# 3 Gold Mining Industries and Local Livelihoods in Rural Naryn

#### Introduction

Livelihoods of rural communities in the Naryn region are mostly dependent on a combination of livestock and agriculture farming as well as other formal and informal economic activities that provide additional financial income. In the villages of Emgekchil and Ming-Bulak, informal, small-scale and artisanal gold mining is a crucial but oftentimes risky source of income for many households in an environment that has been recently integrated into the global capitalist economy and is marked by the absence of sufficient formal and secure employment and socio-economic safety networks. Simultaneously, formal mining exists in an ambivalent and often contradicting relationship with informal extractions and plays an equally important, but different role in the formation of local livelihoods. This paper aims to analyze the significance of both informal, small-scale and formal gold mining industries for the livelihood strategies of inhabitants of two rural communities located in the Naryn Oblast'. It further situates these livelihood strategies within local and global economic systems as well as socio-political and historical developments in the region. It is based on field research conducted in Emgekchil and Ming-Bulak in July 2016 that will be analyzed in the context of wider literature on informal mining economies, global production networks and economic transformation in Kyrgyzstan.

As Steimann (2011: 32) argues, the "high degree of hybridity, uncertainty and disorientation that characterize post-socialist transformation processes" in Kyrgyzstan calls for research and analysis focused on local-level processes and responses to the "various 'paths' of postsocialist transformation". He thus contends that due to the increase of uncertainty since the collapse of the Soviet Union, the population responded by increasing their flexibility and diversifying their sources of livelihood (ibid.: 35-37). This is exemplified by our research. In the two communities where we conducted our study, Emgekchil and Ming-Bulak, we found two varying approaches and livelihood strategies which utilize the specific resources and knowledge available to the inhabitants in order to cope with, adopt, resist and transform the area's post-socialist trajectory and prevalent socio-economic relations. Drawing on the large field of literature concerned with rural livelihoods, it is important to acknowledge the complexity and diversity that marks livelihood strategies while focusing on the access as well as different forms of utilization of (material and immaterial) capital and resources. Contemporary studies mostly build on Chambers and Conway's people-centred approach, according to which "a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living" (Chambers & Conway 1992: 6). Depending on their individual endowment with (financial, social, human, physical and natural) capital, inhabitants of Emgekchil and Ming-Bulak combined agriculture, animal husbandry, labour migration, local employment and other income generating activities, of which small-scale mining was one of the most prevalent ones.

Artisanal and small-scale mining (ASM) are an important source of income for many individuals and groups across the world, and at least in terms of the amount of labourers,

estimated to be 20-30 million globally, it should be considered of equal importance to the large-scale and formal mining industries (Buxton 2013: 1; Hentschel, Hruschka & Priester 2002). Despite the lack of an agreed upon definition of ASM, several conditions are identified which characterize this sector. Among these are the necessity for hard manual labour, due to a "lack or very reduced degree of mechanization, [...] low level of occupational safety and health care, [...] exploitation of marginal and/or very small deposits, [...] low level of salaries and income [and] mostly working without legal mining titles" (Hentschel, Hruschka & Priester 2002: 5). All of these aspects we found to be true to varying degrees within our field work. A consensus among scholars seems to have emerged, which contextualizes the expansion of ASM as a response or coping-strategy mostly found in rural areas to "interrelated processes of structural adjustment, de-agrarianization" and poverty (Verbrugge 2015: 1028; Hentschel, Hruschka & Priester 2002; Hilson & Maconachie 2010). While some highlight ASM as a means for survival and the possibility to generate financial income, others stress that it simultaneously exposes rural populations to income insecurity and health and safety risks (Fisher et al: 2009).

During the existence of the Soviet Union, Kyrgyzstan (alongside the other Central Asian Republics) was extensively mapped and explored, which led to the discovery and evaluation of hundreds of mineral deposits, many of which have been undeveloped ever since their discovery (Clark & Naito 1998: 105). Kyrgyzstan's mining and metallurgical sector also played a substantial role in the raw material economy of the USSR (Abdyrakhmanova, Bogdetsky & Ibraev 2001: 13). From 1993 onwards, foreign investors became involved in gold mining and in 1996, the Kumtor mine began production (ibid.: 27). The state gold mining company Kyrgyzaltyn was founded in 1992 and was renamed as Kyrgyzaltyn OJSC (open joint stock company) in 1999 (Kyrgyzaltyn 2017). In contrast, ASM has been carried out in Kyrgyzstan for several hundred years, and during the Soviet era of the 1930s and 40s, small-scale mining took the form of legal co-operatives (Appel, Dyikanova, Esengulova & Tagaeva 2004: 4). After the collapse of the Soviet Union, thousands of people became involved in informal gold mining, due to losing their jobs and in the absence of other ways to generate income. Out of the two ways to mine gold in ASM, placer gold mining is allowed, while hard rock mining is prohibited. However, rules and regulations are often contradictory, conflicting and seldomly enforced. In the absence of any legal outlets where they could sell their gold, small-scale gold miners have to sell it illegally to gold buyers who are mostly Kyrgyz, Uzbek or Chinese nationals (ibid.).

## Methodology

This paper is based on field research conducted in the villages of Emgekchil and Ming-Bulak in July 2016. The research consisted mainly of semi-structured interviews, observations and two informal focus-group discussions. The interviews were conducted in Kyrgyz and simultaneously translated into English. We interviewed 22 informal, male gold miners, two former informal gold miners, four owners of processing equipment, two women involved in processing, nine female members of informal gold mining households, seven male employees of Kyrgyzaltyn (Kyrgyz state gold mining company), two female employees (cooks) of

Kyrgyzaltyn, two male employees (security) of China Gold (Chinese mining company), the head of the Aiyl Okmoty of Emgekchil, four public employees (in Emgekchil and Ming-Bulak), one engineer at the institute of geology, one police officer and four shop owners. The interview partners were identified through relationships that Nadira Bekboeva had in the villages and by finding new contact persons who helped us approach individuals or households involved in the production chain. Many partners were also identified by simply following the sights, sounds and smells of gold mining. It was easy to recognize households involved in gold mining as they either had jeeps parked outside, the turning and churning of the processing machines could be heard or by smelling the unpleasant fumes that are emitted when burning the gold particles with acid. So knocking on the right doors turned out to be the most effective way to find interview partners and often gave us the chance to observe the processing of gold-containing stones and sands brought back from the mining sites.

### Introduction to the study area

The conducted research focused on the village of Emgekchil, where it is reported that inhabitants have been involved in small-scale mining activities for the last 20-30 years, probably since the collapse of the Soviet Union. Emgekchil has a population of 3,107 persons living in 651 households and is located about 21 km north of Naryn city. Currently, smallscale and illegalized gold mining seems to be the most important source of income, and 70-90 % of all households are reportedly involved in the production chain while about 170 inhabitants are employed with the state mining company "Kyrgyzaltyn". Research was also conducted in the communities of Örnök, Kuibuishev and Ming-Bulak, which are united in the Aivl Okmotu of Ming-Bulak, located about 7 km east of Emgekchil and have a total population of around 5,500 persons living in 1,178 households. In these communities, a much smaller percentage of the population is involved in small-scale mining or employed with mining companies but the research allowed informative comparisons of differing livelihood strategies in the two areas. The stones containing gold are excavated in three areas located in Solton-Sary (Buchuk, Ak-Tash and Altyn-Tor). Solton-Sary, a three to five hour drive from the villages, is where the summer pastures of Emgekchil and the neighbouring Ming-Bulak are historically located, a fact which has been officially acknowledged in the Kyrgyz law on pastures in 2009 (LKROP art. III, § 2). It is estimated that the gold reserves in Solton-Sary amount to 20 t (Kyrgyzaltyn 2012). The attribution of these areas to Emgekchil and Ming-Bulak is not only significant for small-scale mining but also because of the location of several gold mining companies who are either prospecting or extracting gold there. The most important among these is the state company Kyrgyzaltyn, who is operating an open-pit mine and processing factory in Altyn-Tor. These companies recruit workers from the respective villages and also pay taxes to the two local municipalities of Emgekchil as well as Ming-Bulak and are thus by far the most important contributors to the budgets of the villages' administrations.

## Following the gold - the production chain

While focusing on local-level processes and ways of adapting to transformations and uncertainties, it is nevertheless important to locate socio-economic activities within local and global production networks and hierarchies. We will therefore apply the Global Commodity Chain (GCC) approach in our analysis, which, according to Gereffi et al., shows how "production, distribution, and consumption are shaped by the social relations [...] that characterize the sequential stages of input acquisition, manufacturing, distribution, marketing, and consumption [...] promotes a nuanced analysis of world-economic spatial inequalities in terms of differential access to markets and resources" (1994: 2). Following this framework, our analysis will embed production processes in the relevant physical and social spaces and pay attention to how both production and social relations are simultaneously influencing and shaping each other. The importance of local and informal networks for credit acquisition, as well as for renting and borrowing of processing equipment, vehicles and other assets are one main point of interest.

Even though it was not possible to explore the whole commodity chain and to identify all actors involved as intended by the approach, but rather only the lower echelons, the framework is nevertheless useful to indicate the extractivist nature of the gold mining industry. It enables us to connect the informal and illegalized miners in Emgekchil and Ming-Bulak with global transport routes, trade nodes and consumers of gold on global markets, such as in China, India or Europe. However, instead of merely reproducing a simplified north-south dichotomy, the GCC framework rather draws our attention to the various hierarchies and differentiated access to knowledge and resources of the various actors that make up the chain. The production processes that we were able to observe during the field research can be divided into excavation, processing and sale. As they are important for the overall analysis, these steps will be outlined below. All the information provided was obtained through interviews and by observing labour processes.

#### Excavation

Small-scale and illegalized extraction of stones from the mining sites takes place mainly in the months between August and March when the water levels are lower and there is less or no security personnel present at the mining sites, which have officially been leased to different state- or private mining companies. Groups of miners from the villages that consist of three to 15 individuals travel to the mining sites in Solton-Sary, located almost 4,000 m above sea level. There they will stay in tents for a period between one day and one month. Some large groups even had members who were responsible for cooking and various forms of division of labour seemed to exist. Interviewees described the conditions as very hard and mentioned that there were hardly any safety measures taken. In the winter, the temperatures fall down to -45°C in the mountains and the high altitude further strains the miners. Many reported injuries and health problems as a result of the dire conditions and the need to carry heavy weights. The gold deposits in the stones are indicated by the presence of quartz and most mining groups have become experienced in choosing the right locations for excavation. While some groups extract stones through open pit mining, most dig tunnels that can be between three to 100 m long, using explosives,

some of which motor-operated but mostly consisting of manual tools, which the miners often make themselves. Stones are filled into durable bags that can fit up to 90 kg and carried from the end of the tunnels to the camp-sites where they are finally loaded onto lorries, jeeps and other cars and transported back to the villages (Fig. 1). One bag of stones may contain anything between 0 and 100 g (or even more) of gold, and how much income individual miners make in one trip to the mining sites is starkly fluctuating. The drive to and from the mining site can take a long time and might be dangerous during the winter months, as the dirt roads are often steep and covered in snow.



Fig. 1: Bags holding gold-containing stones and sands brought back from the mining sites in Solton-Sary.

Photography: Soulier, 2016

## **Processing**

The gold is extracted from the collected stones in several consecutive steps using self-built machines and manual labour processes. In Emgekchil, where most stones are processed, about one-third of all households have workshops with the necessary machines in their backyards, which can be relatively simple but also highly sophisticated. Initially, stones are dried over ovens before they are put in the first motor-run machine, which consists of two large revolving drums that contain iron balls, which over several hours grind the stones to sand (Fig. 2). Afterwards, the sand is sieved before being washed by hand in large tubs of

water or in specific, vibrating machines that are lined with grids through which the heavy gold is retained, while sand and dirt is washed away. Finally, the remaining, concentrated gold-dirt mixture is mixed with acid and burned over fires or hotplates, leaving the households with pure gold that is sold in small bottles of penicillin to gold buyers located in Emgekchil for a current price of around 2,200 Som per gram. The gold is then traded at higher prices in Bishkek. However, trade relations further along the production chain was not possible to determine during the field research.



Fig. 2: Self-built rotating machines which are filled with iron balls and stones which over several hours are grinded into sands.

Photography: Soulier, 2016

# The socio-economic organisation of the chain

The production chain outlined above is embedded in socio-economic networks and hierarchies that have evolved as gold mining became a major source of income for the villages during the last 20-30 years. Informal gold mining is dependent on the existence of various social networks formed mostly on a village-level along friendship and kinship lines, as well as credit, renting and borrowing systems. The groups typically have a leader which might be the person owning a lorry for transport, machines for processing or the one with the most experience. Both expenses and income are carefully accounted for, and divided equally between all members of the group. The necessary funds to pay for the transport of the miners and stones, to buy food products, gas and necessary tools for the period spent at the mining sites, and to rent machines for processing the stones are mostly mobilized through local and informal credits (Fig. 3).

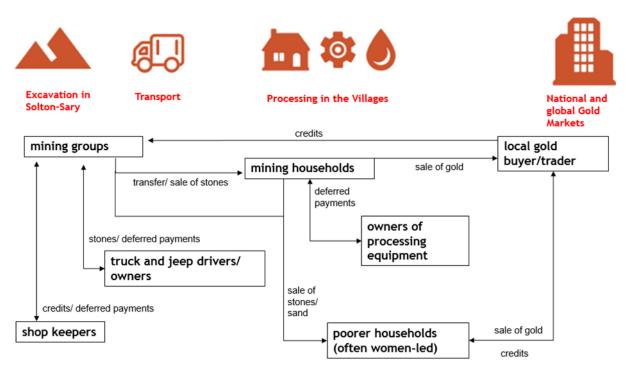


Fig. 3: Diagramme of the commodity chain of artisanal and small-scale gold mining. Design: Soulier, 2017

Individuals and groups borrow the needed food products from local shops, cash from gold traders and pay the owners of processing machines for their usage after they were able to extract and sell their gold. Many of the interviewees, miners as well as shop owners, reported that miners were often not able to settle their debts as they did not find and extract the necessary amounts of gold and thus many are forced to return to the mining sites for several times just to be able to repay what they owe. While local shop owners, owners of processing equipment, lorries and jeeps all profited from the mining industry, it became clear that the buyers/traders of gold, who usually had more financial capital than the average village household, were the main local profiteers. When deducting all necessary expenses from the average gold contained in one bag of stones, the final profit for the small-scale miners (as well as other labourers involved in processing) is likely to be relatively small. However, it seems that working independently and informally in groups might be more profitable than

being employed with one of the mining companies and also gives the advantage of more flexible working periods.

All interviewed households also had livestock and were involved in agriculture to some degree and some had household members employed locally (with mining companies or in other sectors), in Bishkek or abroad. However, small-scale mining was an important or the most important source of income for most households, and it was possible to sustain one's family through the combination of gold mining activities, livestock, agriculture and occasionally some other form of employment. Yet it is important to highlight the insecure nature of income from small-scale gold mining, which was often compared to 'a game of cards' because the gold content and the availability of stones was starkly fluctuating and because of issues arising from the illegalized nature of the work. Most interviewed participants in the chain were highly aware of the prevalent income insecurity and detrimental working conditions, however in the absence of other opportunities to generate income, gold mining was considered an important and durable livelihood strategy.

In order to fully grasp the significance of gold mining and the different labour processes that constitute the production chain, it is worth taking a closer look at the activities taking place further downstream the chain. It becomes clear that gender is one of the main factors structuring labour processes and access to resources. Scholars have found that women (and children) often comprise a high percentage of the labour force in small-scale and artisanal mining (Hentschel, Hruschka & Priester 2002). Far from being homogeneous, the informal mining sector therefore has to be understood as being segmented by social hierarchies where gender is one of the most important structuring forces. In Emgekchil, interviews with several women showed that they are often responsible for processing the stones that their male household members bring back from the mining sites. It should also be taken into consideration that women are often solely responsible for taking care of their families, houses and livestock while the male family members are off excavating stones. Even though women did not go to the mining sites to extract stones themselves (most interviewees considered the work and environmental conditions too hard for women), women-led households are nevertheless involved in the production chain. Many women either buy bags of stones belonging to other miners and process these themselves, or they buy the trashes sands that have been washed out during the processing - re-wash and then burn them which allows them to still extract small amounts of gold. As many miners use public water taps to wash their sand, some women also use these as free resources and collect sand and dirt around these taps to extract small amounts of gold in order to derive some income for their households, using the most basic processing mechanisms. Interviewed women-led households were clearly the poorest, had only few animals and often had the most precarious working conditions.

## The significance of mining companies for local livelihoods

While the original aim of the research was to identify and analyze the significance and socioeconomic structures of small-scale and illegalized gold mining activities, it became increasingly evident that state and private mining companies and the employment they created were also significant for the livelihood strategies of inhabitants of the studied areas. Individuals and households may be involved both in formal and informal mining activities, depending on their respective opportunities and needs that arise at various times. According to the village administration of Emgekchil, about 170 (38 %) of the inhabitants were employed with the state mining company "Kyrgyzaltyn" in Altyn-Tor, Solton-Sary. The company operates a large open-pit mine and a processing plant, while the last processing steps (refining) are not carried out locally but at the Kumtor or Kara-Balta Mining plant, from where the gold then goes to western markets (Abdyrakhmanova, Bogdetsky & Ibraev 2005: 38). In 2017, the company expects to produce 61 kg of gold (Kudryavtseva 2017).

The company operates year-round except from January to March and employs around 300 people. Labourers work twelve hours a day during 15 consecutive days per month in alternating day- and night-shifts. The workers are provided with transport to and from the company, accommodation and necessary facilities at the mining site and three warm and rich meals a day. Salaries range between 9,000-15,000 Som per month and include a wage premium for working in high altitudes. Workers are also able to access free health care while at the mining sites, are insured for injuries sustained while working and are also awarded pensions when reaching the legal age for retirement. However, it seemed that only a few of the inhabitants from Emgekchil worked in higher positions while many were employed as drivers or security personnel. While almost all employees are male, at least two women from Emgekchil were also employed as cooks. Their working conditions and salaries (10,000 Som/month) were similar to those of the male employees, but they reported working for 16-17 hours a day. They also described difficulties of working while having small children as they have to find relatives who are able to care for their families. While there are no companies currently operating in areas administratively belonging to Ming-Bulak village, the company "China Gold" started prospecting and hired six local inhabitants as security guards who earn 15,000 Som for 15 working days per month. One interviewee who is employed with the institute of geology stated that the company would begin excavating the land within the next few years. Interviewees in Emgekchil and Ming-Bulak reported that certain agreements are in place between "China Gold" and other investors and the local administrations, stating that about 70-90 % of all employees should be inhabitants of these villages, if mining activities will begin.

Maybe more significant than employment are the taxes or rents which companies pay yearly to the two Aiyl Okmotu of Emgekchil and Ming-Bulak. "China Gold" pays a yearly sum of 600,000 Som to the Aiyl Okmotu of Ming-Bulak for a certificate allowing them to prospect the area, and this fee will rise substantially if the company will start excavation. The money is reportedly used to buy new agricultural machines for field cultivation and to build a new school. While it was not possible to get accurate information about the amount of taxes annually received by Emgekchil, we have heard about amounts of several million Som by local inhabitants. Further, a cultural centre, a library and a sports centre were reportedly 'donated' by various mining companies.

## Why Emgekchil? A comparison of livelihood strategies

The main question we attempted to shed light on while conducting research in the communities of Ming-Bulak was why small-scale mining was relatively unimportant there in comparison to Emgekchil. While several interviewees claimed that this was due to the mining deposits being located on Emgekchil's traditional pastures, this was contested by others and did not seem like a plausible answer in itself. It became clear that in order to find an answer, we had to consider and compare the historical socio-economic development of the two villages. By asking the right questions, we found that Emgekchil had historically been economically poorer than Ming-Bulak, meaning that the households there owned less livestock and farm land, and water was scarcer. As one interviewee from Ming-Bulak put it: "We (in Ming-Bulak) always had a lot of livestock. People from Emgekchil used to come and ask us for food. Now, they are richer than us, as one can tell by all the two-story houses that they are building in Emgekchil". Considering, the centrality of livestock to surviving and prospering in the Naryn region, or as Steimann put it: "There is no life without livestock here", inhabitants of Emgekchil had to find alternative means and resources in order to make a living (Steimann 2011: 168). Consulting the registers of the two Aiyl Okmotu, a difference in the average numbers of livestock in the tow villages is still apparent: while Ming-Bulak has an average of 4.5 cows and 21.8 sheep per household, Emgekchil still only has an average of 2.6 cows and 15.6 sheep per household. Thus, as the households of Ming-Bulak were able to derive income from their livestock and farmlands, gold mining was one of the only ways to generate monetary income for households in Emgekchil. This could explain why minging is a much more prevalent livelihood activity there, despite the hard working conditions and inherent insecurity. Furthermore, it seemed that knowledge about small-scale gold mining had been retained and accumulated in Emgekchil for over 20 years, while inhabitants of Ming-Bulak only began being involved in these activities during the last five or six years. The accounts seemingly described a development similar to a 'gold rush': when gold prices rose rapidly in 2009, more people became aware of gold mining as a possibility to generate significant income, and many formerly inexperienced men from Ming-Bulak (and the two associated villages Kuisbuishev and Örnök) formed groups and went to the mining sites. However, many interviewees reported that a substantial proportion of small-scale miners from Ming-Bulak became indebted and were not able to derive any substantial profits from gold mining since they lacked the necessary experience and equipment. The number of gold miners thus decreased again over the last two to three years, as only few found the activities profitable. This indicates the importance of social networks, inter-generational knowledge and the access to necessary resources in order to be successful in small-scale gold mining.

## Informality and materiality in gold mining

Most scholars analyzing the persistent informality in ASM worldwide highlight the financial, legal, administrative and political barriers that prevent small-scale miners from formalizing their work and from obtaining legal permits to access mining sites (Verbrugge 2015: 1024; Hilson & Maconachie 2017). They are adopting a legalist approach, which sees bureaucracy and obstacles to obtain property rights as main drivers of informality (de Soto 2000). This

approach is equally applicable in the case of Emgekchil and Ming-Bulak, considering that many miners had voiced their wishes for the state to enable them to legalise their work. However, Boris Verbrugge's research allows for a more complex perspective, as he also integrates the structuralist approach into his analysis of ASM, which conceptualizes informalisation "as a long-term systemic process embedded in [...] global capitalism" as well as a product of economic restructuring and crisis. Due to a "crisis of accumulation in the formal economy", cheap, informal labour becomes a main strategy for capitalist regeneration (Verbrugge 2015: 1026). The latter approach not only enables us to see ASM within a global capitalist framework - as a strategy to enable mineral extraction in areas where large-scale capital-intensive mining would not be profitable, but also accounts for the heterogeneity of the informal mining sector. Even if groups of entrepreneurs were able to formalize their mining operations to a certain extent, informality would be likely to persist as a labour practice in the lower echelons of the production chain, as examples from other regions indicate (Verbrugge 2015).

The informal and illegalized nature of ASM in Kyrgyzstan has a decisive impact on the working conditions and socio-economic development of the small-scale gold mining sector. Even though formal mining companies are important for the study areas in terms of employment generation and by contributing to the incomes of the village administrations, they also obstruct and hinder the income generation of small-scale miners. The security personnel employed by the companies and their cooperation with police forces restrict the times and locations for small-scale mining activities. Interviewed miners reported that they are often harassed by both security personel and the police, who either confiscate their stones or oblige them to pay a fine. The illegalized nature of the work also means that miners cannot install facilities at the mining sites such as proper means of accommodation making their working conditions safer and less precarious. During the processing of the stones, illegality obstructs the implementation of necessary safety regulations and monitoring while the price of gold is also lower than on formal markets.

The materiality of the gold that is extracted, the stones in which it is enclosed and the necessary production processes as well as its sounds and smells have forever been imprinted on the population and landscape of Emgekchil. Impacts of the labour and production processes include but cannot be reduced to working conditions as more profound transformations of ecological, economic and social systems have taken place. Because gold is found best underground, the mountain landscape is slowly transformed both by the smallscale miners and larger companies, and eventually the deposits will be exhausted. The working conditions on the mountain are harsh. Miners live at an altitude of almost 4,000 m above sea level and in temperatures that are often between -30 to -40°C for prolonged periods while carrying bags full of stones which can be as heavy as 90 kg from the underground tunnels to the lorries transporting them to the villages. Back problems, injuries, colds and various illnesses and other bodily reactions to altitude and temperature are reported by the miners. Injuries due to the hazardous condition of the road leading back to the village are also common occurrences. Interviewed inhabitants of Emgekchil report headaches, nosebleeds, teeth that are falling out and hair that turns white early; red eyes of participants in the production chain are a common sight. In Emgekchil, the sounds of the turning machine drums filled with stones and iron balls and the smell of burned acid saturate the air.

#### Conclusion

Artisanal and small-scale gold mining is one particular of many livelihood strategies of rural households in the Naryn region. Its prevalence in certain villages, such as Emgekchil, can be traced back to certain localised socio-historical developments and the general absence of adequate and sufficient sources of income in the wake of capitalist expansion, economic restructuring and de-agrarianisation. While formal mining economies are equally important to local livelihoods, these might also contribute to a further illegalisation of informal mining activities potentially prohibiting the rural population from accessing this important natural resource in the future. However, local miners and communities have been successful in circumventing obstacles and legal provisions that aim to prevent them from accessing what they consider their lands. While many households are seemingly able to sustain themselves through their participation in gold mining industries, this should not conceal the precarious working conditions and social hierarchies that are prevalent in this sector.

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