BioOne COMPLETE

The Atta Abad Landslide and Everyday Mobility in Gojal, Northern Pakistan

Authors: Cook, Nancy, and Butz, David

Source: Mountain Research and Development, 33(4) : 372-380

Published By: International Mountain Society

URL: https://doi.org/10.1659/MRD-JOURNAL-D-13-00013.1

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

Mountain Research and Development (MRD)
An international, peer-reviewed open access journal
published by the International Mountain Society (IMS)
www.mrd-journal.org

MountainResearch
Systems knowledge

The Atta Abad Landslide and Everyday Mobility in Gojal, Northern Pakistan

Nancy Cook[1] and David Butz[2]*
** Corresponding author: ncook@brocku.ca*
[1] Department of Sociology, Brock University, St. Catharines, Ontario, L2S 3A1, Canada
[2] Department of Geography, Brock University, St. Catharines, Ontario, L2S 3A1, Canada

Open access article: please credit the authors and the full source.

In early 2010, the massive Atta Abad landslide blocked the Hunza River in the Gojal region of northern Pakistan. It also buried or flooded 25 km of the Karakoram Highway, the only vehicular transportation route connecting this region to the rest of Pakistan. Since the Karakoram Highway opened in 1978, road mobility has become deeply integrated into the everyday economies and time–space fabric of Gojali households. In this paper, we focus on what happens when a natural disaster unexpectedly slams the brakes on movement as a way to understand more fully the sociodevelopmental implications of roads in the rural global South. We review the history of mobility in the region to explain the importance of the Karakoram Highway as a mobility platform that restructured sociospatial relations in Gojal. We then turn to interviews, ethnographic fieldwork, and local news sources to outline how residents of 4 Gojali communities were experiencing the economic, social, and emotional impacts of landslide-induced mobility disruptions in the 18 months following the disaster.

Keywords: *Mobility; roads; disaster; landslide; social change; Pakistan.*

Peer-reviewed: *August 2013* ***Accepted:*** *September 2013*

The context of disaster

Atta Abad is a small agricultural village located in Hunza-Nagyr, a district of Pakistan's most northerly and mountainous province of Gilgit-Baltistan (G-B) (Figure 1). Since 1994, the Geological Survey of Pakistan (GSP) has been monitoring large cracks that formed on slopes 300 m above Atta Abad's residential cluster (Petley 2010b). The cracks widened in 2005 after the Kashmir earthquake, followed by small-scale sliding that destroyed several houses and fields. The GSP declared the area a landslide threat and recommended Atta Abad's evacuation (Pamir Times 2009), but no further practical steps were taken.

On 4 January 2010, a massive slope failure above Atta Abad triggered a landslide that blocked 2 km of the Hunza River valley to a depth of 120 m (Petley 2010a). Atta Abad village was largely destroyed, and parts of Sarat were badly damaged. Nineteen people were killed, and about 1650 individuals from 141 households were displaced (NDMA 2010a). Over the next 5 months, a lake formed behind the landslide. By the time it overtopped the dam on 29 May 2010, the entire village of Ainabad was submerged, along with 60% of Shishkat (Government of G-B 2010), significant portions of Gulmit and Ghulkin, and a small part of Hussaini (Figure 2). Altogether, the property of 240 households in 5 villages was submerged and 380 families were displaced (NDMA 2010b). Having seen their homes and livelihoods drop suddenly from under their feet or disappear slowly beneath rising water, residents of the affected communities were emotionally traumatized and materially straightened (Figure 3).

The Pakistani government provided emergency relief to affected households and agreed to mitigate property losses by providing US$ 7000 compensation for each family whose house was flooded or destroyed; after 17 months, most households had received about 65% of the promised grant in small, irregular installments (Abidi-Habib et al 2011). Because of the Chinese government's donation of an 18-month supply of food and fuel sufficient for all 20,000 people living upstream from the slide, sustenance was not a major issue after the first few months. However, shelter was a challenge, as was livelihood.

To make matters worse, the disaster buried or flooded 25 km of the Karakoram Highway (KKH), the only vehicular transportation route connecting scattered communities in the region north of the slide—known as Upper Hunza or Gojal—to the rest of Pakistan. Gojalis experienced this loss as a devastating misfortune. Without the capacity to access markets, services, and provisions located in towns south of the landslide, residents were virtually immobilized. Since summer 2010, a boat service has been operating for most of the year, so goods and people could be transported the length of the lake with much inconvenience and expense. But this was no solution for a population whose lives and livelihoods had

 http://dx.doi.org/10.1659/MRD-JOURNAL-D-13-00013.1 © 2013 by the authors

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

FIGURE 1 Gilgit-Baltistan, Pakistan. (Map by David Butz)



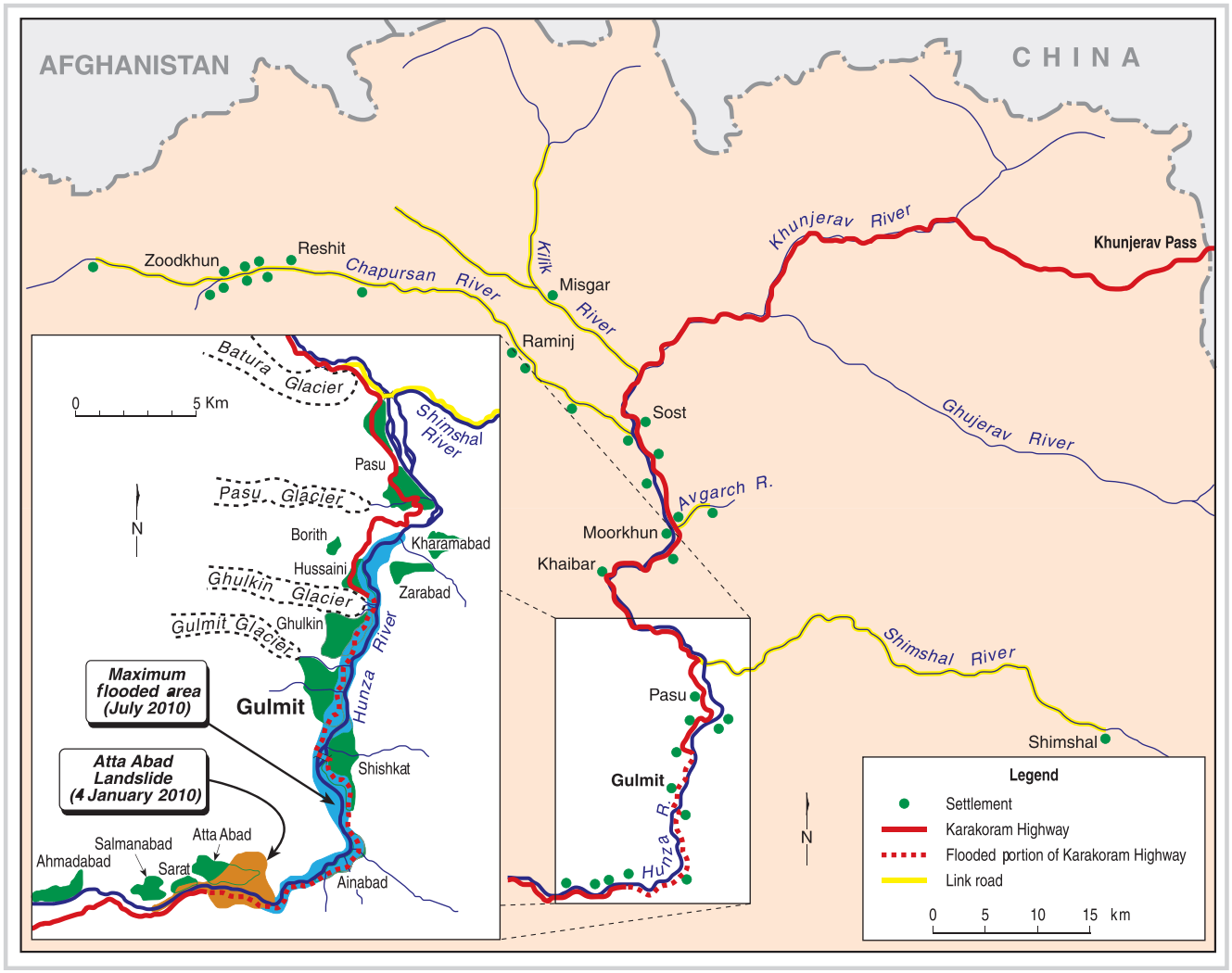
become reliant on the fast and cheap mobility afforded by an all-weather road.

Recent analyses of the Atta Abad disaster describe its ramifications for a range of everyday experiences in Gojal (Abidi-Habib et al 2011; Butz and Cook 2011; Sökefeld 2012a, 2012b). Our study contributes to this scholarship through its focus on the secondary disaster of constricted mobility. Most scholars studying the impacts of rural roads, including the KKH, have considered only an upward trajectory of increasing mobility (Kreutzmann 1991, 1993, 2009; Kamal and Nasir 1998; Rigg 2002; Wood and Malik 2006; Nyiri and Breidenbach 2008). Little attention has been given to what happens when circumstances unexpectedly slam the brakes on movement, despite the potential importance of mobility disruptions for understanding the full sociodevelopmental implications of roads in the rural global South. In this paper, we begin to address this oversight by outlining how Gojalis expressed their experience of constricted mobility in the wake of the Atta Abad disaster. We begin by reviewing the history of mobility in the region, employing Allan's (1985, 1986, 1989) "accessibility model" to explain the importance of the KKH as a mobility platform that restructured sociospatial relations in Gojal during the 1980s. We then turn to interviews, ethnographic fieldwork, and local news sources to outline how residents of 4 Gojali communities were experiencing the economic, social, and emotional impacts of landslide-constrained mobility between January 2010 and July 2011, before this fluctuating mobility milieu became an accustomed part of daily life.

Gojali research assistants conducted semistructured qualitative interviews during fall 2010 and winter 2011 with members of 18 households in the villages of Shishkat, Gulmit, and Ghulkin, as well as in the Chapursan valley. They employed a nonrepresentative convenience sampling method due to the challenges of traveling to and socially accessing disaster-affected households. Households were selected to include a range of sizes, sources of income, kinship affiliations, and wealth to access differentiated experiences. Two-hour interviews were conducted and recorded in villagers' native tongue (Wakhi or Burushaski) and then transcribed and translated into English by local assistants. Individual interviews frequently involved 2 or more members of the same household as respondents. Interviews were analyzed

http://dx.doi.org/10.1659/MRD-JOURNAL-D-13-00013.1
Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

FIGURE 2 Location of Atta Abad disaster in Gojal Hunza, Gilgit-Baltistan. (Map by David Butz)



inductively using an open coding process that was contextualized by 2 ethnographic site visits, informal discussions with residents during summer 2010 and summer 2011, and close reading of a local English-language news blog.

Gojal's road to mobility

Gojal was part of the feudal kingdom of Hunza until 1974, when Hunza fell under the jurisdiction of the Pakistani state. The absence of roads in feudal Hunza before the 1950s allowed the Raja to restrict movement in and out of the kingdom, making Hunza one of the least accessible parts of South Asia. Within the kingdom, villagers used a network of footpaths that linked communities via high pastures. Although these paths were impassable much of the year, they suited people's mobility needs in a land use system that involved harvesting resources across an altitudinal range of 3000 m. In this economy, called *almwirtschaft* or vertical zonation (Allan 1986; Guillet 1986; Grötzbach 1988; Uhlig 1995; Grötzbach and Stadel 1997), high paths gave people access to their means of production on mountain slopes above valley settlements.

In the mid-1960s, Pakistan's Frontier Works Organization and Army Corps of Engineers, in cooperation with Chinese counterparts, began constructing a paved road through Hunza to China (Khalid 2011). The 2-lane KKH links Pakistan to its ally China, the Pakistani heartland to its northern frontier, and mountain communities to one another. Since the KKH's construction, numerous link roads have been built to connect it to settlements in side valleys. In Gojal, which the KKH traverses, most communities that previously relied on subsistence agriculture and herding quickly shifted their attention downslope to the economic opportunities afforded by the highway. Cash cropping

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

FIGURE 3 Partially flooded villages from above Gulmit. (Photo by David Butz, July 2011)



and off-farm employment became the basis of people's livelihoods. The network of high paths fell into disrepair as fewer people visited the alpine pastures and travel between villages shifted to the KKH or tributary roads along valley floors. Gojalis became accustomed to road transportation and reliant on the cheap and easy movement of people and commodities that the KKH enabled.

A small number of publications by scholars and development specialists have examined the transformational effects of the KKH and its tributary roads (Allan 1985, 1986, 1989; Soffer 1986; Kreutzmann 1991, 1993, 1998, 2006, 2009; Kamal and Nasir 1998; Haines 2012). Allan's research, conducted more than 2 decades ago, remains exemplary in depicting how villagers in the region, in response to the construction of the KKH, adapt mountain land and resource use in ways that integrate vehicular mobility into everyday life. Allan developed an "accessibility model of mountain land use" in conversation with prevailing *almwirtschaft* models that emphasized the vertical stratification of climatic and vegetative zones in mountain regions (Allan 1986: 191). He argues that these older models are rendered obsolete in the context of northern Pakistan by the KKH and the link roads that join it from neighboring valleys. As these roads penetrate mountain regions, land use is determined more by accessibility to lowlands than by local geoecology. Allan's model describes how a mountain land use system based on vertical zonation turns into one based on accessibility with the construction of roads; throughout a mountain region, a subsistence economy reliant on numerous vertical zones is replaced by more intensive and specialized production for market on a smaller number of altitudinal zones.

Allan's accessibility model is an important contribution to scholarship on the cultural ecology of mountain areas, but it does not contemplate the possibility of a sustained disruption to vehicular mobility in mountain regions that have been reorganized in response to road accessibility. The Atta Abad disaster reminds us that a linear progression of uninterrupted mobility and development cannot be taken for granted in these contexts and provides an opportunity to learn what happens when the mobility of people, produce, and commodities becomes impeded.

http://dx.doi.org/10.1659/MRD-JOURNAL-D-13-00013.1
Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

FIGURE 4 Boat passengers disembarking at Atta Abad landslide deposit. (Photo by David Butz, November 2012)



Experiencing disrupted mobility

In many of the interviews, respondents reminisced about the speed, ease, and low cost of road travel before the landslide disaster. Most recalled making a trip south at least once a week pertaining to household management, business, education, healthcare, family and community ceremonies, social activism, or religious duties. According to a community leader from Gulmit, prior to the disaster some people traveled "without any reason." He reported that "1 year we surveyed that 150 people traveled daily from Gojal to Aliabad, to go to the bank or just taste the food there." Another participant calculated that 6 or 7 vans operated from Shishkat every day, with an annual cost to fare-paying passengers of about US$ 29,000.

In contrast, respondents described the journey over the lake and landslide in the months following the disaster as, in the words of a man from Ghulkin, "challenging and painful." At this time, the trip to Gilgit from Ghulkin took a full day instead of the usual 3 hours. After an initial 2-hour boat ride, passengers disembarked at the spillway and scrambled over the slide with their luggage to find jeeps bound for Aliabad, the nearest market town (Figure 4). Public van service is available from Aliabad to Gilgit, the regional center. The need for extra and specialized means of transport, which did not operate in harsh weather or winter when the lake is frozen, increased the cost of transportation exponentially. Under these trying conditions, Gojalis traveled less frequently, usually only for pressing matters. A teacher from the Chapursan valley consequently described his household as "stuck."

Rather than being uniformly imposed, mobility restrictions are spatially and socially differentiated in the region. Villages in upper side valleys, like Chapursan, are managing somewhat better than those with more proximate access to the KKH and market towns due to their greater agricultural self-sufficiency. The resources available to wealthier households and those with external

http://dx.doi.org/10.1659/MRD-JOURNAL-D-13-00013.1
Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

income sources, such as absent members earning wages down-country, are enabling them to fare better too. Respondents reported that women and the elderly have been disproportionately constrained by the physical and social challenges of journeying south: waiting for transport, climbing into and out of overcrowded boats, standing for long periods, walking on uneven terrain, and enduring fear of the water and occasional harassment from nonlocal boat operators and cargo porters.

In addition to these differentiated experiences of constricted mobility, respondents described the shared impacts that newly imposed inaccessibility was having on their economic, social, and emotional lives. Relating road access and regional economics, a resident of Gulmit emphasized that "the economy of Gojal as a whole depends on the KKH.… We get crops from our lands, which travel by this road and bring us profit. Thus, the road acts as the heart vein of our lives." When this vein was blocked, the economy of Gojal became paralyzed in 4 ways.

First, villagers cannot ship their cash crops to market due to the expense of transporting such large quantities of potatoes and fresh and dried fruit over the lake and landslide, which involves hiring cargo boats and porters, as well as trucks. The provincial government (Government of G-B 2010) predicted that the region would initially lose US$ 7.5 million in cash crop income, an amount that will likely increase annually until the KKH is restored. Farmers we spoke to estimated their monetary losses to be even higher and mourned the loss of cash cropping as a principal source of income. Second, alternate means of generating income have also diminished. A robust transportation system of more than 200 trucks, vans, and taxis is now defunct (Government of G-B 2010). Shops remain closed due to the scarcity and cost of supplies. Trade-related businesses struggle as commodity exchange between Pakistan and China, which was estimated at US$ 8.7 billion annually before the disaster (Abidi-Habib et al 2011), slowed to a trickle. Tourism agencies have few customers. Due to this extensive loss of income, many villagers have been unable to pay bank loans and creditors. Associated stress relates to identity, as well as economics; people who understood themselves as wealthy farmers were worried about becoming dependent debtors.

Third, approximately 70% of foodstuffs consumed in Gojal are imported from down-country sources (Government of G-B 2010). The roadblock has limited the accessibility of these food supplies and inflated prices beyond what most people can afford. Meat is especially expensive and scarce. Some villagers from the most northerly communities are traveling to China to shop; the journey is less cumbersome, and the goods are considerably cheaper. Gojalis are also attempting to grow more food for their own consumption, but several factors have hampered their efforts. Fertilizer and seeds are less accessible and more expensive due to increased transportation costs, so crop yields have been lower. In communities along the lake, threshing machines are often marooned, the fuel to run them is unavailable, and plant growth has been impeded by settled dust from the landslide.

Despite these challenges, villagers are returning to subsistence cropping and eating practices to address the limited accessibility of imported food. Villages in upper side valleys have sufficient land and pastures available for subsistence production. Others rely additionally on food relief from the Chinese government, which includes flour, rice, sugar, oil, milk powder, salt, and tea. According to respondents, relief supplies eased the burden of inflation so that prices for these basic food commodities became somewhat stabilized. Villagers are not going hungry, but at the time of the interviews, some reported eating less—and less varied—food than before the disaster. They expressed concern about the effects of this unbalanced diet on their long-term health and the temporary, unsustainable nature of food relief.

Fourth, the highway has been key to economic development agendas in Gojal. As a head of household from the Chapursan valley noted, "Before the KKH and the link road to Chapursan, life was constrained. But when the road was built, it caused a revolution, with access to Aga Khan Rural Support Program development initiatives, tourism, and increased incomes." When the landslide occurred, communities were in the midst of building new link roads, hydroelectric plants, hospitals, schools, and water supply systems they hoped would enhance their economic futures. But this development activity was frustrated after the disaster by a shortage of construction materials, and hopes for long-term development were overwhelmed by concern for immediate survival. Interviewees claimed to have become skeptical of local development agencies' advice to invest in market activity at the expense of self-sufficiency. Although economic development initiatives have increased household incomes, they have simultaneously jeopardized Gojalis' ability economically to survive mobility-constraining natural disasters.

Mobility disruptions have also affected several aspects of social life in Gojal. Interviewees were especially concerned about their access to healthcare. No fully equipped and staffed medical center operates in the region, so villagers customarily travel south to facilities in Aliabad or Gilgit for acute and chronic care. Many pregnant women also visit maternity clinics in these towns for pre- and postnatal testing and delivery, as recommended by Aga Khan Health Services. In the disaster context, pregnancy is riskier and medical emergencies are more dire when boats operate intermittently during the day and not at all during the night and winter and when patients cannot physically navigate the route. Some men reported shifting their

http://dx.doi.org/10.1659/MRD-JOURNAL-D-13-00013.1
Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

FIGURE 5 Porters transporting Chinese goods from trucks to boats at Hussaini port. (Photo by David Butz, July 2010)



pregnant wives south well in advance of delivery to be close to medical expertise in case an emergency situation arose. Such precautionary measures, however, do not resolve all health accessibility challenges; respondents mentioned 2 Gojalis—a driver injured in a car accident and a newborn baby—who died for want of emergency medical attention. In early 2011, the Rabita Committee of Gojal estimated that at least 13 people had died due to inaccessible healthcare since the landslide (Pamir Times 2011b). Fourteen more perished after a vehicle crash in August 2012.

Interview respondents said that difficulty maintaining extended family ties was another social outcome of restricted mobility. Now that travel is arduous, time consuming, and expensive, it is not undertaken lightly; this stresses familial relationships. Gojali families are often spatially dispersed throughout the region and down-country areas. Those living in southern cities have difficulty returning home for vacations, weddings, funerals, and religious festivals, events that maintain kinship bonds. Even local residents have difficulty attending ceremonies in neighboring villages when van and boat service is unpredictable. We heard stories of Gojalis who traveled to their parents' funerals unaccompanied by their immediate families or missed them altogether due to protracted travel times. Escalating transportation costs and a general reluctance to undertake demanding journeys caused others to miss family marriages. Parents we interviewed were especially concerned that they could not easily check on children who are studying in the south, which left parents and children feeling stressed and emotionally alienated. Some parents or grandparents migrate south of the slide during the winter months when boats are inoperative to be closer to extended family. Respondents reported that leaving the village to live with family can leave elderly people feeling despondent but may be crucial to securing the emotional support elders need to cope with their material losses.

Education has been a key focus of social development activity in the region for the past 30 years, largely sponsored by the Aga Khan Development Network and deployed through Aga Khan Education Services. Gojalis have invested much agricultural, trade, and wage income in educating their children in local and urban institutions with the hope that students will succeed in the modern economy. Parents we interviewed claimed that the immobilization of particular income systems had left

http://dx.doi.org/10.1659/MRD-JOURNAL-D-13-00013.1
Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

them without the money to pay even basic school fees. They argued that children need to study down-country, where their education is less disrupted by the disaster, but the disaster has deprived them of the resources necessary to accomplish this goal. Access to teachers locally was cited as an additional problem; many migrated south after the slide, leaving Gojali schools short staffed.

Parents reported struggling to secure loans to cover education expenses, but students are losing interest in studying when survival needs are more immediate. Many students abandoned school to earn wages laboring at the lake's 2 ports (Figure 5). To mediate this effect of constrained mobility, the federal government announced an educational compensation package in June 2010. Fee remission for the year was promised to Gojali students attending government or private institutions who could prove their regional residency (Pamir Times 2010). By August 2011, students had yet to receive this tuition waiver, which compromised their enrollment (Pamir Times 2011a). Finally, in May 2012, approximately US$ 210,000 for fee support was released to institutions educating disaster-affected students (Pamir Times 2012). According to respondents, such delays exacerbate youths' demoralized attitude about their futures.

Emotional distress and demoralization is another social effect of mobility disruptions emphasized by the Gojalis we interviewed. They described themselves variously as disheartened, sorrowful, listless, despondent, worried, tense, feeble, anxious, helpless, hopeless, desperate, and afraid and remembered themselves before the disaster as happy, content, wealthy, independent, robust, and active. In the words of a village elder from Shishkat, Gojalis were "mentally pressurized because they were planning their future and education and were interested to grow and live a better quality of life. But this disaster has depressed and shattered us." For another Shishkat farmer, "Every problem seems 100 times greater than before. Every single person is tense due to health problems, educational problems, and transport problems. We feel totally helpless and hopeless." Some men expressed being disheartened that their honor was at stake, because they could no longer materially provide for their families. Children too, according to a Gulmiti farmer, "have become psychological patients. They are always in a state of fret and the water is always on their minds." These quotations suggest that constricted mobility has emotionally distressed Gojalis, leaving them feeling newly poor and dependent with few prospects for development.

Conclusion

Gojalis are frustrated with the slow progress in reestablishing road access. They stress that "mobility is necessary for our lives" and "a road is a basic necessity for all." These sentiments indicate a social and economic reliance on vehicular mobility that is foreshadowed in Allan's and other work on the early effects of the KKH. The example of the Atta Abad landslide also shows that the accessibility-induced changes in land use and the political ecology described by Allan's accessibility model impede households' capacity to weather prolonged disruptions to road-based mobility. As the comments of our respondents suggest, social and market integration may hamper possibilities for household livelihood—as well as longer-term processes of modernization and development (Harrison 1988; Nyiri and Breidenbach 2008)—when the mobility regime underlying such integration is disrupted or constrained. In geologically—or geopolitically—unstable mountain areas, this is always a possible alternative ending to the teleology of increasingly frictionless mobility and integration.

Although Gojalis are adjusting to shifting conditions of mobility, many feel that life is on hold until the KKH is reconstructed. Pakistani politicians have turned their attention elsewhere, and Chinese relief shipments are unpredictable, raising concerns about infrastructure development, compensation, food insecurity, and aid dependence. Cargo porters and boat owners have accessed new sources of income, but development projects that would have enhanced economic futures have stalled due to the lack of imported construction materials. And for many, healthcare prospects remain grim. Some villagers will cope in situ until the KKH is rebuilt, but the prospect of a future of constrained mobility compels others to consider making their lives elsewhere, where mobility seems more assured.

ACKNOWLEDGMENTS

We thank our research collaborators at *Pamir Times* for their help with data collection, Loris Gasparotto for assistance with maps, and anonymous reviewers for their suggestions. This study was supported by SSHRC Standard Research Grant 410-2009-0579.

REFERENCES

Abidi-Habib M, Khan H, Uddin M, Khan B. 2011. *Revisiting Attabad*. http://www.himalmag.com/component/content/article/4699.html; accessed on 27 April 2012.

Allan N. 1985. Periodic and daily markets in highland–lowland interaction systems: Hindu Kush–Western Himalaya. *In:* Singh T, Kaur J, editors. *Integrated Mountain Development*. New Delhi, India: Himalayan Books, pp 239–256.

Allan N. 1986. Accessibility and altitudinal zonation models of mountains. *Mountain Research and Development* 6(3):185–194.

http://dx.doi.org/10.1659/MRD-JOURNAL-D-13-00013.1
Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use

Allan N. 1989. Kashgar to Islamabad: The impact of the Karakorum Highway on mountain society and habitat. *Scottish Geographical Magazine* 105(3):130–141.
Butz D, Cook N. 2011. Accessibility interrupted: The Shimshal road, Gilgit-Baltistan, Pakistan. *Canadian Geographer* 55(3):354–364.
Government of G-B [Gilgit-Baltistan]. 2010. *Early Recovery Plan and Framework for Disaster-Affected Areas of Hunza-Gojal in Hunza-Nagar District of Gilgit-Baltistan*. Gilgit, Pakistan: Government of G-B.
Grötzbach E. 1988. High mountains as human habitat. *In:* Allan N, Knapp G, Stadel C, editors. *Human Impact on Mountains*. Lanham, United Kingdom: Rowman and Littlefield, pp 24–35.
Grötzbach E, Stadel C. 1997. Mountain peoples and cultures. *In:* Messerli B, Ives J, editors. *Mountains of the World: A Global Priority*. New York, NY: Parthenon, pp 17–38.
Guillet D. 1986. Toward a cultural ecology of mountains: The Central Andes and the Himalaya compared. *Mountain Research and Development* 6(3):206–222.
Haines C. 2012. *Nation, Territory and Globalization in Pakistan*. New York, NY: Routledge.
Harrison D. 1988. *The Sociology of Modernization and Development*. London, United Kingdom: Routledge.
Kamal P, Nasir M. 1998. The impact of the Karakorum Highway on the landuse of the Northern Areas. *In:* Stellrecht I, editor. *Karakorum-Hindukush-Himalaya: Dynamics of Change, Part I*. Köln, Germany: Rudiger Koppe Verlag, pp 303–338.
Khalid M. 2011. *History of the Karakoram Highway*. Vols 1 and 2. Rawalpindi, Pakistan: Hamza Pervez.
Kreutzmann H. 1991. The Karakoram Highway. *Modern Asian Studies* 25(4): 711–736.
Kreutzmann H. 1993. Challenge and response in the Karakoram: Socioeconomic transformation in Hunza, Northern Areas, Pakistan. *Mountain Research and Development* 13(1):19–39.
Kreutzmann H. 1998. Trans-montane exchange patterns prior to the Karakoram Highway. *In:* Stellrecht I, editor. *Karakorum-Hindukush-Himalaya: Dynamics of Change, Part I*. Köln, Germany: Rudiger Koppe Verlag, pp 21–43.
Kreutzmann H. 2006. High mountain agriculture and its transformation in a changing socio-economic environment. *In:* Kreutzmann H, editor. *Karakoram in Transition: Culture, Development and Ecology in the Hunza Valley*. Karachi, Pakistan: Oxford University Press, pp 329–358.
Kreutzmann H. 2009. The Karakoram Highway as a prime exchange corridor between Pakistan and China. *In:* Kreutzmann H, Beg GA, Lu ZZ, Richter J, editors. *Integrated Tourism Concepts to Contribute to Sustainable Development in Mountain Regions*. Bonn, Germany: Internationale Weiterbildung und Entwicklung, pp 13–36.
NDMA [National Disaster Management Authority Pakistan]. 2010a. Hunza landslide one-pager report, June 21. http://www.ndma.gov.pk/AttaHunzaLandslide.html; accessed on 27 April 2012.
NDMA [National Disaster Management Authority Pakistan]. 2010b. Hunza landslide one-pager report, July 2. http://www.ndma.gov.pk/AttaHunzaLandslide.html; accessed on 27 April 2012.
Nyiri P, Breidenbach J. 2008. The Altai road: Visions of development across the Russian-Chinese border. *Development and Change* 39(1):123–145.
Pamir Times. 2009. Attabad, Hunza: A battleground for nature and men. December 14. http://pamirtimes.net/2009/12/14/attabad-hunza-a-battleground-for-nature-and-men/; accessed on 27 April 2012.
Pamir Times. 2010. *Gojal educational relief fund. June 7*. http://pamirtimes.net/2010/06/07/gisak-announcement-gojal-educational-relief-fund/; accessed on 27 April 2012.
Pamir Times. 2011a. KIU refused to give degrees and transcripts to 43 Gojali students, around 100 students not allowed to attend classes. August 4. http://pamirtimes.net/2011/08/04/kiu-refuses-to-give-degrees-to-43-gojali-students-around-100-students-not-allowed-to-attend-classes/; accessed on 27 April 2012.
Pamir Times. 2011b. Stranded commuters evacuated through ferry raft operated by Pakistan Army. February 10. http://pamirtimes.net/2011/02/10/stranded-commuters-evacuated-through-ferry-raft-operated-by-pakistan-army/; accessed on 27 April 2012.
Pamir Times. 2012. 20 million rupees released for students affected by Attabad landslide and damming of Hunza River. May 26. http://pamirtimes.net/2012/05/26/20-million-rupees-released-for-students-affected-by-attabad-landslide-and-damming-of-hunza-river/; accessed on 27 April 2012.
Petley D. 2010a. Hunza landslide monitoring. http://hunza-landslide.blogspot.com/; accessed on 27 April 2012.
Petley D. 2010b. The landslide blog. http://www.landslideblog.org/2010/01/landslide-at-attabad-village-hunza.html; accessed on 27 April 2012.
Rigg J. 2002. Roads, marketization and social exclusion: What do roads do to people? *Journal of the Humanities and Social Sciences of Southeast Asia and Oceania* 158(4):619–636.
Soffer A. 1986. Man-made altitudinal belts in the mountains: The result of plain–mountain interactions. *Mountain Research and Development* 6(3):199–204.
Sökefeld M. 2012a. The Attabad landslide and the politics of disaster in Gojal, Gilgit-Baltistan. *In:* Luig U, editor. *Negotiating Disasters: Politics, Representation, Meaning*. Frankfurt, Germany: Peter Lang, pp 175–204.
Sökefeld M. 2012b. Visualizing disaster: Gojal after the Attabad landslide in northern Pakistan. *Tsantsa* 17:212–224.
Uhlig H. 1995. Persistence and change in high mountain agricultural systems. *Mountain Research and Development* 15(3):199–212.
Wood G, Malik A. 2006. Sustaining livelihoods and overcoming insecurity. *In:* Wood G, Malik A, Sagheer S, editors. *Valleys in Transition: Twenty Years of AKRSP's Experience in Northern Pakistan*. Oxford, United Kingdom: Oxford University.

Downloaded From: https://bioone.org/journals/Mountain-Research-and-Development on 28 Mar 2024
Terms of Use: https://bioone.org/terms-of-use