


Navigating community transitions away from mining

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The shift away from mining presents substantial livelihood security challenges for mining communities, but documented mining closures offer insights into how to ensure a successful transition. Secure community transitions require support from governments in the form of proactive planning, locally led collaborative responses and targeted investments.

While exploration investments push the boundaries of mineral exploitation into new regions, it is important not to overlook the plight of mature mining regions, which house both large, well-established mines and vibrant mining communities¹. The urgent need to combat climate change has prompted a decline in thermal coal production and a surge in the extraction of minerals to support technology for the energy transition. Research estimates that a complete exit of coal followed by mine closures could disrupt the lives of at least 33.5 million people².

At the heart of these disruptions are mining communities, intricately tied to energy production and supply chains.

Mining communities, both established and emerging, bear the brunt of the cumulative impacts associated with resource projects and their subsequent closure. As they navigate this challenging terrain, increased unemployment, poverty and social tensions can arise, having profound consequences for the livelihoods of residents.

Here, I shed light on the intricacies of mining communities in the Global North and their journey toward transitioning away from mining. I discuss the shared negative impacts of industrial decline and highlight a three-step approach underpinning stakeholder engagement as a strategy to minimize these impacts. To successfully implement this approach, I provide governments with policy recommendations to effectively address common transition challenges and foster sustainable and equitable development beyond mining.

Mining communities

Mining has a profound impact on local communities. It is an immensely disruptive activity that introduces movement into and out of the community³, including new capital flows, new landscape modifications, new workers, their attachments and social networks and new conflicts.



Fig. 1 | Mining communities in various stages of transition. **a**, Silverton, South Australia: originally established during the mining boom of the late nineteenth century, Silverton was abandoned just 50 years later during the mining bust. Today, this ghost town is a tourist attraction of the Australian outback. **b**, Miner's Memorial situated on a waste heap in Broken Hill, Australia: repurposing of mining infrastructure for tourism and cultural endeavours is part of Broken Hill's

transition strategy. **c**, Jezeří Castle in the Czech Republic is a cultural heritage site located on the outskirts of a coal mine, saved from demolition due to mining. Its preservation is an important part of the regional transition away from mining. **d**, Most, Czech Republic: In the 1960s, the town underwent resettlement. However, the surrounding areas have since been rehabilitated into lakes and recreational areas. The photographs are sourced from the author's personal archive.

The cumulation of these changes shapes the community's identity, and while some people may benefit from the development, others may suffer. The local economy becomes heavily reliant on a dominant mining sector influencing various aspects of community life. Workplace norms and values extend beyond the work setting, affecting non-work environments⁴. The shared experience of living and working in a mining community creates strong cohesion. Understanding the inherent strength of identity and unity within mining communities is key to understanding their resistance to change in facilitating successful mining transitions.

Moving towards closure and consequently away from mining is not an easy or short journey. The literature extensively documents the economic and demographic consequences of industrial decline and closure, including loss of jobs, labour shifts and outmigration^{2,5}. The loss of relatively well-paid jobs that form a stable working class across the region may cause negative ripple effects in communities, such as economic stagnation, a decrease in public revenue and degradation of public spaces and property values – as witnessed in Silvertown in Australia⁶. Mine closure can also alter the national political landscape, such as with a resurgence of nationalism as experienced in communities across Scotland in the 1990s and 2000s⁷.

Not as well documented are the less tangible social and cultural impacts of mine closure⁵. When mines close, the communities experience a profound loss as the very core of their identity vanishes. Outmigration triggered by sudden unemployment leads to a dearth of social connections and support networks within these communities. The disruption of the community's sense of place creates feelings of isolation and alienation⁸. In Calama in Chile, mine closure has led to social instability, stress and loss of identity⁹. Mental health issues have been documented in the mining communities in British Columbia¹⁰.

In the pursuit of energy security, it is crucial for governments to acknowledge the transformative journey that individuals in mining communities undergo when transitioning away from mining. Overlooking these communities may result in social and economic instability, ultimately impacting the overall integrity of national energy systems.

Learning from the past

Past experiences with industrial transitions have demonstrated that a single, one-size-fits-all strategy is insufficient to facilitate effective transformation. Instead, a combination of tailored measures, considering specific local contexts, appears to work best^{11,12}. Analysing the more successful cases of industrial transitions reveals that diverse communities follow distinct paths to transition (Fig. 1). Nevertheless, there are shared elements in their transitioning strategies. Notably, multi-stakeholder collaboration – including declining industries, governments, trade unions, educational institutions, communities and private sectors – emerges as a common thread among the more successful narratives. Countries such as Germany and Canada have demonstrated successful identification of key stakeholders, including underrepresented groups within mining communities, and have extensively engaged with them to implement effective policies¹³. While some may argue that these Global North countries benefit from historically strong social safety nets and collaboration between trade unions, businesses and governments, examples from Itabira in Brazil and Emalahleni in South Africa show that multi-stakeholder planning can also lead to positive outcomes in the Global South.

Nonetheless, stakeholder collaboration may not be enough. Drawing lessons from previous transitions, it becomes evident that a three-step approach centred around stakeholder engagement and collaboration

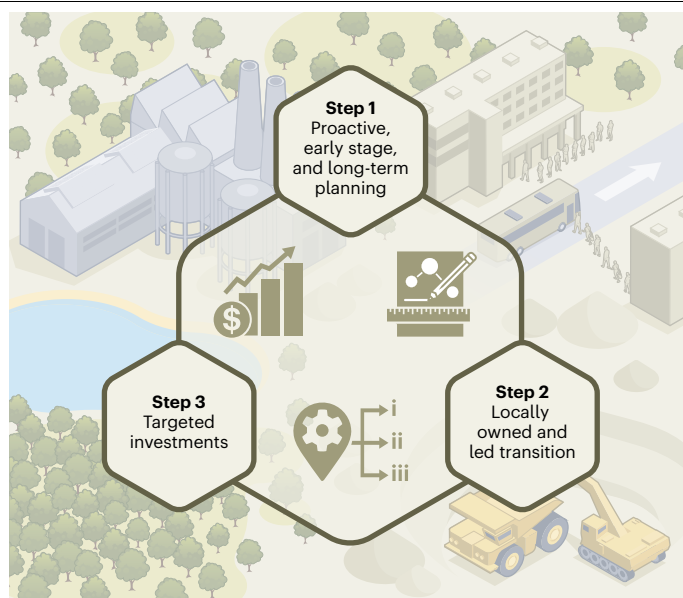


Fig. 2 | Three-step approach to community transition away from mining.

The approach places an emphasis on fostering multi-stakeholder engagement and wider collaboration. It prioritizes early planning, empowering local-based solutions and strategic investments for sustainable transformation.

could be the most effective way forward (Fig. 2). This approach entails early planning, local-based solutions, and targeted investments aimed at fostering economic and workforce transformation.

Proactive, early stage planning that continues long after mine closure. Decisions made during the profitable stages of mining significantly impact the closure process and offer substantial benefits for mining communities. Early discussions on post-closure futures maximize options, as it becomes challenging to build trust and relationships in the final years before planned closure. Attention to mine design, operational practices and progressive rehabilitation early on can provide more precise ways forward. The earlier that risks are identified, the greater the potential for meeting specific transition objectives. Enduring post-closure transitions requires sustained participatory planning and support, as evidenced by successful industrial transition examples that spanned decades¹².

Locally owned and led transitions. National responses to mining transition often lack specificity to local contexts and established networks for collaboration. In some communities, the establishment of local agencies or the enhancement of local governments' capabilities has proven pivotal in spearheading the transition¹⁴. To accomplish this, local governments must be equipped with regulatory powers, skills, know-how, and resources. A combination of bottom-up and top-down approaches, along with collaboration with neighbouring communities and regions, has proven crucial¹⁵. Without such measures, there is a risk of national governments initiating isolated projects that fail to generate positive spill-over effects.

Targeted investments. Transition away from mining is costly. More successful cases have channelled investments towards mining communities

including funding to implement labour measures, seed new industries, support innovations, enable the repurposing of mining infrastructure and preserving urban centres, and enhance essential services^{5,14}. As local governments may lack the capacity to bridge the economic voids caused by mine closures, financial support from private investors and regional, national and supranational levels becomes necessary. In addition, targeted investments in urban centre regeneration have yielded positive outcomes, as these areas have a higher potential to attract private investment and businesses compared to remote sites. An example from Genk in Belgium underscores the significance of maintaining functional urban systems. By preserving the city's urban centres, investing in carefully planned and citizen-focused urban development and repurposing mining infrastructures, the City of Genk has recovered and developed into a hub for business, culture and innovation¹⁶.

Among critical considerations for investments in mining communities – aside from selecting which projects and industries to support – job quality and wages often become contentious issues. Examining the transition from fossil fuels to renewables, average salaries in fossil fuels exceed those in clean energy jobs. In California, for example, the average wage for a clean-energy worker is about \$86,000, while a fossil-fuel worker earns about \$130,000 (ref. 17). Renewable jobs may also offer less security and lower unionization rates, as noted in the USA¹⁸. Moreover, experiences from Kiruna in Sweden, Mount Isa in Australia, and Cerro de Pasco in Peru reveal that resource potential and low jobs-to-output ratio can significantly limit employment opportunities⁵. Lack of transparency, understanding of the transition strategy and insufficient community guidance exacerbate these challenges. Without coordination, investments in the transition cannot be effectively directed.

While this three-step approach has demonstrated positive outcomes, it is important to acknowledge that its implementation may present challenges for some mining communities. Building trust among mining companies, communities, and governments is of utmost importance. A significant factor contributing to mistrust is the 'mirage of closure', where the promise of closure is continually postponed due to factors such as new discoveries, fluctuating prices or advancements in technology. This lack of certainty regarding closure dates creates stress within mining communities. By initiating transition planning at the outset of mine operations, uncertainties can be reduced. However, if communities have previously experienced the mirage of closure, it can be challenging to persuade them to trust and genuinely engage in the planning process. It is essential to recognize these complexities and address the underlying issues to foster effective collaboration.

Recommendations for governments

In the transformation of mining communities, governments bear significant responsibility in coordinating the transition process. They face pressure to not only enact policies that shape this transformation, but also to ensure that it is carried out in a manner that is socially just and equitable for all stakeholders involved.

New legislation and significant financial packages from governments in many countries have been launched to facilitate the transition of mining communities, often as part of green deal policies or post-COVID-19 recovery plans (for example, the EU Recovery Fund, the Chilean Climate Change Framework Law, and the Indian PMKKKY programme). These efforts are much needed, but evidence shows that governments struggle to truly engage mining communities in both legislation and executive actions¹⁹. More successful (often deemed exemplary) transitions, such as those in Latrobe Valley in Australia or

Dundee in South Africa, failed to follow the principles of open and just participation or invest enough time in the process^{11,15}. Convincing the right people from mining communities is a critical and difficult task, which goes beyond issuing an open call to anyone with a stake in the effort. Some stakeholders may lack the confidence or resources to respond to such a call.


Instead, 'thoughtful inclusion' using transparent selection criteria and recommendations by community informants results in a more thorough cross-section of people committed to the process. Key considerations in identifying the right participants include how they are impacted by the transition, their capacity to influence outcomes and their possession of valuable resources such as expertise, experience, time, financial means and contacts related to the topic at hand. Focusing on individuals by hosting more (but smaller) gatherings helps to build individual relationships and include marginalized groups. Smaller settings tend to make people feel more comfortable expressing their opinions. Hands-on opportunities such as field trips, three-dimensional models and videos serve as effective techniques to help community members to better understand the complexity of the decisions about the transitions.

Early and extensive engagement with local communities, local-based measures, thoughtful and targeted investment and realistic plans to diversify local economies can help governments to achieve better and more equitable mining transitions. Collaboration between multiple stakeholders enables the development of comprehensive transition plans that address the needs of all affected parties.

Recognizing that the transition takes time and persistence is essential for success¹⁹. Transparency and effective communication are also crucial throughout the transition process. Governments should openly communicate their strategies, ensuring communities and other stakeholders are well informed and engaged. Building trust and providing guidance helps residents navigate the uncertainties associated with transitions. Learning from the shared experiences of historical industrial transitions, moving away from mining presents an opportunity to address the inseparable link between energy-based livelihoods and community transitions. By embracing the three-step approach described here that centres around stakeholder engagement, governments can prioritize equitable and just outcomes when navigating mining transitions as part of their energy security strategies.

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Competing interests

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