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Hidden Dimensions of Injustice in the Green Transition of China's Coal Mining Industry

Guanli Zhang [1] and Bingyi Zhang [2]

[1] School of Sociology, Beijing Normal University, China
[2] School of Social Development and Public Policy, Beijing Normal University, China

Correspondence: Bingyi Zhang (zhangbingyi@mail.bnu.edu.cn)

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Abstract

The social impact of China's policy of phasing out excess coal production since the 2010s is examined through the lens of "just transition." Qualitative fieldwork undertaken in Liupanshui, Guizhou province, focussed on seven mines, among which three were decommissioned. Against the backdrop of top-down policy imperatives aimed at rapidly reducing coal production capacity, more powerful stakeholders took action to safeguard their own perceived interests, thereby transferring the costs of transition to the least powerful actors while exacerbating existing injustices. At the same time, Confucian traditions and modern civic education in China—which prioritise endurance and compliance—limited individual voice and agency. By adopting just transition as a policy tool, China could avoid errors made by countries that transitioned earlier.

Keywords

China; coal mining industry; green transition; just transition; social injustice

1. Introduction: Just Transition and China's Accelerated Pace of Decarbonization

The concept of just transition bridges the fields of climate, energy, and environmental justice studies (McCauley & Heffron, 2018). It was initially proposed against the backdrop of global decarbonisation, with an emphasis on the equal distribution of the benefits and costs of green transition among different socio-economic groups (Carley & Konisky, 2020; Healy & Barry, 2017; Rissman et al., 2020). Although views about "transition" and "justice" differ (Heffron, 2021, pp. 9–19), the concept of just transition has gradually been integrated into governance strategy, public perceptions, and theories of socio-technical transition through extensive theoretical debates and empirical explorations (Wang & Lo, 2021). Threats to just

transition have been identified relating to energy poverty, the livelihoods of employees in the energy industry, and the management of potential conflicts between energy policy and the pursuit of climate justice (Newell & Mulvaney, 2013).

Just transition, while being a matter of public concern and an ethical principle, is necessarily achieved through political and economic processes. Just transition, therefore, may take different forms in societies with varying political economies and give rise to the need for empirical literature rooted in practice (Wang & Lo, 2021). However, the existing literature is disproportionately informed by the experience of just transition in the Global North, whereas that from developing countries (Swilling et al., 2016; Wang & Lo, 2022), as well as voices from indigenous or marginalised communities (Zografos & Robbins, 2020), are largely missing.

China, as the world's largest coal producer and consumer, plays a pivotal role in the global campaign of decarbonisation, with its transition commencing in the 2010s. In 2020, the pace of decarbonisation accelerated with the country's "political mission" to promote a green transition and facilitate the construction of an ecological civilisation, as well as with President Xi Jinping's announcement of the "30–60" decarbonisation target, with emissions peaking in 2030 and carbon neutrality to be achieved before 2060 (H. Dong et al., 2022). Achieving this target requires a dramatic reduction in coal-fired power production, an industry employing some four million workers (Zhang et al., 2022), and a major source of government revenues (Clark & Zhang, 2022). With limited alternative employment opportunities, frontline workers could bear much of the social cost of the transition which will be concentrated in China's major "coal provinces," i.e., Shanxi, Inner Mongolia, Shaanxi, and Xinjiang (Hamilton et al., 2022; Luo et al., 2023; Pai et al., 2020; Sharma et al., 2023). Against this backdrop, Chinese scholars and policymakers must engage with the idea of just transition, seeking ways of minimising and fairly allocating the social impact of the energy structure adjustment following the principles of social justice. In making the transition out of coal later than many developed countries, there is plenty of room for cross-national learning.

British coal production peaked in 1913 but the industry still employed 237,000 workers in 1980. Thereafter, mines closed rapidly but the former mining districts, once economic leaders, now lag the rest of the country in terms of economic development, with high levels of economic and social disadvantage and especially health problems and disability affecting the entire community, not just the dwindling number of former miners (Beatty et al., 2019). Mine closures on a large scale in the Appalachian region of the United States began in 2011 and current poverty rates in the once-high coal-producing areas are twice those in adjacent areas with high disease and mortality rates (Zipper & Skousen, 2021). In Poland, two-thirds of mines have closed in the last 30 years with pockets of high poverty remaining in many coal-mining districts. Leaders of mine workers unions complain of rapid closures, lack of unions, workers' benefits in the private sector, and, until recently, no commitment to two pillars of just transition: participation and re-training (Jarzabek, 2022).

In apparent contrast, the Ruhr region of Germany has pursued a holistic policy of just transition since 2007 (World Resources Institute, 2021). Policy elements include a slow, gradual phasing out of subsidised coal based on a strong social partnership model and large-scale investment by all levels of government. In addition, there has been a leverage of local assets and workforce skills with public support for regional revitalisation and diversification beyond a simple focus on job substitution and retraining. The policy "turn" towards just transition reflected earlier failures. Top-down policies first adopted in 1968 resulted in economic stagnation leading, in the 1990s, to a more decentralised, inclusive engagement strategy and partnership following the

Future Initiative for Coal and Steel Regions launched in 1987. While the commitment to just transition is deemed to have been largely successful, policies have primarily benefited large companies while casual and short-term workers have missed out on the protection afforded to long-term employees. Northern Ruhr has been underserved and has above-average unemployment rates, lower incomes, and high levels of child poverty (Arora & Schroeder, 2022).

Based on ethnographic research in a major coalfield in China's Guizhou province that has recently experienced a wave of closures, this research aims to better understand the distribution of the associated costs and the reasons for them. It is apparent that China has pursued strategies similar to those employed by other countries in the early stages of the transition away from coal and that a greater focus on just transition could yield social and economic benefits.

2. Fieldwork Methods

Guizhou province accounted for 3% of China's coal production capacity in 2022 (CEIC, 2022). Widely known as "the coal capital of Southwest China," Liupanshui, one of the nine prefecture-level cities in Guizhou, has a history of production dating back to the 1960s Third Front Construction Scheme (Guiyang Poverty Alleviation Office, 2021). It boasts 40% of the province's total coal reserves and, in 2022, over 10% of the city's population was still employed in coal mining and preparation, which accounted for 55.2% of its GDP (C. Chen, 2022). Since 2010, Liupanshui has proactively taken measures to align with the central government's directive to phase out inefficient coal production capacity (hereafter referred to as the "phase-out policy"). It closed 55 coalmines during the 13th Five Year Plan (2016–2020), reducing production capacity by 13.12 million tons (D. Liu & Qi, 2021), and announced plans to limit the number of coal mines to 120 by the end of the 14th Five Year Plan (2021–2025; Government of Liupanshui, 2023). Despite green development, the social consequences of closures have been described as "painful" by local media (Z. Liu, 2016; Long et al., 2021).

Fieldwork was undertaken in the summer of 2021 by a team of eight researchers from Beijing Normal University and Duke Kunshan University, including the authors. It concentrated on seven coal mines and their nearby communities chosen to provide a meaningful account of the ecology of the Liupanshui coal transition during the past decade. The mines differed in ownership, size, and location; three had closed while four remained open, as shown in Table 1.

Table 1. Background information of the seven selected coal mines.

Name	Ownership	Location	Production capacity	Employees	Status
M Mine	State	44 km NW to the city centre	900 kiloton/y	1231	Shut down (2016)
D Mine	State	38 km NW to the city centre	3000 kiloton/y	3005	In operation
W Mine	State	21 km NW to the city centre	2700 kiloton/y	3179	In operation
Bh Mine	State	32 km NE to the city centre	400 kiloton/y	240	Shut down (2013)
Bx Mine	Private	38 km NE to the city centre	1500 kiloton/y	1700	In operation
H Mine	Private	52 km SW to the city centre	600 kiloton/y	684	In operation
X Mine	Private	66km SW to the city centre	200 kiloton/y	c. 200	Shut down (2012)

Some employees of closed mines were redeployed under "internal resettlement" schemes. The S Mining Company, for example, upon the closure of M Mine, moved some miners to mines D and W where the research team was able to interview them in depth. Similarly, some miners transferred from X Mine to H Mine and Bh Mine to Bx Mine at the time of closures in 2012 and 2013 respectively. Interviews and on-site observation of working mines added to the understanding of the challenges ahead and after closure. Ethical approval for the research was obtained from Beijing Normal University, with respondents consenting to recorded interviews and offered anonymity.

Semi-structured interviews were adopted as the main approach to data collection, accompanied by on-site observations and archival work. Sixty semi-structured individual interviews were conducted with six government officials, 13 high and mid-level managers, 21 first-line miners, 11 ground crew, and nine villagers living close by the mines identified through purposive sampling. Separate topic guides were designed for each set of stakeholders with respondents invited to reflect on the transition of coal mining and its influence on their lives during the past 10 years. The interviews yielded rich and comprehensive accounts of life stories and first-person observations which were later collated for summarisation and comparison. Paul Colaizzi's descriptive phenomenological method helped the authors reveal an "essential structure" of the investigation through a 7-step inductive data process (Morrow et al., 2015). Following this approach, the authors identified over 1,100 significant statements appertaining to the concept of just transition which, when aggregated, underpin the seven features of the transition discussed below.

3. Enterprises

3.1. Closures

Coal mining enterprises nominally bore the primary responsibility for phasing out outdated and inefficient production (State Council of China, 2016). However, when, in February 2016, the State Council issued a decree to cut annual coal production capacity enterprises had no alternative but to act. In late May 2016, the Liupanshui government translated the decree into measurable targets, allowing only three months for companies to react. The implications were similar to those observed in Poland about which trade unions complained.

Although S Mining Company only had three months in which to act, being one of the largest state-owned coal mining enterprises in Guizhou, with over 10 coal mines, it had scope to mitigate direct losses through internal adjustments. It responded to the "political mission" by downscaling its annual production capacity by 1,000 kilotons in 2016, despite raw coal prices trending up at the time and a recent investment of 70 million RMB to increase productivity. It decided to close M Mine, even though it was still profitable, announcing the decision on 10 August 2016. Within five weeks, the portals of M Mine were sealed with strips of paper marking the closure date (12 September 2016), which remain fixed to the gate. L, former party secretary of M Mine, complained about the haste and the consequential tough situations faced by the management team:

> Everyone knew it would be a huge loss, but we had to shut down the mine instantly because it was a political mission from the above. We are a state-owned coal company and we serve primarily for the national strategy of development. This was our political responsibility and there was no room for bargaining…but all I hoped for was that we could have been given more time to evaluate what option

> would cause the least loss to the enterprise, and to find ways to minimise the harm to the workers. After all, we are a company. We need to care about profit too, as we have tens of thousands of employees to feed. (L, 45, male)

Many private coal mining companies in Liupanshui—typically smaller with less production capacity—had no room to mobilise for survival however. In 2016, the provincial government determined that enterprises with an annual production capacity equivalent to below 300 kilotons were to close. The three-month window for action was insufficient for companies to merge or purchase production quotas to exceed the closure threshold, a cause of many complaints, as reflected by Y, a former midlevel manager of X Mine, closed in 2013:

> Back at the time when the redline was announced, my boss barely slept for many days. He met other mining business owners, but they could not come up with any solutions on time, despite smoking packs of cigarettes together day and night. Even if they had agreed to merge, the paperwork and administrative procedures would have taken more than half a year. It was just a matter of the government not wanting private coal mines to survive. (Y, 39, male)

3.2. Compensation

The central government established a special fund to assist mining companies in compensating employees who were to be dismissed because of the phase-out policy (Cong et al., 2019; S. Dong et al., 2007). D, a high-ranking manager of S Company responsible for the disbursement of the special fund, explained the challenges: The company received 480 million RMB to facilitate the closure of M Mine which, according to D, was insufficient. 340 million RMB, 70% of the total, was used to fund displaced workers' social insurance and redundancy payments, which left too little to guarantee retired employees' welfare, to support the families of mining accident victims, to maintain state-owned assets, and to undertake environmental restoration:

> Even though M Mine was shut down merely 32 days after the decision, many problems were left unsolved due to insufficient funds. This has caused the management of our enterprise much distress. (D, 56, male)

The situation was even tougher for the small-scale private enterprises. The Guizhou Provincial Government Planning Document explicitly prioritised state-owned companies when allocating the central government's special fund (Government of Guizhou Province, 2017). The reason, according to X, a government official in the energy sector, was that the state-owned companies' employees had a statutory right to redundancy and compensation, whereas workers from the private mines did not:

> The compensation for shutting down private coal mines with an annual production of 150 kilotons and 300 kilotons is 2.7 million and 4.6 million RMB respectively, whereas in my records, a state-owned mine can get 12 million to phase out 150 kiloton production capacity and another one 30 million for 420 kilotons. State-owned companies also receive additional stipends to resettle their employees, whereas private companies get nothing for that. After all, it is a common practice here that private companies do not have to compensate the miners when they get dismissed. (X, 37, female)

4. Employees

4.1. Participation

The speed of closure meant no or very limited consultation with employees, who typically complained that they were "the first to be laid off and the last to be notified." M Mine serves as an example. Y, a frontline mineworker, recalled the last day in M Mine:

> My team was probably the last to know the news. It was right before we finished the day's work that the chief of the division told us that the portal would be sealed that night. All the machines and tools were left in the tunnel. Someone even forgot to bring out their hi-vis vest from the last blasting hole we were working on. (Y, 43, male)

Two of the three closed mines had been state-owned with a history of over 50 years. Many employees were *kuangerdai* or *kuangsandai* (the second or third generation of the descendants of workers who first developed the coal mines) and would have worked in the mines all of their lives. They criticised the company for the arbitrary decision and the unfair treatment in which they saw no compassion or respect.

Dissatisfaction was further compounded by S Company's decision to transfer all those displaced by the closure of M Mine to other positions within the company (internal settlement) rather than offering employees a choice of internal retirement or economic compensation as stated in the Guizhou Provincial Government Planning Document. Management explained that it was impossible to tailor plans for the 1,345 workers given the speed of closure.

4.2. Silence

To legally launch the worker placement scheme, S Company was required to consult with representatives. Eighty percent of representatives voted against the proposal to redeploy all staff affected after which the company dispatched a special team to M Mine to undertake "ideological" work among the representatives. In a second vote, the revised plan received 100% approval but the legitimacy of the outcome was widely contested by miners including Z, a frontline miner who was transferred to D Mine:

> The assembly meeting was nonsense. I do not know those people. We do not have a representative to speak for us. Everyone focuses on his own business down under the mine. It is impossible that the representatives know me, nor do I get the chance to know them. (Z, 46, male)

Despite widespread discontent, few workers sought to challenge the result or seek a different outcome for themselves. Both the Confucian tradition and modern civic education in China set the stage for the deliberate choice of silence. The cost of transition transferred to the workers was considered to be a collective sacrifice equally distributed among the group and their unavoidable fate. As H, a forklift driver who transferred to D Mine from M Mine in 2016, reflected:

> No one wanted to stick his head out. The scheme was not fair, but everyone sacrificed without exception….The farthest we could go was the headquarters of S Company in the city. M Mine was too

> remote. It was hard to organise people and go tens of miles to protest. We seldom brought it up to the city authority. Back in the past when the wage was too low to live on, we just endured it by ourselves and did not bring it up for a single time either. (H, 44, male)

In the autumn of 2017, over 100 former employees of M Mine lobbied the Liupanshui Municipal Government to alter the basis for calculating compensation from the annual average income of S Company (30,000 yuan RMB) to the average of M Mine (56,000 yuan RMB). Their failure, reputedly even to receive a "proper" reply, frustrated workers and further dampened their willingness openly to express their opinions. Former miners from W Mine and Bh Mine were equally frustrated by the discontinued welfare. However, it was typical that frontline workers, being the bottom of the social and political pyramid, had no choice but to accept the loss as their destiny. W, a former miner from Bh Mine, explained why he chose to keep silent:

> It was only after the mine was shut down that we were told that we did not have medical insurance. We found it absurd and unacceptable—back then it was all free to see a doctor on the mine….What is the solution? The solution is [to pay] all from my own pocket. The officials cover for the entrepreneurs. As a commoner, I dare not defy the government. (W, 49, male)

4.3. Financial Support

While the Guizhou Provincial Government Planning Document stipulated that state-owned, though not private, enterprises were obligated to reach an agreement on placement and to provide training and support for re-employment, this seldom occurred. Laid-off employees, perhaps especially those aged over 50, found it extremely hard to find another job, as they were "the least wanted in the job market." Miners complained that welfare benefits were insufficient to cover daily expenses meaning—as L, a former worker at Bh Mine, explained—that they had to "go back home growing some short season crops and live on a monthly stipend of less than 100 yuan RMB from the mine."

Worse still, as Bh Mine was later taken over by another company and resumed production for a short period of time, the new employer refused to recognise prior length of service, depriving workers of the retirement benefits they had accrued through working in a state-owned company for over 15 years.

5. Impact on Communities

5.1. Local Livelihoods

All that remained of M Mine in 2021, five years after its closure, were the dilapidated grand hall, an abandoned hospital, and a deserted shopping street. Once a large community with more than 2,000 residents, only about 40 semi-retired employees remained to safeguard state-owned assets. The impact of mine closures on nearby villages was marked by small businesses offering services to mine employees abruptly losing their *raison d'être*. Mine managers, as explained by L, the former party secretary of M Mine, considered that their sole responsibility was the placement of their workers, not the livelihood of local villagers, many of whom had to migrate in search of alternative employment, leaving villages "hollow" of a prime-age workforce.

The mine closures in Liupanshui deliriously affected villagers in other respects. Often villagers had rented out their land to the mining company on long-term leases. Bh Mine, for example, had signed a 25-year land acquisition agreement with the adjacent villages but rents had not kept up with living costs. When Bh Mine closed in 2013, with 5-years tenure remaining, villagers expected that they would be able to take the land back into cultivation. However, S, a villager, explained that the local government requisitioned the land for other purposes:

> Back in the 1990s, Bh Mine contracted our arable land for 25 years in one go. We got money year by year as compensation, but the agreed rate was so low by today's standards….When Bh Mine was shut down, we all thought that we could finally get the land back. However, to our surprise, the district government took over the land and auctioned the right of use to another party. (S, 47, female, 47)

5.2. Environmental Degradation

Much of the land near the mining sites was no longer suitable for cultivation due to the consequences of the mining operations. Land subsidence was reported by residents living close to both Bh and X mines; as H, a male villager living next to Bh Mine. memorably stated: "[The land] was too unstable to walk on, let alone grow things."

Ironically, the mines in Liupanshui had originally been sunk in areas of considerable natural beauty. M Mine, for example, named in the local Yi dialect, means "the valley with abundant flower bloom," while X Mine is located next to a famous grassland, the home of millions of camphor trees and spectacular karst landscape. The tourism potential was now compromised by severe land subsidence and ecological degradation. As a further irony, a factor influencing the closure of X mine, situated at the bottom of a valley, was the prospect of flooding the valley to create a reservoir that may "wash away the stains of the past." This was something locals welcomed, an unanticipated ending to their campaign against pollution:

> X Mine piled up the coal gangues here and there without any treatment at all. Our land has all been contaminated. We filed a complaint about pollution to the Environmental Bureau, but they never cared about our health….They would not have shut down the coal mine if the reservoir water were not pumped to the downtown of Liupanshui for the city residents to drink. (M, 55, male, villager living next to X Mine)

6. Discussion and Conclusion

Viewing the coalmine closures in Liupanshui through the lens of just transition is informative albeit that just transition was not a stated goal of Chinese environmental policy at the time. What is apparent is that the same threats to just transition were at play in Liupanshui as had been observed elsewhere: energy poverty, employee livelihoods, and management of conflicts between energy policy and the pursuit of climate justice (Newell & Mulvaney, 2013). Likewise, under similar pressures, policy actors pursued many of the same strategies as their counterparts dealing with mine closures in earlier periods in Europe and North America.

For the most part, social injustice went unrecognised. Collateral damage resulting from a narrow environmental policy might have been identified and avoided had the pillars of proactive just transition been in place such

as participation and re-training. The reality is that it is difficult to identify injustices in daily settings as they are usually expressed in the form of hidden transcripts, in the sense that James Scott originally used to term to describe the invisible criticism of power among peasants in Southeast East Asia (Scott, 1990). It may take anthropological approaches to reveal them (Tilt, 2023).

China's approach to environmental and energy governance has been termed "authoritarian environmentalism," a multi-tier command-style campaign of energy transition with top-down delegation of tasks (G. Chen & Lees, 2018). With the environment integrated into the performance appraisal system (Guan et al., 2022), local government officials felt obliged to reduce coal production capacity as instructed by the central government edict, constraining enterprises to act accordingly. Large state-owned coal mining companies, S Company, for example, exhibited greater resilience than smaller private enterprises and were able to protect employees to some extent through redeployment ("internal resettlement"). They also benefitted from receiving a disproportionate share of the special fund, rational in administrative terms since public sector employees were due social security payments whereas private sector employees were not. However, the strategy served to exacerbate existing inequalities between public and private sector employees.

The speed of closures imposed on enterprises created—or excused—forms of injustice. Managers in the state-owned S Company argued that they had insufficient time to offer employees a choice of redundancy packages as required by the Guizhou Provincial Government Planning Document. Instead, they opted to require all staff to accept "internal resettlement," a strategy resented by many employees. Likewise, the earlier rapid imposition of a capacity threshold on mining enterprises precluded small private sector firms from merging to meet the arbitrary threshold. This caused many producers to cease trading but it remains unclear whether this was the policy intent or an unanticipated consequence of imposing a short period of transition.

Ordinary people dependent for their livelihoods on the mining industry lie at the end of a chain of delegation and they experience the consequences of decisions taken primarily for the benefit of government and public or private sector enterprises. Their interests, insofar as they were accounted for in Guizhou's "phase-out" policy, were interpreted by others largely without consultation. Ordinary people were perhaps too often seen either as resources, labour, or liabilities. With limited voice or power, they bore most of the costs and few of the benefits of the green transition. The average per capita income in Liupanshui fell behind the Guizhou average in 2013 and has not recovered. Similarly, registered unemployment was much higher until the impact of the Covid-19 pandemic in 2021.

Consistent with the findings from Liupanshui, Lo (2020, 2021) concludes that China's "authoritarian environmentalism" excludes public engagement and, hence, denies policymakers access to local knowledge. China is not alone in this as will be realised from the failure of the concept of just transition to have traction in the United States where it was originally developed. Trade unions sought to ensure that environmental concerns did not prevail over the well-being of workers and communities (Wang & Lo, 2021). However, the passivity of those negatively affected by the phase-out policies in Liupanshui is possibly a product of Chinese social culture where both Confucian traditions and modern civic education merit endurance and compliance in everyday political life.

The German experience of gradually phasing out coal production and co-opting just transition as a policy template or tool stands as an exemplar against the generic failure of governments satisfactorily to manage the transition from coal. At its most successful, it has focused large-scale investment by all levels of government on future development investing in, rather than disposing of, human capital and strategic infrastructure. Little of either was yet apparent in Liupanshui risking the possibility of it repeating the experience of Britain, where former coalmining districts remain deeply disadvantaged and distrusting of the government 40 years after the mines were decommissioned (Abreu & Jones, 2021; Beatty et al., 2019).

The successful regeneration of Germany's Ruhr former coalmining district draws attention to the potential of just transition as a policy tool. By listening to different stakeholders, recognising various forms of injustice, and identifying the demands of people, this research sheds light on how to increase the "practicability" of the concept. It requires a bottom-up case-based approach in which anthropology and qualitative sociological methods play a key role in collecting data from the grassroots level, listening to subaltern groups in particular, and contextualising the findings in specific regimes and cultures.

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Conflict of Interests

The authors declare no conflict of interests.

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About the Authors

Guanli Zhang is a lecturer at the School of Sociology, Beijing Normal University. He holds a doctorate in geography and environment from the University of Oxford, UK. His research interests include environmental sociology, rural poverty and anti-poverty in contemporary China, urban-rural population mobility, gender, marriage, and family, with a particular focus on the protection of the rights and interests of vulnerable groups and policy support.

Bingyi Zhang is a PhD Candidate at the School of Social Development and Public Policy, Beijing Normal University, majoring in social security and social policy. Her research interests are family and child welfare, rural poverty and anti-poverty in contemporary China, urban-rural population mobility, gender, marriage, and family, with a particular focus on the protection of the rights and interests of vulnerable groups, and policy support. She specializes in conducting research using qualitative methods and has published several academic papers.