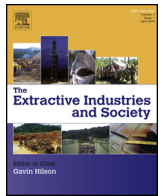




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Review article

The impacts of mining on livelihoods in the Andes: A critical overview

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ABSTRACT

This review article synthesizes research findings which demonstrate that mining in the Andes is transforming local livelihoods by changing water quality and quantity and land tenure practices upon which traditional livelihoods depend, as well as by generating new employment opportunities in mining communities. I argue that research on livelihood change in Andean mining communities would be enriched by 1) a deeper attendance to the gendered, raced, and classed nature of these changes and 2) the disaggregation of different mining management regimes (e.g. state-run, privately-run, cooperative-run) to allow for comparisons of the livelihood impacts between them.

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Contents

1. Introduction	00
2. Mining in the Andes	00
3. Impacts of mining on livelihoods	00
3.1. Impacts on livelihoods via water	00
3.2. Impacts on livelihoods via land tenure	00
3.3. Impacts on livelihoods via new employment opportunities	00
3.4. Placing the livelihood-change literature in context	00
4. Attending to social difference	00
5. Attending to different forms of mining	00
6. Conclusion	00
Acknowledgments	00
References	00

1. Introduction

In October 2016, two protests just four days apart in separate mining communities in southern Peru resulted in violent clashes between police and protesters (Post, 2016a,b). Followed in December 2016 by violent confrontations in Ecuador (Ling, 2017), these protests are only the most recent and visible in a growing mobilization by local residents in opposition to increased mining activity in the Andes since the 1990s (Himley, 2012; Jenkins, 2015). One of the central claims made by protesters is that

mining activities are negatively impacting local livelihoods. Specifically, recent protests have organized around the claim that pollution from mines and transport trucks kills livestock and reduces fertility of agricultural fields (Post, 2016a,b). The protesters' fears are not unfounded, as a common feature of resource dependent countries is increased poverty and worsened living conditions for populations in close proximity to mines, despite growing national GDPs (Valdivia, 2011).

In this article, I synthesize a vibrant and rapidly growing body of research on the impacts of Andean mining on local livelihoods. This research demonstrates that Andean livelihoods are altered primarily by the effects of mines on: (1) water quality and quantity, (2) land tenure practices, and (3) shifting employment opportunities. Despite the vitality of work on the mining-

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livelihood change nexus in the Andes, I argue that this literature would be greatly enriched by further analysis in two key respects. First, only a few of the studies synthesized here attend to how livelihood changes are experienced differently within communities or households based on gender, race, or age. Second, the studies do not adequately address how different forms of mining present in the Andes – foreign-run, state-run, cooperative-run, and artisanal – may differentially impact livelihoods.

Attending to intra-community and intra-household social difference when examining livelihood change in Andean mining communities is important because of the potential vulnerability of specific groups to mining, based on age, race, or gender. For example, transnational mining corporations have been charged with nine human rights cases for violating women's rights, including inflicting upon women forced labor, human trafficking, beatings, rapes, and gang rapes (Palmater, 2016). Women in the Andes are often exploited in small-scale artisanal mining camps as well, where they may be recruited to work in the camp and then forced to sell their virginity to pay for transportation and lodging costs (Global Initiative against Transnational Organized Crime, 2016). In these examples, the disproportionately negative impacts of mining activities on women and girls are attributable to acts of gender and sexual violence. However, I argue that the impacts of mines on local livelihoods in the Andes is also likely to be experienced differentially along gender lines given the role of gender hierarchies in shaping social life in the Andes (e.g. Andolina et al., 2009; Radcliffe, 2012a) and the gendered nature of livelihood change in mining communities in other regions (Jenkins, 2014). Racial hierarchies, as well as differences in class, age, religion, or marital status, may also produce differentiated livelihood impacts within communities or households impacted by mines (Perreault and Valdivia, 2010; White, 2013).

Beyond attending more closely to social difference, I argue that the mining-livelihood change literature synthesized in this article would also be greatly enriched by comparing the impacts of different types of mines on livelihoods. Increased attention to different forms of mining in the Andes is important because of the increasing prominence of state and cooperative mines in Bolivia and artisanal mines in Peru and Ecuador as compared to foreign-run operations (Achtenberg, 2016; Law, 2012). These commonly smaller-scale mines have the potential to produce different livelihood outcomes than larger-scale mines because, for example, they may source their workforce more locally, operate with less infrastructure and under less regulation, and have different environmental impacts. These potential differences demand critical comparison and analysis between the impacts of various mining forms, which the literature to date has not sufficiently addressed.

In this article, I first provide a brief overview of the geographical and historical context of mining in the Andean region. I then synthesize the current work on Andean mining-related livelihood change, demonstrating that local livelihoods are altered primarily by the impacts of mines on water quality and quantity, land tenure, and new employment opportunities. Finally, I argue that the mining-livelihood change literature would be enriched by (1) studies which explore how power relations and social hierarchies of gender, race, class, age, or religion shape and mediate mining-induced livelihood changes, leaving some people in more vulnerable and marginalized positions than others, and (2) research that disaggregates mining into its specific forms, such as foreign and/or privately-run, state-run, cooperative-run, or artisanal, to explore how each form differentially impacts local traditional livelihoods.

This article focuses specifically on Bolivia, Peru, and Ecuador. Although neglected in this article, mining is also prevalent in the Andes of Colombia and Chile. I delimit the geographic extent of this

analysis for two reasons. First, Bolivia, Peru, and Ecuador followed relatively similar political-economic trajectories over the past several decades, implementing structural adjustment programs and allowing increased foreign investment in the 1990s following the 1980s debt crisis. In contrast, Chile's political economy has been more closely tied to U.S. economists and neoliberal policies since the 1970s (Harvey, 2005), and Colombia's political economy has been under greater U.S. influence under the premise of the war on drugs (Livingstone, 2004). Second, the majority of studies on changing livelihoods due to mining in the Andes has been conducted in Bolivia, Peru, and Ecuador, where indigenous, *campesino*, and women's protests over mining are highly visible (Jenkins, 2015).

2. Mining in the Andes

Mining has shaped the Andean region's economic, political, and social relations since the colonial period. From the 16th–19th centuries, Europeans extracted minerals from Latin America to fund expansion, industrialization, and urban development in Europe. 136,000 metric tons of silver accounting for 80% of global silver production came from Latin America between 1550 and 1800 (Robbins, 2011). During the same time period, Europeans extracted an estimated 1,685 metric tons of gold and 50,000 metric tons of mercury from Latin America (Hylander and Meili, 2003; TePaske et al., 1982). The extractive colonial relationship between Europe and Latin America oriented Latin American economies around the export of natural resources, a legacy which is still seen in the region's many resource-dependent countries.

Like other Latin American countries, Bolivia, Peru, and Ecuador entered the 1980s after a 30-year period of Import Substitution Industrialization (ISI), in which national policies limited foreign trade and investment and attempted to build the national industrial capacity to replace foreign imports (Green, 1999, 2003). However, the 1980s debt crisis ended this period of partial isolation, as Andean countries accepted strict neoliberal austerity measures facilitated by the International Monetary Fund (IMF) and World Bank that required them to globalize trade and attract foreign investment in an effort to pay off their debt (Perreault and Martin, 2005). The mining sector in Bolivia, Peru, and Ecuador, which had been largely state-run during ISI, was privatized under neoliberal policies, and foreign investors, including new investors from China, began acquiring or forming mining operations in the region (Bury and Bebbington, 2013). Himley (2012) identifies neoliberal government policies which privatized and transnationalized the Andean mining sector as one of three key factors that contributed to the dramatic growth of mining in the Andean region since the 1990s. Increased demand for minerals on global markets, especially from rapidly industrializing countries like Brazil, China, and India, and advances in extraction and processing technologies also contributed to the increase in mining activities (Himley, 2012).

The privatization and internationalization of the mining industry in Peru, Bolivia, and Ecuador was rapid and extensive in the 1990s and 2000s (BBC News, 2012). By 2006 the Peruvian government had privatized 220 state-owned firms in the mining and fuels industry, generating a capital flow of \$9.2 billion (Gurmendi, 2006). But while Peru has remained consistently neoliberal in its policies (excepting perhaps a series of laws in 2011 and 2012 to increase taxes and regulations on mining), Bolivia and Ecuador have elected governments which claim a departure from neoliberal policies. Both Bolivian President Evo Morales elected in 2005 and Ecuadorian President Rafael Correa elected in 2007 campaigned on the promise to recognize indigenous rights, nationalize control over natural resources, and use the resulting profit for social development projects (Humphreys Bebbington and Bebbington, 2012). Morales' and Correa's policies and vocal

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