



The costs of conflict: Financial consequences of Indigenous rights-related conflicts for mining firms in Peru

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ABSTRACT

Conflict between Indigenous communities and mining firms operating on their land often results in negative consequences for all parties, with Indigenous peoples suffering loss of life, land, and health, and mining firms incurring significant financial and operational costs. Despite a growing literature on the impacts of these conflicts on Indigenous communities and firm strategies to manage conflict, there remains a gap in understanding the magnitude of firms' financial costs, their distribution across functions, and the potential for proactive engagement to reduce such impacts. This paper examines 28 cases of Indigenous rights-related conflicts for mining firms in Peru between 1996 and 2025, drawing on over 920 publicly available documents. Building on the cost typology developed by Franks et al. (2014), we systematically code financial costs by magnitude and business function, such as lost productivity (operations), personnel (human resources), and proactive investment (external affairs). Across cases, lost productivity emerged as the most frequent and expensive cost, followed by redress and capital losses, with total conflict-related costs exceeding \$31.9B. We find that higher proactive engagement spending was associated with fewer and less severe disruptions, although managing conflict remains difficult because costs span multiple business functions. The findings contribute to the literature on mining conflict, social risk, and political risk by showing how localized conflict can trigger cross-functional cost cascades. They also suggest that firms, investors, and regulators should treat Indigenous rights-related conflicts as enterprise-level risks that require earlier engagement and cross-functional strategic planning.

1. Introduction

Mining projects reshape landscapes, disrupt communities, and alter local economies (Bruijn et al., 2024; Scheidel et al., 2023). The negative externalities of mining projects are often exacerbated in sensitive socio-political contexts, particularly in Indigenous communities (Birss and Sirén Gualinga, 2022; Henisz and McGlinch, 2019; Temper et al., 2018) and as a result, often generate social conflict (Jamison et al., 2025; Kemp et al., 2011; Zandvliet and Anderson, 2009). When firms fail to secure credible consent, address environmental concerns, or sustain meaningful engagement with affected communities, conflict can impose severe costs not only on the natural and social environments but also on investing firms and their shareholders. These costs include production delays, suspended projects, legal and regulatory expenses, security costs, redress payments, reputational harm, capital losses, and foregone investment opportunities. Yet because these costs are often recorded across different corporate functions and are rarely reported as “conflict costs,” managers and investors may underestimate their scale and strategic significance.

Existing research has established that company-community conflict can translate environmental and social risks into business costs. Franks

et al. (2014) developed a taxonomy of the costs of conflict highlighting the relative frequency of different types of costs (e.g., lost productivity, capital, personnel, reputation, and redress). However, because their cost estimates relied on confidential company data or non-disclosure agreements, their methodology offered limited transparency and prevented readers from linking conflict events and costs to specific firms or projects. Consequently, investors, managers, and policymakers have limited visibility into how conflict-related risks materialize in practice and how costly they can become both across and within projects over time. Further, prior management literature has discussed potential costs that firms may face from conflict (Herz et al., 2007; International Alert & Engineers Against Poverty, 2006; Reed, 2002), but case studies suggest firms often do not reveal or aggregate these costs, making them difficult to measure (Birss and Sirén Gualinga, 2022; Rees et al., 2012). The environmental justice literature has documented the grievances that Indigenous people raise regarding mining projects (Scheidel et al., 2023; Temper et al., 2018), but this work is largely societal, rather than firm- or investor-focused, and does not quantify the costs firms face. Our study addresses these gaps by relying exclusively on publicly available sources, enabling a transparent and reproducible assessment of conflict-related costs across and within projects over time.

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We analyze 28 cases of mining projects involving Indigenous communities across Peru¹ between 1996 and 2025, drawing on more than 920 publicly available documents, including company reports, government documents, NGO publications, and national and international media sources. Each case was coded using the cost typology developed by Franks et al. (2014), to which we added a proactive engagement category that captures stakeholder-related costs incurred on a voluntary basis before conflict occurs. Further, while Franks et al. (2014) described the types and frequencies of costs experienced by firms, our study quantifies the dollar value and distribution of those costs across functions, providing one of the first systematic estimates of the financial magnitude of mining-related conflict involving Indigenous communities. This matters because investors, managers, and policymakers make decisions not only on how often conflicts occur but also on how costly they can become, especially as society seeks to move forward on the green energy transition that depends on these metals.

In this context, we address the following research questions: What is the magnitude of the financial costs incurred by firms from Indigenous rights-related conflict? How do these costs manifest across projects and, within a project, across business functions over time? How is proactive stakeholder engagement associated with subsequent conflict-related costs across projects and functions? By shedding light on the financial implications of these conflicts and on proactive engagement strategies, we highlight the need for firms to meaningfully engage with Indigenous communities and other local stakeholders to mitigate the adverse effects of conflict and its subsequent financial consequences. We therefore treat proactive engagement not as a separate topic from the costs of conflict, but as part of the same financial mechanism: if conflict imposes reactive costs, then early and credible engagement can be understood as a potential *ex ante* investment in reducing the probability, severity, or duration of those later costs.

Although Peru is our empirical setting, the mechanisms we study are not unique to it. Across the world, Indigenous peoples and local communities are increasingly affected by mining tied to critical minerals and the energy transition – from cobalt in the Democratic Republic of Congo, to nickel in Indonesia and the Philippines, to lithium and copper in Chile and Bolivia. Production disruptions, project delays, community opposition, and investments in proactive engagement are common challenges for extractive firms operating across these diverse institutional settings. By documenting how Indigenous rights-related conflict translates into measurable financial consequences, this study speaks to broader debates on social risk, stakeholder engagement, and governance of extractive industries globally.

Our study makes three key contributions. First, we provide transparent, project-level estimates of the financial costs associated with mining-related conflict involving Indigenous communities and show that these can be substantive in size (i.e., \$31.9 billion across 28 projects in our sample). Second, we show that the distribution of these costs is highly skewed, with a small number of prolonged conflicts accounting for cost cascades across functions and most of the financial losses. Third, we introduce and operationalize a new and strategically relevant cost omitted from Franks et al. (2014) – namely, we add a proactive engagement cost category. We find a negative association between higher proactive engagement spending and subsequent reactive conflict-related costs. Together, these contributions speak to the costs-of-conflict literature, stakeholder and social license research, and political risk scholarship by showing how localized conflict can become

a cross-functional enterprise risk.

2. Mining, Indigenous communities, and conflict

Conflict is defined as a state of tension between parties with different aspirations or interests, which they perceive as being incompatible, and as a result, take actions that damage the other's ability to pursue their interests, ranging from minor disagreements to a complete relationship breakdown or violence (Kemp et al., 2011; Rees et al., 2012). Costs are defined as the negative impacts of conflict on a company's tangible assets (e.g., destruction of property, production delays) and intangible assets (e.g., reputation, loss of value) (Herz et al., 2007; International Alert & Engineers Against Poverty, 2006). Proactive engagement costs are specifically defined as expenditures firms incur when engaging local communities prior to any conflict, such as through consultation activities and social investments in healthcare and education. The conceptual foundation for proactive engagement, or front-end loading, can be traced to Morris' early empirical work (Morris, 1997; Morris and Hough, 1993), which established that project outcomes are largely determined during the shaping and definition phases. Subsequent practice-oriented models, most prominently Merrow's FEL framework (IPA) and CII's Front-End Planning & PDRI tools, operationalized these insights into structured, stage-gated methods aimed at proactively identifying and resolving issues before execution (Merrow, 2011).

In recent decades, there have been growing concerns around Indigenous peoples and their rights (Anaya, 2013; Fontana and Grugel, 2016; Salmon, Chavez R., & Murphy, 2023; Scheidel et al., 2023), especially in relation to the impact of multinational investment on their communities (Birss and Sirén Gualinga, 2022; Jamison et al., 2025). Existing evidence suggests that Indigenous peoples frequently respond negatively to foreign direct investments that are near their lands due to negative externalities that these projects can create, such as environmental damages (Perez-Rincon et al., 2019), threats to cultural heritage (Ballard and Banks, 2003), and human rights violations (Whiteman and Cooper, 2016). Indigenous peoples may also react to the unfair distribution of benefits (Murphy and Vives, 2013; Whiteman, 2009) and a lack of incorporation of Indigenous peoples in decision-making (Banerjee, 2018).

It is not surprising, then, that when extractive projects take place on or near Indigenous lands, they often generate significant conflict, as Indigenous peoples and their lands are frequently co-located with precious metals (Szablowski, 2002) and the visible impacts of mining are often severe (Bruijn et al., 2024). A 2022 study of 5097 energy transition minerals and metals (ETMs) projects found that 54% of these projects are located on or near Indigenous land (Owen et al., 2022). For Lithium (85%) and Manganese (75%), the percentages are even higher. In addition to collocation, the marginalization of Indigenous peoples by their national governments, who operate in partnership with multinational corporations (Collier and Hoeffler, 2004), creates power asymmetries that enable multinational firms to neglect or minimize Indigenous concerns, exacerbating conflict. A study of over 3000 environmental conflicts on Indigenous land found that around 75% of these conflicts were caused by extractive and land-intensive industries (Scheidel et al., 2023). While there has been a rise in policies aimed at improving company-community relations, such as Free, Prior, and Informed Consent (FPIC) and various Human Rights frameworks (Fontana and Grugel, 2016; Murphy and Vives, 2013; Owen and Kemp, 2014), global mining companies continue to (intentionally or not) cause conflict and/or exacerbate existing tensions within Indigenous communities (Kemp et al., 2011), such as by forcing resettlement (Terminski, 2012), contributing to social dislocation (Filer, 1990), destroying sacred sites (Kung et al., 2022), and degrading the environment (Hilson, 2002). Indigenous communities often respond negatively to these projects, such as through protests, demonstrations, and blockades (Conde, 2017), and at an extreme, these conflicts may result in injuries, deaths, and assassinations (Birss and Sirén Gualinga, 2022;

¹ Detailed case descriptions and supporting documentation for cases discussed in-text are available in an anonymous, read-only repository hosted on the Center for Open Science (OSF) available at https://osf.io/vn67h/overview?view_only=3be6a51c88c2483eae578c7a65604027. Cases include: Las Bambas, Rio Blanco, Orcopampa, Uchucchacua, Tambo Grande, Canariaco Norte, Condestable, Haquira, Pucamarca, La Granja, Pierina, Arasi, Iscaycruz, and Corihuarmi.

Henisz and McGlinch, 2019). Further, these localized conflicts can expand beyond national and regional borders.

The financial consequences of these conflicts are evident across numerous mining projects in Peru. Disruptions can lead to project delays and legal expenses (Herz et al., 2007; Reed, 2002), and violent conflict in particular can impose heightened security expenses, increased insurance premiums, and damage to property (International Alert & Engineers Against Poverty, 2006). Further, community opposition can also induce the government to reverse permits, impose fines, or require community assistance (Herz et al., 2007) and firms may face reputational harm and stock devaluation if knowledge of the conflict becomes widespread (e.g., if it is picked up by international media or involves transnational advocacy networks).

As mineral and metal extraction is projected to increase in the coming decades (Lèbre et al., 2020), especially in the context of the clean energy transition (Owen et al., 2022), instances of conflict between Indigenous peoples and multinational mining companies are likely to intensify, and so too will their financial consequences for firms. Further, while there are examples of positive company-community relations, these often involve sustained proactive engagement and still carry financial implications for the firm.

3. Data and methodology

We analyzed case studies of company-community conflict around mining operations involving Indigenous communities in Peru ($n = 28$) to develop an understanding of the types and extent of the costs of conflict, as well as the issues in dispute, manifestations of conflict, and project characteristics. The cases span time periods from 1996 to 2025; however, the majority of case timelines began in the mid-to-late 2000s (19 of 28 cases). We adopt a comparative case-study design because conflict costs are heterogeneous, cumulative, and often only partially observable. A single conflict can unfold over many years, involve multiple actors, and generate costs through different channels over time. A case study approach allows us to trace these sequences from initial grievance or engagement through protest, disruption, negotiation, regulatory response, redress and the financial consequences, as reported in the public record, for each stage.

Rather than beginning with highly publicized conflicts alone, we began with a population of mining sites in Peru, identified those located on or near Indigenous land claims, and then searched for publicly available evidence of firm-community interaction, whether conflictual or collaborative. We included cases only when there was sufficient public evidence to establish a meaningful relationship between the mining project and Indigenous communities and to code cost-related outcomes. The resulting sample should therefore be interpreted as mines with observable, documentable Indigenous-firm interaction, not as the full population of mines on or near Indigenous land.

We rely on publicly available sources (media coverage, government records, company disclosures, NGO reports) because many of the company-Indigenous conflict costs are not internal accounting entries, but public, relational, legal, and reputational costs that surface through protest activity, litigation, investor communications, and public statements by communities. Public sources therefore provide a systematic way to observe how conflict becomes visible and costly to a firm's external stakeholders, rather than relying on an inferential chain from private accounts to those effects. This design sacrifices some of the internal granularity available through confidential interviews, but it offers greater transparency, replicability, and relevance for investors, regulators, and civil society actors who must assess social risk using externally available information.

This approach complements, rather than replicates, Franks et al.'s (2014) design, which combined analysis of publicly available information on 50 cases with 45 confidential interviews, showing that company-community conflict creates costs through delays, legal expenses, and lost opportunities, among other costs. Their study

demonstrates the value of both practitioner knowledge and public case evidence for identifying cost patterns. Our design builds on the public-evidence side, trading the internal detail that confidential interviews can provide for greater transparency, replicability, and cross-case comparability. Using public sources is also consistent with established research in social movement and political risk research (Dorobantu et al., 2017; McDonnell and King, 2013), where news data are routinely used to code contentious events.

We focus on Peru for three reasons that make it a strong setting for studying conflict between mining companies and Indigenous communities. First, Peru is a major center of mining – it is the world's second largest producer of zinc, third largest producer of copper, silver, and mercury, and fourth largest producer of lead and tin (Garcia, 2025). Overall, mineral exports represent 63.9% of the country's total exports, and the mining sector makes up 8.5% of the country's GDP. Second, Peru also has a large Indigenous community – just over 25% of Peruvians identified themselves as being members of an Indigenous group (INEI, 2018), and over 65% of all land in Peru is under some sort of Indigenous control, whether formally recognized or unacknowledged by the government (LandMark, 2024a). Third, while Peru has voted in favor of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) as well as ratified the International Labour Organization's (ILO) Convention 169, which further protects the rights of Indigenous peoples (Alden Wily et al., 2018), the country has seen a surge in social mobilization and conflict in the mining industry, especially involving Indigenous communities (Herz et al., 2007; Owen et al., 2022; Rees et al., 2012). Taken together, these reasons make Peru a good context to study conflict related to mining companies and Indigenous communities.

Further, these patterns of conflict are not only shaped by local grievances, but also by national politics. In the early 1990s, the Peruvian national government privatized and liberalized the mining industry to facilitate foreign investment. As a result, there was a heavy influx of investment; between 1993 and 2003 alone, foreign mining companies invested \$6.7B in mines across the country (Herz et al., 2007). With this, however, the national government was not able to balance increasing foreign investment with mitigating negative externalities – for example, the government offered mining companies agreements that precluded the government from strengthening environmental requirements at their mine sites for 10–15 years if they invested (Herz et al., 2007). Beyond the mining sector specifically, in recent years Peru has experienced persistent political instability, including the impeachment or resignation of six presidents since 2018 (Aquino, 2022). Widespread anti-government protests following the ousting of President Pedro Castillo in 2022 further deepened public distrust in state institutions (Muñoz Acebes, 2023). These broader political issues can amplify local mining conflicts, namely intensifying community resistance against government actors. While our analysis focuses on firm and project-level dynamics, we acknowledge that part of the potential costs borne by companies could be influenced by these broader national conditions; nonetheless, firms still bear the financial costs resulting from conflict at the local level.

Peru's profile as a major mineral producer with a large Indigenous population and active mining conflicts, is not unique among mineral-exporting countries. For example, Bolivia's Indigenous population is an estimated 48% of its total population (Mamo, 2024) and sits within the Andean “lithium triangle” alongside Chile. Chile, with an estimated 13% Indigenous population, produces roughly 24% of the world's copper and 27% of the world's lithium (ITA, 2025; Mamo, 2024). The Philippines produces 9.5% of the world's nickel supply, and Indigenous people make up an estimated 10–20% of its population (Mamo, 2024; Moon, 2024). These are only a few examples of countries that have both a sizable Indigenous population and significant portion of global mining activity to which our findings could be expected to generalize. By contrast, other major mineral producers differ from Peru in ways that may limit how directly our results generalize. The Democratic Republic

of Congo supplies over 70% of the world's cobalt, and Indonesia around 60% of the world's nickel, but the politicization of Indigenous grievances is much lower (Cobalt Institute, 2026; Mamo, 2024; Manubag, 2026).

We drew our sample of Peruvian metallic mining sites (e.g., copper, gold, silver) from S&P Global Market Intelligence (S&P Global, 2025). Initially, there were a total of 802 mining sites in Peru. We restricted our sample to the 238 mines with listed in-situ valuation estimates in the database, which are typically larger officially recognized mines. Artisanal and small-scale mining (ASM) in Peru is omitted from our sample, as it is unregulated and often informal, making the aggregation of cost details for these mines difficult (Sánchez-Ancochea and Wilson, 2024). Next, to focus only on mines located on or near Indigenous communities, we first mapped the locations of the mine sites onto the PRIO-GRID (Tollefsen et al., 2012). The PRIO-GRID is a spatial grid of the world, cut into 259,200 cells each accounting for 0.5 by 0.5 degrees of latitude or longitude, or approximately 50 km by 50 km boxes. We then constructed an indicator that tells us whether there is an Indigenous land claim within the cells using data from LandMark (2024b), though LandMark explains that their data likely under-counts the amount of land belonging to Indigenous peoples. If any part of a PRIO-GRID cell was marked by LandMark as having land held by Indigenous peoples, we scored that cell as a "1". After dropping all mine locations that were not located on Indigenous land (and/or within a 50 km radius of Indigenous land), this left us with a total of 69 mines located on Indigenous land to investigate.

After identifying this initial list of Peruvian mines located on Indigenous land claims, we then collected materials for each case through secondary sources, such as company documents (press releases, annual reports, sustainability reports, etc.), government documents, legal cases, digital and print media articles (both international and domestic), union websites, non-governmental organization websites and reports, and academic literature. As English language sources may underreport instances of conflict, we also searched in Spanish and on local Peruvian media websites. Further, whereas prior research has also relied on anonymous interviews from mining companies (Franks et al., 2014), our exclusive use of publicly available information allows for more transparency in our research process and results, and allows us to clearly and publicly tie costs of conflict to specific firms. In the end, our search yielded a total of 920 documents. Through this process, we tracked whether each case had adequate information, and if so, whether there was sufficient connection between the mine site and Indigenous communities (whether conflictual or collaborative). We dropped mines where publicly available information was insufficient to determine whether there was meaningful interaction with Indigenous communities or to code costs as well as mines where the available evidence did not indicate a sufficiently direct connection to Indigenous communities for the purposes of this study (e.g., conflict related to pay rises for contracted workers who were not explicitly Indigenous). Importantly, exclusion from our final sample should not be interpreted as evidence that no Indigenous-firm interaction or conflict occurred, it may instead reflect limited public visibility. This left us a final total of 28 cases. A map of these mines can be found in Appendix A and basic case details in Appendix B.

Our team of research assistants then manually coded each of the case documents according to the cost typology presented by Franks et al. (2014) (Table 1), as well as transcribed key case details related to the issues of dispute (Appendix C), manifestations of conflict (Appendix D), and project characteristics, such as the operating phase, company information, and location of project. In addition to the original cost categories outlined by Franks et al. (2014), we also introduce a new category: proactive engagement costs. This captures expenditures firms incur when engaging communities *prior* to conflict, such as social investments (as opposed to 'redress', which captures social investments following conflict). We believe differentiating proactive investments from redress is important as firms with positive relations may face less conflict and lower costs down the line. Case details, especially those

Table 1
Typology of costs.

Cost Category	Examples
Security	Payments to state forces or company security contractors Increased operational costs of security: fences, patrols, escorts, transport, alarm/leak monitoring systems, reduced mobility Increased security training and management: staff time, lost production, cost of programs
Project modification	Design modification costs: application, redesign, legal, additional works
Risk management	Insurance: higher premiums and coverage, risk rating, withdrawal of coverage Legal and conflict expertise: specialist training for staff; additional staff
Material damage	Damage or destruction to private property or infrastructure Damage or destruction to public property or infrastructure
Lost productivity	Operations discontinued: voluntary closure or enforced through injunction Temporary shutdown of operations Lost opportunity for future expansion and/or for new projects Disruption to production: delays, temporary or indefinite, absenteeism Delays in deliveries/supplies Greater regulatory burden/scrutiny
Capital	Loss of value of property: full write-off, other depreciation, sale at a loss, theft Inability to repay debt or default on debt Difficulty raising new capital Share price instability/loss in value (within relevant time period)
Personnel	Staff time spent on risk and conflict management Costs of remediation: mediators, meetings, negotiations Hostage-taking: ransom payments, rescue operations, compensation Arrests of staff Injuries to staff and deaths Low morale and stress-related effects Retention: higher salaries, compensation packages, bonuses Recruitment: advertising positions, screening, interviewing, induction training
Reputation	Higher expenditure on public relations: consultants, dissemination of information Competitive loss/disadvantage: impact on brand, investor confidence
Redress	Compensation (out of court payments) Fines Increased social and environmental obligations: health care, education and training, provision of other services, clean-up and remediation costs Costs of administrative proceedings or litigation: costs of proceedings themselves; judgment/settlement costs

Source: Franks et al. (2014).

pertaining to costs, were triangulated, where possible, to improve accuracy (e.g., we made sure to cross-check productivity delay estimates both across a company's annual reports, as well as what was reported in the media). A detailed description of the procedures used to construct and standardize cost estimates, including rules for currency conversion, estimation, and handling of multiple sources, is provided in Appendix E and a more detailed description of the coder training procedures can be found in Appendix F.

However, there are several instances where numbers provided by companies, the government, and the media may not be consistent. As a result, we emphasize that the costs we identify are to be interpreted as estimates, and not exact quantities. In cases where there were significant differences in numbers (e.g., Las Bambas had varying number of days delayed estimates), we provide a range of estimated costs and explain how this range came about. Nevertheless, our final cost numbers are likely underestimates of the total tangible and intangible costs that a given firm may face. Prior research has shown that companies can intentionally omit conflict-related information from reports and underplay the impact of conflict (Birss and Sirén Gualinga, 2022), and even in cases where information is provided, it is often not clearly labeled or

aggregated in a way that highlights it is conflict-related (Rees et al., 2012). For example, Birss and Sirén Gualinga (2022) note that from 2007 to 2015 Occidental Petroleum was fighting a lawsuit against Achuar communities from northern Peru from claimed environmental and health impacts, however their 10-K filings during this time showed no mention of the suit nor any Indigenous rights opposition. Further, our sample reflects selection on visibility, capturing cases where conflict or proactive engagement generated sufficient public documentation to be observable, rather than the full universe of mining projects.

4. Results

Across our sample of 28 mining projects, we identify a total of \$31.9B in conflict-related costs. Consistent with our expectations, these costs are not evenly distributed but instead demonstrate a heavy-tailed distribution (see Appendix G for additional case-level distribution details). As shown in Fig. 1, a small number of extreme cases (notably, Rio Blanco, Las Bambas, El Faique, and Chalcobamba) account for a disproportionate share of the total costs across cases. Recognizing this highly skewed distribution is important as people tend to assume a normal or uniform distribution (Okamoto et al., 2023; Spagat et al., 2020), which may contribute to a bias in forecasting. As such, while the average risk or cost may appear small because most cases have lower values than the extreme cases, a single poorly managed dispute can still drive costs sharply upward.

The distribution of costs across Franks et al.'s typology is also consistent with a heavy-tailed distribution. This implies that, as with the case-level distribution, a small number of cost categories account for the vast majority of total losses. Indeed, the majority of these costs stem from lost productivity (93.65%), followed by redress (3.13%), and capital losses (2.57%) (see Fig. 2 for heavy-tailed distribution graph and Appendix H for additional cost category-level distribution details). This distribution mirrors the findings of Franks et al. (2014), where lost productivity was also the most frequently cited cost by their interviewees. Note that across our cases, project modification, risk management, and reputation costs were either not identified or not able to be quantified based on the information available. Across our cases, conflict over the lifetime of a given mine can yield an average of \$1.1B in costs with a standard deviation of \$4.0B (and a median of \$37.4M),² equivalent to 10.53% of the mine's in-situ value, 42.59% of the firm's market capitalization, and 285% of its average annual capital expenditure. Notably, most of these costs occur at the pre-feasibility and feasibility ($n = 9$) or operations ($n = 8$) stages (see Fig. 3). We further analyzed the distribution of directly observed expenditures (\$1.2B), accounting losses (\$163.2M), estimated production losses (\$6.3B), and opportunity costs (\$24.2B), available in Appendix I. For a full case-by-case breakdown, see Appendix J.

4.1. Lost productivity as the most common financial consequence

Among all cost types, lost productivity stands out as the most frequent and costly consequence of conflict. Mines faced extended operational delays due to road blockades, land disputes, labor strikes, and protests, often leading to injuries or deaths. In several cases, these interruptions spanned multiple years and directly undermined the viability of projects, sometimes forcing closure of mines.

The most striking example of this is MMG's Las Bambas copper mine,

² Consistent with the heavy-tailed distribution, the omission of the largest one or two cases changes these summary statistics substantially without altering the conclusions we draw from the body of cases. Specifically, omitting the costliest case changes the mean losses to \$390.9M with a standard deviation of \$1.0B (and median of \$35.8M). Omitting the largest two cases changes the mean to \$207.7M with a standard deviation of \$403.2M (and a median of \$33.6M).

where over 500 days of operational disruption have been recorded since 2016, resulting in an estimated \$4.5B in lost productivity costs, equivalent to 6.5% of the mine's in-situ value, 94.7% of the firm's market capitalization, and 771% of the firm's average annual capital expenditure. The conflict surrounding the Las Bambas mine arose primarily from uncommunicated modifications to the Environmental Impact Assessment (EIA), leaving local communities reportedly feeling misled. Community members raised concerns about inadequate compensation for the use of their roads, disturbances caused by transport activities, and the lack of a transparent dialogue between the company and the community. Available public records suggest that authorities at both local and national levels largely sided with the company, frequently declaring states of emergency to suppress protests and restrict residents' freedom of movement. In response, the community engaged in various forms of protest, including road blockades and strikes, which directly targeted the transport issues at the heart of the conflict. As a result, the mine has consistently operated below capacity, leading to financial losses and instability in its output. Of the 500 to 600 days in operational disruption, nearly 400 days were in 2019–2022 alone, with each year having an over 100-day disruption. The effects of these blockades are clear when looking at the production output (Fig. 4). Between 2019 and 2022, actual production values were below the projected range – and while each subsequent year's projected range was lowered by the firm, conflict still drove production well below predicted levels. MMG's actions also extended to its neighboring Chalcobamba project, where a nearly two-year delay in project construction yielded \$1.3B in operational opportunity costs. The conflict between the Chalcobamba site and the local Huanquire community centered on land ownership, environmental damages, and similarly the lack of transparency from the company. Case evidence suggests that, rather than addressing concerns through early consultation before construction, MMG engaged in limited negotiations and relied on police forces to suppress protests, further fueling tensions.

Further examples of lost productivity include Compañía de Minas Buenaventura's ('Minas Buenaventura') Orcopampa and Uchucchacua mines. The conflicts surrounding both mines unfolded over more than a decade, rooted in a complex system of labor disputes, social grievances, and environmental concerns – in total Orcopampa experienced 79 days of disruption from 2008 to 2019, costing the firm \$75.54M, and Uchucchacua experienced 136 days of disruption costing the firm \$97.7M. These production losses are illustrated by Figs. 5 and 6. Note that in 2018 and 2019 the company implemented a de-bottlenecking program and intentionally reduced capacity. However, the de-bottlenecking program alone cannot explain the sharp and continued decrease in productivity.

These cases demonstrate how prolonged disruptions, from road blockades to labor strikes to unresolved land disputes, translate directly into severe financial losses for firms. While each conflict had its own drivers, a common thread across cases involving productivity losses was the breakdown in trust between firms and communities, often exacerbated by weak (or absent) consultation processes, perceived injustices, and disproportionate security responses. The magnitude of productivity losses alone, upwards of \$29.9B across cases, underscores the need for more effective engagement and resolution strategies.

4.2. The cost of social movement pressures

In several cases, community resistance manifested not just as small-scale protests but as organized social movements capable of halting or significantly delaying mine development. For example, Tambo Grande is one of Peru's earliest and most influential mining conflicts. Manhattan Minerals' ('MMC') proposed mine would have displaced nearly half of Tambogrande's 16,000 residents and altered the region's agricultural economy. Beyond this threat, the project was characterized, according to multiple reports, by a lack of transparency and accountability, particularly in environmental assessments. Despite extensive drilling between 1999 and 2001, the company released only one preliminary

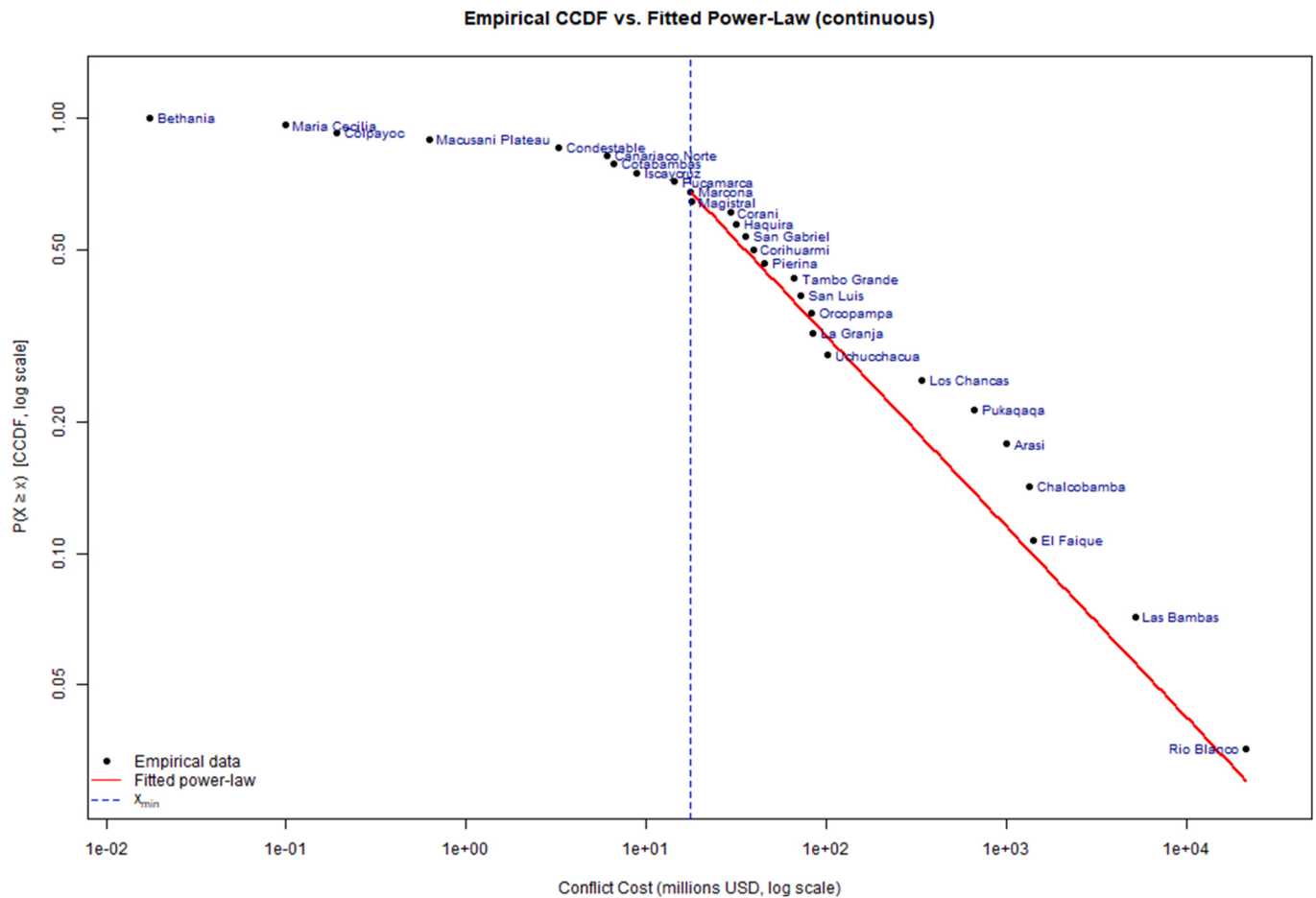


Fig. 1. Heavy-tailed distribution by case.

baseline study, which was criticized as incomplete and misleading. The Ministry of Energy and Mines (MINEM) sided with the company, while local officials, who initially supported the project, later shifted their position under growing public pressure. Resistance efforts intensified in 2001 with the formation of the Defense Front, which played a critical role in mobilization, leading large-scale protests of up to 10,000 people, and securing support from domestic and international NGOs. Years of organized resistance culminated in a landmark public referendum in 2002, where 94% of voters rejected the mining project. After the referendum, MMC's shares on the Toronto Stock Exchange fell by 28%. The government and MINEM initially claimed that the referendum was neither valid nor permitted by law, and instead insisted that communities engage with MMC through an independent EIA. In the months that followed, the Defense Front organized marches, blockades around MINEM workshops, and strikes at public hearings.

Amid the deterioration of their reputation, MMC could not find a financial partner for its mine and, thus, in December 2003, the Peruvian Ministry of Mining ruled that MMC had failed to meet its contractual obligations, leading to the termination of its mining rights. After the government withdrew its approval, MMC's stock plunged a further 55%. MMC closed its offices in 2004 and fully withdrew from the project in 2005. The total costs incurred in the Tambo Grande mining project amounted to \$66.4M, the vast majority of which were capital expenditures, including a \$59M write-down after the government revoked its permit.

The Rio Blanco mine followed a similar trajectory. The conflict began in the early 2000s, when Monterrico Metals reportedly initiated exploration activities without obtaining proper authorization or the consent of local communities. Community members voiced concerns about

reduced water supply, destruction of the local ecosystem, and impact on local jobs and livelihoods. At the same time, Monterrico Metals was reported to have attempted to sow community division by creating so-called "development committees" in certain villages to recruit individuals willing to oppose the anti-mining community members. The company also created the Alliance for Development, which was officially meant to coordinate social development projects; however, in practice, it was described in some reports as used to pressure community leaders, weaken local organizations, and neutralize resistance. In the years that followed, there were several protests involving thousands of community members, often leading to clashes with the Peruvian National Police and special forces, kidnapping, torture, and death. Civil society organizations that supported Tambogrande, such as the Majaz Support Group and Red Muqui, played a pivotal role in coordinating advocacy, legal assistance, and media outreach during the Rio Blanco conflict. The case also drew significant international attention – in 2006, the Peru Support Group organized a public meeting at the UK's Houses of Parliament and demonstrators protested outside Monterrico Metals' headquarters in London. In 2007, the local governments of three affected districts held referenda, with the support of Oxfam, in which over 90% of voters rejected the proposed mine. The national government rejected these polls and accused the community leaders who organized them of terrorism. Amid mounting public outrage and unresolved tensions, the Peruvian government officially suspended the Rio Blanco project in 2009. Although production was initially scheduled to begin in 2011, as of 2025, the mine remains unconstructed. This 14-year delay in operations has resulted in an estimated \$21.2B in lost productivity (29% of market cap, 645% average annual capital expenditure), calculated using the projected operations and copper prices in that time

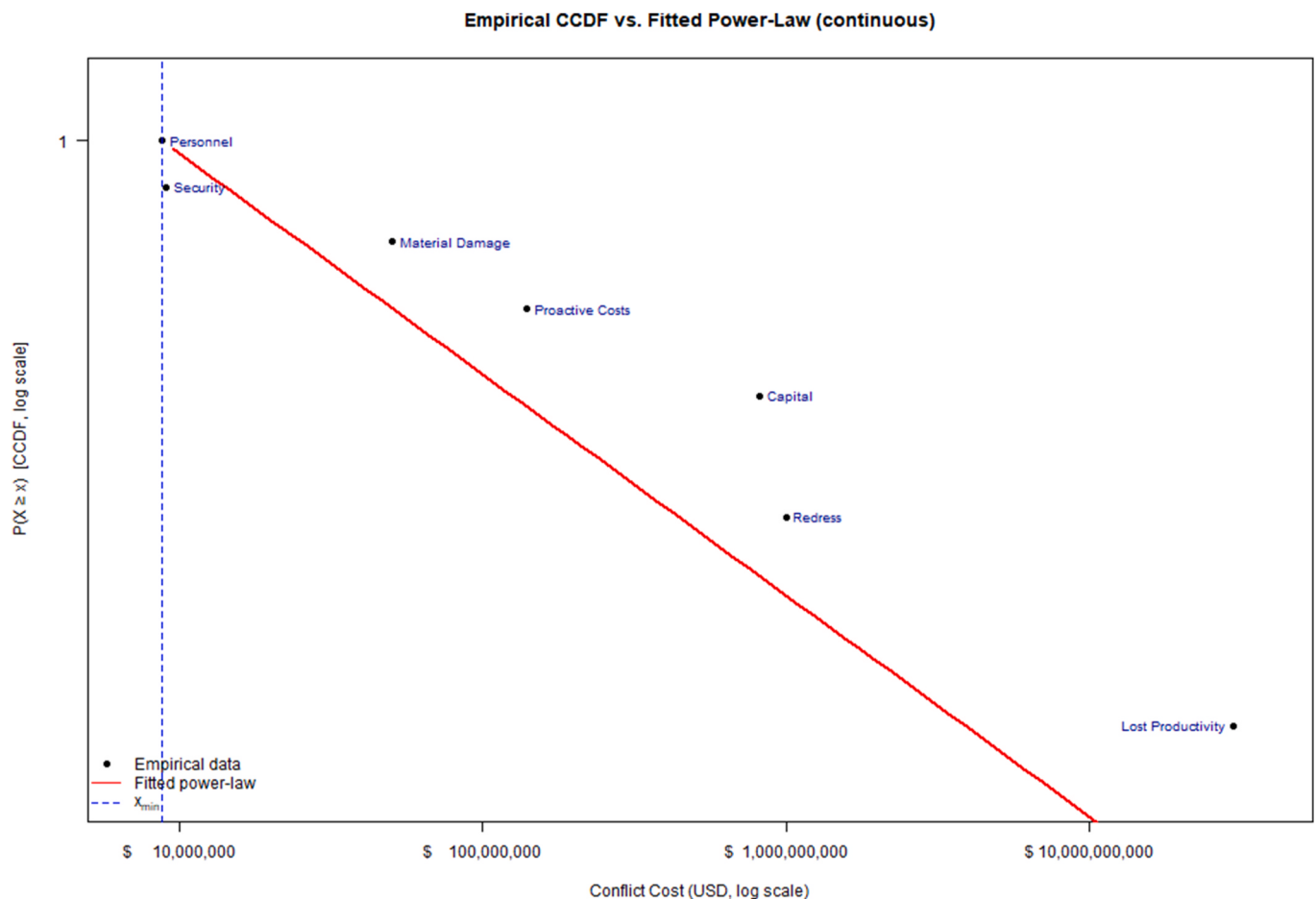


Fig. 2. Heavy-tailed distribution by cost category.

period. The remaining costs, \$160.5M, stem from redress, including development projects and regulatory fines for environmental violations.

Canariaco Norte further illustrates how early-stage opposition can derail project timelines. Like Tambo Grande and Rio Blanco, the project faced resistance at the outset over environmental concerns and lack of consultation. Tensions culminated in a 2012 referendum, in which 97% of residents voted against the project, but like the prior two cases, the Peruvian government dismissed the outcome. Continued protests through 2013 led to the temporary suspension of the project. In recent years, the firm has sought to rebuild relationships through a new community relations team and updated community development projects but is still waiting to secure a new community agreement as of 2025. To date Canariaco Norte has incurred around \$6.1M in conflict-related costs, primarily from redress, a relatively modest figure compared to Tambo Grande and Rio Blanco, but nonetheless a clear example of how referenda, even if legally non-binding, can express opposition that materially affects investment outcomes.

Together, these cases underscore the financial consequence of ignoring or underestimating organized social resistance. What began as local grievances evolved into coordinated movements that leveraged referenda, legal tools, and international advocacy to block or delay mining projects. Despite initial government support of the firm, including the use of national police forces to respond to protests, these movements proved to be resilient, leading to decade-long delays and missed production opportunities.

4.3. Proactive engagement: promising intentions, mixed outcomes

The preceding sections show how conflict generates reactive costs

through lost productivity, capital losses, redress, and social movement pressure. We next examine the other side of the cost equation: whether expenditures made before or early in conflict – through consultation, social investment, land access agreements, community relations teams, and information-sharing – are associated with lower subsequent reactive costs. This analysis is not intended to imply that spending alone prevents conflict. Rather, it asks whether proactive, credible, and sustained engagement appears to function as a form of social-risk mitigation.

Mining companies have increasingly adopted proactive engagement strategies to build trust and reduce the risk of community conflict (Fraser, 2021). These include early consultation, social investments, independent assessments, and adherence to international standards. However, the effectiveness of these strategies varies widely depending on how they are implemented.

The Condestable mine, operated by Southern Peaks Mining and Trafigura Group, has invested significantly in community engagement to build trust and manage potential social conflicts with the Mala community. Between 2010 and 2024, there was only one major instance of conflict – in 2013, residents and mine workers staged sit-ins at the mine's entrance in response to the company's failure to fulfill commitments made back in 2005. While the initial response to these protests was forceful (by engaging police officers to arrest protestors), in the years that followed, the company ramped up its social investment in the community. From 2010 to 2023, the company allocated a total of \$3.3M towards community investments. Their Community Relations Plan included initiatives in areas such as land acquisition, health, education, infrastructure, environmental sustainability, and socioeconomic benefits. Activities ranged from medical campaigns and disaster response to vocational training for local communities and public infrastructure

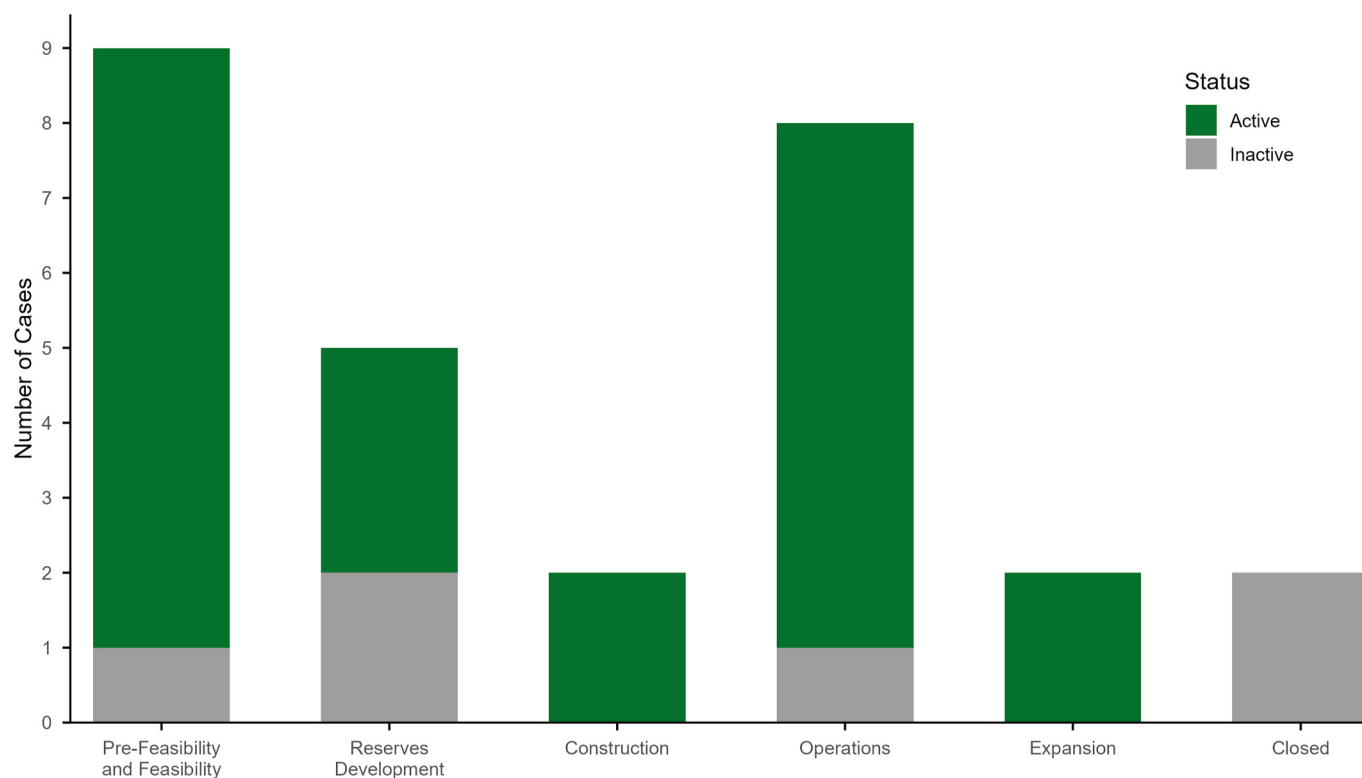


Fig. 3. Breakdown by mine activity.

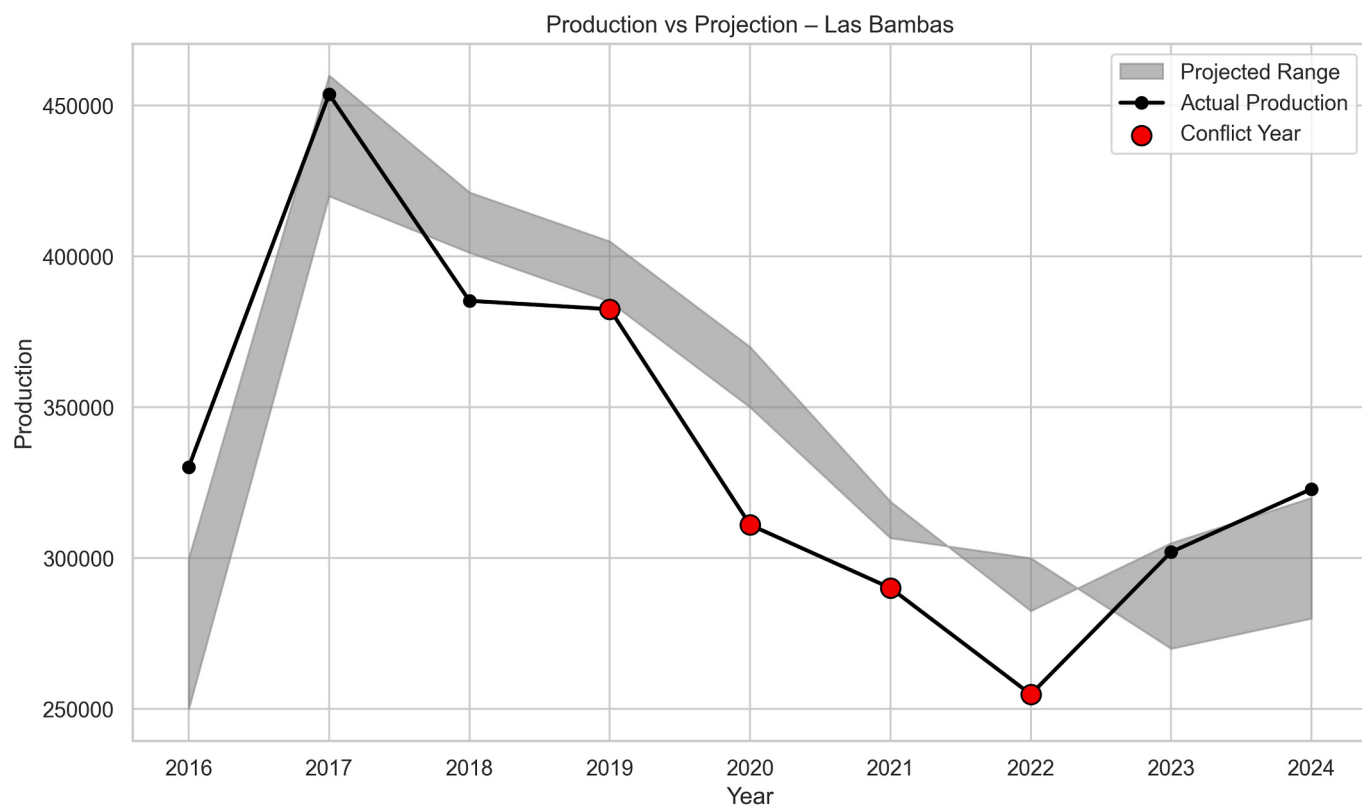


Fig. 4. Las Bambas forecast and production.

improvements. This strategic engagement appears to have effectively managed conflicts with local communities near the mine. In 2022, the company was awarded the Copper Mark Award and Blue Certificate for

its commitment to sustainability.

Haqira, currently in the pre-feasibility stage, offers an example of proactive engagement before conflict takes place. Owned by First

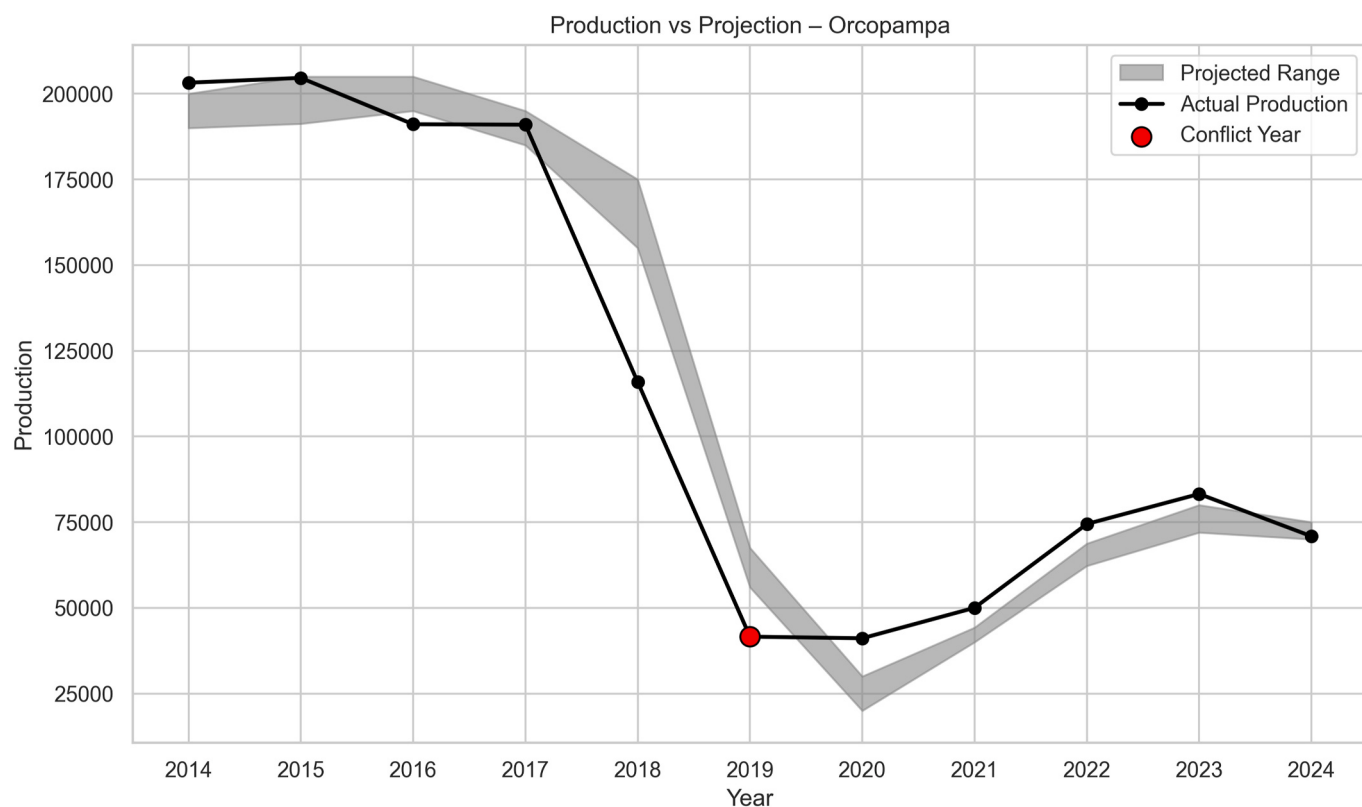


Fig. 5. Orcopampa forecast and production.

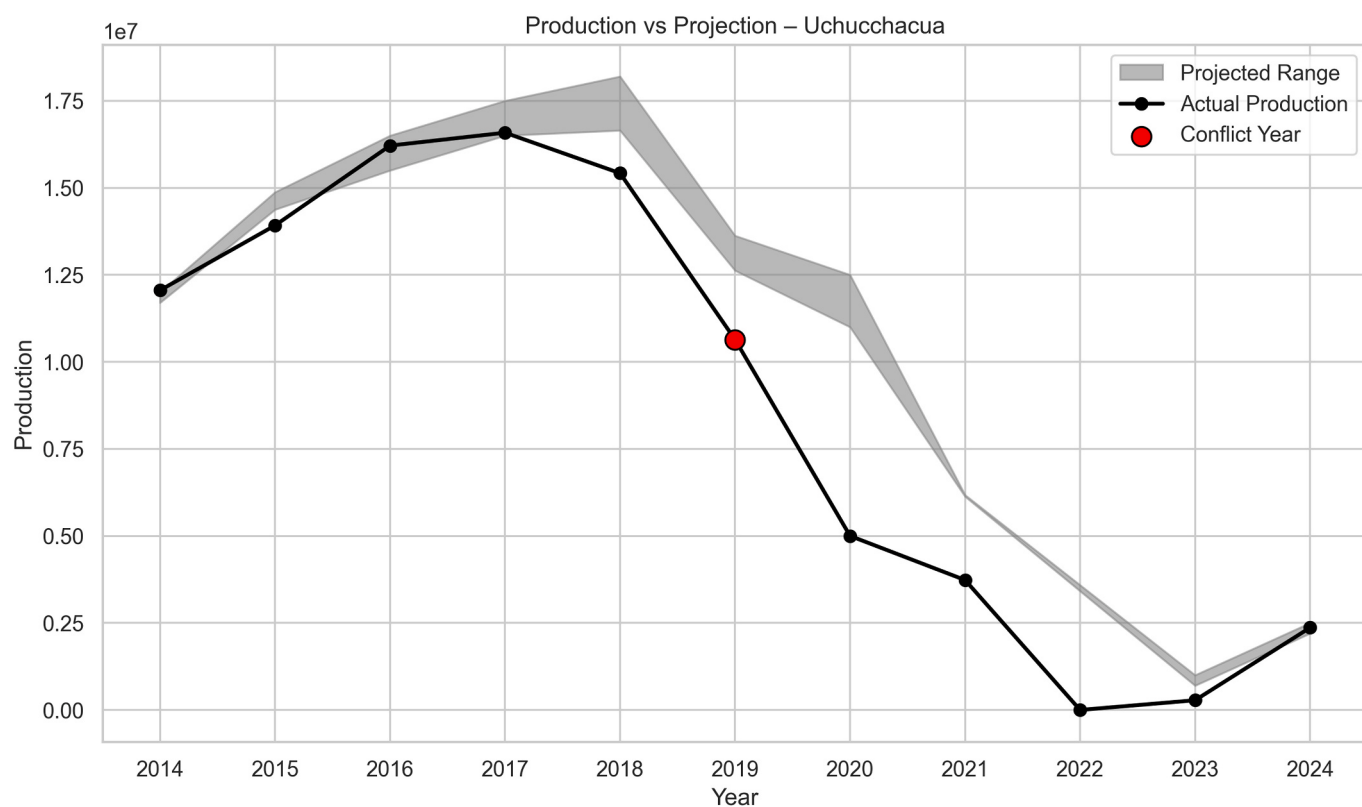


Fig. 6. Uchucchacua forecast and production.

Quantum Minerals, the project has yet to enter production, but its development has already been shaped by the nearby conflict at Las

Bambas (which for MMG generated billions in losses). While no major conflicts or grievances have been recorded so far at Haquira, the Las

Bambas conflict has delayed key resettlement discussions and environmental studies. Anticipating similar risks, the company has spent \$31.3M in proactive costs, dedicated to social programs, land access agreements, and a community relations team. Half of First Quantum Minerals' staff in Peru is focused on social issues, and Haquira has consistently maintained dialogue with local Indigenous communities. Haquira thus sits between success and uncertainty of proactive initiatives, suggesting the potential value of early engagement, but also the limits of firm-level efforts in a region where conflict and inter-mine dynamics continue to shape outcomes.

One case that highlights the importance of ongoing, adaptive engagement is Minsur's Pucamarca gold and silver mine. Initially accepted by local communities in 2001, the project later faced mounting resistance between 2006 and 2009 over concerns about water contamination in the Uchusuma Canal, which supplies water to Tacna's 300,000 residents. Conflict peaked in 2007 with a strike of more than 3000 participants, resulting in one police officer injured and five arrests. Farmers, unions, and water boards also voiced opposition in 2009. In response, Minsur revised its engagement strategy to improve transparency, expand communication channels, and conduct guided tours of the mine to address community fears. Tensions initially subsided but then resurfaced in 2010 when the Vilavilani-Charipujo community accused the company of failing to respect agreements, misusing communal roads, and mishandling labor relations. This escalated into a blockade of mine access, during which six community members were injured in clashes. The conflict was resolved through dialogue mediated by the prefecture, direct hiring of locals, and the creation of a Joint Committee with community representatives to oversee compliance, negotiate easements, and manage a Development Fund. In 2013, opposition surged again when Minsur prepared to start operations. Thousands marched, demanding a referendum and government review of the EIA. A local referendum in Ciudad Nueva saw nearly 20,000 residents participate, with over 98% voting against the project. While the results were non-binding, they underscored widespread distrust. In response, Minsur established Permanent Information Offices (PIOs) and expanded social investments in education, health, and agriculture. These sustained efforts coincided with more stable relations, and no major conflicts have been reported after 2013, with mining operations continuing uninterrupted. While Minsur has incurred total redress costs of \$14.2M since 2001, the company has adopted a long-term community engagement approach, underscoring that proactive engagement is not just about early intervention but about sustained relationships throughout a mine's lifecycle.

Rio Tinto's La Granja mine, in contrast, is consistent with some of the limitations of proactive engagement. The mine was originally owned by Cambior from 1993 to 1999, during which aggressive land acquisition tactics caused significant trauma among Indigenous communities. Biliton, the next owner (2000–2002), attempted to address these issues by reselling land to displaced families at below-market prices, but distrust toward mining companies persisted. When Rio Tinto, a member of the International Council on Mining and Metals (ICMM), acquired the mine in 2006, this legacy of conflict complicated its engagement with local stakeholders. Since its arrival, Rio Tinto has adopted a proactive approach to engaging local communities, including establishing the La Granja Social Fund, developing resettlement policies with external consultants, and engaging in dialogue with NGOs to address community concerns. Although its efforts were acknowledged and appreciated by local communities, land access negotiations between 2012 and 2014 still faced challenges due to historical trauma. In total, Rio Tinto spent \$57M on proactive community engagement initiatives, and while this seems like a substantial amount of money, it only accounted for 0.03% of the in-situ value of the mine, and 0.10% of Rio Tinto's market capitalization. Another source of tension arose from communities outside the core zone of influence identified by Rio Tinto. In 2008, “excluded” communities protested Rio Tinto's planned demonstration plant, citing environmental risks, particularly arsenic contamination, and a lack of transparent

communication. These protests forced Rio Tinto to suspend construction in 2008 and ultimately cancel the plant in 2009, a capital loss of \$25M.

Pierina, operated by Barrick Gold Corp. (also an ICMM member), offers another case where proactive social investments failed to prevent conflict. Although Barrick invested heavily in community programs, commissioned third-party environmental and human rights assessments, and engaged in dialogue initiatives, the mine faced persistent conflict. Throughout the mine's operation, water issues remained central, with communities increasingly frustrated over pollution and depletion. In 2005, the Uliyacu stream dried up completely, intensifying grievances. Although Barrick promised to provide clean drinking water, it failed to fulfill this commitment, leading to a major, violent protest in 2012. Labor concerns also played a significant role in the conflict, particularly between 2003 and 2007. Barrick employed residents through short-term subcontracting, creating instability and dissatisfaction due to stagnating wages and poor working conditions. In response, local communities formed a pan-community organization in 2005 to collectively demand better treatment. However, their initial efforts were largely ignored by the company. Frustration culminated in a coordinated strike in 2006, involving multiple villages around the mine. Another key issue was the company's use of police forces for security. Reports from NGOs highlighted that Barrick had formal agreements with the police for protection, raising concerns about excessive force and human rights violations. In the 2006 and 2012 protests, confrontations escalated into deadly violence, resulting in three deaths and dozens of injuries. Between 1996 and 2018, Barrick incurred a total of \$45.2M in costs, of which \$30M stemmed from redress, \$5.7M in lost productivity, and \$4M in security costs. While the Pierina case shows that proactive engagement can involve substantial financial commitments, it also illustrates that without credibility, even the most visible investments may fail to prevent conflict.

These cases suggest that proactive engagement, while often costly upfront, may be associated with greater long-term project stability. Mapping out our 28 cases, Fig. 7 illustrates an overall pattern in which mines that invested more heavily in proactive engagement (such as early consultation and social programs) tended to incur substantially lower reactive costs following conflict later in the project lifecycle.³ In other words, within our sample, higher early engagement spending was associated with lower later spending on conflict management and repairing relationships. This “front-end loading” pattern is consistent with the idea that proactive spending may be financially consequential and may operate as social-risk insurance rather than a discretionary expenditure. While Condestable and Haquira exemplify how early and credible community investment can help build trust, La Granja and Pierina show how well-funded engagement efforts can fail due to historical grievances and lack of acknowledgement of concerns. Together, these findings suggest that firms may be systematically underinvesting in proactive engagement, as firms that underspent on proactive measures tended to face far greater costs in lost productivity and redress following conflict. This finding provides important quantitative evidence, largely absent in prior research and unavailable from Franks et al. (2014), that proactive engagement is important in the mining sector. As such, what matters is not only how much firms invest, but how they

³ Fig. 7 plots proactive costs (log USD) against reactive costs (log USD), showing a consistent negative association in the sample. Fig. 7 includes all 28 mining cases. Seventeen cases (60.7%) had proactive costs of \$0 and four cases (14.3%) had reactive costs of \$0; to accommodate the logarithmic scale, \$1 was added to both proactive and reactive cost values before plotting. The negative association between proactive and reactive costs ($\rho = -0.70$, $p < .001$, $N = 28$) held consistently in direction and magnitude across subgroups defined by project size ($\rho = -0.75$ to -0.63), development stage ($\rho = -0.81$ to -0.63), and after excluding the largest-cost outliers ($\rho = -0.68$ to -0.69), indicating the pattern is not driven by a small number of influential cases or a specific subset of projects.

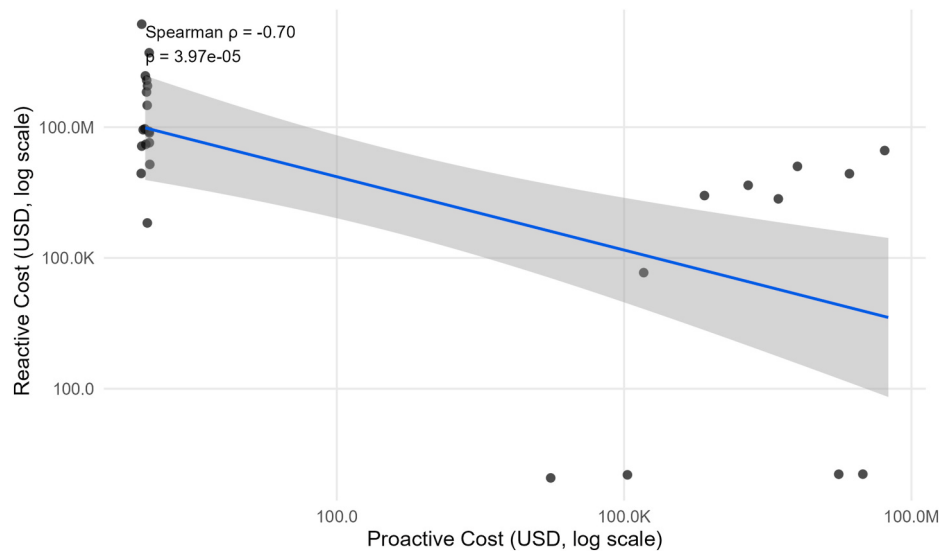


Fig. 7. Higher proactive engagement associated with lower reactive costs.

engage. See [Appendix K](#) for more details.

4.4. The cost of non-engagement

While some firms attempted to prevent conflict through early engagement or social investment, others demonstrated limited documented engagement. Available public evidence indicates that in several cases companies did not respond to community concerns, withheld information, and violated regulations – with responses often occurring only after external pressure from communities, regulators, or civil society organizations.

Arasi, operated by Aruntani S.A.C., is among the clearest cases in our sample characterized by prolonged regulatory non-compliance and limited documented engagement. For years, the company was reported to have discharged acidic effluents into the Llallimayo and Chacapalca rivers, contaminating vital water sources, harming human health, and disrupting local agricultural activities. Although affected communities repeatedly raised concerns about pollution and requested dialogue, available public evidence indicates Aruntani did not participate in sustained consultation processes or implement meaningful remediation measures. At the same time, Aruntani S.A.C. violated obligations under its EIA, breached national mining and environmental laws, and accumulated sanctions and fines from the Environmental Evaluation and Enforcement Agency (OEFA). The company's reported regulatory violations and limited response to documented community concerns contributed to growing public distrust and mobilized grassroots demands for accountability. In response to ongoing environmental violations and mounting pressure from communities, government authorities ordered the mine's closure in 2019 and formally required the company to take responsibility for environmental remediation. However, years after operations ceased, the environmental damage remains unresolved. Aruntani has shown little documented progress in fulfilling its post-closure responsibilities, exacerbating local frustrations and reinforcing local perceptions of corporate negligence and weak enforcement. Notably, no annual reports, press releases, or updates from the company were identified during the conflict period, potentially reflecting the firm's broader pattern of non-engagement and lack of transparency. In total, the Arasi case resulted in an estimated \$997.4M, with the overwhelming majority (98.9%) attributed to opportunity costs resulting from the mine's forced closure in 2019. The remaining \$10.9M included fines from OEFA and an environmental guarantee to fund remediation in the absence of corporate compliance.

Iscaycruz, a mine formerly owned by Glencore, is also marked by a

lack of proper communication and consultation with Indigenous communities. From the late 1990s through 2022, the company demonstrated limited documented engagement with communities, with reports indicating withholding of critical information or delaying discussions until legally mandated. Even when meetings occurred, they were typically unplanned, superficial, or structured in ways that, according to community accounts, were designed to exploit knowledge asymmetries. Instead of fostering informed decision-making, the company used its professional teams in negotiations that communities later reported as pressuring them into signing agreements without fully disclosing the implications. As communities gradually recognized the environmental and social consequences of Iscaycruz's operations, coupled with the company's opaque communication, they began voicing their grievances. A 26-day protest in 2010, sparked by an unauthorized pipeline, became a turning point, forcing the company to offer compensation. While a formal apology and new social programs followed, most of these initiatives were viewed by communities as symbolic, as many of the promised initiatives were either abandoned or implemented superficially. Iscaycruz incurred \$8.9M in costs, with the majority (93.4%) allocated to redress.

Conflicts at Minera IRL's Corihuarmi mine primarily revolved around natural resources, particularly pollution and access to water. Community members raised concerns about metal contamination in local water sources and soil, specifically in nearby lagoons, as well as the depletion of the water supply and a lack of proper consultation regarding land access. Tensions escalated following a significant environmental incident in 2020, when acidic water discharged from the mine's tailings affected the Chacote and La Virgen rivers. In the years that followed, protests and complaints intensified, with demands for the mine's closure becoming more frequent, particularly in 2022 and 2023. While protests and blockades occurred, residents also pursued procedural channels to voice their grievances. These included petitions, submissions to government agencies, and litigation efforts. Despite authorities intervening and, in some cases, confirming the environmental violations raised by local communities, enforcement actions remained limited. As a result, the affected communities received little institutional support, and meaningful remediation efforts were largely absent. The company's response ranged from limited engagement to actions that communities described as openly hostile, further straining relations with Indigenous communities. In 2022, Corihuarmi was accused in public records of threatening to kill community members who reported contamination. Although the company pledged to present a closure plan by the end of 2022 and initiate implementation in 2023, it instead continued

operations—and even expanded exploration—through 2023, 2024, showing no clear intent to follow through on its commitments. Between 2011 and 2023, Minera IRL accrued an estimated \$39.1M in costs, of which 88% were redress-related. Fig. 8 below also visualizes the impact of the local conflict on Corihuarmi's production.

Together, these cases demonstrate that perceptions of inaction or superficial engagement not only fail to prevent conflict but may also actively contribute to a firm's financial, operational, and reputational risk. Whether through regulatory non-compliance or broken promises, each firm incurred substantial costs that exceeded what might have been required through early, genuine community engagement. While Arasi, Iscaycruz, and Corihuarmi reflect different degrees of non-engagement, ranging from regulatory non-compliance to limited or delayed engagement, all resulted in similar outcomes – deepened community conflict and multimillion-dollar liabilities – emphasizing that minimal or delayed engagement is not cost-free.

4.5. Reframing costs through business function

Building on Franks et al.'s typology, we also classify costs by business function. This lens helps show why conflict can be difficult to manage: costs are often distributed across departments, budgets, and reporting systems, which can obscure their aggregate financial significance. We identify four primary business-function domains: operations, human resources/security, external affairs/legal, and capital. Fig. 9 shows the distribution of costs across these categories, while Appendix L provides a case-by-case breakdown.

Several cases in our sample illustrate these cross-functional challenges. At Las Bambas, MMG faced severe productivity losses (operations), increased social obligations (external affairs), and a dependence on private security and state police (human resources). Rio Blanco similarly suffered delays in production (operations), environmental fines and redress payments (external affairs), and security involvement (human resources). Such fragmentation of costs across departments can

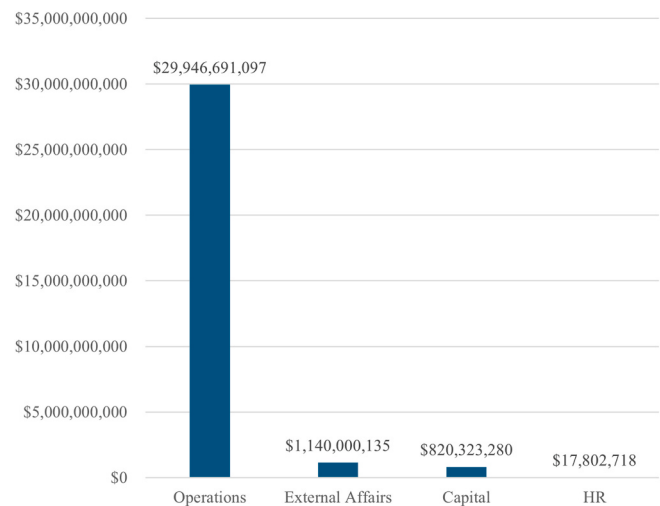


Fig. 9. Breakdown by business function.

make it difficult for companies to internalize the full scope of the costs of conflict. Because different business units bear different types of costs, no single manager may observe the total financial impact, which can obscure accountability and slow potential mitigation efforts. At a higher level, this fragmentation may also shape strategic decision-making at the executive level, namely, if the costs of conflict are distributed across functions with separate budgets and reporting structures, firms may systematically underestimate the total cost of conflict when making investment decisions.

This business function lens, in combination with Franks et al.'s typology, also helps identify costs that are routinely overlooked, particularly those related to human resources. While some firms disclose security contracts or social investments, few report the internal time

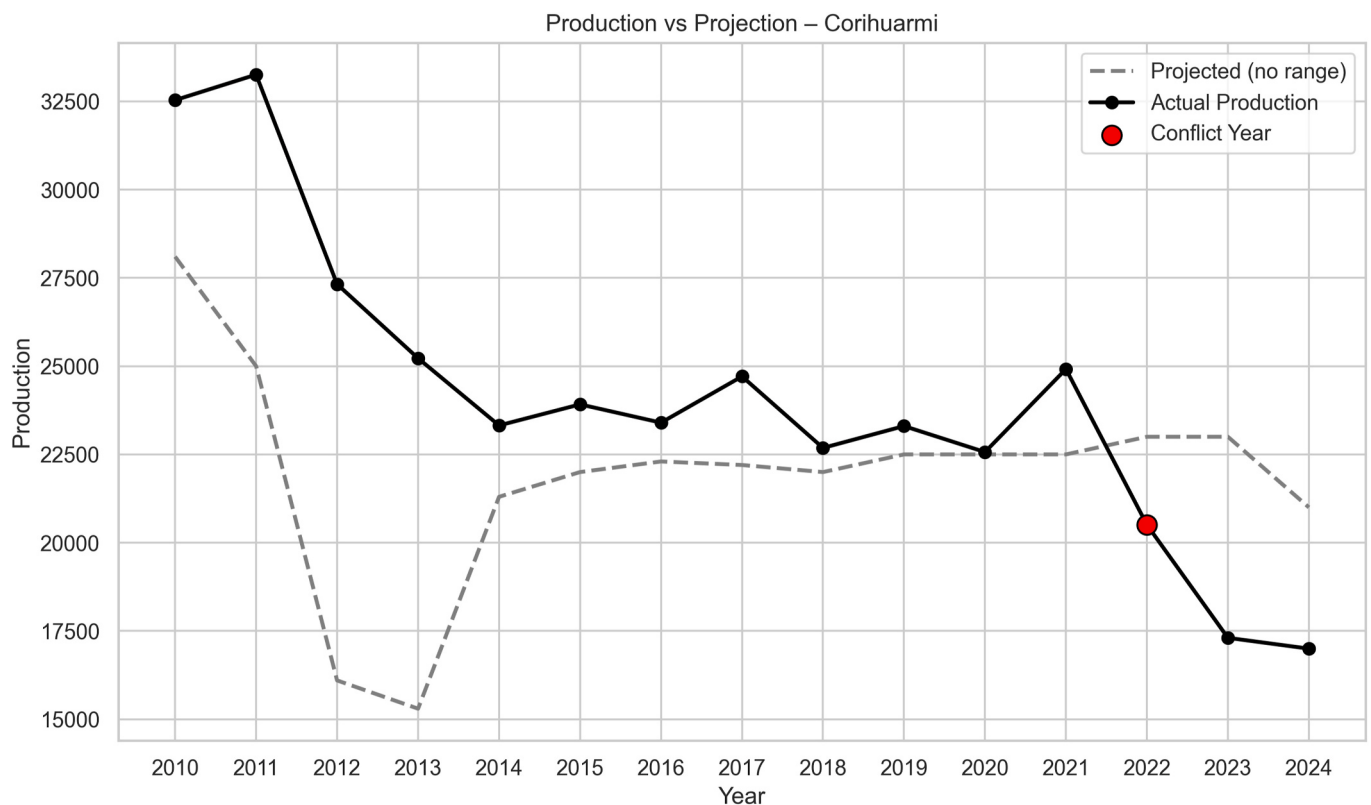


Fig. 8. Corihuarmi forecast and production.

managers or community relations staff spend managing conflict. Some cases mentioned the use of community relations teams but had no cost data (e.g., Magistral, Rio Blanco), while others had no mentions at all despite staff working on these issues (e.g., Las Bambas, Canariaco Norte). Yet these labor costs, often spread over months or years during conflict, can be substantial. Franks et al. (2014) likewise found that “staff time spent managing conflicts” was the most overlooked cost in their sample. Firms like Rio Tinto and First Quantum Minerals maintained dedicated community relations teams and spent years negotiating land access or rebuilding trust, yet these efforts are rarely ever quantified. Recognizing these overlooked costs is important for a more complete understanding of the costs of conflict. As these costs are rarely quantified or reported, they are unlikely to be incorporated into formal cost assessments or investment decisions, further contributing to the underestimation of the true cost of conflict.

5. Discussion and conclusion

5.1. Summary and contributions

As the global demand for critical minerals increases in the context of the energy transition, the cases presented in this study reinforce a critical and growing concern in the extractive sector: mining projects that do not fully incorporate Indigenous rights or fail to engage meaningfully with local communities frequently incur substantial, and often avoidable, financial and operational costs. While the extractive industry has long been associated with negative externalities such as environmental degradation and human rights abuses, particularly involving Indigenous communities, our analysis moves the conversation from general concern to substantive, financially material consequences for firms.

Our findings converge with prior research in three main ways. First, consistent with Franks et al. (2014), we find that conflict translates environmental and social risks into material financial costs for businesses, especially through delays, lost productivity, redress, and capital-related consequences. Second, consistent with Franks et al. (2014) and practitioner-oriented work on community consent and conflict-sensitive business practices, we find that conflict costs are not limited to direct damage or fines but also include staff time, security, legal responses, renegotiation, and lost opportunities. Third, consistent with research on social license to operate and stakeholder engagement, we find that weak consultation, unmet commitments, perceived environmental harm, and loss of trust are recurring antecedents of costly conflict.

Our findings also diverge from and extend prior work. Whereas Franks et al. (2014) identified cost categories and relative frequencies through confidential interviews and public case material, we provide transparent project-level cost estimates based on publicly available evidence. Whereas much of the environmental justice literature emphasizes harms to communities and ecosystems, we quantify the financial consequences for firms without minimizing those broader harms. Further, whereas prior work has generally examined company-community conflict in mining broadly, we focus specifically on Indigenous rights-related conflict, where grievances often concern land, consent, water, cultural impacts, and benefit-sharing. Finally, we show that conflict costs are not only diverse but also organizationally and temporally fragmented: they are recorded and managed across long periods of time and impact a wide range of functions (e.g., operations, HR/security, external affairs/legal, and capital functions), which can obscure the full financial consequences of conflict from decisionmakers at the moment where they can most effectively proactively engage with stakeholders.

The uneven distribution of these costs has important implications for how firms and investors understand conflict risk. In our sample, costs are not evenly distributed across cases or cost categories; rather, a small number of prolonged conflicts account for most total losses. This pattern is consistent with broader research showing that conflict intensity, social

disruption, and project losses often follow highly skewed rather than normal distributions (Teschner and Holley, 2021). Our contribution is to show that a similar pattern appears in publicly observable firm-level financial losses associated with Indigenous rights-related mining conflict. This matters for investment appraisal: if firms and investors rely on average expected costs, they may underestimate low-frequency but high-severity conflict scenarios. Social risk should therefore be treated less like a routine operating expense and more like a tail risk with enterprise-level implications.

Our findings also extend stakeholder engagement and social license research by quantifying the financial relevance of proactive engagement. Prior work emphasizes FPIC (Fontana and Grugel, 2016; Prno and Scott Slocombe, 2012), codes of conduct (Doh, 2005), community benefit agreements (Odziemkowska and Dorobantu, 2021), social performance measurement (Nenasheva, 2019), credible dialogue (Dorobantu et al., 2024), and co-ownership (Kung et al., 2022) as mechanisms for reducing conflict and improving project outcomes. Our evidence is consistent with this logic: firms that devoted greater resources to proactive engagement early in the mine lifecycle tended to incur lower reactive conflict costs later. At the same time, cases such as La Granja and Pierina show that spending alone is insufficient. Engagement appears most valuable when it is credible, sustained, and responsive to historical grievances and community concerns.

Beyond categorizing costs by type, including proactive engagement, our analysis introduces an additional lens for understanding how conflict can affect firms: the distribution of costs across business functions. This perspective highlights that the financial consequences of conflict are rarely confined to a single business function. Instead, they cut across operations, human resources, external affairs, and capital costs. This fragmentation helps explain why many firms struggle to internalize the full costs of conflict, as the impacts are dispersed across departments that often have distinct budgets, priorities, and accountability structures. This framing further highlights hidden costs, such as human resource costs, that are rarely disclosed or discussed but are pivotal to managing conflict. As a result, firms may underestimate the total cost of conflict and underinvest in preventive measures such as proactive engagement, even when such investments are associated with lower downstream costs in our data. Viewing conflict through this lens underscores the need for better internal communication within firms to help prevent and mitigate conflict and associated negative externalities.

The financial consequences of conflict often unfold as a domino effect rather than as isolated cost items. A dispute over land, water, consultation, or benefit-sharing may first appear as a community relations issue. If unresolved, it can trigger protests, blockades, litigation, or regulatory intervention. These events then result in operational losses due to delayed production or suspended construction. Operational losses can, in turn, require security responses, legal action, renegotiation, compensation, environmental remediation, or new social commitments. If the dispute attracts media, NGO, investor, or state attention, the conflict may further affect reputation, financing, share value, permitting, and ultimately project viability. Las Bambas, Tambo Grande, and Rio Blanco illustrate different pathways through this cascade, but the underlying mechanism is similar: localized grievances can cascade into mutually reinforcing losses.

This cost cascade also helps explain why firms may underestimate the total cost of conflict and underinvest in prevention. When losses are distributed across functions, they may not be visible as a single conflict-related cost. Operations may record production delays, security may absorb personnel or policing costs, external affairs may manage community relations and redress, legal may handle disputes and fines, and finance may register impairments, higher cost of capital, or lost project value. This fragmentation mirrors recent political risk research, which shows that politically salient risks often spill across business functions and create feedback loops that traditional, siloed risk management systems fail to capture (McCaffrey et al., 2024). The implication is that conflict with Indigenous communities should be governed as an

enterprise risk rather than delegated narrowly to community relations or sustainability teams. Firms need mechanisms to identify conflict signals, assess cross-functional impacts, coordinate responses, and integrate mitigation across operations, legal, finance, HR/security, and external affairs.

5.2. Implications for firms, investors, and policymakers

For firms, our findings suggest that Indigenous rights-related conflicts should be treated as enterprise risks rather than community relations problems. Firms should identify potential land, water, consultation, cultural heritage, and benefit-sharing concerns before major capital commitments are made; track conflict-related costs across functions; and include social-risk scenarios in project valuation, capital budgeting, and operational planning. Proactive engagement should not be limited to philanthropic spending or one-time consultation. It should include credible information-sharing, documented commitments, grievance mechanisms, community benefit agreements where appropriate, and sustained dialogue throughout the project lifecycle.

For investors, the findings suggest the need for more systematic project-level social-risk disclosure. Investors should ask firms to report not only community investment totals, but also unresolved grievances, operational disruptions, security incidents, regulatory sanctions, community agreements, and the governance processes used to escalate social risk to senior management. Because costs are highly skewed, investors should also assess downside scenarios rather than relying only on average expected costs.

For policymakers and regulators, the findings highlight the importance of credible consultation, transparent permitting, enforceable community agreements, and timely remediation of environmental harm. Weak enforcement can increase uncertainty for both communities and firms, allowing grievances to escalate until they become more costly for all parties. Regulators can reduce this risk by requiring clearer disclosure of consultation processes, social commitments, grievance outcomes, and conflict-related disruptions.

5.3. Limitations

Our findings come with several caveats. First, the analysis is limited by the quality and availability of public information on a sample of mining projects in one country. Many companies do not readily publish breakdowns of their conflict-related expenses, and media reports disproportionately capture high-profile incidents, and as a result, cases involving no conflict or low-intensity conflict had less data than cases involving high conflict. This stands in contrast to [Franks et al. \(2014\)](#), whose confidential interviews provided access to more detailed cost data but lacked transparency and replicability. Our reliance on public sources reverses this; while our data is less granular, it allows us to tie data to specific firms. Relatedly, our case selection is subject to visibility bias. Because our dataset is constructed from publicly available sources, it is more likely to include cases and categories of costs that generate significant media attention, NGO involvement, or regulatory scrutiny. This implies that our estimates should be interpreted as indicative of the potential magnitude and distribution of conflict-related costs when conflicts or proactive engagement activities become visible and documented, rather than as representative averages across all mining projects. Lost productivity is often the largest category because shutdowns, blockades, and delayed production directly affect output and can be estimated using production volumes, commodity prices, and project timelines. By contrast, personnel time, security coordination, reputational damage, risk management, and project modification are often embedded in broader administrative, legal, sustainability, or capital expenditure accounts and are rarely disclosed as conflict-related costs. Reputation costs are especially difficult to monetize unless they are reflected in observable share-price movements, financing failures, or asset impairments. Because we use conservative public-source estimates,

these lower-cost categories are likely undercounted. Their low measured value, therefore, reflects limited observability as much as limited financial relevance. The public-source design has weaknesses, but it also underscores the study's practical relevance: if researchers can detect many of these costs using public sources, investors, regulators, and firms can as well. Finally, the single country research design allows for greater comparability and strengthens the claim of generalizability across a sample of projects but does so in one country that may not generalize to other nations, particularly those with smaller Indigenous populations and/or whose Indigenous populations' rights are less contested.

5.4. Conclusion

This study shows that Indigenous rights-related mining conflict can impose substantial, uneven, and cross-functionally dispersed financial costs on firms. Across 28 Peruvian mining projects, we estimate more than \$31.9B in conflict-related costs, with lost productivity accounting for the largest share, and a small number of prolonged conflicts driving most of the total losses. By using public sources, we provide a transparent, replicable approach to estimating costs that are often hidden in company accounts or dispersed across functions. By adding proactive engagement and business-function classifications to the [Franks et al. \(2014\)](#) framework, we show both how conflict becomes costly and why firms may underinvest in prevention.

The broader implication is that Indigenous rights-related conflict should be understood as a material enterprise risk. Its costs can cascade from local grievances to operational disruption, security responses, legal and regulatory exposure, reputational damage, financing constraints, and project cancellation. Preventing such losses requires more than reactive redress. It requires early, credible, and sustained engagement with Indigenous communities, combined with internal systems that allow firms to identify, aggregate, and respond to social risk across functions. As demand for critical minerals increases, the ability to manage these relationships responsibly will become central not only to community well-being but also to the financial viability of mining projects.

Declaration of generative AI and AI-assisted technologies in the manuscript preparation process

During the preparation of this work the author(s) used ChatGPT5.4 in order to proofread and copyedit some text. After using this tool/service, the author(s) reviewed and edited the content as needed and take (s) full responsibility for the content of the published article.

CRedit authorship contribution statement

Doron Tadmor: Conceptualization, Data curation, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Witold Henisz:** Conceptualization, Funding acquisition, Project administration, Resources, Supervision, Validation, Writing – review & editing.

Declaration of competing interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: Witold Henisz reports financial support was provided by Bay and Paul Foundations. Witold Henisz reports financial support was provided by Christensen Fund. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.resourpol.2026.106017>.

Data availability

Data available in an anonymous, read-only repository hosted on the Center for Open Science (OSF) available at https://osf.io/vn67h/overview?view_only=3be6a51c88c2483eae578c7a65604027.

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