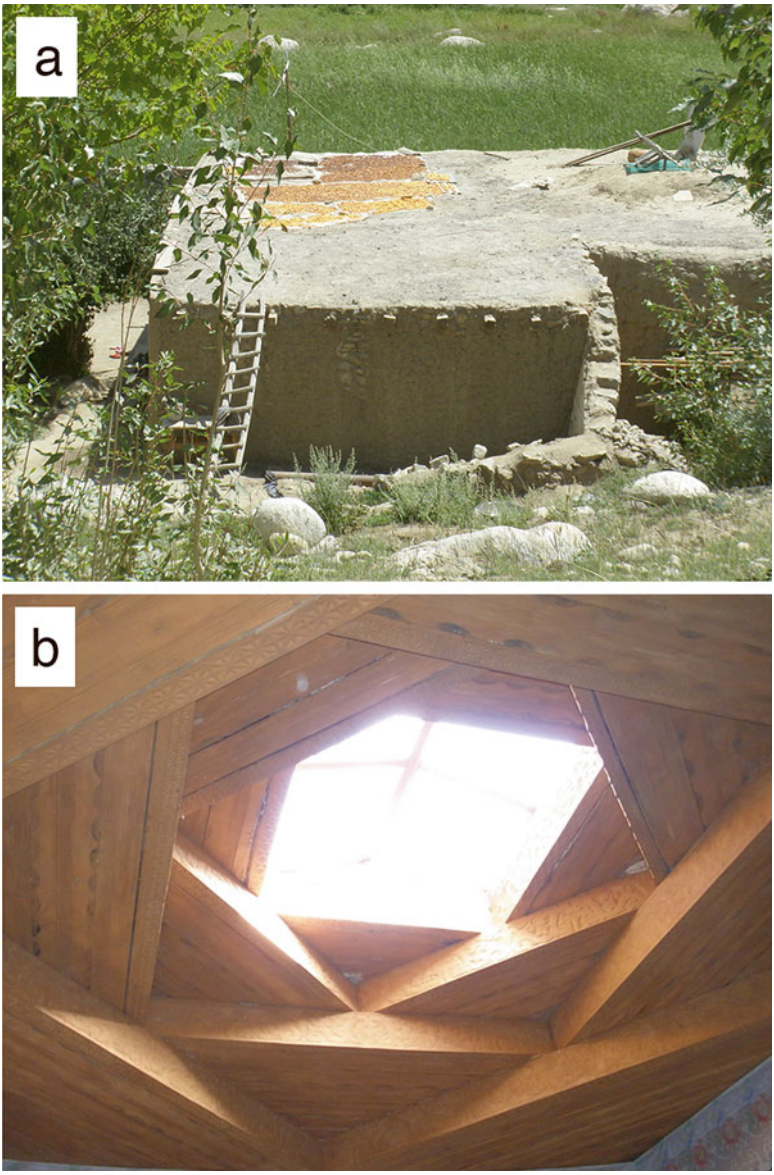

Fig. 3 (**a**) Traditional house of Wakhi villagers in Namadgut (Photograph © Yasuhiro Ochiai, 25 Jul 2011), (**b**) distinctive design of interior ceiling (Photograph © Yasuhiro Ochia, 31 Jul 2010), (**c**) wall made with whole stones in traditional method in Vichkut village (Photograph © Yasuhiro Ochiai, 27 Jul 2011)

Fig. 3 (continued)

Fig. 4 (**a**) Irrigation canal and water dividing system in Langer village (Photograph © Yasuhiro Ochiai, 1 Aug 2010), (**b**) calendar with the schedule for water distribution posted on the trunk of large willow tree (Photograph © Yasuhiro Ochiai, 27 Jul 2011)

located adjacent to the main Tajikistan Wakhan thoroughfare about 20 km from the town of Ishkashim. The village consisted of 167 households with a population of 1394 persons in 2011 at an altitude of about 2600 m. The village of Shitkharv is located on the main thoroughfare, but it is relatively farther from the subdivision's center, about 50 km from Ishkashim. Shitkharv is the larger of the two villages, with

Table 1 Actual situation on agriculture: case of two families in Tajikistan Wakhan

	Household A	Household B
Crop field	Total 1.5 ha	Total 1.5 ha
	Potato 0.3 ha	Potato 0.2 ha
	Peas 0.1 ha	Vegetable 0.3 ha
	Wheat/barley/grass 1.1 ha	Wheat/barley/grass 1.0 ha
Fruit tree	Apricot 70	Apricot 2
	Apple 12	Apple 10
	Cherry 2	
Livestock	Cattle 7	Cattle 10
	Sheep/goat 40	Sheep/goat 40
	Donkey 1	

Sources: Interview to each of two households in 2011

188 households and a population of 1686 persons in 2011. Its altitude is about 2750 m (Fig. 2).

Household A, in Namadgut, cultivates about 1.5 ha, one-fifth of which is used to grow potatoes. In 2010, household A sold about four tons of potatoes at the local market and used two tons of potatoes for personal consumption. About 0.1 ha of the household's field was used to grow peas, and other small plots were used to grow wheat, fodder grass, and other crops. In addition, the household has approximately 70 apricot trees, 12 apple trees, and two cherry trees that yield fruit used almost exclusively for the household's consumption. The household keeps livestock: seven cattle, 40 sheep and goats, and one donkey (Table 1).

Household B in Shitkharv cultivates about 1.5 ha of land as well, 0.2 ha of which is used to grow potatoes. In 2010, the household consumed about one ton of potatoes, and the rest was sold to buyers from towns such as Ishkashim.[2] About 1 ha of the household's cropland is used to grow wheat and barley; other plots were used to grow vegetables. The household has two apricot trees and ten apple trees, and it maintains ten head of cattle and 40 sheep and goats.

Traditional irrigated cultivation combined with pastoral practices prevails in Tajikistan Wakhan (Kreutzmann 2009, 2012). Wheat, barley, and peas are the main crops in this area, along with potatoes that, in some cases, are used as commodities but are mostly consumed by the people who grow them. Fruit trees are abundant. Some households in the villages pursue livestock farming by using traditional pastoral practices. Households own summer pastures on the upper side of the Shakhdara Range or about 4000 m high around the Khargush Pass (Fig. 5). Livestock is moved from the vicinity of the villages up to these pastures during the three summer months. It is common for village households to work together in organized groups

[2] The potato was purchased at 2 TJS (*Somoni*) per kilogrammer in 2010 (1 TJS = 0.22 USD).

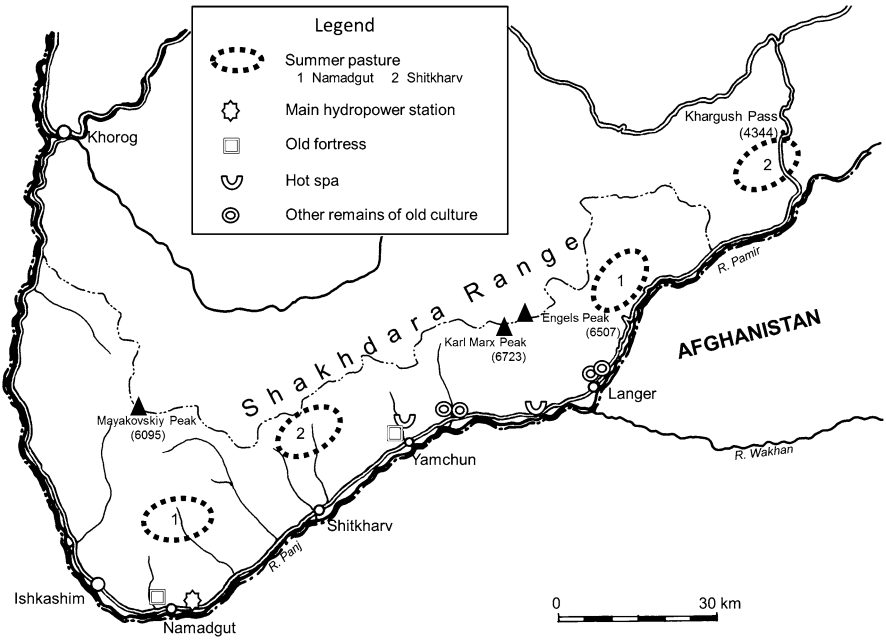

Fig. 5 Instances of summer pasture and resources for tourism in Tajikistan Wakhan

to tend to approximately 300 or more sheep and goats.[3] Households delegate one or more members to transfer the animals to the summer pastureland and control them there. Milking and other dairy production at the summer pastureland are traditionally considered as women's work.

Recently, cultivating cash crops and selling animals[4] and dairy products have become common practices in this area, even though most of the villagers cannot survive on the income gained from agriculture. One response to the shortfall in income is to work off-farm jobs. In household A and household B, the heads have off-farm jobs. For further savings, the householders share a house and are living with their sons' families. In the case of household A, the head is a former schoolteacher in his 70s who now is the director of a nearby museum. He is perceived as a local well-informed person, and he has written and published books. His wife, who is in her 60s, was a schoolteacher as well. His two daughters who are teachers and his two sons who are office workers live in other cities in Tajikistan. The youngest son and his family live together, and this son commutes to an office position in Ishkashim.

[3] In the case of Namadgut, six groups practice pastoralism, comprising about 10–15 households per group.

[4] The cost of one sheep was about 200 TJS in 2010.

Although almost all of the Tajikistan Wakhan householders are farmers, many of them need additional income, and, therefore, they take on wage-earning jobs. However, the majority of the householders who seek additional work are not successful in finding permanent jobs in the Wakhan area. Only a few people are able to find employment in local industries or offices as shopkeepers (or clerks), office workers, or teachers.[5] One direct consequence of the lack of local employment opportunities is that about 10–25% of the people, particularly young men, have migrated to cities in Tajikistan or Russia in search of work.[6] Almost all of the villagers who get jobs in the cities or in foreign countries have strong connections to their households in the Wakhan at present. Young men, in particular, are rarely interested in local jobs or jobs in private enterprises, development, or the improvement of the local community. Therefore, it is thought that the sustainability of the local culture and community will likely be weakened soon if this employment situation in the area continues.

Infrastructure and Education

The Wakhan area's poorly developed infrastructure burdens the local people's abilities to transform their traditional and chosen lifestyle, and it impedes new opportunities for employment. The trunk route along the Panj River of the Tajikistan Wakhan area is not completely paved, and the public bus runs only twice a week (Fig. 6a). The Pamir Highway is a major artery crossing the Pamirs through the center of Gorno–Badakhshan Autonomous Province. However, the Wakhan valley is remote from the main highway, although it is connected by a link road. Historically, low importance has been placed on this route because of the small number of people expected to use it, which may be the reason it has been slow to develop.

At this point, sanitary systems have been established in several villages, but most of the villages use canals or streams for potable water (Fig. 6b). The area's established sanitary system was constructed by NGOs (e.g. Aga Khan Foundation). In addition, there is a main hydropower station located beside the trunk route in the western part of the Wakhan area that has been in operation since the mid-1970s. However, this old plant is too small to meet the demands for electricity in the entire area (Fig. 6c).

Existing facilities face challenges. For example, because of the shortage of local governments' funds for repairs to the school buildings, some of them were repaired by NGO support (Fig. 6d). Moreover, the children's education in the middle school lacks lessons about the Wakhi language and Wakhi traditions. To promote the sustainability of Wakhi culture and lifestyle, these programmes should be offered in the schools.

[5] The income of a 30-year-old office worker in Ishkashim is about 350 TJS; the income of a teacher in his or her 20s in the Wakhan area school is about 120 TJS.

[6] According to the interviews conducted in 2011, about 200 persons from Namadgut and about 400 persons from Shitkharv were living in other areas of Tajikistan or in foreign countries for employment and occupation purposes.

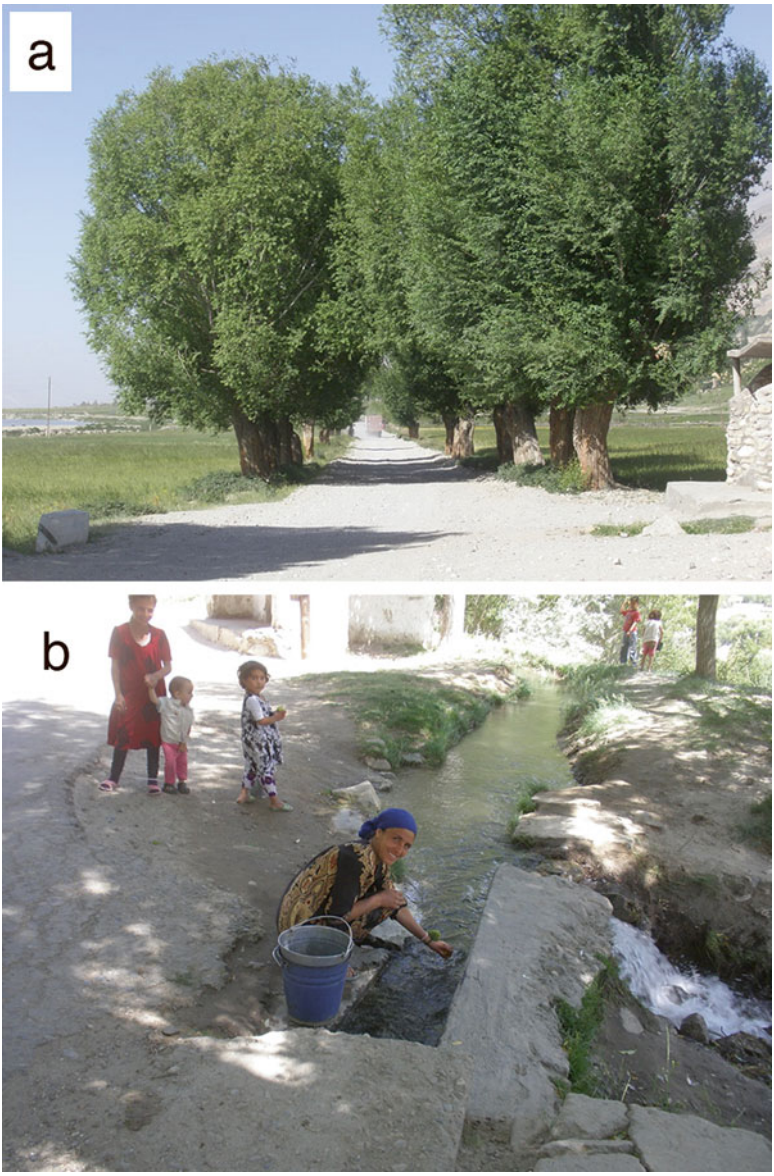

Fig. 6 (**a**) Unpaved trunk route near Tuggoz village in Tajikistan Wakhan (Photograph © Yasuhiro Ochiai, 27 Jul 2011), (**b**) a villager taking potable water from irrigation canal in Namadgut village (Photograph © Yasuhiro Ochiai, 25 Jul 2011), (**c**) main hydropower station of Tajikistan Wakhan area located near Namadgut village (Photograph © Yasuhiro Ochiai, 25 Jul 2011), (**d**) a signboard indicates the roof construction of school building in Yamchun village (Photograph © Yasuhiro Ochiai, 1 Aug 2010)

Fig. 6 (continued)

Introducing Sustainable Tourism

As was pointed out in the descriptions of households A and B, employment opportunities and finding ways to increase household income are important to the local people. In the Tajikistan Wakhan area, development of built environment (e.g. building large structures) is not taking place. From a practical standpoint, large projects require injections of large amounts of capital, the local people have little to contribute, and the local governments are short on funds.

However, the Tajikistan Wakhan area has abundant and available regional resources with which it can develop sustainable tourism. The magnificent landscapes of the Pamir Mountains and the appeal of the other nearby mountains, including the view of the Hindu Kush on the Afghan side, are the most obvious resources this area has to offer. In addition, there are historical ruins of old fortresses and holy places of indigenous religions, and there are spas, baths, and hot springs that have the potential to become distinctive tourist destinations (Fig. 5). Of particular interest and, perhaps, the most important potential source of sustainable tourism might be the Wakhi culture, based on agricultural practices, folklore, and traditional heritage. Because these resources are available, promoting tourism would be an effective way to create opportunities for the local people to increase their incomes without emigrating. Moreover, the area is already hosting foreign tourists visiting the natural beauty and wildness of this secluded part of the world. Motorbike riders and cyclists are regularly spotted along the trunk route.

At present, few hotels, hostels, or guest cottages can be found in this area, but several small lodging kept by villagers at their private houses, referred to as "homestay," have been established in each village. Advertisements along the trunk route in this area identify the local homestay for travelers seeking lodging (Fig. 7). The local administrative offices controlled at least ten of these small accommodations in the villages of the Tajikistan Wakhan. The administrator has stated that homestays recently have been increasing in numbers.

One particular homestay in Yamchun was established in 2007. The owner of this accommodation is a farmer who works in the local administration. Table 2 provides information from the homestay's guest register on the number of nights that guests have spent there and their nationalities. The homestay has at least 50 overnight stays per year. The number of guests at this particular homestay is fewer than at other similar accommodations in this area because most of the travelers are touring the trunk route, which is relatively far from the homestay. However, the experience to date suggests that an increasing number of foreigners are visiting the area. The majority of the guests have visited from European countries, particularly Germany, Switzerland, and the United Kingdom. Because this area apparently appeals to Europeans, even though Central Asia is far from Europe and was part of the former Soviet Union, tourism in the Wakhan area could focus on European tourists as the main targets to attract in the near future.

Fig. 7 Regular signboard of "homestay" in Tajikistan Wakhan (Photograph © Yasuhiro Ochiai, 1 Aug 2010)

Table 2 Nightstays of "homestay" in Yamchun

	2009	2010	2011	Total
Germany	8	7	9	24
Switzerland	8	6	8	22
United Kingdom		4	14	18
France	5		4	9
Denmark		5	1	6
The Netherlands		2	2	4
Poland			4	4
Sweden		1	1	2
Ireland	1		1	2
Spain		1		1
Estonia		1		1
Bulgaria			1	1
United States		3	7	10
Canada	1			1
Australia	1	1	3	5
New Zealand		2	7	9
Japan		2	8	10
Kyrgyzstan		1	5	6
Unidentified	2	7		9
Total	26	43	75	144

Sources: Survey in 2011

Conclusions

Although the Tajikistan Wakhan area has positive assets and prospects for the development of tourism, there are several challenges that must be resolved regarding the promotion of the tourism industry. First, the area faces problems of poor infrastructure. Improvements to aspects of the infrastructure (e.g. electricity and sanitary upgrades, road paving and completion, and other improvements in the transportation system) are necessary to build lodging that has all of the amenities necessary to attract foreign tourists. Second, because financial means are lacking (this applies to individual residents as well as to local administrations), external financial support from the Central Tajikistan government and NGOs are vitally important for tourism to gain momentum. Third, it is imperative that the magnificently beautiful landscape and natural environment and the unique culture of the local people be conserved and protected as resources for sustainable tourism. It is particularly important to sustain the traditional agricultural practices and to preserve the heritage identified as Wakhi. Working toward suitable practices combined with adequate crop selection would support a feasible agriculture and potentially create jobs for young people. For example, further stimulating cash crops and marketable livestock products would support and protect the sustainability of the local agricultural and pastoral practices. The establishment of new processing facilities might add value to the local agricultural products. These economic innovations could be linked to sustainable tourism in the area. The challenges faced by the people and communities of the Tajikistan Wakhan area in their efforts to promote a sustainable society should be considered. Therefore, although several NGOs, such as PECTA,[7] have already been active in the area, an independent tourism organization could be a feasible approach to promoting tourism and protecting the local economy.

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Political Ecology of Human-Environment Change in Gojal, Gilgit-Baltistan, Pakistan

David Butz and Nancy Cook

Abstract In the past half-century, the Gojali people of northern Pakistan have experienced dramatic human-ecological change, the dynamics of which have been shaped by key aspects of the region's environmental governance context, including Gojal's geographical peripherality and constitutional liminality, the emerging influence of global conservation and international Ismailism as non-state transnational governance actors, the construction of the Karakoram Highway and subsequent development of a regional road network and the 2010 Attabad landslide disaster and associated influx of food relief. These contextual features have complemented and sometimes contradicted each other to influence Gojal's political ecology in three ways: they have (1) diminished Gojalis' inclination and capacity to maintain and productively use agricultural and pastoral environments, (2) limited locals' access to their ecological resource base and undermined the legitimacy of local resource control and (3) created new Gojali identities that are both less materially rooted in the local environment and more capable of acting politically in support of local resource control.

Keywords Political ecology • Resource governance • Human-environment change • Gojal • Gilgit-Baltistan • Pakistan

Introduction

The Pamirian portion of northern Pakistan is roughly contiguous with Gilgit-Baltistan's Gojal subdistrict (Fig. 1).

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Fig. 1 Gojal subdistrict, Gilgit-Baltistan, Pakistan

Gojal's 23,000 inhabitants are overwhelmingly Wakhi-speaking members of the Shia Ismaili sect who share religious, linguistic and cultural ties with Pamirian peoples in adjacent countries, as well as a common human ecological history of farming in river valleys and herding on extensive alpine pastures. Their relationship with the geo-ecological environment is changing drastically. Farming and herding—for subsistence and the market—are diminishing as sources of household reproduction and individual identity. Large swathes of mountain territory have been reserved as conservation zones, and much of the remainder achieves its greatest economic value as a tourist attraction. Subsistence-oriented institutions and governance practices that coordinate how environmental resources are accessed and used are disintegrating, replaced by less locally autonomous ones more attuned to the exigencies of market orientation. Economic activity is increasingly concentrated in the main valley, close to the Karakoram Highway (KKH), an arterial motorway that draws

people's movements, activities and preoccupations down country, away from the mountain environment that sustained their forebears. As a result of these changes, the majority of Gojalis are losing practical—and in some cases legal—access to their ecological resource base as skills are lost, farming infrastructure disintegrates, traditional environmental knowledge is forgotten, ecological commons are enclosed, resources are privatised and ecological governance is bureaucratised and delocalised.

This subtle, incremental and seemingly noncoercive process of ecological alienation is easily understood as an innocuous by-product of integration into a national polity, market-oriented modernisation, economic rationalisation and responsible conservation, aspects of which most Gojalis enthusiastically support. But it should not for that reason be considered inevitable, apolitical or without contestation. Changes to human-environment relations are always shaped by the rules, conventions, decision-making processes and self-governing subjectivities involved in the use and control of the environment and natural resources and are often reflective of alterations to those aspects of 'environmental governance' (Robbins 2012). Our purpose in this chapter is to trace the overlapping influence of five key features of Gojal's environmental governance context on the characteristics, timing, geographical distribution and social consequences of human-ecological change in order to outline the contours of a *political ecology* of environmental transformation in the region.

Gojal's overarching condition of geographical peripherality, and constitutional and legal liminality, is the *first* feature of the region's environmental governance context to which we turn, as it provides an essential backdrop for understanding the others. Typical of mountain regions worldwide (Hewitt 1988), Gojal constitutes a socially, economically, politically and geo-ecologically peripheral part of the nation state to which it belongs. Associated with Gojal's *peripherality* in relation to metropolitan centres of economic and political power, its population also occupies a *liminal* position vis-à-vis the Pakistani nation: neither fully included nor excluded from national discourses and polities, strongly influenced by the geopolitical interests and interventions of bordering states and sharing certain cultural, religious and social affinities more strongly with Pamirian peoples across national borders than with majority populations in Pakistan. One consequence—and symptom—of the region's peripherality and liminality is that although Pakistan has invested heavily in controlling its Pamirian territory militarily, it has not devoted commensurate attention to the provision of economic opportunities, social welfare, infrastructure or good governance. In the past several decades, a variety of transnational non-state institutions have stepped in, simultaneously replacing (and sometimes reinforcing) distant and ineffective state-based governance institutions and strengthening affinities with Pamirian populations across borders. Two specific governance regimes have had an important influence on human-environment interactions in Gojal: the first is composed of those mechanisms associated with global conservation; the second consists of an interconnected web of local and transnational Ismaili *jamaati* and *imamati* institutions. These are the *second* and *third* aspects of Gojal's governance context we address. The former has limited locals' access to their traditional

resource base, generating a politics of resistance and introducing tourist trophy hunting as a key source of community income; the latter has provided social services neglected by the state, as well as material, organisational and ideological resources for coordinating human-ecological relations at the local scale. Both have contributed to the constitution of new environmental subjects and identities.

The *fourth* key feature of Gojal's environmental governance context is the development of a regional road network, beginning in the 1960s. Roads have facilitated the governance impacts of global conservation and Ismaili institutions; neither of these governance regimes could have had such reach absent the KKH and its tributary roads. In addition, the absence, construction and maintenance of roads are markers of Gojal's peripherality in relation to lowland Pakistan, as well as of the Pakistani (and Chinese) state's interests in managing the region's territorial peripherality and constitutional liminality. In these ways, roads are environmental governance 'actors', shaping possibilities and opportunities for Gojalis' use and understandings of their environment. It is therefore no surprise that when 25 km of the Gojali portion of the KKH was destroyed following a massive landslide in January 2010, the context within which Gojalis interact with their environment was significantly affected. For that reason, the Attabad landslide is the *fifth* feature of Gojal's environmental governance context we address here. Its implications for cash crop production, the immobility it imposed on Gojali people and institutions, the perceived inattention of the Pakistan state to Gojalis' plight and the massive influx of food relief from China have both reinforced locals' sense of peripherality and liminality and shaped environmental governance and practice in Gojali communities.

Legal and Constitutional Liminality

Prior to 1974, Gojal was an outlying territory of the fiefdom of Hunza, a semi-autonomous principality that fell under Pakistan's jurisdiction following the nation's independence and Kashmir's *de facto* division in 1947. During this period, Gojal was doubly *peripheral*. First, Hunza itself was remote from Pakistan's economic, administrative and social centres, and its inhabitants received few government services or other benefits of citizenship. Moreover, owing to the Kashmir dispute and Hunza's autonomy in most spheres of governance, its juridical status was ambiguous. Second, Gojal's Wakhi-speaking people were culturally, territorially and administratively marginal *within* mainly Burushaski-speaking Hunza, where Gojalis were denied the autonomous spheres of lineage-based governance enjoyed by the Burusho clans of central Hunza (Ali 1983) and Gojali territory was more directly controlled by Hunza rulers than was the Burusho heartland. This situation continued after 1974, when Pakistan's government dismantled the last of its principalities and, like the rest of Hunza, Gojal was incorporated into the Federally Administered Northern Areas, which was established in 1971. The Northern Areas was not granted the constitutional rights and powers held by Pakistan's provinces; neither were its

residents represented in the National Assembly. A federal appointee governed the new jurisdiction as head of a regional legislative assembly. The Northern Area's location in the disputed Kashmir Region, with international borders on three sides, meant that military and geostrategic interests were prominent in its governance, and Pakistan's armed forces enjoyed exceptional power.

In 2009 the *Gilgit-Baltistan (Empowerment and Self-Governance) Order* renamed the area Gilgit-Baltistan, extended residents' legal rights, strengthened the powers of the regional assembly (Hong 2013) and established a Legislative Council dominated by federal appointees (Sökefeld 2014). Despite these gestures towards greater self-governance, the region remains largely under the control of Pakistan's executive branch and without representation in the National Assembly. Gilgit-Baltistan continues to be defined ambiguously in the nation's Constitution, as a territory 'administered by Pakistan' (rather than a province; Hong 2013:78) and its inhabitants still have no right of appeal to Pakistan's Supreme Court (Hong 2013:81). As Caylee Hong (2013) outlines, Gilgit-Baltistan's residents exist in a state of constitutional and legal *liminality*, with implications for how individuals and communities deal with their peripherality, engage with development processes and manage natural resources. Locals' efforts to exploit resources sustainably and for their own economic benefit are severely hampered by legal and territorial liminality, which, as Hong (2013) shows, diminishes access to private and public investment, impedes advantageous revenue sharing agreements with higher levels of government, imposes restrictions on resource access and allows the state to pursue its own resource extraction agendas without legal restriction or local recourse. This political ecology, in which locals are marginalised from their resource base, is reinforced by broader national discourses that associate Gilgit-Baltistan with its natural environment (touristic scenery, water supply, mineral resources, wildlife), while systematically overlooking its human inhabitants (Ali 2014).

As in the past, Gojal is currently peripheral in the national context as part of constitutionally liminal Gilgit-Baltistan and in the regional context as a 'far-flung' district whose inhabitants comprise a linguistic, cultural and religious minority. This state of affairs has been crucial to the emergence of two distinct transnational non-state governance regimes: global conservation and the international Ismaili community.

Global Conservation

Global conservation appeared in Gojal in 1975, when the Northern Areas Wildlife Preservation Act was passed, entitling the government to declare any area in the Northern Areas a national park or limited-access conservation area (Ali 2010). Khunjerab National Park (KNP) was established that year, subjecting about a third of Gojal's territory to the guidelines of an IUCN Category II Park, which banned all productive human activities, including agriculture, grazing, hunting and resource extraction (Knudsen 1999). Affected communities were not consulted or

compensated and due to the region's constitutional liminality had little legal recourse to fight their dispossession. Although responsibility for KNP falls to the regional government's District Forestry Office, IUCN was heavily involved in establishing it and together with WWF has determined its boundaries, formulated its management plans and policies, provided resources and technical expertise and nurtured its legitimising discourse in which subsistence uses are represented as inherently degrading to mountain environments (Butz 1998; Ali 2010).

Global conservation agencies have been similarly involved in the formation and oversight of the Central Karakoram National Park (CKNP; established 1993) and the Mountain Areas Conservancy Project (MACP; inaugurated 1999) (Knudsen 1999; Ali 2010). The latter has adopted the rhetoric of 'community participation/management'; nevertheless each further reduces Gojalis' access to their subsistence resource base and places additional constraints on communities' management of environmentally oriented economic activities. Communities profit from their former grazing lands mostly through royalties from international trophy hunting, which they receive only if they relinquish other resource use rights (MacDonald 2005). Subsistence landscapes are commodified to serve Western consumers, and locals are forced into the circular logic of 'saving nature in order to sell it' and 'selling nature in order to save it' (Ali 2010:66). Meanwhile, global conservation governance helps the Pakistani government solidify control of its peripheral mountain territories by underwriting the conversion of 'commonly owned pastoral and agricultural land into state-owned territory' in which most local uses of nature are severely curtailed (Ali 2010:67). Conservation initiatives have simultaneously concentrated economic activity in valley floors, hastened the penetration of capitalist market relations into high mountain areas through international tourism and reduced Gojalis' access to much of their ancestral territory.

Gojalis have responded by attempting to ignore, negotiate with, exploit and actively contest this government/conservation partnership in resource dispossession, shaping themselves in the process into new environmental subjects. To retain even nominal control over formerly subsistence landscapes, they are compelled to police their resource use activities according to the values of global conservation and thus become self-regulating subjects of an imposed conservation regime. At the same time, their experiences with this territorial control (and lack of legal recourse) have become new sources of ambivalence towards the Pakistani state, which is perceived as more interested in governing Gojal's natural environment than in providing citizenship rights and social services to its people. Many Gojalis have come to understand themselves as the rightful stewards of a landscape more threatened than preserved by conservation or state intervention (Ali and Butz 2003). Such an environmental identity heightens symbolic and aesthetic values in local environmental discourse and imbues efforts to resist material dispossession through conservation with additional ideological justification.

Transnational Ismailism

A second mode of transnational non-state governance that has shaped Gojali environmental identities and practices is represented in Ismaili Islam's secular *imamati* and religious *jamaati* institutions, the importance of which has been enhanced by the absence of effective state institutions and services. Beginning with the Aga Khan Rural Support Program (AKRSP) in 1982, the Aga Khan Development Network (AKDN) introduced a suite of development programmes to provide services and organisational capacity to the Northern Areas' population, whether Ismaili or not. Due to their strong identification with the Ismaili imam—the Aga Khan—these AKDN *imamati* institutions have been especially influential in Ismaili areas. By the mid-1980s, every community in Gojal had established AKRSP village organisations (VO) and women's organisations (WO), to which households paid regular dues and through which they could access credit, training and technical development expertise. VOs and WOs constituted new decision-making structures, which were used to organise social and economic development activities and coordinate collective labour for AKRSP-funded productive physical infrastructure (PPI) projects. Most initial PPI projects focused on irrigation agriculture (mainly building feeder channels), followed by link roads and bridges: communal projects that would benefit individual or household enterprise (Butz 1993).

AKRSP intended to integrate rural households advantageously into a regional—and ultimately global—market economy by increasing agricultural productivity, replacing subsistence activities with production for market, modernising farming practices, diversifying household economies, building collective organisational capacity and facilitating interaction between rural communities and regional centres. This development approach contributed to a number of human ecological effects in Gojal: more irrigated farmland, a sharp decline in high altitude grazing, increased reliance on intensive cash cropping (mainly of potatoes and fruit), less variety of subsistence agriculture (more wheat and less barley, buckwheat and peas), greater concentration of economic activity along the KKH, more off-farm employment and a diminishing proportion of Gojalis using land resources for productive purposes. In terms of local environmental governance, the authority of elders and their ecological knowledge and experience waned, replaced by a younger generation of VO office holders wielding the power of literacy, numeracy, AKRSP connections and training. Agricultural and pastoral decision-making—along with many areas of social organisation—were subsumed under the rubric of 'rural development', with an associated focus on modernisation, rationalisation and market-integration.

Since the early 2000s, AKRSP has supported the creation of local support organisations (LSOs), which are clusters of VOs and WOs across several communities, often at the same territorial scale as government union councils or Ismaili local councils (LC). LSOs are registered with the government as non-profit organisations under 1984's Company Ordinance and are administered by a volunteer board and small professional management teams. They support existing VOs and WOs in forging and funding an 'integrated development vision' by pursuing independent

project-oriented partnerships with government, the private sector and other development or conservation agencies including AKDN (LSO Network 2014).

Gojal has three LSOs that manage projects in partnership with numerous government departments and non-governmental agencies. Projects are diverse, ranging from micro-health insurance schemes and computer training programmes to the construction of infrastructure, provision of agricultural inputs and sponsorship of cultural events (LSO Network 2014). Gojal LSOs cooperate with various local *jamaati* institutions, including LCs, which are responsible for the 'social governance, administration, guidance, supervision and co-ordination of the activities' of the Ismaili community under its jurisdiction (Ismaili Universe 2012), and with Ismaili Scouts, Guides and Volunteers who often provide volunteer labour for development projects. LCs have deep and wide-ranging authority, so their support has been important to the success of LSOs and other AKDN programmes. They are part of a regional, national and global hierarchy of Ismaili councils, which along with other *jamaati* institutions ensure a highly standardised Ismaili worldview, doctrinal understanding and approach to social and moral behaviour. As detailed by Jonah Steinberg (2011), this vision is strongly invested in modernity, rationality, progress, accountable governance, education and global integration. AKDN agencies are understood by many Ismailis as the instruments for implementing such a worldview, which helps to account for their remarkable uptake.

Gojal is the site of one local manifestation of a network of Ismaili institutions that extends across the Pamirian region and into the metropolitan centres of South Asia, Europe and North America. The trans-Pamirian nature of this network helps to constitute Gojal as liminal in a more positive nonlegal sense. Gojalis are also liminally situated in that aspects of their identities, governance context and daily experience with development, social change and social service provision are more strongly shared across national borders than with other Pakistani citizens. Pamirian Ismailis are transnational subjects who straddle and transcend conventional notions of state-based citizenship (Steinberg 2011).

Ismaili *jamaati* and *imamati* institutions help constitute Gojalis as modern developmental subjects who understand themselves as socially progressive, competent, well educated, well connected and well organised (Steinberg 2011): savvy actors in the contemporary context of neoliberal development. Ismaili institutions have emphasised formal education for both genders, which has paid off in Gojal's rapid emergence as one of the most literate areas in Pakistan. By providing opportunities for advanced education down country or overseas, they have also widened locals' social capital and enabled some to occupy positions of influence in development agencies and the civil service. These characteristics give Gojalis the confidence and capacity to negotiate with government and global conservation in support of their collective political ecological interests, thereby reducing some of the consequences of peripherality and legal liminality. LSOs, for example, have drawn on the expertise and connections of Gojal's new educated elite to find routes through Pakistan's legal apparatus that allow communities to retain or regain control of ecological resources (Hong 2013). Given that Ismaili teachings and AKDN development initiatives have emphasised both integration into capitalist markets and the

commensurate formation of subjectivities characterised by rational individualism (Steinberg 2011), these new bureaucratically and legally formalised ecological relations have taken increasingly commoditised forms (bioprospecting, trophy hunting, adventure tourism).

Even as Ismaili institutions shape Gojali subjects capable of defending their ecological rights in a context of liminality and peripherality, they have also created a population less interested in using the environment for productive agricultural or pastoral purposes. The combination of high education, capitalist market orientation and social networks that extend beyond the region has produced a generation whose capabilities and identities incline them towards off-farm economic activities and in many cases permanent or seasonal outmigration. Modern subjects code farming and herding as 'backward', unprofitable ways to make a living. At the same time, global Ismailism values cultural heritage, which in Gojal is intimately connected to the mountain environment and its productive use. The natural and agricultural landscape, therefore, is valued more for its power to inform Gojali identity than for its ability to provide a livelihood. Gojalis are becoming tourists in their own land as they return to their natal villages for holidays and visit former or remaining high pastures to restore cultural authenticity. This process of cultural change has been facilitated by the construction of a regional road network.

Road Infrastructure

Gojal was not practically accessible by road until 1971. A seasonal motorway was completed from Abbottabad over the Babusar Pass to Gilgit in 1949 and extended to Hunza in 1957 (Kreutzmann 1995). But not until the KKH was constructed did regular vehicular traffic reach Gojal. This all-weather highway—built between 1964 and 1978—linked lowland Pakistan to its northern periphery and established a year-round road connection with China. Its northern portion, which was constructed mainly by the Chinese army between 1968 and 1971, follows the Hunza and Khunjerab Rivers through Gojal's most densely populated valley before reaching the Chinese border at Khunjerab Pass, where it links to China's Friendship Highway. The KKH opened to trucks in 1975 and to regular international traffic in 1986 after the Chinese portion of the highway was completed to Tashkurgan. The highway was constructed to strengthen geopolitical and trading relations between Pakistan and China and to solidify Pakistan's control over its mountainous northern border area (Khalid 2011). The two countries shared an interest in stifling Indian and Soviet territorial interests in the region, and China was keen to establish a road link to the Arabian Sea. Its construction alleviated Pakistan's concerns (shared by China) regarding territorial control of a politically liminal frontier without requiring a legal or constitutional resolution. It also marked the start of China's involvement in Gojal's economic and infrastructural development, a transborder relationship that adds another dimension to the region's ongoing political liminality.

Much has been written about the KKH's transformative impacts on social, economic and environmental relations in northern Pakistan (Allan 1986, 1989; Kreutzmann 1991, 1995, 2004, 2006; Kamal and Nasir 1998), including a decline in subsistence agriculture and pastoralism, increased involvement in cash cropping, off-farm employment and other market activities, greater reliance on government-subsidised food staples imported from the Punjab, the erosion of traditional systems of resources management, generally improved living standards combined with increased social stratification and the concentration of wealth along the road corridor, the introduction of agency-led rural development, the construction of link roads into side valleys and expanded social networks and mobility. Few of these impacts stem directly or mechanistically from the highway; rather, as recent mobility scholarship indicates, they are the contingent outcomes of a new mobility platform in relation to its broader social context (Hannam et al. 2006). These transformations could not have occurred as rapidly or taken their specific shape absent the influence of Ismaili institutions, global conservation governance or the region's constitutional liminality. On the other hand, these governance regimes would not have established themselves as firmly and ubiquitously or exerted their influence as powerfully without the vehicular access afforded by the KKH and its associated feeder roads. Cause and effect are inextricably tangled in these mutually constitutive processes. Nevertheless, we identify four ways that the KKH has influenced political ecological transformation in Gojal.

The *first* is the highway's construction itself. The prolonged presence of Chinese and Pakistani road crews disrupted Gojals' subsistence-dominated world. Gojalis engaged in a variety of exchange relations with these outsiders—labouring, buying and selling—thereby hastening the penetration of a cash economy, expanding locals' social networks and introducing new commodities. In terms of more direct political ecological implications, the highway's construction destroyed fields, removed land from local control and littered the landscape with road-building detritus. It also opened new areas to cultivation. Road crews supplemented their diets by hunting wild ungulates in valleys adjacent to the KKH, in the process endangering wildlife populations and a sustainable local dietary resource. Cursory wildlife surveys in the mid-1970s (e.g. Schaller 1980) noted the rarity of ungulates in parts of Gojal, blamed it on local hunting and grazing practices and recommended the formation of KNP, marking the start of global conservation governance in Gojal.

Second, the KKH enhanced access *to* Gojal. It is a truism in rural roads literature that NGOs and government services follow roads (Wagner 1990), and Gojal is no exception. Vehicular access enabled the provision of education, health care, agricultural services, government-subsidised imported grain, communications facilities and electricity. AKRSP required the KKH to move its social organisers efficiently from village to village and extended the highway's reach by funding numerous link roads to villages in side valleys. Many aspects of Gojal's contemporary material culture would have been impossible without these roads (e.g., concrete and sheet-metal roofing, tractors, threshing machines, generators and electric sawmills). Their political ecological effects relate to the means and mode of agricultural production, the types of crops grown and the reorganisation of agricultural

labour sharing practices. The road network also provided tourist access to Gojal. Guiding, portering and hotel keeping became important sources of income for a proportion of Gojali households that, combined with cash cropping, provided the means to educate children, purchase imported consumer goods and otherwise subsidise subsistence agriculture in an increasingly market-oriented economy. Tourism, in tandem with global conservation, also introduced the idea of nature as a commodity in itself.

Third, the KKH affords mobility *beyond* Gojal for its residents and their produce (see Benz 2014). It created the possibility of agricultural production for distant markets. Households in villages adjacent to the highway and closest to central Hunza shifted much of their attention to cash cropping potatoes and fruit, while communities more distant from the road system continued to rely heavily on subsistence agriculture and pastoralism. Cash cropping inserted households and their environmental resource base into the capitalist economy at the most intimate levels of household reproduction, with significant implications for how people perceive and use the environment. Market efficiency came to govern the production practices of households invested in cash cropping, which hastened the spread of farm machinery and chemical inputs, contributed to a decrease in the variety of crops cultivated, encouraged some villages to abandon pastoralism and eroded conventions governing reciprocal labour relations and common property resources. Agricultural productivity became contingent on distant market forces, the cost of transport and the highway's passability, as well as the usual vagaries of weather and household labour supply.

The KKH also offered greater mobility to Gojal's residents. Although there is plenty of road travel in all directions, the flow has been predominantly downward, from side valleys to large communities adjacent to the KKH corridor and from the main valley downstream to Hunza, Gilgit and the Pakistani plains. Gojalis avail vehicular mobility for family and social purposes, employment, access to social services and education. LSOs and Ismaili institutions rely on roads to coordinate activities and governance across spatially dispersed communities, as well as to liaise with nonlocal partners. In these ways the KKH and its feeder roads have enabled local communities to organise in defence of their collective ecological interests.

Fourth, these flows of people and goods *concentrate* social, economic and ecological activity in the main valley along the highway corridor and south out of Gojal (Allan 1986). As a result, communities at the greatest distance from the KKH became relatively more peripheral socially and economically (Butz and Cook 2011). Without the same access to rapid and cheap mobility, higher-altitude villages were slower to receive electricity, telecommunications facilities, well-equipped schools, access to LSOs and full involvement in *jamaati* institutions. Moreover, lacking easy access to the KKH, they were unable to exploit new cash cropping opportunities and relied instead on subsistence production and remittances from family members working seasonally outside the region. Some villages suffered depopulation of working-aged men and youth, resulting in shortages of male labour for subsistence activities and an associated expansion of women's farming responsibilities. As market orientation deepened in Gojali's main valley, uses of high-

altitude environments that could not be profitable according to market logics were devalued, as were systems of common property resource governance, further peripheralising subsistence-reliant communities. High-altitude environments across the region were used less intensively, except for tourism. At the same time, land use intensified along the main KKH corridor out of Gojal as populations increased, new areas came into market-oriented cultivation, new schools and other social services opened, and a passenger van business facilitated more and easier travel to central Hunza and Gilgit.

The Attabad Landslide

By 2003 link roads had been constructed to all Gojali villages, and virtually all households depended on vehicular mobility to accomplish reproduction (Cook and Butz 2013). Therefore, when in January 2010 a massive landslide destroyed 2 km of the KKH at the southern end of Gojal and dammed the Hunza River to a height of 120 m, life in the region was significantly disrupted (Cook and Butz 2013). Over the next 5 months, the dammed river flooded large parts of 5 villages and 25 km of the KKH, Gojal's only road link to the rest of Gilgit-Baltistan and down country Pakistan (Fig. 2).

The landslide and subsequent flooding altered the context for environmental governance and practice in Gojal in a number of intertwined ways.

The landslide killed 19 people and displaced 141 households in Attabad and Sarat, which were evacuated; 240 additional households in Ainabad, Shishkat, Gulmit, Ghulkin and Hussaini lost homes, fields and approximately 80000 fruit trees to flooding (NDMA 2010a, b; Butz and Cook 2011). For the first time in recent memory, some Gojali households found themselves homeless and landless, and many others lost their most valuable and productive agricultural resources. Although the lake has been partially drained, the trees are dead and the exposed land is covered with silt, making it unsuitable for agriculture until soil can be reestablished. This loss of productive land, in precisely those villages that had invested most heavily in market-oriented agriculture, had devastating effects on the farming economy, which were exacerbated by the sudden rupture of Gojal's only road link to relevant markets. A boat service was inaugurated in summer 2010, to help bridge this rupture, but at great cost in terms of affordability, convenience and reliability.

One of the most devastating effects of disrupted mobility is the virtual disappearance of agricultural production for market as a viable economic activity due to the increased cost of transporting produce out of Gojal and bringing inputs like fertiliser into the region. Cash cropping was the most important money-earning activity in communities adjacent to the KKH, so its loss was catastrophic to household economies and constricted the range of ecological affordances Gojalis could avail. Some wage-earning activities emerged in the aftermath of the landslide, such as stevedore labouring, operating boats, constructing new homes and engaging in business across the Chinese border, with the effect of reducing households' integration with the

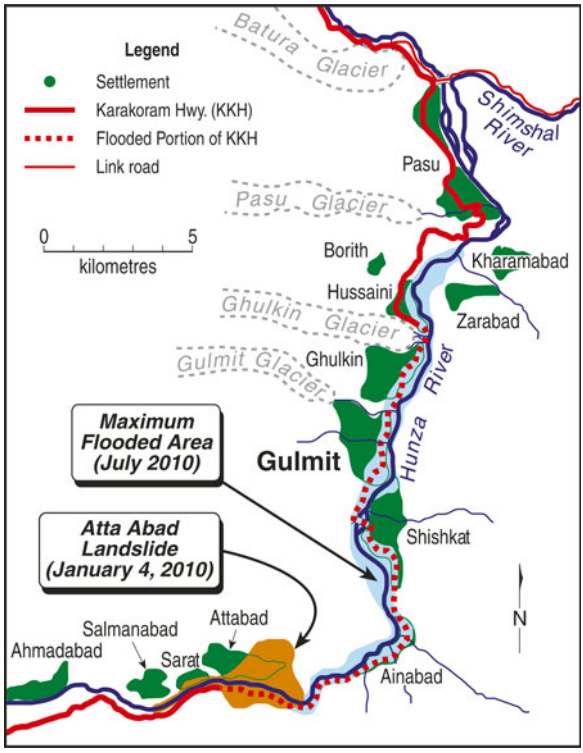

Fig. 2 Attabad landslide and barrier lake, Gojal subdistrict, Gilgit-Baltistan, Pakistan

local ecological resource base. One market-oriented activity enabled by the landslide contradicts this trend: the practice in Shimshal and the Chapursan Valley of marketing yaks in lower Gojal and central Hunza. Yaks are almost the only farm product that is sufficiently valuable to bear the cost of transportation across the lake, and yak has become more affordable in lower Gojal relative to imported meat. This burgeoning market has reinvigorated yak-based pastoralism in the highest altitude communities, with implications for the gendered division of labour and authority in pastures (Butz 1996).

Although the landslide created limited livelihood opportunities, its overall effect has been to constrict economic activity, reduce possibilities for survival from the ecological resource base and heighten Gojalis' experiences of peripherality. It is now more difficult, costly and time-consuming to move out of Gojal, with the effect that economic options are constrained and social networks and services are less accessible. Moreover, households have less disposable income to overcome these constraints.

There is a political dimension to Gojalis' increased sense of peripherality that stems from locals' belief that the government could have moved more quickly to cut a spillway through the landslide, thereby preventing the lake from forming. The perception of government disregard has heightened as the state repeatedly fails to

meet its own targets for draining the lake, realigning portions of the highway, resettling displaced households and providing compensation to disaster affectees (Sökefeld 2012) and as politicians make insensitive remarks about the lake's potential benefits for tourism or electricity production. The current plan to lower the lake level by 30 m, which will uncover most stretches of submerged highway but not recover all agricultural lands, leaves Gojalis with the impression that trade with China is a higher government priority than the plight of local farmers.

The state's lacklustre response to the disaster has compelled Gojalis to strengthen local social networks and institutional capacity, provided impetus for political and social mobilisation on a larger scale and impelled new forms of political activism in the shape of rallies, protests and marches (Sökefeld 2012). LSOs and the Ismaili Scouts, Guides and Volunteers have enhanced their reputations through disaster mitigation efforts, and local news blogs have emerged as important sources of information and opinion. At the same time, organisations that rely on voluntary monetary contributions find themselves with diminished resources (Sökefeld 2012).

Many residents contrast Pakistani state indifference with the Chinese government's active response to the disaster. When Pakistan's Frontier Works Organisation failed successfully to cut the spillway and realign the highway, Chinese road crews became involved with rapid results. Moreover, the Chinese government provided a much larger share of disaster relief than did the Pakistani government. In 2010, 2011 and 2013, it delivered food relief via the KKH to sustain 23000 people for 6 months, as well as medicine, petrol, diesel, coal and kerosene. Although these deliveries were requested and negotiated by the Pakistani government, Gojalis perceive China as coming to their rescue. This perceived contrast between Pakistani and Chinese responses to disaster fanned discourses of liminality that were already fuelled by the region's uncertain constitutional status and Gojalis' identification with transnational non-state institutions.

Sustained food relief adds to other dimensions of the disaster that undermine agricultural activity in Gojal. Most of the population only suffered the constraints of the severed road link, yet they received roughly half the relief per capita of those who were also displaced or lost land to the flooding. Moreover, the largest portion of relief was wheat flour, the region's ubiquitous subsistence cereal crop. The quantity and quality of food aid undermined a temporary transition back to subsistence production in those villages that had depended on market production and lessened farmers' commitment to subsistence in villages that had not invested heavily in cash cropping. Some households with reliable off-farm or remittance income abandoned agriculture altogether, with detrimental implications for terrace maintenance, soil fertility, collective management of irrigation infrastructure and the reproduction of farming knowledge. In this way, food relief alleviates food insecurity in the short term while adding to it in the long term, by diminishing people's remaining capacity to meet their food needs through subsistence. Large quantities of nonlocal foodstuffs also reshape local dietary habits, making them more dependent on imported food and further eroding the connection between the ecological resource base and household reproduction.

In addition to the landslide's direct human ecological effects, its outcomes of increased geographical peripherality, a heightened sense of liminality vis-à-vis the Pakistani state and disincentives to agriculture have combined to reshape Gojalis' ecological identities. They have become simultaneously more marginalised from the productive affordances of their ecological resource base while also gaining institutional and organisational—if not economic—capacity to defend their ecological interests via new forms of knowledge production and political mobilisation. In particular, the disaster has inspired in Gojalis both a sense of self-reliance in relation to the Pakistani state and 'the need to look elsewhere — both internally to communities themselves, and externally to other countries, international organisations and Ismailis around the world — for assistance and support' (Hong 2013:97).

Conclusion

Political ecology demonstrates that changes to environmental governance and systems of human-environment interaction usually create inequitably distributed costs and benefits that strengthen existing social and economic inequalities (Bryant and Bailey 1997). Empirical studies show that the losers in such transformations are typically local inhabitants of the environments in question, especially those already marginalised by their class, gender, ethnicity or educational positioning. In short, political ecologists show that the context of changes in human-ecology relations is structured by interests and power arrangements. In this chapter, we outline several key dimensions of the governance context within which human-ecology relations have been shaped in Gojal over the past half-century and trace some of their political ecological effects. By linking human ecological outcomes to the contingent particularities of governance context, we problematise the apolitical narratives of governments, NGOs, conservation agencies and local elites that represent human-ecological transformation as inevitable, innocuous or serving the common good.

Our analysis exemplifies three of the key themes Paul Robbins (2012) distils from the spectrum of political ecological scholarship. *First*, as resource use systems become subject to state intervention or integration into regional and global markets, locals often become marginalised from their resource base and environments undergo degradation. Gojalis' alienation from their environment's affordances is linked to the five contextual dimensions discussed in the chapter: peripherality and liminality, global conservation, transnational Ismailism, road development and the Attabad landslide. Although these factors may not have led to irreversible degradation of Gojal's environment, they have diminished locals' capacity and inclination to maintain agricultural and pastoral environments in a productive state.

Second, efforts to protect natural environments through conservation often cast local users as ecologically irresponsible and disable local systems of 'livelihood, production and socio-political organisation', with detrimental ecological effects (Robbins 2012:21). In Gojal this is most evident in global conservation interventions, which have removed large territories from local control and colluded with the

state to restrict local use and management of much of the remainder. Gojal's constitutional liminality denies locals various avenues of legal recourse and exacerbates the disempowering effects of conservation schemes. On the one hand, conservation initiatives have hastened the collapse of local mechanisms and institutions for subsistence-oriented resource governance; on the other hand, under the rubric of community-based conservation, they have reintroduced constrained forms of resource self-determination geared towards market-integration, mainly in the forms of trophy hunting and adventure tourism. One by-product of this new environmental governance context is communities' capacity to establish transnational partnerships that allow them to sidestep or resist some of the constraints of peripherality and constitutional liminality.

Third, transformations to environmental management regimes create 'new kinds of people, with their own emerging self-definitions, understandings of the world and ecological ideologies and behaviours' (Robbins 2012:22) and inspire new forms and targets of political agency. Gojalis are indeed 'different kinds of people' today than in the past, with different practical and notional attachments to their ecological environment. Although most people continue to identify deeply with their Pamirian mountain surroundings, fewer view those surroundings as the source of their livelihood or their full-time home. Farming identities in particular are becoming less central to local culture and social organisation, as subsistence production diminishes, market-oriented agriculture faces new challenges and young people seek formal education and off-farm opportunities. New environmental identities are emerging, which engage the local ecological environment as something to be conserved for its own sake, valued for cultural and restorative purposes, exploited for tourism income and, if regulations allow, mined for non-renewable resources. These identities are more cosmopolitan than previously, connected to the wider world through transnational Ismaili institutions, educational and occupational networks, involvement with international development and conservation organisations, labour migration and translocal media. As such, they are better resourced than their forebears to contest the alienating and marginalising effects of peripherality, liminality, disaster, conservation and economic globalisation, making greater human-ecological self-determination an open possibility for Gojal's future.

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The Changes in Regional Structure and Land Use Related to External Factors in Hussaini Village, Northern Pakistan

Kazuo Mizushima

Abstract This study describes changes to regional structure and the use of farmlands in Hussaini village, Pakistan, caused by two events. The first event was the opening of the Karakoram Highway in 1978 that introduced commodities and a money market economy. The enhanced transportation increased access to markets, which spurred a transition from subsistence wheat cultivation and vegetable crops to potato cash crops. The second event was the catastrophic landslide in Atabad which occurred on 4 January 2010 that submerged part of the Karakoram Highway and created a dammed lake. The loss of the highway halted the village's engagement in the wider agricultural market, and farmlands in the village reverted to traditional agriculture. The changes caused by these outside factors created confusion and disturbance and challenged the villagers to quickly adapt for survival.

Keywords Commodities • Money market economy • Karakoram Highway • Hussaini village • Gojal

Introduction

Hussaini village is located in the Gojal Subdivision of the Hunza-Nagar District of Gilgit-Baltistan in northern Pakistan. It borders the Xinjiang Uygur Autonomous Region, China, and Afghanistan at an altitude of 2500 m and is inhabited by the Wakhi ethnic minority (Kreutzmann 1996, 2003, 2007).[1] The village is located at the foot of the eastern-lateral moraine formed by the Ghulkin Glacier on the right

[1] The Wakhi are a minority mountain community whose ancestors originated from the Wakhan region of northeast Afghanistan. Their language belongs to the Eastern Iranian group within the Indo-European languages and has remained without a script to date. In denominational terms, the Wakhi belong to the Ismaili sect, a branch of Shia Islam.

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bank of the Hunza River, a branch of the Indus River system. The Karakoram Highway (KKH) passes through Hussaini village, which, in 2013, was inhabited by 671 residents in 128 households.

Two additional parcels of land belong to the village; one is at Zarabad, across a bridge on the left bank of the Hunza River, and the other comprises summer pastures up the valley on the right bank of the Batura Glacier. Approximately 593 *kanal*[2] of the village's land is cultivated and irrigated. Thus, Hussaini village historically controlled three separate parcels that formed the basis of its land use: village land, farmlands of Zarabad and pasturelands. To maintain self-sufficiency, the village embraced traditional agricultural modes that combine the rotational cultivation of wheat and beans with seasonal pastoralism. However, this changed in response to two events: first, the KKH opened in 1978 (Kreutzmann 1991) and, second, a dammed lake formed after a massive landslide which occurred on 4 January 2010. Although these two events altered the Hussaini village community and more widely affected Gojal, research about these changes has yet to be conducted. Figure 1 illustrates the geographic context of Hussaini village.

Changes in the Regional Structure and Farmland Use in Hussaini Village

Changes in the regional structure and the use of farmlands in Hussaini village occurred during three distinct periods: (1) before the advent of the Karakoram Highway in 1978, when it was isolated from neighbouring regions; (2) between the 1980s and the late 2000s, when it was opening up to other countries and international visitors; and (3) between 2010 and the present after the emergence of the dammed lake.

The Period of Isolation before the Opening of the Karakoram Highway

Before 1978, Gojal Subdivision was isolated with little exchange with its immediate neighbours. The subdivision's villages relied on traditional modes of agriculture and livestock farming for subsistence. The farmers who lived there during that period provided the following account of everyday life in the area at that time. The residents of Hussaini village irrigated their farmlands from mid-April until early May with water that rose from the foot of the moraine of the Ghulkin Glacier. The Zarabad fields were irrigated with water flowing out from the glacier high up in the Khundaq valley. After early May, the villagers sowed wheat and beans. They paid

[2] One *kanal* is approximately 500 m^2.

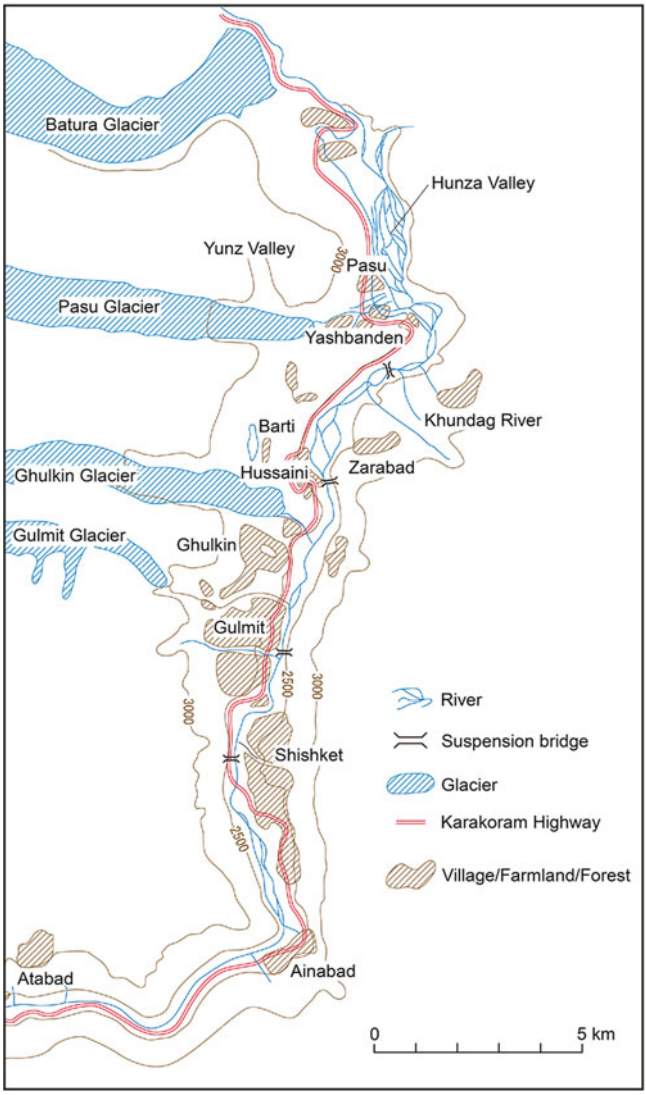

Fig. 1 Locational context between glacier and irrigated oasis in Hussaini

meticulous attention to irrigation during the growing season, and the crops were harvested between late August and early September. In addition, the people of Zarabad prepared hay stacks from weeds collected from the land to augment their meagre fodder supplies for the livestock during the winters.

In the dry mountainous climate, seasonal pastoralism within Gojal involved shifting the livestock to the vegetation-rich summer pasturelands near the Batura Glacier (Kreutzmann 2012). The people of Hussaini historically used five summer pasturelands on the right bank of the Batura Glacier about 20 km from the village

for their animal husbandry. In mid- to late May of each year, the villagers moved their sheep and goats from the village along the rough tracks that bypass the Pasu (Passu) Glacier and across the Yunz Valley to the summer pasturelands on the right bank of the Batura Glacier. The livestock grazed there at low altitude until mid-July when they were shifted to the rich meadows in Maidan from late July to mid-September at an altitude of approximately 3200 m. In late September, they left Maidan and returned to the homestead in the village for the winter.

The entire village cooperated to perform the tasks related to the migration and management of the livestock in the summer pasturelands and to process milk for the preparation of dairy products according to the village traditions. Until the mid-1980s, the three parcels of Hussaini village land were organically intertwined to sustain the villagers' self-sufficient living (Fig. 2a). This relationship among the different types of land use was the basis of the agro-ecological structure and the use of farmlands by the village.

The Period of Opening Up: The 1980s Until the Late 2000s

The opening of the KKH in 1978 was a significant event for the region. Modern means of transportation now passed through the Gojal Subdivision, providing accelerated and enhanced exchange relations between the people in the villages, nearby neighbours and towards the central and southern parts of Pakistan. That interaction led to integration into the regional market economy with respect to commodities and cash flow (Kreutzmann 1991, 1993, 2009). In addition, foreign tourists and hikers began to visit Gojal after 1982 when it was possible to stay there. A second boost occurred when in 1986 travel to China was permitted after the opening of the Khunjerab border for foreigners. Moreover, several development programmes emerged in the region (NGOs) since the beginning of the 1980s.

Exposure to these external influences had significant effects on regional development. Previously, the farmers had relied on rotational cultivation of wheat and beans for their sustenance. Now, cash crops, such as apples and potatoes, were introduced, although the extent of participation in these new cultivars was quite varied from village to village (Kreutzmann 2006a; Malik and Piracha 2006). Overall, the villagers had new income sources.

Similar to other villages in Gojal, Hussaini faced the challenge to transform its economic basis. Rotational agricultural practices for wheat and bean production were significantly decreased in favour of cash crop-oriented potato cultivation. Potato farming became popular, and it spread throughout the region to become the dominant cash crop in the majority of cultivated plots. The land use shown in Figs. 3a and 4a, in contrast to the land use shown in Fig. 2b, illustrates this transitional phenomenon.

However, expansion of the cultivated areas led to seasonal water deficits and higher demands for irrigation water. When the rotational cultivation pattern was applied for wheat and bean cultivation, the village derived the necessary irrigation

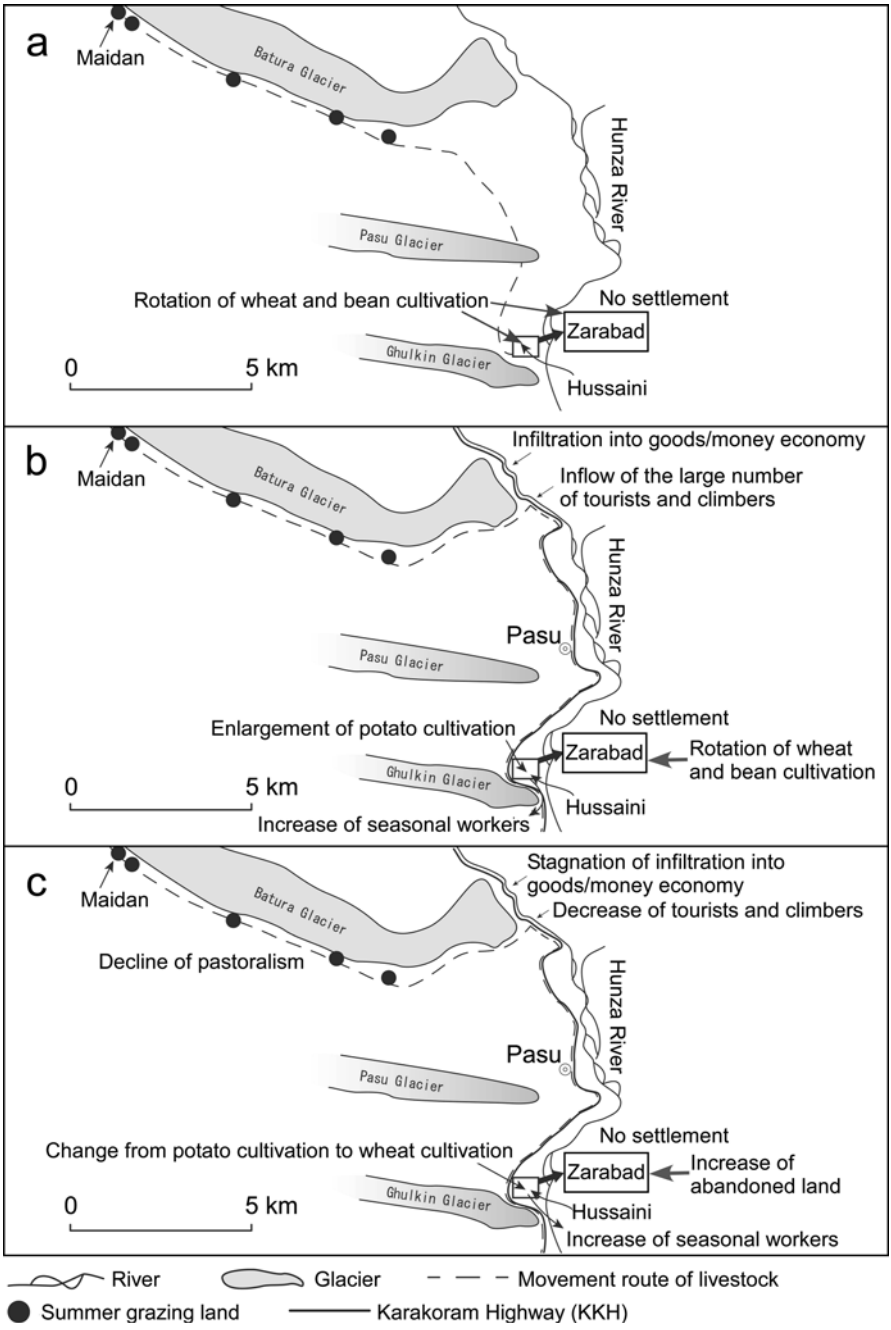

Fig. 2 Change of cultivation patterns and infrastructure in Hussaini across the three periods of change. (**a**) Agro-pastoral patterns in Hussaini before the mid-1980s. (**b**) Economic structure of income sources in Hussaini from the late 1980s to the late 2000s. (**c**) Recent changes in income generation in Hussaini from 2010 to present

Fig. 3 Change of land use in Hussaini village. (**a**) Land use in August 2009. (**b**) Land use in October 2013

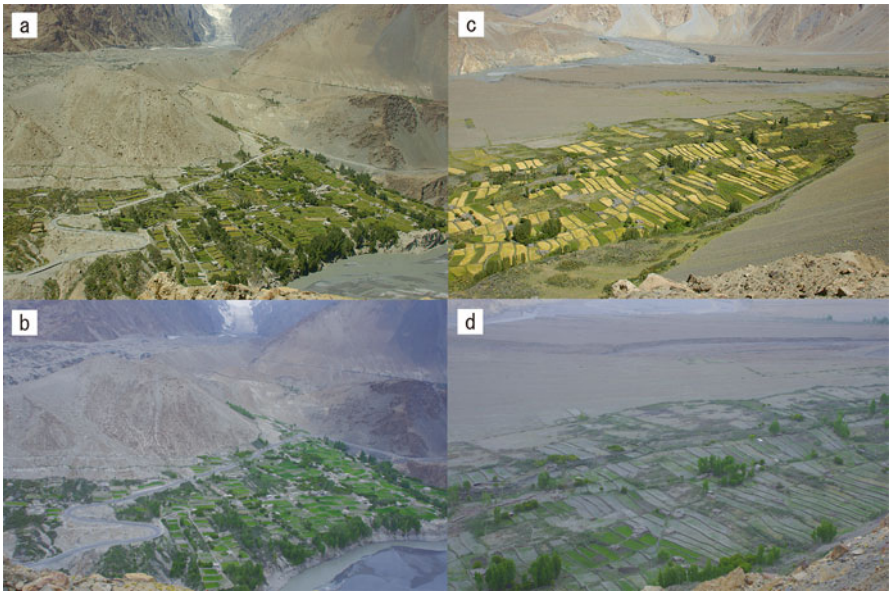

Fig. 4 Agricultural landscape changes in Hussaini village and Zarabad. (**a**) Hussaini village lands in August 2009; *greenish-yellow* indicates potato fields. (**b**) Hussaini village lands in May 2013; *darker green* indicates wheat fields. (**c**) Zarabad cultivated lands in August 2009; *yellow* indicates wheat fields. (**d**) Zarabad cultivated lands in May 2013; mostly abandoned (Photographs © Kazuo Mizushima 2009, 2013)

water from five channels that conveyed the water oozing from the moraine of the Ghulkin Glacier. Under the abridged cultivation pattern, the available water quantity was insufficient for the demands of potato crops. At that time, the water shortage problem needed to be solved in order to secure the necessary quantity for the production of a high-quality potato cash crop.

Hussaini village's solution to the water deficit was to construct a small intake basin on the left bank of the Ghulkin River flowing out from the Ghulkin Glacier approximately two kilometres from the village and to install iron pipes to transport the water from the reservoir to the fields. Construction of the basin and transportation system was completed in 2007, after which the village fields received a large volume of water, and the water shortage problem was solved (Mizushima 2008, 2009).

In contrast, Zarabad across the river functioned as augmenting the village lands. On occasional visits farmers from Hussaini followed a rotational cultivation pattern for wheat and beans that remained unchanged despite of the increased accessibility due to the KKH (Figs. 5a and 4c). A major reason for the lack of change was that the distance between Hussaini village and Zarabad was far and the terrain was treacherous. To get to Zarabad, the Hussaini villagers had to cross a precarious suspension bridge over the Hunza River and traverse a steep path along a cliff and sliding area. Thus, it was impossible and dangerous to carry heavy loads, such as

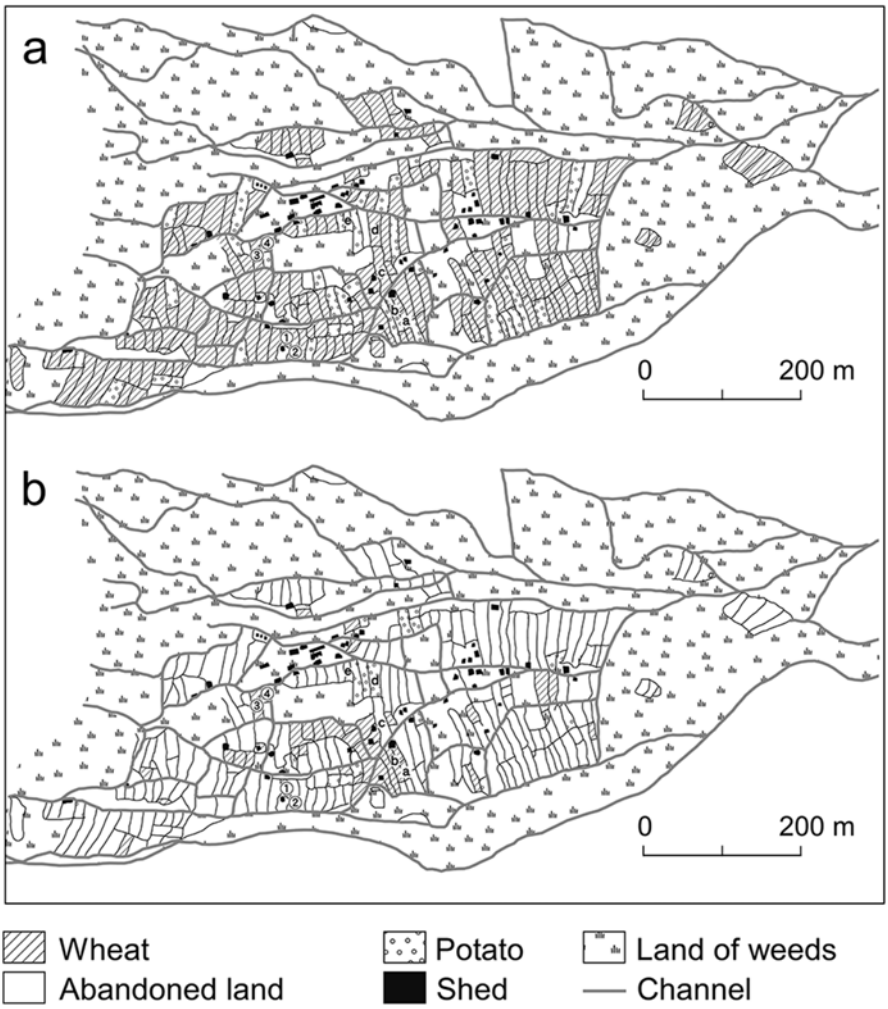

Fig. 5 Change of land use in Zarabad. (**a**) Land use in August 2009. (**b**) Land use in October 2013

potato harvests, making potato cultivation unfeasible, and, thus, commercial potato production did not increase in Zarabad.

During this period the use of the summer pasturelands on the right bank of the Batura Glacier remained unchanged. Grazing in Maidan continued (Fig. 6a). However, the availability of the KKH made it easier to travel the 10 km from Hussaini village to the terminus of Batura Glacier (Fig. 6b), even though the roads from the mouth of the glacier to the five summer pasturelands posed a barrier, as had been the same during the previous period. Furthermore, the tasks performed by the villagers in their summer pasturelands remained virtually unchanged except that the preparation of butter and *qurut* (a milk curd dried and then boiled in water), tasks

Fig. 6 Livestock farming in Hussaini. (**a**) Livestock pen at Maidan in August 2011. (**b**) Movement of sheep and goats to the terminus of Batura Glacier on Karakoram Highway (Photographs © Kazuo Mizushima)

previously handled by women, gradually declined as alternative incomes became available.

Thus, although there were changes in activities and land use, these changes were not sufficiently forceful to alter the spatial interaction pattern that linked Hussaini village's three parcels of land (village, farmlands and pasturelands) together, the structure of which remained unchanged during this period of opening up. As shown in Fig. 2b, with the advent of the KKH, the ensuing penetration of commodities, a money and market-oriented economy, there was a pressing need to create a new basis for living. A typical example of adaptation was the drastic change in the cultivation of farmlands in Hussaini village in which potato production expanded so that the villagers could earn cash money. In contrast, no marked change occurred in Zarabad's land use (Figs. 5a and 4c) or in the use of summer pasturelands near Batura Glacier. Despite the expansion of potato production, the villagers generally did not realise sufficient income from it to subsist, and family/household incomes tended to be supplemented by the village able-bodied men and women who worked as migrant labourers.

The Period between 2010 and the Present after the Emergence of the Dammed Lake

A massive landslide suddenly and unexpectedly hit the region on 4 January 2010. It was a severe natural disaster that impeded Gojal's connection with its neighbouring villages downriver, its link to the district capital of Aliabad and its connection to the major urban centre of Gilgit-Baltistan, Gilgit Town, and towards the central and southern parts of Pakistan. Only the road connection via KKH towards China remained open for vehicular traffic. Previously, Gojal and its surrounding areas had faced many natural disasters, which had caused much damage (Derbyshire and Fort 2006; Kreutzmann 2006b, 2013). This time the massive landslide that occurred in

Atabad (Attabad) village was so severe that it immediately dammed the Hunza River, which created an enormous dammed lake that encompassed a wide area from Atabad to Hussaini village, which is located approximately 22 km upstream from the location of the rockfall and landslide (Schnei et al. 2013).

The newly formed lake submerged houses, farmlands, trees, shops, hotels and other buildings, as well as the KKH and bridges throughout the area. The disruption of the KKH inflicted particularly serious damage on Gojal because the highway was its only transportation lifeline to the outside world (Cook and Butz 2013). In the wake of the disaster, small vessels were deployed as alternatives to road vehicles to transport people and goods across the lake (Fig. 7a, b). However, the traffic volume was limited and bound to seasonal conditions; no transport was feasible in winters when the lake was frozen. Transportation costs soared, resulting in product shortages that caused all prices of necessary commodities to increase significantly in Gojal.

Hussaini village was severely affected by the dammed lake. Direct impacts on the village included submerged trees, such as poplars, and the complete loss of fertile farmland. The villagers were no longer able to ship and sell their potatoes, which were their primary agricultural source of cash income. They were forced to abandon potato farming (Fig. 2c), which was the mainstay in the farmland, and they returned to traditionally irrigated wheat agriculture for their own sustenance (Figs. 3b and 4b). To make matters worse, their previous irrigation innovation that had solved their water shortages during the potato cash-cropping years was destroyed as it submerged in the dammed lake.

The villagers faced a financial catastrophe. In Zarabad, the precarious, yet important, suspension bridge had been torn away by the lake waters, and it was not being repaired, even after the water subsided. As a result, the villagers were unable to grow crops. Figures 5b and 4d show that the farmland that produced wheat and beans was mostly abandoned.

The summer pasturelands on the right bank of the Batura Glacier also experienced changes. The use of the summer pasturelands and the related tasks had been communally organised based on village rules. However, the number of sheep and goats and the number of shepherds significantly decreased (Table 1). Only 15

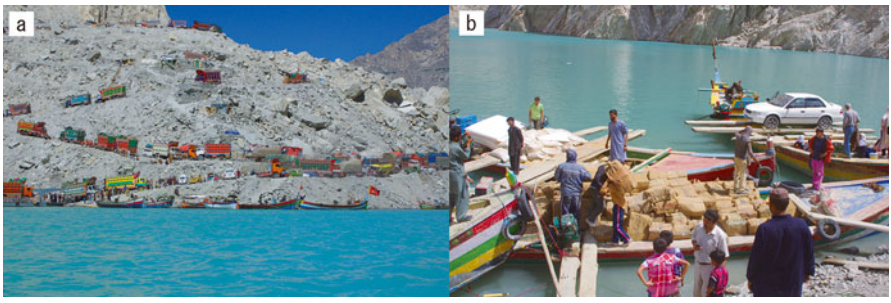

Fig. 7 Dammed lake at the landslide location, Atabad port. (**a**) Temporary river port in June 2014. (**b**) Boats used to transport commodities and people on the dammed lake in June 2014 (Photographs © Kazuo Mizushima)

Table 1 The number of sheep, goats and cattle in Hussaini village[a]

Year	Sheep	Goats	Cattle	Total
1995	413	916	194	1523
2005	365	865	314	1544
2011	60	390	ND	ND

Sources: Ali Rehmat and interviews with villagers[b]

[a]Gojal District, including Hussaini village, is not included in official statistical data numerations. Thus, the numerical data for the surveys or interviewees are somewhat inconsistent. I confirmed that the year and the numbers of sheep and goats were 2011 with Mr. Frasat Shar, a villager

[b]Data on the livestock are as of 1995 and 2005 and were derived from Mr. Ali Rehmat (personal communication)

farming households with goats and sheep used the summer pasturelands in 2013. This decline resulted from (1) the replacement of many necessities for self-sufficient living with purchased products (commodities), (2) hard labour that previously had placed heavy demands on women being avoided to educate the children, (3) the sale of sheep and goats for meat that decreased because fewer tourists visited and (4) long-term grazing that has been depleting the vegetation in the summer pasturelands (Mizushima 2013). The decline in summer grazing was an observed long-term trend that was accelerated by the sudden emergence of the dammed lake.

The fundamental spatial structure of Hussaini village remained unchanged during the period since the emergence of the dammed lake. However, the interrelationships among the village, farmland and pastureland weakened after the disaster. For example, the farmland in Hussaini village and Zarabad reverted to land use that had no value in a cash crop-based economy anymore (Fig. 2c). Moreover, the number of migrant workers, mostly young people, increased significantly to make up for the shortages.

Conclusions

Until the mid-1980s, Hussaini village maintained a functioning interrelationship among its three parcels of land (village, farmlands and pasturelands) to sustain the villagers' self-sufficient livelihoods. However, in no more than one generation after the 'modern' opening up to the outside world, the context of Hussaini village dramatically changed. Among the major changes were the accessibility opportunities offered by the KKH. To adapt to the changes, Hussaini village's farmlands first shifted from rotational cultivation of wheat and beans based on traditional irrigation to potato farming. Then, the emergence of the dammed lake forced a return to wheat production. Overall, the area's land use underwent a series of extreme changes. After the advent of the KKH, the farmland in Zarabad continued to be used for rotational cultivation of wheat and beans because of its location and the terrain, but the emergence of the dammed lake made access to Zarabad more difficult and all cultivation was abandoned.

The summer pasturelands on the right bank of the Batura Glacier were historically used for seasonal pastoralism, which continued after the opening of the KKH. However, after the emergence of Atabad Lake, the quantity of livestock and shepherds significantly decreased. Pastoralism, historically a communal operation engaged in by all the farmers of Hussaini, became limited to those farmers who were personally using the pasturelands during summer.

Hussaini continues to maintain coherence among its three parcels of land. However, shifting land uses and a decreasing need for seasonal pastoralism have weakened the interrelationships among village, pasturelands and farmlands, resulting in subtle changes in the spatial utilisation patterns of Hussaini. Although the traditional relationship has weakened, creating a need for supplementary sources of income, no alternatives to the self-sufficient subsistence lifestyle locally exist at present; out-migration seems to be the most promising opportunity to date. Therefore, the current spatial patterns and practices of inter-linkages will most likely endure. Furthermore, the population of Hussaini is increasing. If the interrelationships that fundamentally support the livelihoods disappear, it will not be possible to sustainably support the people of Hussaini in the future.

A field survey conducted in June of 2014 found that vigorous road construction was underway to recover the KKH. Completion of the construction is expected by the end of 2015, 5 years after the landslide. It was observed that Hussaini village had already adapted to the expected change of opportunities. Again Hussaini as a community increased its proportional size of potato cultivation in an attempt to secure the villagers' livelihoods. A significant decline in transportation costs across the lake had already augmented this trend. Nevertheless, the decline in the number of farmers who were using the summer pasturelands had not stopped and the number of migrant workers was still increasing. Moreover, some households had given up their rural basis and temporarily left the village.

Although the KKH may reopen soon, full restoration of the lifestyle that was destroyed by the landslide that created the lake 5 years ago is a challenging task. With the reopening of the KKH, Hussaini village may return into a market-oriented economy. However, the agro-ecological, spatial and organisational interrelationship between the village, farmlands and pasturelands will likely serve as a foundation for exploring new ways to subsist and develop, such as tourism (Watanabe et al. 2011).

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Humanitarianism Across Mountain Valleys: "Shia Aid" and Development Encounters in Northern Pakistan and Eastern Tajikistan

Till Mostowlansky

Abstract This chapter focuses on development encounters involving organisations with particular Shia genealogies in Pakistan's Hunza-Nagar district and Tajikistan's region of Gorno-Badakhshan. Based on anthropological fieldwork conducted between 2008 and 2013, I argue for an ethnographically grounded exploration of the two regions as contact zones which these organisations have entered. I furthermore maintain that as a result of dynamics within these contact zones, the analysed organisations, while promoting a humanitarian approach to development, also become part of specific sectarian imaginaries. Thus this chapter attempts to show that these organisations have not only left their imprints on physical landscapes and improved people's lives. In the course of their involvement, development interventions also become part of how society imagines society, and they engage with local constructions of sectarian difference.

Keywords Development • Shia • Ismaili • Pakistan • Tajikistan • Social imaginaries

Introduction

Sitting in the loggia of Niaz' house,[1] overlooking the majestic Hunza valley at the very northern tip of Pakistan, we discuss the sectarian strife that is poisoning everyday life in the country. In an attempt to make sense of the atrocities that are being committed in the name of particular strands of Islam, our host goes back in time and explains the difference between Sunnis and Shias as one between "product Muslims" and "process Muslims". Niaz holds the opinion that while the Sunnis' beliefs were

[1] While I use real names for public figures and well-known representatives of organisations, the names given for all other interlocutors are pseudonyms.

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packaged fourteen centuries ago, Shias, particularly Ismailis, began to be involved in a process called Islam which has changed and developed ever since according to particular times and contexts.

This short passage from notes taken in the course of anthropological fieldwork in northern Pakistan in 2013 not only reflects an attempt to frame the grievances of a conflict-torn country by re-inscribing sectarian boundaries as meaningful. It also highlights that my interlocutor Niaz viewed "his" Ismaili (and Shia) side as open to change and ready to engage with the requirements of different historical periods. Furthermore, later in the conversation, he defined the economic and social development of his native place Hunza as a major contemporary requirement for such change (Fig. 1).

A closer look at the recent history of the Hunza valley in which Niaz grew up and still lives shows that the region has been massively transformed through development interventions in the fields of infrastructure, education, health and community in the course of the past three decades (Kreutzmann 1989; Wood et al. 2006; Khan 2009). Similar processes can be observed in neighbouring areas within Pakistan and under different political circumstances across the border in Afghanistan, Tajikistan and China. In this chapter, I will explore these processes and their intersection with

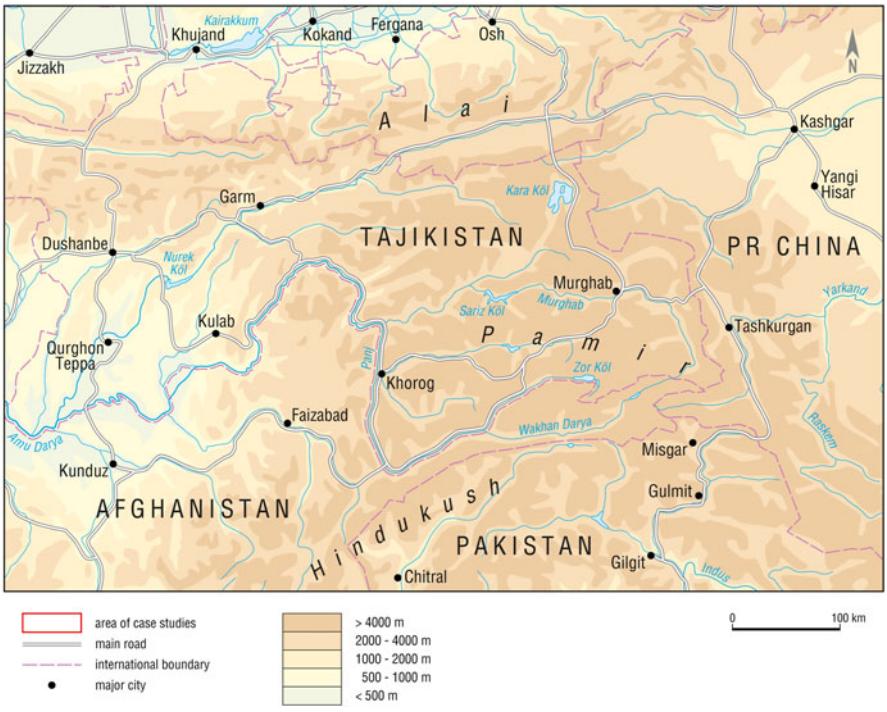

Fig. 1 The study area in Gorno-Badakhshan, Tajikistan, and in Gilgit-Baltistan, Pakistan (Design: Hermann Kreutzmann)

the construction of sectarian difference in Pakistan's Hunza-Nagar district as well in Tajikistan's Gorno-Badakhshan. Based on ethnographic data collected during fieldwork in Tajikistan from 2008 till 2013 and in Pakistan from 2012 till 2013, I thus aim to contribute to the ongoing debate on the relation between development and religion at the crossroads of anthropology, development studies and the scientific study of religions.

I will begin with a discussion of current approaches to the anthropological study of development and religion. After having addressed the framing terminology, I will focus on Hunza-Nagar and Gorno-Badakhshan as contact zones and fields for various development interventions. Finally, I will conclude with a general outlook on the impact of "Shia aid" and development encounters on the social landscapes of northern Pakistan and eastern Tajikistan.

Entering Contact Zones

Over the past 10 years, religion has become an increasingly important topic for donors and scholars of development studies (Fountain 2013). However, while studies on the role of "religious" or "faith-based" organisations in the field are flourishing (e.g. Clarke and Jennings 2008; Ter Haar 2011; Barnett and Gross Stein 2012; Clarke 2013), little work has been done with regard to a state-of-the-art conceptual framing of the terms in use. Fountain (2013:23) convincingly argues that this lack of a conceptual framework is closely linked to the political discourse within the field of development (studies) which distinguishes between a secular "us" and a religious "them". As a result, the essentialist definition of religion that underlies this discourse caters to the constructing of religion as "a distinctive, readily identifiable entity, which in turn renders it manageable" (Fountain 2013:23).

In this chapter, I will follow approaches which historicise the idea of religion as a "universal concept" (Van der Veer 2006:25; see also Asad 2003). This implies a move away from religion as an assumed framework, thereby challenging religion's "overwhelming sense of objective reality […] that now holds us in its sway" (Masuzawa 2005:2). Thus, rather than being a given concept, religion becomes the object of analysis in its historical and contemporary dimensions. In turn the approach of taking a step back behind religion as a stable entity evokes the question of how one can research "it" from an anthropological point of view. While a focus on "thick" ethnography of the work of specific NGOs and institutions in particular contexts constitutes common ground, anthropologists of development and religion have provided various answers to this question (e.g. Bornstein 2005, 2012; Smith 2008; Bornstein and Redfield 2010; Rudnyckyj 2010; Atia 2013; Feener 2013).

In this chapter, I will draw on a framework that Fountain (2011) recently suggested. With reference to Pratt (1991) and Clifford (1997), Fountain (2011:12) perceives development encounters as involving "contact zones": spaces that are marked by a high degree of geographical mobility and cultural fluidity. In such a contact

zone, "meetings across difference" (Fountain 2011:12) are part of a routine, which includes disagreement on the very nature and purpose of the zone itself. The global connectedness of development encounters fosters such processes and leads to what Tsing (2005:xi) calls "zones of awkward engagement, where words mean something different across a divide even as people agree to speak". In the following, I attempt to show that upon entering specific contact zones, development interventions draw on and reconfigure ongoing social and political processes. Thus, as Mosse (2005:16) argues, particular development projects should be framed as "sites of social and institutional reproduction".

With a focus on development interventions as drawing upon, reworking, adding to and being shaped by contact zones, *a priori* distinctions between "secular" and "religious" development organisations not only become undesirable, but even impossible. Thus from such an angle, the central question of this chapter is not whether NGOs in northern Pakistan and eastern Tajikistan are "religious" or "faith based", but rather how processes within respective contact zones can be framed. In the following, I will therefore not focus on organisations such as the Aga Khan Development Network (AKDN), the Jabir Bin Hayyan Trust, the Lady Fatemah Charitable Trust (LFCT) and the Madinatul Ilm Charitable Trust (MICT) as primarily and *a priori* "religious" NGOs but as organisations which encounter and become part of contact zones in which this question is negotiated. At the same time, the selection of these organisations is not random, but is based on the fact that they are locally linked, and yet also disconnected, through geography and history. Furthermore, these NGOs carry with them different sets of ethics that they themselves situate as being within, but not limited to Shia Islam. It is the emphasis on humanity and the language of humanitarianism which provide further connecting points between these organisations and the specific contexts in which they operate.

Developing Hunza

During my fieldwork in Hunza in 2013, I frequently spent afternoons sitting with Sherullah in the shadow of the Baltit Fort watching tourists from Karachi and other cities in the flatlands of Pakistan slowly ascend the steep slope beneath us. The Baltit Fort, first owned by the Mir of Hunza and later on transferred to the Baltit Heritage Trust was restored by the Aga Khan Trust for Culture (AKTC) during the 1990s and now serves as a major tourist attraction (Bianca 2006; Hughes and Lefort 2006). While few foreigners visit Hunza these days, as a result of the damage done to Pakistan's image through the "war on terror" and a decade of increasing violence, domestic tourists enjoy the fresh air and historic sites of the north.

Although Sherullah sometimes expressed suspicion towards guests from the southern parts of the country who are collectively labelled (and othered) as "Punjabis"[2] in the region (Mostowlansky 2014:187–190), he was generally satisfied

[2]The term "Punjabi" is a collective term used to describe "down country people" more generally, even if they do not originate from the region of Punjab.

with the fact that they had replaced Western tourists and were thus at least generating some profit for the local tourist industry. "All this", he said once pointing at the fort and the settlement of Karimabad spreading to the bottom of the valley, "would not have been possible without development; and without the road there would have been no development". Using *taraqqi*, the Urdu term for development,[3] Sherullah reflected upon this fact and added:

> You see, there is no such word in Burushaski, my native tongue. There might be ways to express and circumscribe *taraqqi*, but there is no such word itself. Before this all began, we lived in medieval times – families with their cattle in one smoky room. Only with the road and the support of the Imam we got access to a different life.

The road to which Sherullah referred is the Karakoram Highway connecting Pakistan and China and traversing Pakistan's northernmost territory Gilgit-Baltistan (formerly the Northern Areas) of which Hunza is a part. The highway, built in the context of bilateral cooperation between the two countries, was opened for regular traffic between Rawalpindi and Gilgit in 1978 (Kreutzmann 2009:22). In 1982, the road was also officially declared open for regular traffic between Pakistan and China (Kreutzmann 1989:35). In the aftermath of the road construction, development projects followed the newly established transport network (Kreutzmann 2009:25), and in 1982, the Aga Khan Foundation (AKF), part of the AKDN, brought into being the Aga Khan Rural Support Programme (AKRSP) (Wood et al. 2006: 1).[4]

Since its establishment, the AKRSP has catered to all inhabitants of the regions in which the organisation operates in Gilgit-Baltistan and Chitral through projects covering infrastructure, education, health, microfinance and agriculture. However, the question of religious orientation has always been central for people on the ground. This is also evidenced by Sherullah's reference (quoted above) that development would not have been possible without the help of "the Imam".[5] By "the Imam" he meant Prince Shah Karim Al Hussaini Aga Khan IV, the current Imam of the Nizari Ismailis, a globally dispersed Muslim denomination which has historically developed as a branch of Shia Islam (Daftary 2007; Steinberg 2011).

While the majority of the population of Hunza is Ismaili and speaks four different local languages (Burushashki, Domaaki, Shina and Wakhi), the territory of Gilgit-Baltistan as a whole is marked by a high degree of difference with regard to religious, ethnic and linguistic identities (Kreutzmann 1995; Sökefeld 2010). Generally, the AKDN and the projects it implements locally around the world are attempting to avoid potential conflict by promoting a pluralist approach which addresses all of humanity (Ruthven 2011). This is evidenced, for example, in the

[3] Further translations of *taraqqi* include "advancement" and "progress".

[4] While road construction in the 1980s certainly enabled large-scale development projects in Hunza-Nagar, there were already attempts to improve the lives of local Ismailis and to integrate them into a broader transnational network during the time of the Aga Khan III (1877–1957) (Kreutzmann 1989:156).

[5] For a general analysis of the relationship between the Ismaili Imamate and the AKDN, see Poor (2014).

Frequently Asked Question page of the AKDN's webpage, where the question "Are the AKDN and its agencies religious organisations?" is answered as follows:

> *No. The work of the AKDN is underpinned by the ethical principles of Islam – particularly consultation, solidarity with those less fortunate, self-reliance and human dignity – but AKDN does not restrict its work to a particular community, country or region.* Its focus is on poor areas of the developing world, but it also conducts programmes in North America and Europe. Pluralism is a central pillar of AKDN's ethical framework: AKDN aims to improve living conditions and opportunities for people regardless of their particular religion, race, ethnicity, or gender. AKDN employees are also of different faiths, origins and backgrounds. (AKDN 2014a, emphasis in the original)

In the course of my fieldwork in Gilgit-Baltistan, the AKDN's secular self-representation played a subordinate role in local encounters. Expressions of sectarian difference were an integral part of everyday life, and my interlocutors often attributed them to conflict, violence and war. In his ethnographic study of Islam in Pakistan's Chitral region, Marsden (2005:19) argues that the rise of "sectarian identities" in the sense of a "process whereby the boundaries between once fluid 'doctrinal clusters' are hardened" is closely linked to the systematisation and objectification of religion. In the case of Islam in Pakistan, but as I will show below also more recently in Tajikistan, this is on the one hand enforced by specific political processes. On the other hand, education, literacy and access to different forms of media provide the basis for a widespread notion of Islam as a system of diverse beliefs and practices, thus implicitly highlighting "differences within the Muslim community" (Eickelman 1992:650).

To be sure, Muslim identities have been central to Pakistani state-making from the very start in 1947 (Devji 2013). However, Zia-ul Haq's domestic Islamisation efforts (including the country's education system) as well as regional rivalry between Iran and Saudi Arabia in the 1980s led to an increasingly violent demarcation between Sunni and Shia Muslims (Nasr 2010). Along with other regions of Pakistan, sectarian differences have deeply penetrated Gilgit-Baltistan and are now continuously being reproduced in everyday life (Grieser and Sökefeld 2015; Varley 2015). To make sense of this process, I will draw on Ali's (2010) notion of "sectarian imaginaries". Ali (2010:739) borrows Taylor's (2007a:29) concept of "social imaginary" which reflects "the imagination *of* society *by* society" (see also Taylor 2007b:159–211). Thus, she introduces the concept of sectarian imaginary in order "to explore and explain how Shia and Sunni Muslim communities […] imagine, feel about and relate to each other, and the subtle ways in which sectarian anxieties are experienced and reproduced in everyday life" (Ali 2010:739). These "sectarian imaginaries" have become one of the dominant local ways to explain difference in Pakistan (and under different circumstances in Tajikistan).

During my fieldwork, my interlocutors usually attributed a particular religious denomination to development organisations. However, this does not mean that people did not distinguish between "being" and "acting". While Swiss or US organisations were often defined as being Christian, this did not imply that one should not interact with or profit from them. At the same time, the fact that the AKDN was

perceived as being Ismaili, by, for instance, Twelver Shia interlocutors, did not exclude the possibility of close cooperation across sectarian lines.[6]

A second important factor underlying perceptions of institutions of the AKDN and their development projects in local encounters in Hunza was the ways Ismailis themselves related to these institutions. From my interlocutors' perspectives, development in the region was triggered by their Imam as part of his worldly duties towards his murids, his "spiritual children". When delivering one of his influential and widely remembered "edicts" (*farman*) in Hunza on 13 May 1983, the Aga Khan IV emphasised the importance of development in the region and expressed the strong wish that the quality of life for his "spiritual children" in the north of Pakistan would improve. At the same time, he called for cooperation and unity with all Muslim brothers and sisters, thereby promoting a particular vision of Islam.

The impact of the Aga Khan's vision of development and humanitarianism as being at the heart of the community (Mukherjee 2010:199–203) is still strongly visible today and reflected in various aspects of everyday life in Hunza. For example, when talking with Nizam, a middle-aged farmer in Karimabad, in summer 2013, he explained to me that he considered himself "an ambassador of Ismaili religion", a function which every Ismaili should fulfil. He defined being an ambassador as "having religion in your heart and showing nothing but collaboration between people on the outside". Based on this principle, Ismailism was to him, in his own words, "a secular religion" which contrasted with the religion of the Sunnis in Gilgit and that of the Twelver Shiites just across the valley in Nagar. For Nizam and my other interlocutors in Hunza, the difference between Ismailis, Twelver Shiites and Sunnis varied in degree. While they attributed the most fundamental differences to Sunnis, the relationship between Ismailis and Twelver Shiites remained loosely defined and was ambiguously located amidst religious-historical links and family networks.

Education for Nagar

From a Hunza point of view, the inhabitants of the Nagar valley, which has been part of the common Hunza-Nagar district since 2009, are "others" with regard to religion and development. This distinction along territorial lines is based on the fact that the majority of people in Hunza are Ismailis, while Twelver Shiites are predominant in Nagar (Kreutzmann 1995:117; Gilgit-Baltistan Scouts 2014).[7] And even though the separation between Hunza and Nagar which marks them as opponents and constructs their territories as having specific religious orientations has a

[6] However, AKDN institutions have also been accused of serving missionary purposes. As Kreutzmann (1989:164, fn. 38) notes in the 1980s, violence against Ismailis and institutions attributed to them was not uncommon. In 1985, for instance, a group of Sunni Muslims attacked institutions which they defined as Ismaili in Gilgit.

[7] Twelver Shiites also constitute a majority in Ganish and its affiliated villages which are located in Hunza at the meeting point of the two valleys.

long history (Dani 1991:193–200), their distinct yet entangled development paths also derive from recent reactions to change.

An example for such a reaction to a changing regional environment can be found in the biography of Asad who lives close to Aliabad at the bottom of the Hunza valley. While he was born in Nagar and spent his childhood there, Asad's Twelver Shia family decided to move to Hunza in the 1990s because, as he states, "there they already had education". The choice of their destination far below Karimabad and the Baltit Fort was no coincidence since settlements there consist of mixed Twelver Shia-Ismaili communities. As a result, when he was a boy Asad went to the local USWA Public School which is managed by the Jabir Bin Hayyan Trust, an Islamabad-based NGO that focuses on education and health.

The Jabir Bin Hayyan Trust, which was established in 1994, defines the mission of its educational project USWA as "to make quality education accessible to deprived communities of Pakistan integrating intellectual and economic growth with spiritual and moral development" (USWA 2014a). Even though the Jabir Bin Hayyan Trust refers to Islamic semantics in its official representation,[8] it does not promote a particular school of Islam. However, on a local level USWA schools, which can be found in many places all over Gilgit-Baltistan, are assessed differently and often attributed a Twelver Shia underpinning. Asad, for instance, described USWA as a Twelver Shia alternative to the "modern" schools that have been established by institutions of the Aga Khan in Hunza since 1946 (Kreutzmann 1989:162; Hunzai 2004:9).[9] From his point of view, development in the region was generally triggered by the Aga Khan and has particularly influenced how Twelver Shia communities relate to education. But while the Aga Khan provided an initial trigger, development in Twelver Shia villages has long since become "a central thing", as Asad put it, adding that today his family would not necessarily need "to move from Nagar to Hunza for education anymore".

Recent literature on educational development in Gilgit-Baltistan (Rieck 1997; Benz 2013, 2014) emphasises the fact that education in the region is often organised along sectarian boundaries but also that it has become highly diversified through local community initiatives. In contrast to Aga Khan schools, which are part of an institutional hierarchy, USWA and other community schools in Hunza-Nagar (Rieck 1997:223) pose a much bigger challenge to ethnographic exploration due to their various donors and an intricate web of transnational connections. While my Twelver Shia interlocutors often mentioned this fact as an asset one should be proud of, the unclear institutional embedding of these educational projects raised concerns among my Ismaili interlocutors in Hunza. For example, Niaz, whom I introduced at the beginning of this chapter, perceived USWA and other schools in Twelver Shia

[8] The most obvious signs of Islamic semantics on the USWA website include pictures of veiled girls studying at local schools (USWA 2014b), the organisation of events on the "Islamic Code of Ethics" (USWA 2014c) and references to Allah in reports (USWA 2014d).

[9] The exact point in time is defined by the Aga Khan III's Diamond Jubilee which marked sixty years of his Imamate between 1885 and 1945. The establishment of eighteen "Diamond Jubilee Schools" in Hunza began in the aftermath of the celebrations (Kreutzmann 1989:163).

communities as being the result of sectarian competition. He explained to me that Twelver Shiites would rather not send their children to Aga Khan schools out of fear of missionary activities. In his opinion, it is this anxiety that stands as a driving force behind such school projects which are financed with the help of, as Niaz put it, "rich Kenyan Shiites".[10]

To be sure, Niaz' reference to sectarian difference, emphasised by alleged Twelver Shia links from Hunza-Nagar to East Africa, was polemical in nature. At the same time, global connections between northern Pakistan and Twelver Shiites around the world can indeed be traced. The Jabir Bin Hayyan Trust and with it the USWA Education System are part of an informal network of NGOs that engage in development and operate in various places including the Caribbean, the UK, the Middle East, East Africa, South Asia and Australia. During my fieldwork, I specifically followed one link that leads from Hunza-Nagar to Islamabad and England. While it is mainly the Jabir Bin Hayyan Trust that is visible as part of the USWA Education System on a local level in Hunza-Nagar, two other organisations (among others) are involved with regard to trainings and funding: the Madinatul Ilm Charitable Trust (MICT 2014) in Islamabad, which cooperates with the Lady Fatemah Charitable Trust (LFCT 2014a) based in England.

In an interview I conducted with the Lady Fatemah Charitable Trust's chairman Amirali Karim in 2014, he explained that interactions between his trust and other NGOs are primarily based on reliability, professionalism and a shared interest in "humanity" (and not on religious belonging), but he also emphasised that personal networks played an important role when it came to actual cooperation. An overview over the Lady Fatemah Charitable Trust's projects in Africa, Europe and Asia (LFCT 2014b) confirms this view and shows that there are Sunnis and Christians among the trust's beneficiaries. At the same time, the existence of Twelver Shia communities and places that are part of the historical "Shia topography" (e.g. Iran and Iraq) seems to be defining markers for choosing particular countries as project sites. This ambiguity suggests that it is important to move away from perceiving ethical motivations, organisations and beneficiaries as constituting a continuum (see, e.g. Rieck 1997:223). This moving away prompts us to view shifting "secular" and "religious" development realities as being related to particular ethnographic contexts.

Similar tendencies can be observed with regard to AKDN institutions and their activities in Hunza-Nagar but also in close-by Afghanistan and in eastern Tajikistan. Yet matters are different when it comes to the aforementioned NGOs with a Twelver Shia underpinning. While these organisations do have links to Afghanistan, Tajikistan lies outside the range of their focus, mainly due to a lack of historical

[10] In Niaz' statement, the adjective "Kenyan" serves as a broad reference to Twelver Shiites with historical links to East Africa. In this context, a group of particular importance are the Khojas who originate from Gujrat and have lived through multiple migrations from India to East Africa (Madelung 2014) and subsequently to a range of countries including Canada, the UK and the USA (Nanji 2004). The Khojas are divided into Ismailis and Twelver Shiites and thus sometimes serve as a point of comparison for "ethnic groups" with a similar divide (such as the Burusho in Hunza-Nagar).

connections and personal networks. In the following, I will demonstrate how Tajikistan's Gorno-Badakhshan region has become a major site for development projects of the AKDN since the dissolution of the Soviet Union.

Saving and Substituting in the State in Gorno-Badakhshan

In 1992, newly independent Tajikistan sank into the chaos of a civil war that lasted until 1997 (Nourzhanov and Bleuer 2013:323–335). At the outset of the conflict stood politicised regional identities. However, where such regional identities intersected with specific religious belonging, questions of sectarian difference soon began to play an important role. With the southeast of the country being sparsely but predominantly populated by Pamiris who identify as Ismailis, the suffering of the people of Gorno-Badakhshan was immediately high on the agenda of the AKDN. In 1993, the Aga Khan Foundation (AKF) established the "Pamir Relief and Development Programme" which later became the "Mountain Societies Development Support Programme" (MSDSP). This name change was made in 1997, due to the expansion of activities outside Gorno-Badakhshan to the Rasht Valley (De Cordier 2008) and the region of Khatlon (AKDN 2014b). The renaming of the programme also signified a shift from short-term humanitarian aid and relief in the context of civil war to a development programme which now aimed to implement sustainable long-term projects. The MSDSP soon operated on the basis of lessons learnt from rural development projects such as the AKRSP in northern Pakistan. Since 1997, activities have been pursued in diverse fields, including agriculture, civil society, economy and community structures.

From the very beginning in 1993, AKDN institutions in Gorno-Badakhshan had to take into account the region's particularity of having experienced a long period of Soviet modernisation and dependency on the state. Being under "Moscow provisioning" (*Moskovskoe obespechenie*) (Mostowlansky 2013:107) for several decades, people in the region relied on and expected certain services. Particularly during the civil war, the relief programme implemented by the Aga Khan was generally seen as essential for survival. For instance, in the eastern part of Gorno-Badakhshan, the provision of food supplies and heating fuel from 1993 onwards largely secured people's livelihood in the region (Kraudzun 2012:97). Following in the footsteps of the Soviet administration, the programme imported basic supplies which could not be produced in Gorno-Badakhshan. Thus, the establishment and presence of AKDN institutions in Gorno-Badakhshan was not limited to an Ismaili experience but included most people who lived in the region.

Steinberg (2011:169) notes that Aga Khan institutions in Gorno-Badakhshan have had only some "superficial continuity" with Soviet forms of organisation. He argues that the institutions brought a crucial shift from Soviet structures of "collective organisation" to participatory developmental approaches which focus on individual effort as a basic precondition for capitalism (Steinberg 2011:170). Thus when the MSDSP and other programmes began their work in Gorno-Badakhshan

and other places in Tajikistan, they did not just aim to take over the role of the patron which they inherited from the Soviet state but also to transform and educate individuals in capitalist skills. Such an aim included a different vision of how communities were supposed to organise themselves and a decision about which aspirations of modernity they ought to follow (Mostowlansky 2013:142). In doing so, the institutions of the AKDN on the one hand addressed people with different ethnic and religious identities (such as Kyrgyz, Pamiri, Tajik, Ismaili and Sunni). Yet on the other hand, they also established links between Ismaili communities in all parts of Gorno-Badakhshan and the global Ismaili network, with its headquarters in Geneva, London and Aiglemont just outside Paris (Kreutzmann 1996:385).

Worldly Duties and Sectarian Aims

The AKDN institutions' developmental endeavours are officially separated from religious institutions. However, many Ismailis in Gorno-Badakhshan experience these programmes as deeply interconnected with the Aga Khan's duties as the Ismaili Imam. As Remtilla (2011:191) argues, existing literature on the post-Soviet influence of the Aga Khan in Gorno-Badakhshan focuses mainly on *zahiri* (or exoteric) aspects of his presence and neglects *batin* (or its esoteric aspects). Such a perspective does not take into account that conceptually *zahir* and *batin* are deeply connected (Remtilla 2012:147–166). This connection derives from the correlation between the current Aga Khan and past and future Imams. As Remtilla (2011:191) points out, the "totality of all Imams is referred to as the Imamate and it is in the Imamate that the *nur* (lit. light) of God is reflected". The eternal, *batini* Imamate becomes visible in the *zahiri* manifestation of each Imam through the presence of the *nur* of all Imams (i.e. the Imamate) in each of them (Corbin 1983:117–130). Accordingly, Remtilla (2011:191) describes the *batin* as "in opposition to, constitutive of, and inherent within" the *zahir*. Inner and outer meanings of the Ismaili religion in Gorno-Badakhshan are closely interconnected theologically but also in everyday life. When aid and an "edict" (*farman*) by the Aga Khan are delivered together by the same institution, often even by the same person, the distinction between "secular" and "religious" fades.

The link between the Imam as a religious authority and the aid he delivers is reciprocal: a road stretch that was funded by AKDN institutions is per se judged as being of superior quality in comparison with Chinese road construction. And the Imam's technology is considered supreme and as deriving from "the West". This also became evident when I visited Sultonsho, an Ismaili interlocutor, in summer 2010 in his house in Murghab, the administrative centre of the eastern Pamirs. Upon arrival, he proudly showed me two new cubic technical devices which were standing under the cover of his veranda.

Sultonsho: Look, we've got two solar panels now. When you were here earlier, we didn't have either of them.

Till: Where did you get them from? China?
Sultonsho: No, no… one is a gift from the Imam. There was a raffle because they didn't have enough for all. The other is a gift from [President] Emomali [Rahmon].
Till: What do you need it for?
Sultonsho: Television, lamps, radio… the thing from the Imam works with all of them and is long lasting. The other panel from [President] Emomali [Rahmon], naturally, doesn't really work anymore. It's broken. It's a cheap one.

The opposing nature of Sultonsho's solar panels, on the one hand, implies a close material relationship between Ismailis and their Imam. On the other hand, it also points to major political fault lines that exist in Tajikistan. The solar panel that government organs had delivered to Murghab as a gift from President Emomali Rahmon could, as Sultonsho explained, not be of the same quality as the one that the Imam had sent. While the MSDSP had delivered a supreme solar panel, the inferior quality of the presidential one seemed to symbolise the materialised incapability of the state to make things work in Murghab.

For many Ismailis in Gorno-Badakhshan, the experience of the Tajikistani civil war in the 1990s and a more recent conflict in Khorog between local militia and government troops which began in 2012 have left their mark (Mostowlansky 2014:190–192). The civil war officially lasted from 1992 to 1997 but still has its effects on how people interact, organise their lives, relate to the state and draw sectarian boundaries. Steinberg (2011:25) calls religion "a key element" in the Tajikistani civil war. This is correct in the sense that war factions were shaped alongside religious, ethnic and regional categories and that people often got killed on the basis of their origin and faith. Since then, sectarian differences between the regime in the capital Dushanbe, which is often identified as being Sunni, and the Ismaili majority population of Gorno-Badakhshan have continued to be cultivated. Particularly since the armed conflict in 2012 and subsequent, regular incidents of violence, sectarian imaginaries that draw on a Sunni-Shia distinction have become ingrained in everyday life in the region (Mostowlansky 2013:112–115; Mostowlansky 2014).[11]

For my Ismaili interlocutors, the relief programmes which AKDN institutions operated during the civil war and more recent development projects are part of the Imam's *zahiri* duties. From their point of view, aid and development are inextricably linked to religion and constitute its outer meaning. In this sectarian imaginary, the ties constructed between Ismailis and development, on the one hand, and of Sunnis and an incapable state, on the other hand, furthermore imply an opposition between being "modern" and "backward". To be sure, *zahiri* and therefore outer actions can be considered inclusivist aspects of Ismailism. Through the use of development and aid, sectarian boundaries are to be softened. At the same time, these outer actions also establish the visibility of Ismailis in the public space. Four-wheel drives of

[11] For more on the potential of Charles Taylor's "social imaginaries" for the study of Central Asia see Rasanayagam (2014).

AKDN institutions with the Imam's emblem and the Ismaili flag, office buildings, schools, road stretches and bridges are all part of a concrete materialisation of the Imam's actions. Against this backdrop, it becomes clear that officially "secular" development is always also "Shia aid" in a local context due to political processes that are increasingly defined along sectarian boundaries.

Conclusion

Following Fountain (2011:12), I defined Hunza-Nagar in northern Pakistan and Gorno-Badakhshan in eastern Tajikistan as contact zones. I furthermore maintained that these contact zones have been entered by a number of development organisations whose particular Shia genealogies constitute a common marker. This is hardly disputed by either their official representatives or beneficiaries. However, I also attempted to show that each organisation unavoidably plays different roles in different ethnographic contexts. While institutions of the AKDN can be defined as secular development organisations in one context, they are also perceived as part of the Ismaili Imam's *zahiri* duty to replace the Soviet state in others. At the same time, the Lady Fatemah Charitable Trust, for instance, promotes humanitarianism across the globe but is also part of a network of organisations which specifically receives funds from and implements projects for Twelver Shia communities.

Throughout this chapter, I argued that these development encounters have had very different histories in Pakistan's Hunza-Nagar district and in Tajikistan's region of Gorno-Badakhshan. While the impact of "Shia aid" in Hunza-Nagar has been strongly linked to the construction of roads and infrastructure since the 1970s, Gorno-Badakhshan only became accessible in the early 1990s after the dissolution of the Soviet Union and in the context of civil war. However, I also argued that sectarian imaginaries have played a central role with regard to development, both in Hunza-Nagar and Gorno-Badakhshan. Whereas the distinction and competition between Ismailis and Twelver Shiites has been of particular importance in Hunza-Nagar, the difference between local Ismailis and the Sunni central government in Dushanbe has steadily increased in the context of civil war and recent conflict in Gorno-Badakhshan.

The importance of sectarian imaginaries in both Hunza-Nagar and Gorno-Badakhshan emphasises the need for a reorientation away from general talk about development and religion towards ethnographically grounded analyses. If differing religious identities play a central role in people's everyday lives, then every development endeavour can potentially become part of a sectarian imaginary. In this chapter, I attempted to show that the analysed development interventions have not only shaped Hunza-Nagar and Gorno-Badakhshan's physical landscapes through the construction of infrastructure, and improved people's lives by enhancing education and health care over the past decades. Through their presence and local involvement, these interventions have also become part of how society imagines society, and they engage with the ways people construct sectarian difference.

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History of the Development of the Pamir Region of Tajikistan (Gorno-Badakhshan)

Robert Middleton

Abstract Until the arrival of the Russian military forces in the Pamirs at the end of the nineteenth century, the inhabitants suffered depredations by local potentates and representatives of the rulers of neighbouring countries and benefited from no influences for social or economic development. Their status improved with the establishment of a permanent Russian base in Khorog in 1895, but it was not until the full incorporation of the region into the Soviet Union that the development process began. The achievements were remarkable – the region was intended by the Russians to be perceived as a model of socialist achievements for the attention of neighbouring Moslem populations – but, after the break-up of the Soviet Union, proved ultimately to be non-sustainable. Thanks to the intervention of the Aga Khan Foundation from the time of the Tajik Civil War in 1992–1993, innovative programmes were introduced to address the most urgent problems and, subsequently, to lay the groundwork for more sustainable policies in the future. Major challenges remain.

Keywords Tajikistan • Pamirs • Post-Soviet • AKF • Sustainable development • MSDSP

Introduction

The Tajik Pamirs are situated in the eastern part of Tajikistan (Gorno-Badakhshan Autonomous Oblast – GBAO) and cover nearly half of the total surface area of Tajikistan (approx. 64000 square km, equal to 1.5 times the area of Switzerland). The western and southern frontiers of the Tajik Pamirs are determined by the Panj/Amu Darya and Pamir rivers and are contiguous to Afghanistan. The eastern border is contiguous to the Kashgar prefecture of China

The current population is estimated at 216000 (approx. 3% of the total population of Tajikistan). The total area of arable land (available for cultivation) is only 240 square km (0.4% of the Tajikistan total). Human settlements are located at

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altitudes varying from 1200 to 3500 m. GBAO is one of the poorest regions in Tajikistan and therefore one of the poorest in all Central Asia as well as worldwide. The average per capita income in Tajikistan in 2011 was around $2000 per year (substantially lower in GBAO) (World Bank 2014).

The Eastern Pamirs (Murghab District, population approx. 16000) are mainly inhabited by people of Kyrgyz extraction, although there is a significant minority in Murghab town originating from the Western Pamirs.

The Western Pamirs (Darvaz, Vanj, Rushan, Shughnan – including the regional capital Khorog – Roshtkala and Ishkashim districts, population approx. 200000) are inhabited by people of Irano-European extraction. The physical characteristics of the population of the Western Pamirs suggest that they may be remnants of the original Saka/Scythian inhabitants of Central Asia who were driven westward by successive Mongol invasions from the thirteenth-century CE onwards and ultimately found refuge in the inaccessible high mountain area of the Pamirs.

The Western Pamirs are characterised by narrow and long valleys, leading west into the Panj/Amu Darya. The Eastern Pamirs are a high plateau (approx. 3000–3500 m) that contains several mountains over 6000 m.

Early Development History

The Wakhan and possibly the Ghunt valleys were familiar to Silk Road travellers on their way to the 'Stone Tower' mentioned by Ptolemy (Middleton and Thomas 2012:267–294). Early Chinese Buddhist pilgrims and the seventeenth-century Jesuit missionaries also passed through the Pamirs; there are legendary accounts of visits by Ismaili saints and missionaries such as Shoh Khomoush, Shoh Burhon, Shoh Malang and Shoh Koshon, whose memory is still revered at shrines and other holy sites in the Pamirs (Middleton and Thomas 2012:634–640); the Ismaili poet and philosopher Nasir Khusrow is credited with the conversion of the Pamiri people to the Ismaili faith in the eleventh century, and Marco Polo claimed to have been in Badakhshan and Wakhan (cf. Wood 1995). But it was not until the arrival of Russian military forces in the late nineteenth century that the inhabitants of the Pamir region of Tajikistan were subject to any developmental influences. The territory was unmapped, its political status was unclear and the population was victim to slavery and other forms of exploitation.[1] In the areas in the northwest, from the early nineteenth century, the Sunni Mangit rulers of Bukhara also imposed forced conversion from the traditional Ismaili faith predominant in the Western Pamirs.[2]

[1] There are excavated caves near several villages in the Western Pamirs that were used for refuge from slave traders and other marauders; it is said that the Sarikol population of Xinjiang province has its origin in a wave of refugees from such exploitation – many others fled to Chitral and Afghanistan.

[2] Ismailism is a branch of Shia Islam. The Ismailis are followers of the Aga Khan, who is their spiritual leader. In other parts of Tajikistan, the Sunni faith is dominant. In his *Geographia* (circa 150 CE), Ptolemy described a trade route across Central Asia drawn from the writings of his con-

Prior to the Russian occupation of the Pamirs, certain fairly well-defined regions of the Pamirs (Shughnan, Darwaz, Wakhan) were ruled by local potentates, whose allegiance to outside forces fluctuated and could be multiple. Recognised as part of 'Turkestan', 'Turan', 'Transoxiana' or 'Soghdiana', the Pamirs were claimed at various times in recent history and with varying degrees of confidence and military coercion by the Emirs of Bukhara and Afghanistan and by China. In 1895, with the establishment of a permanent Russian garrison in Khorog, the Pamir region came de facto under Russian control. In 1924, it became briefly part of the Turkestan Autonomous Soviet Socialist Republic and then, as the Gorno-Badakhshan Autonomous Oblast, became part of the Tajik Autonomous Soviet Socialist Republic within the Uzbek SSR. Present-day Tajikistan became a separate Soviet Socialist Republic on 5 December 1929.

Nineteenth-Century Russian Exploration

The Russian conquest of Tashkent in 1865, followed by the fall in rapid succession of Bukhara, Samarkand, Khujand and finally Kokand, led the St. Petersburg authorities to promote scientific studies of these newly acquired regions of Central Asia.

Russian and subsequent Soviet research was nothing if not thorough. A comprehensive chronological listing of all Russian scientific expeditions in Central Asia from 1715 to 1886 was published in four volumes by the Lenin University of Tashkent from 1955 to 1971 under the editorship of Olga Vasilievna Maslova (Обзор русских путешествий и экспедиций в Среднюю Азию); it runs to some 500 pages. A listing of published materials from the two most important multidisciplinary expeditions of the twentieth century (the Soviet-German Pamir Expedition 1928 and the Tajik-Pamir Expedition 1932–1933) was issued by the USSR Academy of Sciences in 1936 under the editorship of A. O. Dalavassera (Памир, Таджикстан, Средняя Азия. Обзор трудов и материалов экспедиции 1932–1935 и 1928–1932); it comprises 250 pages.

Permanent Russian Presence and Early Development Activities

In 1892, an expedition led by a young captain, Mikhail Efremovich Ionov, head of the new military administration in Osh (in today's Kyrgyzstan), established a Russian base (complete with scientific staff) in what is today Murghab and, in 1895,

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temporary Marinus of Tyre. Marinus' work has been lost but was based on an account by the Macedonian Maës Titianus of his agents' travels to China. The 'Stone Tower' ('Tashkurgan' in Turkic languages) may well have been the city of this name in the Xinjiang province of China (Middleton and Thomas 2012).

set up a permanent military headquarters in Khorog, now the capital of Gorno-Badakhshan, expelling the Afghan forces and, the Russians having already made the Emir of Bukhara and the Khan of Kokand their vassals in 1868 and 1876, respectively, established sovereignty over the whole Pamir region (Middleton and Thomas 2012:386–436).

It was from this new headquarters that the first 'development' initiatives on behalf of the inhabitants of the Pamirs began. In addition to protecting them from the depredations of the Afghans and Bukharans, the newly arrived Russians began road building, encouraged the use of horses (Olufsen 1904:117)[3] and gradually spread a minimum of basic health care through the Russian *feldsher* system (Wikipedia 2014).[4]

A public school was opened in Khorog in 1914, but the commitment of the local Ismaili community to education for both boys and girls is recorded already in late nineteenth-century reports by explorers. In 1879, Mukhtar Shah, an Indian native explorer ('pundit') sent to the Pamirs by the British administration in India to prepare maps of the region, observed girls' schools in Afghan Badakhshan (Tanner 1883:23), and, in the last years of the nineteenth century, a Danish explorer noted the existence of schools in the Pamirs for both boys and girls with professional teachers who could read and write: 'If a man does not send his children to school or to the wandering Mullah, the elders of the town remonstrate with him in the matter…' (Olufsen 1904:136–137).

A road between Osh in Kyrgyzstan and Murghab was opened in 1897, and the connection to Khorog was completed a few years later. The Russians introduced the first potatoes, cabbages, new seed varieties for cereals and some improvements in livestock. However, with poor soil, the high altitude, harsh winters and the primitive tools available to the local inhabitants, no fundamental changes could be made to the essence of subsistence farming and nomadic herding. A Russian fact-finding mission in 1904–1906 'was shocked by the extreme poverty of the local population….' (Bergne 2007:34).

Revolution in Russia, followed by the locally inspired *Basmachi* revolt against the new Bolshevik hegemony in Central Asia, diminished Russian presence and influence in the Pamirs. A combination of political reconciliation, cultural concessions and demonstrations of overwhelming military power led progressively to the pacification of the region by 1926. In the Pamirs, however, the inhabitants continued to see only advantages from Russian occupation and never joined the *Basmachi* movement.

[3] 'When I passed from Langarkish to Khorok the first time in 1896, there were no horses to be seen. But of late years the province has made much progress under Russian protection, and now the little horses of Kirghiz and Badakhshan have been imported. These horses are small, persevering, sagacious and well adapted to mountain use, and they are highly prized by the people'.

[4] Feldsher is the Russian name (Фельдшер) for a healthcare professional who provides various medical services, mainly in rural areas. Feldshers provide primary, obstetrical and surgical care services in many rural medical centres and ambulatories across Russia.

Population Growth

Until the mid-twentieth century, human settlement in the Pamirs was insignificant: indeed, the high plateau of the Eastern Pamirs was – until relatively late in the Soviet period – inhabited almost exclusively by nomadic herders. As is the case with any other area inhabited by nomadic peoples, the Pamirs were far from virgin unexplored territory at the time European explorers began to make maps and surveys. Long before the time of miners of spinel, lapis and silver, silk road traders, Chinese Buddhist pilgrims, Jesuit missionaries, spies and military adventurers, the Pamirs had been criss-crossed by local nomadic herders since time immemorial. The earliest estimates of population in the Tajik Pamirs, however, were not made until the British and Russian Empires began to take an interest in the region as part of their nineteenth-century imperial rivalry.

In 1880, the pundit Mukhtar Shah estimated the total population of the Western Pamirs at some 43000 on the Afghan left bank of the Panj and some 22000 on the right bank, including Darvaz, (present-day GBAO) (Tanner 1883:5–6). Ney Elias, the British spy/surveyor who was the first European to explore the Pamirs extensively in 1885, estimated the population on the right bank of the river at about 4000 in Shughnan and 3000 in Rushan, and the Kyrgyz population of the Eastern Pamirs at about 5000 (Elias 1886). In 1894, the first census undertaken by the Russians reported that 1055 people lived in Murghab District, and, in 1908, Andrey Evgenevich Snesarev (1865–1937), Russian Academician and head of the Russian military administration in Khorog, estimated the total population of the Western Pamirs (i.e. territory under Russian jurisdiction on the right bank of the Panj) at 17000 and the Eastern Pamirs only 2000 (Snessareff 1908). We may reasonably conclude that until the Soviet period, the population of the Tajik Pamirs did not exceed 25000.

It became declared Soviet policy to encourage human settlement in strategic border areas and the population grew steadily. Nomadic herders in the Eastern Pamirs, for example, were forced to live in an urbanised environment, leaving their houses only in the spring and summer for their yurts and pastures. Best estimates of population (Kreutzmann 1996:169) show a growth from some 29000 in 1926[5] to 45000 in 1950, 128000 in 1979 and approx. 200000 at the end of the Soviet period. During the Tajik Civil War (1992–1997), the population reached a peak of some 250000 as a result of an influx of displaced persons from other parts of Tajikistan.

[5] By this time the anti-Bolshevik revolt in Central Asia, known as the *Basmachi* movement, had been finally put down, and stability had returned.

Soviet Period

Socialist Revolution in a Muslim Country

The Soviets considered the Gorno-Badakhshan Autonomous Oblast (GBAO) as an example of socialist revolution in a Muslim country and invested heavily in its modernisation 'to show the neighbouring poor peoples to the south….the superiority of the Soviet system….' (Bliss 2006:247). A hospital was built in Khorog in 1924; the airport in Khorog was completed in 1932, and the road between Osh and Khorog was fully asphalted and open to motor traffic by 1935 (cf. Kreutzmann 2013).[6] Following from these early Soviet initiatives, schools, hospitals, public meeting halls, power stations and electricity grids, phone lines, roads and airports were subsequently built in all major areas of the province (Fig. 1).

State-sponsored education began from the realisation that a large majority of party cadres in Tajikistan were illiterate. Schools for the eradication of illiteracy (*Likbez*) were organised from 1927 onwards (Bergne 2007:63). Compulsory universal primary education was introduced as early as February 1931 (Bergne

Fig. 1 Arrival of one of the first flights to Khorog (Source: *USSR in Construction No. 12, 1936*)

[6] This strategic road – the 'Pamir Highway' as it later became known to tourists – regained significance as a military supply route during the Russian invasion and occupation of Afghanistan 1979–1989.

Fig. 2 Porshinev school 70th anniversary. Photo © Robert Middleton

2007:83). In GBAO, for example, school No. 12 in the village of Porshinev, just outside Khorog, celebrated its 70th anniversary in 1996 (Fig. 2).

The first nursery schools were set up at the end of the 1940s (Bliss 2006:257) from the 1950s, education was being provided free from kindergarten to postgraduate studies and the literacy rate increased exponentially. In 1926, an official report by the Soviet *Sredazburo* (Central Asia Bureau) estimated village literacy in Tajikistan at 1.1% for males and 0.2% for females (Bergne 2007:75); by 1984, the official estimate for the whole of GBAO was more than 99%. GBAO held pride of place in the whole Soviet Union in numbers of higher education degrees and produced a disproportionate number of highly educated professionals who made valuable contributions to Tajik society. Where educational facilities were not available at village level, schooling was taken over by the state farms.

After the break-up of the Soviet Union, a 1993 programme feasibility study by the Aga Khan Foundation (AKF), a private development agency,[7] described the health system in GBAO as follows:

- The health status of the population in GBAO is better than that of most middle-income countries in the world.

[7] His Highness the Aga Khan is the spiritual head of the Shia Imami Ismailis, a branch of the Shia faith; there is a substantial Ismaili population in the Pamirs, extending to the Sarikol region of Tashkurgan province in China, the Northern Areas of Pakistan and Badakhshan province of Afghanistan.

- The health system is accessible to everyone, with facilities located in even the most remote settlements, and there are no economic barriers to access.
- It is equitable in its treatment of groups of people who, in many other systems, are often disadvantaged, such as women, the poor, those living outside major towns, etc.
- There are a large number of well-trained professional staff, both doctors and nurses.
- There are 15 hospital beds per thousand population, a higher ration than in almost any country in the world.
- There is a higher ratio of doctors and nurses to population than for almost all middle-income countries (Middleton et al. 1993:72, quoted in Bliss 2006:255).

In GBAO in 1993, there were 28 hospitals, 7 polyclinics, 32 village clinics and 149 medical stations (Middleton et al. 1993:80).

The AKF study noted that some three-quarters of the school-age population of GBAO had 11 years of schooling and almost all the remainder at least 9 years. In addition, some 12% of school leavers went on to university every year, 78% of teachers had taken 5-year university diplomas and a significant proportion of the remainder had attended colleges of education (Middleton et al. 1993: 51; Bliss 2006:257).[8]

Food Production

Soviet planning came late to Central Asia, especially in isolated regions such as the Pamirs. The collectivisation of farming and herds that resulted did not improve yields and the system of state farms ('sovkhoz', from *советское хозяйство*, 'Soviet farm') imposed in the Pamirs from the early 1970s provided no incentive for the population to increase production. From 1940 to 1974, the number of agricultural production units had decreased from 3093 (mainly collective farms) to 245 (state farms) (Kreutzmann 1996:173). By 1993, the latter had been consolidated into only 57 sovkhoz (Middleton et al. 1993:5).

The arable land of Gorno-Badakhshan, the poorest and most isolated part of the poorest Republic in the Soviet Union, is not sufficient to meet the food needs of its population: valleys are narrow, and most of the land area is above 2500 m; in 1992, of a total of about 16000 ha of arable land, only 12000 ha were actually under food crops. During the Soviet period, under the centrally planned economy, a heavily subsidised system of food deliveries was organised – especially during the winter months, when the road from the Tajik capital Dushanbe was closed for 4–5 months by snow, and deliveries had to be made along 'the Pamir Highway' from Osh in Kyrgyzstan.

At the end of the Soviet era, Gorno-Badakhshan was dependent for 85% of its food and all of its fuel on subsidised supplies from other regions.

[8] The report notes that 'there are said to be public libraries in all major centres'.

This dependence was deliberate. Since the progressive occupation of the area by the Russians from the late nineteenth century onwards, the Pamirs were of great strategic importance: first, in the 'Great Game' pitting British spies and surveyors against Russian military expeditions, then in the contested area of Turkestan immediately after the Bolshevik revolution and finally for military access to Afghanistan after the invasion of that country by the Soviet army in 1979. Soviet foreign policy required a sedentary population as proof of sovereignty – economic migration could not be tolerated.

These measures ensured the well-being of the people (and prevented the depopulation of a strategic border area), but there was little development. Moreover,

> On the negative side, Soviet times also witnessed periods of forced collectivization of agriculture, during which lands were nationalized and certain types of crop production (e.g., tobacco and cotton) were forced upon people. Forced migration of the mountainous Ismailis to the southern lowlands of Tajikistan with radically different climatic conditions resulted in the death of many. Under various pretexts, Stalinist purges eliminated a great number of the Ismaili political, intellectual, and cultural elite. Local youth were encouraged to move to other parts of the Soviet Union to fill the human resource deficit in the labor market. The Cultural Revolution, carried out in the name of creating a 'new Soviet human being' who was to be above religious, ethnic and cultural 'prejudices', also impacted the Ismailis. Being a 'Soviet human being', however, was not very different from being or becoming 'Russian', and while education was free and comprehensive, its quality and relevance to the community's development and culture remained questionable. (Niyozov 2002)

A few production units were set up in Khorog – a textile factory, a printing works, workshops for processing semiprecious stones, bread and milk and meat factories – but apart from infrastructure, investment in GBAO remained very low. People's needs were met by free or subsidised deliveries to the urban centres and state farms, and there was little trading. Interviews carried out by the Aga Khan Foundation team in 1993 revealed that a telephone call to the district centre would result in the delivery of most basic necessities: 'If ever we got too much flour, we fed it to the animals', was one comment. Over 70% of the GBAO budget was covered by funding from the capital Dushanbe (Middleton et al. 1993:93).

The Post-Soviet Period and the Aga Khan Foundation

A New Paradigm

With the break-up of the Soviet Union in 1991, the system of subsidies ended and local leaders warned of impending food shortages. One of the first institutions to respond to the threatened emergency was the Aga Khan Foundation. Since the early 1980s, the Foundation had implemented a highly successful rural development programme in the Northern Areas of Pakistan, and this was initially taken as a model for Gorno-Badakhshan. International experts in food security and rural development visited the area in 1992–1993. Their conclusions were clear:

1. No long-term development programmes could be envisaged until the short-term food needs of the population had been met.
2. The attention paid to remote and impoverished regions such as the Pamirs under the Soviet system presented a development paradigm unlike any so far encountered by the Foundation (and probably in the annals of international development policy).

The paradigm comprised of a high level of education, including graduate level technical specialisation; a highly mechanised Soviet-style agricultural infrastructure but no financial resources for its maintenance and no fuel for its operation; a range of health and education services, the cost of which was far beyond the resources of the region; and a population size bearing no relation to the carrying capacity of the land. The collectivised centrally planned Soviet model was unsustainable.

These conclusions had both positive and negative implications. On the one hand, contrary to experience in the Northern Areas of Pakistan, major professional and intellectual resources could be harnessed locally (specialists in civil engineering, hydraulics, electricity generation, agronomy, etc.), and the transition to local programme management was immensely facilitated.

On the other hand, development priorities would be frustrated in the short term by the distractions of fund raising and logistics for an emergency food aid programme. The distractions were increased by the outbreak of the Tajikistan Civil War at the end of 1992.

Other international agencies left the initiative to the Aga Khan Foundation, which rapidly had people on the ground and a coherent strategic concept. The first step was to ensure substantial international funding for food aid while preparing the strategy for longer-term agricultural reform. Fortunately, donors with strategic vision were found: the government of the USA, well aware of the geopolitical implications of a massive flight of destitute refugees across international frontiers; the Swiss government, always prompt to respond to humanitarian crises; the German government, developing a newly found interest in the former Soviet territories; and a Dutch NGO that happened to have a Farsi-speaking expert already in the region.

A local NGO, the Mountain Societies Development Support Programme (MSDSP),[9] was set up in Moscow, Osh and Khorog with indigenous personnel in order to undertake procurement, logistics and monitoring for the humanitarian programme and begin planning for longer-term development. Despite the context of the Civil War, the Aga Khan Foundation was able to negotiate agreements with the Tajik (and Kyrgyz) governments to begin operations in the Pamirs. Between 1993 and 1999, the height of the emergency programme, a total of some 150000 tonnes of humanitarian supplies (much locally procured in Central Asia) was carried in

[9] MSDSP actually went through two transformations: beginning as the Pamir Relief Programme in late 1992, it became the Pamir Relief and Development Programme in November 1993 when a development component was added. The transition to MSDSP came when the programme expanded into the Rasht Valley (Gharm) and Khatlon.

5-ton Russian Zil trucks between Osh and destinations throughout GBAO, corresponding to more than 4000 shipments annually on a round trip averaging 2000 km.

Sustainable Solutions

The break-up of the Soviet Union brought a major reduction in resources for social welfare (financed largely through budgetary support from Moscow), and the educational and health services were in crisis. In partnership with the local government, AKF initiated activities designed to prevent a total collapse of the system and test the potential for longer-term development through reform of the system. In parallel with the humanitarian programme, AKF designed an agricultural reform programme to promote agricultural production and productivity and reduce dependence on subsidised and free food.

Health

Tajikistan's health system was based on Soviet models. Decisions about the health of the population were made by the central government with little or no consultation with regional counterparts, there was a surplus of health facilities and personnel, the focus of medical care was curative, and resources were spent in a wasteful manner with overprescribing of medicines, overstay in hospitals, overuse of hospital facilities for rest purposes, etc.

Emergency Needs

In response to this emergency, AKF began health activities in GBAO in 1994 and worked with a number of other NGOs such as Médecins sans Frontières, the International Federation of Red Cross/Red Crescent Societies and Pharmaciens sans Frontières, providing large quantities of vaccines and medicines in order to respond to the immediate threat of infectious diseases, with particular emphasis on remote communities and vulnerable groups. While meeting these emergency needs, AKF began developing a long-term strategy for health reform in the region which would influence national level policies.

The specific longer-term objectives of the programme were to:

- Make pharmaceuticals available throughout GBAO under a cost-recovery system
- Rationalise hospital services beginning with the central hospital in Khorog and three district hospitals
- Promote rational collection of valid and consistent data on health and nutrition by establishing a health management information system that will enable health staff to target services and analyse needs

Pharmaceuticals

Working in all eight districts in GBAO, the Foundation trained medical practitioners in more rational prescribing practices as well as creating a limited list of essential drugs according to WHO guidelines. These essential drugs were provided to 190 primary healthcare (PHC) facilities (i.e. medical points, ambulatories and pharmacies). Monitoring results revealed that between 77% and 88% of PHC facilities in GBAO dispense the pharmaceuticals provided by the project, thus indicating its affordability to the population. In addition, local production of intravenous fluids was promoted and supported.

Two training manuals on the rational use of drugs were developed for use by PHC staff, and monitoring revealed that the training resulted in the reduction in the number of drugs prescribed per physician (from 4.6 per patient encounter to 1.2), the amount of injectable antibiotics (from 41.7 to 14%) and increased access to essential drugs throughout the region.

The project established an information centre in which updated and relevant pharmaceutical literature and information on new treatment protocols are provided to medical staff of all health facilities in the region. The head of the centre revealed that medical staff regularly visit this centre and gather information with them to take to their respective health facilities (e.g. materials are distributed to patients with pharmaceuticals).

Essential Hospital Services

AKF focused investment in hospital services, training and rehabilitation on a small number of key facilities, beginning with three district hospitals in Vanj, Ishkashim and Murghab, concentrating services in fewer buildings, thus reducing maintenance and fuel costs and encouraging more intensive use of buildings still in use. To date, there has been a bed reduction of 50% in Murghab and 20% in Vanj and Ishkashim.

All hospitals are now properly equipped with water supply in the wards, sanitary toilets, sewage disposal system and simple heating systems, thus contributing to improved hygiene of the patients. Diagnostic and treatment equipment was provided to the three district hospitals. Ambulances provided to the hospitals have enabled seriously ill patients to be transported from the three districts to the central hospital in Khorog town and from the outlying areas to the district hospitals.

Since becoming fully operational in June 2000, the project has achieved the following successes:

- Renovation of hospitals to a reasonable standard
- The provision of basic equipment and vehicles to the three district hospitals
- A programme of medical training
- Regular English and computer courses for hospital staff
- Support to the Ministry of Health on nurse training
- Improving nurse practice
- Building up a cadre of local staff with good management skills

Health Management Information System (HMIS)

The regular collection of health data in GBAO has been in existence since the Soviet period and was the responsibility of the central hospital in Khorog. While this information was collected, the results were used only by the top-level health authorities and did not trickle down to the primary healthcare (PHC) staff at the district level. AKF succeeded in modifying the existing HMIS system to allow managers at all levels to have the data and analysis required to formulate information-based management decisions while training them to manage the collection, flow and analysis of data more efficiently.

A Food Security and Nutrition Surveillance System was introduced, and regular Health and Nutrition surveys were conducted to gather information on the trends in maternal and child health status in the oblast. The survey gathered data on drug use, sexually transmitted diseases, malaria and body mass index of women for the first time.

Education

During the Soviet period, education in Tajikistan accounted for 40% of GDP and achieved a high adult literacy of 99% (1990), an adult upper secondary education completion rate of 71% (1989), equal educational opportunities for girls and boys and special provisions for minorities and disadvantaged students. The country had an extensive network of education institutions at all levels with highly trained teaching and nonteaching staff. The education system in Tajikistan was considered to be one of the best in the Soviet Union. State expenditure started to decline in 1992, from 11.1% of the GDP in 1992 to 2.1% of the GDP in 1999. There was a dramatic increase in overall dropout rates (6% in 1989 to 20% in 1997) and in non-enrolment of children (an estimated 25% of girls and 20% of boys aged 7–18 were not receiving formal education in 1996). In GBAO, however, dropout rates were considerably lower than in many other regions (Middleton et al. 1993:51–63).

School buildings were in desperate need of rehabilitation. Essential school supplies such as textbooks, notebooks, paper and chalk were lacking. Teachers' salaries declined sharply and were often paid in arrears. Highly qualified teachers were being forced to abandon teaching and turn to other income-generating activities or emigrate, leaving behind uncertified teachers with limited teaching experience.

AKF's support to the education sector in GBAO started in 1996 and included the immediate supply of textbooks and essential supplies to schools for rent or sale by the schools to parents, thus creating a revolving fund and encouraging community involvement in schools. Using English as an entry point, AKF also worked with teachers to move away from traditional teacher-centred methods to a more student-centred interactive approach and focus on training at all levels of the education system, the revival or creation of local structures, the strengthening of the Institute of Professional Development (the key in-service training institution) and the promotion of community involvement in schools and local ownership of initiatives.

The overall goal of the education programme was to help the government reform the education system of GBAO to make it more relevant, cost-effective and efficient and raise the educational standards of the population in GBAO. The work in GBAO is also benefiting the education sector in Tajikistan more generally.

An innovative Mobile Training and Resource Centre introduced training on-site in one district and is serving all the language teachers in that district. The community now accepts the principle of community support for the education of their children, and the revived parent committees are invaluable in raising funds for schools, conducting minor but crucial repairs to leaking roofs and crumbling walls and floors and taking responsibility for supporting poor or disadvantaged families at times of dire need.

At the management level, head teachers have been introduced to the concepts of school management and leadership, and District Support Groups exist at each district bringing the concept of decentralised decision-making and management of change a step closer. At the regional level, senior educators now work on reform of the system through research on reform barriers, the setting up of 'gymnasium' schools where freer experimentation and a review of their management methods and practices is possible. At the national level, the work done in GBAO is increasingly being recognised, and AKF is being requested to maintain a more forceful presence and make its expertise and experience more widely available.

The challenges arising out of the extremely difficult context described above persist: a comprehensive, well-conceived educational reform plan remains elusive; central control over crucial educational areas such as curriculum and assessment is still almost total; and the concept of decentralised decision-making is only slowly being accepted.

Agricultural Reform

In September 1993, MSDSP initiated negotiations with the local government of GBAO – which, as an autonomous entity, had considerable freedom (although no resources) – for the privatisation of land not being used (or underused) by state farms. As a result of these negotiations, MSDSP obtained a landmark decision from the local government in Gorno-Badakhshan that some state farmland could be distributed to villagers who wished to become private farmers. A number of other measures, such as food-for-work and cash-for-work, were also introduced with a view to increasing rural incomes and access to food through increased purchasing power.

MSDSP conducted village-level dialogues throughout Gorno-Badakhshan to encourage private farming. Private farmers were assisted with improved seeds, adapted to high mountain environments, and fertiliser and received technical assistance from trained MSDSP staff – a channel building and repair programme was initiated to extend the area of arable land available to private farmers. (N.B. Physical inputs were provided on credit, repayable in cash or from food produced in order to avoid a return to the false incentives of the Soviet system.)

Fig. 3 MSDSP agronomists inspecting a new variety of wheat. Photo © Robert Middleton

The spontaneous demand from villagers was so great that the local government decided to privatise all land in the Bartang Valley. Significant increases in agricultural production in this valley subsequently persuaded the local government to privatise all land in GBAO, and, at the height of the programme, some 25000 private farmers were working with MSDSP. Arable land was apportioned according to family size on a village-by-village basis, without permitting sale or transfer of land title.

Yields of potatoes and wheat per hectare more than doubled. Within 10 years, production of staple crops increased from 15% of local needs (at the end of the Soviet Union) to over 50%[10] by 2002 as a result of improved yields and increases in land area under food crop cultivation (Fig. 3).

Wheat, barley, rye and potatoes continue to be grown as the main food crops. Seed returned in repayment of loans was made available to participating farmers for spring and autumn planting, together with fruit tree saplings. As much seed as possible was procured locally, in order to encourage farmers to market their surplus and to inject cash into a cash-starved economy.

Food Diversification

A horticultural programme tested and introduced new varieties of vegetables in order to provide a balanced diet and a sustainable supply of vitamins and minerals: nine new varieties of beans and six varieties of peas were tested – suitable varieties, which are well adapted to the particular climatic conditions of the region, were

[10] Based on minimum calorific requirements

identified and planted. In addition to increasing fruit and vegetable production through the provision of fertiliser, seeds, saplings and plastic tunnels for small greenhouses, the horticultural programme also provided training and equipment for processing and preserving horticultural produce, including apricot drying. Two greenhouses from the Soviet era were rehabilitated: they are heated and irrigated all year round from nearby natural hot springs and can supply a small, but profitable, market for out-of-season vegetables to the regional capital, Khorog, and other areas.

A livestock programme was implemented to address poor animal health, insufficient fodder availability and lack of organised marketing systems. A breeding programme improved livestock quality and yields of meat and dairy produce.

In addition, small animal husbandry activities, largely managed by women, were initiated, including poultry, wool processing and bee keeping.

Village-Level Autonomy

With the successful implementation of the humanitarian programme and the privatisation of most agricultural land, AKF could begin to deal with broader long-term economic and social development at village level. The underlying philosophy was that rural economic development is best catalysed and sustained through village-level institutions that are autonomous and transparent and contribute to democratic norms of behaviour and to the growth of civil society. Civil-society organisations such as MSDSP were an entirely new concept in the region in 1993.

Each Village Organisation (VO) drew up a village plan, determined village needs and priorities and managed infrastructure projects (such as mini hydroelectric plants, road and bridge construction, school repair). The VOs also created village funds, from which micro-credit was made available for small local enterprises and small trading. In the creation of the VOs, special attention was paid to women's needs – for example, internal rules of the VO require that if the leader of a VO is a man, the deputy leader must be a woman.

Village priorities generally included small hydropower stations, piped water supply, rehabilitation of school and medical buildings and repair of infrastructure, such as irrigation channels, roads and bridges. The Swiss Agency for Development and Cooperation SDC introduced an innovative category of emergency assistance entitled 'nonfood humanitarian assistance' which made it possible to meet many of these priorities. In all cases, MSDSP required village inputs in the form of labour, backed where possible with food- or cash-for-work (Fig. 4).

Gender and Social Equality

As noted above, the AKF programme paid special attention to women's needs. However, the traditions of the Ismaili community, reinforced by Soviet policies, led to a basically favourable status for women in GBAO when the AKF programme began. At 52% in 1985, the percentage of women in the workforce was higher than

Fig. 4 A village-level 'dialogue' at the start of the programme. Photo © Robert Middleton

in the rest of Tajikistan and equal to that for the whole of the Soviet Union (Middleton et al. 1993:103; Bliss 2006:260).

Moreover, long-standing traditions of community sharing – perhaps typical for a society in which everyone is equally poor – led to a high degree of social equality (Bliss 2006:264–265). The cooperative and self-governing community organisation known as *Mahallah* predates the Soviet period and was greatly strengthened during times of hardship, such as the Tajik Civil War and the danger of famine that followed. One of the major donors to the AKF humanitarian programme insisted on the establishment of categories of beneficiaries according to relative need. It proved impossible to achieve full implementation of these lists, especially in remote communities, because local civic and religious leaders considered it the responsibility of the community, and not of the donor, to determine real needs from family to family; a 'mechanical' system of lists was felt to be a shame on the collective leadership.

Under the land privatisation programme described above, there was no opposition to the distribution of all village land according to family size.

Energy

Electricity generation in GBAO began in the 1940s; immediately before the break-up of the Soviet Union, over 70% of the energy was actually provided by diesel generators run on imported diesel fuel. This was a deliberate policy preference over the alternative of developing the hydropower potential of the Pamirs, estimated at

up to 4000 megawatt (Breu and Hurni 2003:35), that would not only have reduced dependency on the centralised resources of USSR but would also have been a potential source of locally created revenue through export to other regions.

Many of the rural inhabitants resort to wood fuel for their heating and cooking needs during the winter, resulting in the destruction of 70% of the region's forests by 2000 and a sharp increase in respiratory disorders due to smoke inhalation. In the Eastern Pamirs, almost all of which is above the tree line, Teresken (*Ceratoides papposa*) is the major source of domestic fuel. The uprooting of Teresken plants, that take decades to grow to maturity, has led to desertification and wildlife reduction.

Very late in the Soviet period, planning began for the construction of a major hydropower plant on the Ghunt river near Khorog, known as *Pamir-1*, with a capacity of 28 mW, but it was not completed by the time of the break-up.

By 2000, the transmission and distribution system of GBAO was in very poor condition, having been largely destroyed in the Civil War. Only 15% of the 435 km of 35 kV lines was still in service. Although the power system continued to provide electricity, outages were scheduled on a rotational basis, particularly during winter, and the power cuts had become more frequent and prolonged. There was no power in most districts of GBAO in winter (United Nations University 2009; World Bank 2013).

The Aga Khan Fund for Economic Development (AKFED), in partnership with the International Finance Corporation, formed the *Pamir Energy* Company in 2002 to repair the electrical infrastructure of GBAO and make *Pamir-1* fully operational.

Forty mini hydropower plants have been built in the Tajik Pamirs – most by the Aga Khan Foundation – since the mid-1990s, mainly in remote areas that were unlikely to benefit from *Pamir-1*, with a capacity ranging from 20 to 300 kW. However, even with *Pamir-1* fully operational, only a minuscule amount of the region's energy needs will be supplied. The considerable solar and wind power generation potential of the Pamirs has been largely untapped. Shortage of energy has hindered the development of the region.

In the Western Pamirs, hydroelectricity and solar power must be considered the best approaches to sustainable energy solutions. In the Eastern Pamirs, communities are affected by energy poverty throughout the year which becomes critical and life-threatening in the winter months. A combination of hydro- and solar power in the warmer months and wind and solar in the winter months is probably the best approach in this high plateau area (Nelson 2011). In both cases, there are not adequate indigenous financial resources for implementation of these approaches.

Challenges and Future Prospects

The success of the programme can be mainly attributed to intelligent public policy by the local government, resourcefulness and adaptability on the part of the population and a wide variety of accompanying measures by a committed international agency (the Aga Khan Foundation) supported in turn by enlightened government funding from the developed world.

However, as noted above, the total area of arable land in the Tajik Pamirs (available for cultivation) is only 240 km^2. With a population of more than 200000, even with the increased yields already achieved, Gorno-Badakhshan will never be able to meet all the food needs of its inhabitants. Today, the balance of needs is met by a development that was only partially foreseeable: remittances from workers from the Pamirs who have emigrated to other parts of the former Soviet Union – mainly Moscow – and who send portions of their earnings back to their families in the Pamirs.

This, in turn, is unsustainable and has serious demographic and cultural consequences. Many villages are depopulated of young men, who return only sporadically and often never. Local traditions are being lost and cultural identity dissipated.

New initiatives are slow in coming. The three greatest resources of the Pamirs are a network of fast-running rivers, the high level of education of the population and spectacular natural beauty. To harness the hydropower potential of the Pamirs will require investments beyond the capacity of the Tajik government, but the potential to supply neighbouring countries such as China and Pakistan could provide a basis for international financing. The high level of education of the people, very low internal salary levels and the fact that increasing numbers of young people are learning English may provide an opportunity for outsourcing services from developed countries.

Tourism – especially ecotourism – is growing slowly, but local entrepreneurs have shown too much interest in quick profits and have been slow to raise the level of service quality, a prerequisite for partnerships with international tour operators. For the time being, the Pamirs cannot compete on price or quality with other high mountain areas such as Tibet, Bhutan, Ladakh and even Gilgit-Baltistan in Pakistan. Today, the vast majority of tourists are 'backpackers' with low revenue-generating capacity – the so-called soft adventure tourism. Here again, foreign investment and international partnerships could improve the situation. A simple visa procedure currently provides tourists easy access to neighbouring Afghanistan, where the Wakhan is becoming increasingly popular as a destination.

The 2012 opening of the border to China at the Qulma pass is a positive factor, as would be a reduction of tension in Afghanistan and an easing of border restrictions from the Afghan Wakhan into Pakistan. An extension of cross-border tourism to China and Pakistan would provide a very valuable boost to tour operators in the Pamirs (Fig. 5).

The territories of the former Soviet Union are described as 'economies in transition'. Some have made the transition successfully – Tajikistan has not (World Development Indicators Database 2014). The challenges of privatisation have been met to a large extent by an increase in corruption and acquisition of wealth by a few privileged families. The situation remains unstable. For the time being, the threat of Islamic extremism is minor but could increase with a major deterioration of the economy, especially in remote regions such as the Pamirs (cf. Middleton 2013,[11] 2014[12]).

[11] In August 2012, the Tajik government sent military forces into Gorno-Badakhshan ostensibly to apprehend four alleged criminals. This massive and disproportionate military response succeeded only in reducing the already fragile loyalty of the local population to the central government.

[12] Further public protests were sparked in Khorog in May 2014, following the killing in the centre of town of four young men by the security forces.

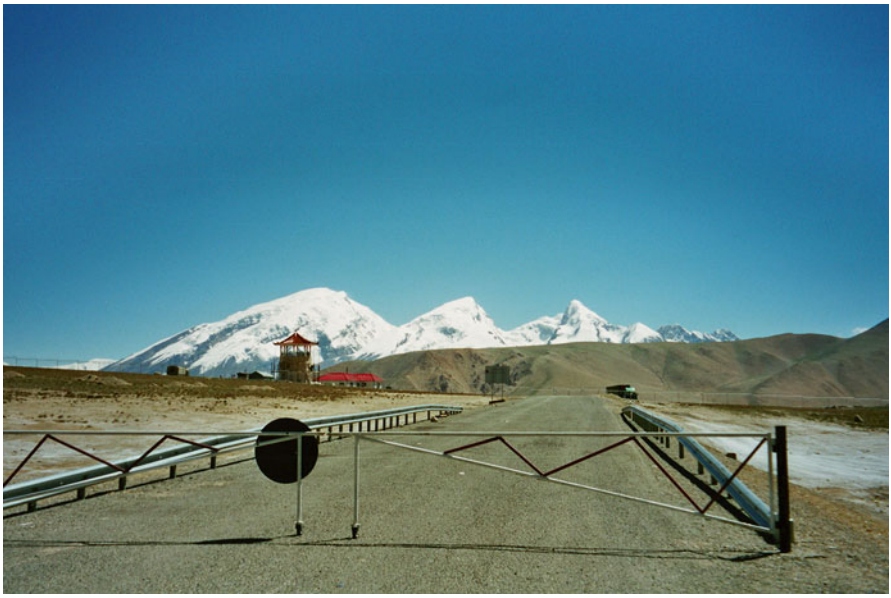

Fig. 5 Chinese border post at the Qulma pass. Photo © Robert Middleton

The difficulty of achieving post-Soviet transition should not be underestimated and is illustrated by the German experience: despite a high level of industrialisation during the Soviet period and massive financial inputs from Western Germany, the economy of the eastern part of the country (formerly German Democratic Republic) is still struggling. In the case of the Tajik Pamirs, central planning and a deliberate Soviet policy of forcing human settlement in inhospitable areas, combined with limited natural resources, has led to imbalances and distortions that can only be corrected in the short- to medium-term by a reduction in the pressure of population on the land, in other words by emigration.

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Conclusions: Why Do We Need to Make Efforts to Map the Transition?

Teiji Watanabe

Abstract The Pamirs, which are considered a marginal region, have been the centre of external pressures. The territory has also been a focal point of recent global aid programmes, conservation schemes, and international research projects. The transition from a centralised command economy to a market-driven one in newly independent states is a key feature of this area, and there are more activities in various arenas on environmental issues. While external drivers often play an important role in guiding and determining changes in livelihood, internal efforts are characterised by the theory of path dependency, which involves previously developed structures and inherited behavioural patterns. Challenges and constraints of a globalised world have affected the Pamirs; joint efforts are necessary to solve these problems and provide hope for the future.

Keywords External pressures • Internal efforts • International aid programmes • Research projects • The Pamirs

Introduction

Depending on perspective, in economic and historical terms, the Pamirs can be seen either as a rimland or a high-mountain territory that holds a central position. The notion of remoteness offers a variety of approaches. Beyond spatial concepts, social constructions and viewpoints can play important roles in changing the idea of the 'remote and the edgy' (Harms et al. 2014). From an orographic angle, the region's critical status remains unchallenged; the Pamirian Knot consists of a hub location where other mountain ranges converge. In human terms, remoteness has been interpreted as a significant, palpable distance from decision-making centres, featuring low population density and offering limited economic opportunities. Both standpoints apply to the Pamirs, which have mostly received a prominent geopolitical

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standing. The boundary-making process of the nineteenth century, in addition to colonial and imperial competition for territorial dominance, has created peripheral features that have characterised the area's relationship to key sites of power. As long as the Pamirs were located at the edge of empires, this narrative prevailed. Since the last quarter century, it is possible that the region's position has changed. Newly independent states and permeable borders have led to an atmosphere of communication and exchange. The area's natural landscape has received increased attention regarding environmental protection, trophy hunting, and sustainable development.

In academic terms, the independence of Central Asian republics has permitted extensive research efforts, which go beyond the strongly natural science-oriented topics that were promoted in the Soviet Union and the People's Republic of China. Afghanistan has again become a place of scientific study, and Pakistan has opened its banned border areas for visitors and researchers. Not surprisingly, many research projects focus on human-environmental relations within conceptual frameworks, such as political ecology and livelihood strategies. The nexus of unique utilisation strategies with harsh environments and their niche resources has led scholars to examine dominant resources such as forests, water, and pastures.[1] In this volume, we amassed 16 papers that are rooted in recent debates and reflect a selection of prominent issues currently under study.

Transitions: Driven by External Pressures or Internal Efforts?

Human beings have long interacted with highlands. The human-environmental landscape has become increasingly important in the twenty-first century. Vanselow (Chapter "Who Is Mapping the Pamirs? A Review on Plant and Vegetation Sciences") discussed the use of natural resources by mountain inhabitants. The spatial arrangement of mountains and basins strongly affects the movement and distribution patterns of humans and livestock (Komatsu, Chapter "Geomorphic Features of the Eastern Pamirs, with a Focus on the Occurrence of Intermontane Basins"). Water resources (Hagg and Mayer, Chapter "Water of the Pamir – Potential and Constraints") are another decisive factor in transforming agriculture and livestock grazing for mountain people. Although a certain portion of hazards in alpine landscapes relate to human activities, they also influence people's livelihoods (Butz and Cook, Chapter "Political Ecology of Human-Environment Change in Gojal, Gilgit-Baltistan, Pakistan"; Mizushima, Chapter "The Changes in Regional Structure and Land Use Related to External Factors in Hussaini Village, Northern Pakistan").

In addition to natural effects, it is necessary to understand how human impacts contribute to landscape development and how people use it. The current transition in the Pamirs results from a path dependency originating in the Tsarist Empire and the Soviet Union; it comes with considerable socio-economic changes and has gone

[1] For example, see Breu and Hurni (2003), Breckle and Wucherer (2006), Giuliani et al. (2011), Kassam et al. (2011), Kreutzmann (2011), Kreutzmann et al. (2011), Schmidt and Doerre (2011), Vanselow (2011), Dörre (2012), Kraudzun (2012), and Steimann (2012).

through modifications in post-Soviet regimes (Dörre, Chapter "Changes in the Relationship Between Borders and Pastoral Mobility in Mountain Regions of Central Asia"; Shirasaka et al., Chapter "Diversity of Seasonal Migration of Livestock in the Eastern Alai Valley, Southern Kyrgyzstan"; Watanabe and Shirasaka, Chapter "*Kezüü* and *Novad*: A Form of Pastoralism in the Eastern Alai Valley, Southern Kyrgyzstan"; Kraudzun, Chapter "External Support and Local Agency: Uncertain Transformations of Livelihoods in the Pamirian Borderland of Tajikistan"). Consequences can be seen in pasture degradation, which was a much more serious problem in the Soviet era (Liu and Watanabe, Chapter "Seasonal Pasture Use and Vegetation Cover Changes in the Alai Valley, Kyrgyzstan"). Topical cases from Afghanistan, Pakistan, and Tajikistan will deal with institutional adaptations, legal amendments, and communal issues from a variety of perspectives (Callahan, Chapter "Khans, Kings, Communists, Warlords and Presidents: Afghan Kirghiz Socioeconomic Strategies for Extorting and Extracting from the State"; Ochiai, Chapter "The Current Status of Lifestyle and Occupations in the Wakhan Area of Tajikistan"; Butz and Cook, Chapter "Political Ecology of Human-Environment Change in Gojal, Gilgit-Baltistan, Pakistan"; Mostowlansky, Chapter "Humanitarianism Across Mountain Valleys: "Shia Aid" and Development Encounters in Northern Pakistan and Eastern Tajikistan").

Both environmental and human factors affect the transformations, which the contributing authors revisit. Since the collapse of the Soviet Union, many pastoralists in southern Kyrgyzstan have been suffering substantially from wolf depredation and subsequent severe losses to their livestock herds (Watanabe et al. 2010). Now, it is extremely difficult for pastoralists to control wolf populations. The predator's threat is not restricted to post-Soviet societies, and the same applies to the high pasture regions of Afghanistan and Pakistan. A new market for wildlife has emerged. In the past few years, some Chinese entrepreneurs started buying live wolves in the Alai Valley (Fig. 1), which might help mitigate the depredation of livestock.

Fig. 1 A live wolf captured by a local herder in Chak, western Alai Valley, southern Kyrgyzstan. Local herders sell live wolves to Chinese buyers (Photograph © Teiji Watanabe, 11 Feb 2014)

However, when such buyers enter the mountain region, they sometimes provide easy cash to the pastoralists who catch wolves; this might result in pastoralists avoiding the hard work of their trade, which in turn could eventually ruin the local grazing system.

Another example of an easy way to make cash is trophy hunting, which happens in many parts of the Pamirs. For some years now, it has been occurring in Khunjerab National Park in northern Pakistan (Ali 2010). Khunjerab National Park suffers from the so-called park-people conflict between the Pakistani government and the villagers of Shimshal, who belong to the Wakhi ethnic group. The government has attempted to exclude the villagers and livestock from the national park, but the villagers have strongly objected to the government's decision, which is a type of external pressure (Fig. 2). The recent introduction of trophy hunting, which pleases affluent Western hunters, could weaken opposition to the park. Moreover, trophy hunting might be just another step towards commodifying local resources, which affect Shimshal and other valleys as well.

Tajik National Park, a UNESCO's World Heritage Site, is another example where nature conservation has failed to achieve its goals, partly due to lack of budget to pay the national park authority and also the continued local tradition of relying heavily on natural resources. Here we find conflicts typical of political ecology, where a number of stakeholders try to push their own interests. The growing outside interests of development and nature protection NGOs are modifying the park's supposed former remoteness. Those external actors are joining and expanding a complex set of local stakeholders, the latter of whom have to come to terms with

Fig. 2 Livestock grazing in Khunjerab National Park, which the Shimshal villagers depend on (Photograph © Teiji Watanabe, 24 Sept 2008)

government regulations and legislation, traditional user rights and practises, and survival strategies based on natural resource exploitation. Pastoralists, as well as some other inhabitants, have traditionally depended on natural resources. The rules of national park authorities often override local practises and try to implement schemes that completely disregard the local population's vital means of living. Further, international hunting groups have a key interest in operating their trophy hunting businesses (Fig. 3), which alters locals' options for using natural resources. At one time, a presidential order banned hunting Marco Polo sheep in Tajik National Park, but local herders and international groups are once again hunting there.

Western interests in protected out-of-area territories in the Pamirs can act as external agents that propel numerous changes in local livelihoods. Such interests often assume that established community practises pose a major threat to nature, instead of acknowledging that nature is embedded in social relations and cannot be protected without recognising indigenous values, rights, and ownership (Ali 2010). Protected areas reduce the degree of freedom for native communities and mostly benefit outside actors (Kreutzmann 2012), except in cases of so-called paper parks (e.g. Tajik National Park).

In addition to introducing the protected area system, international development aid has become a prominent player in implementing transitions. There is hardly any valley in the Pamirs that has not been receiving international aid, such as the programmes run by the Aga Khan Foundation and UN organisations. China might be an exception. Yet in the Pamirs, starting in 2000, the Chinese government launched

Fig. 3 Horns of Marco Polo sheep, hunted in Tajik National Park by international hunting groups (Photograph © Teiji Watanabe, 11 Oct 2006)

Fig. 4 Workshop for the residents of Sary-Tash in southern Kyrgyzstan on pastoralism as an ecotourism resource (Photograph © Teiji Watanabe, 01 Oct 2013)

a campaign called the 'Great Development of the West', which has proven even more adept at changing people's lifestyles and professions (Kreutzmann 2013). Nonetheless, the distribution of 'development aid' is not equal everywhere. Acceptance patterns and offers might vary a lot. The residents of the village of Sary-Tash in the Alai Valley, Kyrgyzstan, have not readily accepted a proposal for ecotourism development, which would transform their pastures into an ecotourism resource. This lack of preparedness was revealed at two workshops held by Hokkaido University in August and October 2013 (Fig. 4). In such cases, short-term development projects often face difficulties in introducing new practises.

Changes will continue to happen. The process of transformation results from negotiations between different stakeholders and their potential influence. Academic research is only one contribution that can benefit its local adaptors. Political issues and power relations seem more instrumental in altering living conditions, introducing legislation, and fostering economic opportunities.

The Next Step

As stated earlier, numerous scientific publications in Russia have been accumulated, although it might be hard to access many of them. After the tremendous decline in research by regional scientists in the 1990s and 2000s, more international research teams began to visit the Pamirs. Certain volumes on the outcomes of their studies

are now available, and many are published in Germany. Kreutzmann (2006, 2011, 2012) has addressed the issue of publishing a lot of these results in English-language books through editing collections of papers. This book is another addition to such efforts; the initial framework for it was born when Kreutzmann and Watanabe chaired sessions at the 32nd International Geographical Congress (IGC) in Cologne, Germany, in 2012, and at the International Geographical Union (IGU) Kyoto Regional Conference in Japan in 2013.

It seems the academic community that studies pastoralism and its broad peripheral disciplines in the Pamirs and Central Asia has not paid much attention to the research framework of the Global Land Project (GLP). However, many, if not most, of this community's results relate to the GLP's interests and moreover to the international research platform of the Future Earth. It will become increasingly important to share the latest knowledge on changes in the human-environmental landscape in the midst of the transition from the International Geosphere-Biosphere Programme (IGBP) and the International Human-Dimension Programme (IHDP) to the Future Earth. We hope this book will be of interest to a wide range of academic communities.

The future direction of pastoralism and its related entities is always a challenge. It would be hard to think that pastoralism will disappear from the globe completely. However, it could happen on a local scale, such that mountain people try to learn from ongoing changes and adapt to them, which often creates diversification of transformations. The shift and slough from the 'relief' status supported by international aids to 'development' by the locals themselves would lead to regional improvement in the Pamirs (Middleton, Chapter "History of the Development of the Pamir Region of Tajikistan (Gorno-Badakhshan)"). It should not take too long to happen, as in some other countries, such as Nepal.

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