WORKING THROUGH PLANETARY BREAKDOWN

Labour, Skill and the Changing Climate

Edited by Chantel Carr and Jesse Adams Stein

First published 2026

ISBN: 978-1-032-84325-4 (hbk)
ISBN: 978-1-032-81771-2 (pbk)
ISBN: 978-1-003-51224-0 (ebk)

Chapter 7

PLACE-SENSITIVE APPROACHES TO COAL TRANSITIONS IN AUSTRALIA

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DOI: 10.4324/9781003512240-10

The funder of the Open Access version of this chapter is Australian Research Council.

Routledge
Taylor & Francis Group
LONDON AND NEW YORK

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Introduction

As one of the world's largest coal exporters, Australia's substantial coal and gas reserves have profoundly shaped national debates around decarbonisation and climate policy. The deep integration of extractive sectors within Australia's regional communities has created a complex landscape for change that demands careful consideration of diverse perspectives and experiences.[1] While subnational state governments have made progress on transitioning domestic electricity generation away from coal, decades of national policy instability reflect broader political contestation.[2] Within the context of mounting domestic and international pressure, the election of the Albanese Labor government in 2022 marked an accelerated national commitment to decarbonising difficult-to-abate industrial sectors. Many of these sectors are also concentrated in regional Australia, and this political shift has re-framed the narrative from "jobs versus environment" to one of regional renewal, delivered through industrial-scale renewable energy and decarbonisation initiatives. Yet researchers have long pointed to the uneven outcomes of centralised policymaking for regional workers and communities.[3]

Over 80 percent of Australian coal production is exported, predominately to Asian markets.[4] Despite federal and subnational state policy oversight, the future of export coal remains opaque and highly politicised, with both politicians and policymakers reluctant to address – or even discuss – phase-out pathways. An absence of such policy, whether intended or otherwise, effectively leaves decisions about the future of Australian coal exports in the hands of global capital and trading partners. The implication is that shifts in the global political economy of coal will have profound economic, social and political

DOI: 10.4324/9781003512240-10

consequences in Australia, particularly in export-oriented communities, yet this is rarely the subject of public or political discussion.

The legislation of a national Net Zero Economy Authority in 2024 brought some measure of protection for workers in regions hosting coal-fired power generation[5]; however justice outcomes for export-exposed workers and communities remain uncoordinated at a national scale. The language and framework of a "just transition"[6] has been embraced and pursued by some powerful actors, including segments of organised labour, scholars and policymakers. However research has identified that at the local level, some coalmining communities view the concept of a just transition as a direct threat to their identity, livelihood and deep connections to place.[7]

Meanwhile, influential voices in politics, media and industry have promoted narratives that downplay Australia's role in global climate change. These narratives have gained varying degrees of acceptance within communities where researchers have found more nuanced perspectives at the community level. In coal regions, views about the future of the industry can often defy polarised national dialogues that favour either immediate industry closure or indefinite continuation.[8] Building on research that emphasises the importance of place-based analyses of energy transitions,[9] in this chapter we examine the experiences and perspectives of metallurgical coal worker households in the Illawarra region of New South Wales (NSW). Our analysis contributes to calls for a more nuanced understanding of worker and community responses to transition.[10]

Human geographers have long advocated for the household as an important site for research,[11] and this is certainly the case for examining the social dimensions of industrial transformation. Households are key spaces where decisions about working futures are made during periods of economic change, and where the outcomes of industrial restructuring are acutely felt.[12] A focus on households offers a different entry point for examining the complex relationship between carbon-intensive regions and climate change, recognising that while workers have some agency in career choice, their decisions are also shaped by economic opportunities, household obligations, and the structural limitations of regional labour markets. By attuning to the intersection of different industries within a household, the allocation of unpaid labour, and community relations beyond individual (predominately male) workers, we can better understand the constraints and considerations that shape livelihoods in carbon-intensive sectors and regions. This invites a more careful conversation about how decarbonisation will reconfigure working lives, impacting on households and communities in the process.

In this chapter we begin with an overview of the political economy of Australian coal, drawing attention to how regional trajectories are shaped by many factors: material distinctions in coal reserves, global markets, and national and subnational state policies. We then outline the shifting social and

economic dynamics in the Illawarra region of NSW, providing context for our empirical data, and an analysis of the perspectives of coal worker households in the region. Here, we draw out three themes that emerge from the interviews: the daily realities of working within export-oriented underground coal mining; how ongoing economic precarity is experienced and negotiated by workers and households; and different visions for the future of the industry. Ultimately, these grounded insights highlight some critical but often overlooked dynamics within Australia's energy transition. They point to the need for place-based sensitivity and clearer transition policy pathways for export-oriented commodities, to better support workers, households and communities across diverse regions.

Locating Australia within a global political economy of coal

Given coal has been so highly politicised in Australia, a great degree of care is required in how it is discussed. Two key distinctions structure Australia's coal sector: the difference between thermal and metallurgical coal; and the difference between domestic and export coal markets. These distinctions shape both how Australia is positioned within a global political economy of coal, and the future trajectories of coal-producing regions, as determined through their different relationships with global markets.

Metallurgical coal is used for steelmaking, which contributes between eight and ten percent of the world's carbon emissions.[13] Australia is the world's largest metallurgical coal exporter, with reserves concentrated in the geological basins of central Queensland, and the Hunter and Illawarra regions of NSW.[14] These regions are deeply integrated with global metallurgical coal markets, with nearly all Australian metallurgical coal exported to major trading partners including India, Japan and South Korea.[15] The implication is that communities in metallurgical coal regions are particularly vulnerable to global market forces, and decisions made in boardrooms are at an increasing distance from those who depend on the sector. While some (predominantly European) steelmakers are pursuing alternatives to replace metallurgical coal in the steelmaking process through methodologies such as Direct Reduced Iron (DRI) and electric arc furnaces, at the time of writing commercial viability at scale remains a work in progress.[16] This places Australia's metallurgical coal production (and the regions that mine it) on a trajectory heavily influenced by global markets, and by the commitments international trading partners make to decarbonising steelmaking.[17]

Meanwhile thermal coal – used to generate energy in coal-fired power stations – presents a different set of dynamics. Much of the national public discussion on coal in the last two decades has focused on domestic demand for thermal coal. This focus makes sense, as coal-fired power generation has been in decline in Australia due to a number of factors. One key enabler of this

relatively rapid transition is national and sub-national policy settings that have supported the decarbonisation of the electricity grid, impacting on domestic demand for thermal coal. An unprecedented rise in domestic solar in Australia has meant that by November 2024, four million – or one in three – homes were fitted with rooftop systems. Over the last decade, investment in larger-scale renewable projects including utility-scale solar, onshore wind and hydro-electricity projects has also accelerated.[18] Much of this has been driven by subnational state policies, where climate politics have arguably been less contentious than the national scale. The withdrawal of global capital from coal-fired energy generation has also been a contributing factor, where the risk of stranded assets and the high maintenance costs associated with ageing infrastructure has further driven transition policy.

While much of the public focus on coal transitions has been focused on domestic thermal coal consumption, in 2024 75 to 85 percent of Australia's thermal coal was exported for energy generation in other countries, including Japan, China, Taiwan and South Korea.[19] The implication is that – as for metallurgical coal – regions producing thermal coal for global markets are exposed to both the policy decisions of international trading partners and fluctuations in global capital investment. The degree of exposure extending beyond national borders is shown in Figure 7.1, which shows a dramatic rise in metallurgical and thermal coal production over the past 40 years. While domestic consumption of coal has remained steady and then dropped off over the last decade with the introduction of renewables, coal exports have continued to expand until very recently, now accounting for 80 to 90 percent of Australia's total coal production. This illustrates very clearly a misalignment between predominant national discussions of coal phase-out that focus on domestic energy generation, and the lived experiences of workers in export-oriented coal regions.

Among the important factors for Australia's growth in coal exports over recent decades is the method for calculating emissions targets under the 2015 Paris Agreement.[20] Under these arrangements, Australia is responsible for the Scope 1 and 2 emissions associated with the production of coal, but not the substantially greater Scope 3 emissions produced in the burning of coal, which fall to the country where it is used. This framework has enabled Australia to focus its efforts on the relatively "low-hanging fruit" of reducing domestic emissions, while actively expanding coal exports. Growing demand for Australian coal has been shaped by several global factors, including rapid economic growth across Asia that has increased regional demand for both thermal and metallurgical coal. Meanwhile, geopolitical disruptions – including most recently, Russia's invasion of Ukraine – have led to increased demand for thermal coal in other global regions.[21] These conditions have fuelled an extended boom period for Australian coal exports.

In terms of coordinated policymaking, resource extraction is governed by a complex combination of federal and State laws and policies under Australia's

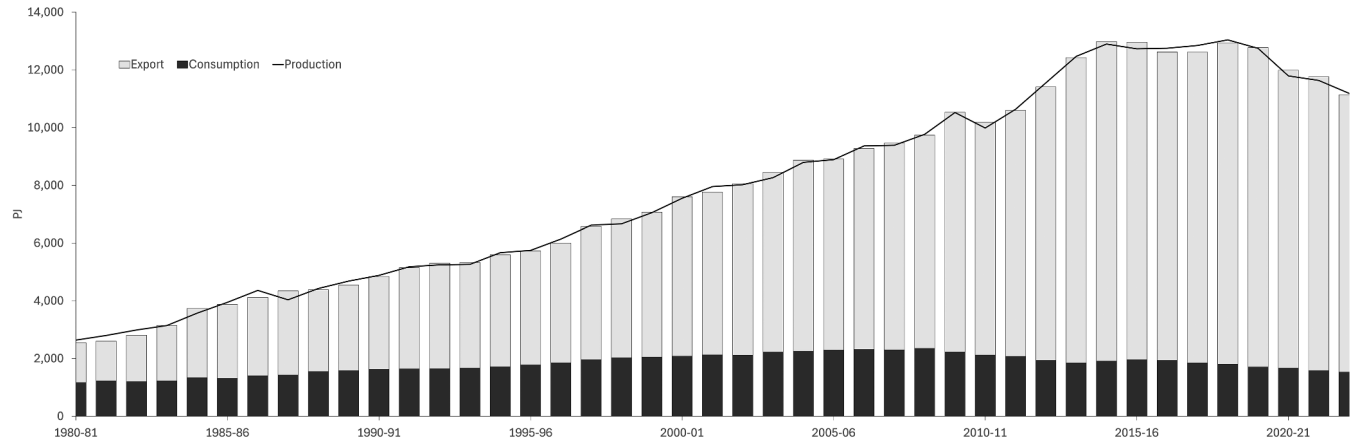

FIGURE 7.1 Australian coal production, domestic consumption and exports, over time. Source: Authors, adapted from DCCEEW Australian Energy Statistics 2024, Tables C1 and J1.

federated constitutional arrangements. Coal reserves are legally the property of subnational state governments and coal mining is regulated by state laws, with some federal and state oversight under environmental protection legislation.[22] Here, the materiality of the coal types interacts with state policies and agendas. For example, the state of Victoria had an ambitious agenda to transition from brown coal used only in domestic coal-fired power generation to meet its net zero targets, whereas the NSW and Queensland governments continue to generate considerable royalty revenue from their thermal and metallurgical black coal exports. Queensland's progressive coal royalties system introduced in 2022 has earned the state AUD$9.4 billion in revenue since its inception, and in 2022–2023 NSW earned AUD $4.5 billion in coal royalties.[23] These substantial revenue streams, combined with the absence of responsibility for Scope 3 emissions, create a powerful disincentive for governments to intervene in coal export markets.

The combination of complex political dynamics and a lack of a clear national policy direction creates significant uncertainty for communities in export-oriented coal regions. Coal workers and their households are left to piece together possible futures from a fragmented landscape of corporate press releases and internal briefings, media speculation, political announcements, and informal localised knowledge-sharing. That is, the absence of a coordinated policy direction leaves communities to interpret mixed signals about their future prospects. While export-oriented coal workers have in recent years experienced sustained investment, growing production and industry rhetoric about long-term market demand, this reality contrasts sharply with the national dialogue around transitions away from coal-fired power generation. More critically, it also overlooks the fact that their livelihoods increasingly depend on the opaque risk calculations of global coal capital, which can divest from assets with little notice or regard for community impacts.

The outlook for coal exports faces additional uncertainty as international trading partners move forward with their own committed emission reduction targets, and Australia comes under increasing international and domestic pressure to reduce its economic dependence on fossil fuel exports. Figure 7.1 shows a recent peak in Australian coal exports, and government economic modelling continues to suggest exports will decline from this point.[24] At the time of writing, no firm national or state policy settings are seeking to curtail coal exports, and some key actors are actively seeking alternative markets – particularly India, which has a net zero by 2070 target.[25] This disconnect between Australia's continued pursuit of coal export markets and its climate change commitments reveals a policy approach that overlooks meaningful decarbonisation beyond domestic emissions. It also leaves export-oriented workers and communities exposed to global capital flight, with very little capacity for sufficient forward-planning of their futures.

Read together, the geographies of different coal types embed specific regions in distinct markets – metallurgical and thermal, domestic and export. As Australia pursues its net zero commitments, these resource geographies will continue to shape uneven regional transition trajectories. The phase-out of low-quality brown coal has focused early transition attention on Victoria's Gippsland region, while central Queensland and the Hunter regions of NSW mine higher quality black thermal *and* metallurgical coal for both domestic use and export. This places these regions on trajectories heavily dependent on global markets and the decarbonisation policy settings of international trade partners. The Illawarra region faces its own distinct vulnerabilities: while three million tonnes of high-quality metallurgical coal supplies the Port Kembla steelworks annually, the rest is exported – yet the region has received little attention in coal transition policymaking. As coal capital shifts offshore and decision-making becomes increasingly distant from those dependent on it, such regions become even more vulnerable to complex global market dynamics. In the next section, we examine how this global political economy of coal interacts with local social and economic dynamics, before turning to our case study of metallurgical coal households in the Illawarra region of NSW.

The Illawarra region: Historical context and contemporary transformations

To situate our empirical data, we begin with a brief overview of the Illawarra region. Declared a region by centralised policymakers in the 1960s,[26] what we now call the Illawarra is the traditional custodial lands of First Nations groups, including Dharawal, Wodi Wodi and Yuin people, who have cared for the land and sea for thousands of years.[27] The region's distinctive geography is shaped by the Pacific Ocean to the east, and a tall escarpment to the west, where three substantial seams of black coal have attracted mining activity since early colonisation. Located just 80 kilometres south of Australia's largest city and economy, Sydney, the region today has a population of around 313,000, with most people living within five kilometres of the ocean.[28] The region's largest city, Wollongong, sits at the centre, with the industrial hub of Port Kembla immediately to its south. Here a vibrant multicultural community lives alongside Australia's largest steel manufacturer, BlueScope, and the industrial-infrastructure complex of Port Kembla, through which the region's high-quality metallurgical coal is exported to Asian markets.

By the early 1900s the Illawarra's economy was dominated by coalmining, but this was overtaken by steelmaking from the mid-twentieth century onwards.[29] At the height of Australian manufacturing in the 1960s, around 22,000 steelworkers (one in four households)[30] and approximately 20 underground coal mines shaped the region's industrial character. The steelworks

drew post-war European migrants who settled around the industrial centre.[31] From the early 1980s, waves of industrial restructuring brought a tumultuous two decades of economic instability and significant unemployment for the region.[32] Youth unemployment was particularly high compared to state averages, prompting state and regional policymakers to pursue economic diversification away from the region's industrial identity. Throughout the 1990s and beyond, a focus on tourism and service sectors emphasised the region's natural assets and sought to bring tourists, university students and commuting professionals into the region.[33] Reflecting these policy efforts, today the region's economy combines heavy industry concentrated around Port Kembla, four operational underground coal mines owned by global capital, and a growing service sector. The largest employers by sector are health, retail, tourism, construction and higher education.[34] Some 26,000 people commute daily between the Illawarra and nearby Sydney.[35]

This shift from industrial heartland to a diversified economy has shifted the region's socio-economic dynamics. Most coastal suburbs now have a concentration of professional commuters in gentrified areas, where house prices exceed the national average. Meanwhile, skilled trades workers and industrial labourers tend to be clustered – though not universally – in suburbs adjacent to key industrial precincts in the region's south. Distinct pockets of socio-economic disadvantage remain across the region. Reflecting national trends,[36] accelerated internal migration from major metropolitan centres (predominantly Sydney) into the region during and immediately after the Covid-19 pandemic has intensified a pre-existing housing shortage, particularly affecting renters and those in need of social housing. These patterns reflect how the Illawarra's geography, resources and economy combine to deeply connect the region to the global and wider domestic economy.

The region has a long history of labour, environmental and social activism. In particular, local branches of the union movement have a history of fighting for better conditions for workers in the coal and steel industries.[37] Community-based activism has also been prominent, including local contests focused on preserving places of significance to First Nations people, and protecting the local environment from industry and over-development. In recent years, community activism has mobilised in opposition to applications to extend existing underground coal mines. Some mining operations extend beneath the Sydney water catchment, while others push up against residential housing and the protected Royal National Park. In our own empirical research, we have found that opposition to mining in the region tends to reflect both local and global climate change concerns, strengthened by an influx of new residents whose economic lives are not tied to the region's heavy industries. The absence of coordinated planning for the future of Australia's export coal industries leaves both coal worker households and the broader community unclear about the future of both mining and steelmaking in the region.

In what follows we turn to our empirical data, exploring how metallurgical coal workers and households navigate daily life and uncertain futures in a changing industrial landscape. Our analysis draws primarily on 32 open-ended interviews conducted between 2021 and 2023 with coal workers and their households, primarily partners and young adults. Interviews lasted between 60 and 150 minutes and were conducted at participants' homes, public libraries and online (the latter during Covid-19 lockdowns). Participants were predominantly permanent employees working across different mines in the Illawarra, though many had experience as contractors in the sector prior to gaining permanent employment. The age range of participants spanned from late twenties to retired workers with over four decades of industry experience. These household interviews were supplemented with ten interviews to gather key stakeholder perspectives from local politicians, industry and regional union representatives, and mine training and rescue personnel. Qualitative data was supported by contextual analysis, including Australian Bureau of Statistics (ABS) data, analysis of federal and state policy documents and publicly available company reports, and ongoing participation in numerous stakeholder forums about the region's industrial future. Throughout this fieldwork we sought to maintain an inclusive methodological approach, engaging with diverse actors and perspectives regarding the region's coal industry. Our analysis focused on three interconnected dimensions of coal worker households' lived experiences: the daily reality of working in export-oriented underground metallurgical coal mines, how this shapes household relations, and how households envisioned their futures amidst broader regional transformations.

Export-oriented underground coal mining: An overview of labour process

Underground coalmining in the Illawarra has a distinct culture shaped by both the physical geography of the region's coal resources and the history of mining in the region. Coalmining was key in establishing many of the region's nineteenth century settlements that became suburbs, closely linking the region's postcolonial industrial, social and spatial history. The proximity of coal mines to residential areas means that coal workers tend to live within the region, enabling them to participate in daily household and social life. This is distinctly different to the "fly-in-fly-out" (FI-FO) culture of mining in regions like central Queensland and Western Australia, where work rosters of rotating weeks regularly separate workers from their families and communities for long periods of time.

Contemporary coalmining is diverse and highly automated, departing significantly from historical images of young men with picks and shovels at the coal face. Underground, there are distinct hierarchies, providing clear reporting lines that are designed to manage risk: production workers report to

Deputies, a statutory role regulated by the state under specific mining Workplace Health and Safety (WHS) legislation.[38] Shift trades (primarily electricians and mechanical fitters) install, inspect and repair production technology "on-the-fly." An Undermanager – also a statutory role – coordinates all mining operations for a shift. Other named statutory roles include Mining, Electrical and Mechanical Engineers, and Engineering Managers. Other underground roles include those responsible for extracting and managing gas, involving highly specialised drilling and ventilation expertise. Above ground, workers may be engaged in maintenance trades, undertaking larger, planned overhauls of underground equipment (though this is increasingly outsourced). There are also roles in administration, engineering, legal and financial services, human resources and other forms of management – underground workers report that such roles have ballooned in recent decades.

In the push to increase production, most mines in the Illawarra use the longwall method of mining: a high-powered cutting system 300 metres wide that works back and forth cutting across the coal face, while a system of automated conveyor belts moves coal to the surface. The presence of large, fast-moving equipment in confined spaces mean the conditions are notoriously dangerous, demanding all underground workers remain highly attuned to a multitude of risks. Beyond the risk of roof falls, the mines in the Illawarra are highly gaseous – predominately producing methane – with the ever-present risk of explosion if the gas is not extracted ahead of cutting. Above-average pay rates reflect the risk associated with underground coalmining. Historically, high levels of unionism and industrial relations disputes have secured improved pay and conditions over time. This relationship between coalmining, remuneration and risk was succinctly described by Participant 18: "It's a lot of money. But the thing about it, when I say it's a lot of money, the dangers go with it."

Historically, work in coal mines in the region was intergenerational, with children following their fathers into the mines.[39] However this is not a distinct characteristic of modern coalmining in the Illawarra – our interviews with households pointed to far fewer intergenerational connections with the coal industry. Many participants indicated that they did not want their children to follow in their footsteps as the work was difficult and precarious. Participant 14 pointed to the impacts of the highly physical work over a lifetime:

> But it's a tough job, it's a dirty job, and it's a backbreaking job, and if you're working on crews underground, it's not an easy job. You don't see a lot of old coal miners underground anymore.

Yet despite the demanding and dangerous conditions, many participants suggested that they had no desire to do other work. Participant 19 explained his enjoyment of a work culture where sharp distinctions could be drawn with the demands of contemporary knowledge-based work: "It's that camaraderie as

well, in a crew, having a laugh and a joke, and when you're underground, there's no phones, there's no internet, there's nothing."

Given the conditions described above, it is clear that coalmining has a distinct embodied experience that extends to the organisation of work. Workers in Illawarra-based mines are rostered on ten or 12 hour shifts usually for three to four days at a time, and many have experienced a multitude of shift changes over their careers. Underground workers are required to be punctual for every shift: crews leave at very precise times from the surface, traveling up to 15 kilometres underground to reach the longwall, and do not return until the end of the shift. Personal protective equipment and a self-contained breathing apparatus – up to 15 kilograms in total – is carried by each person working underground. There is no mobile reception and conditions are almost always confined, but also vary depending on where work is carried out: from hot to very cold, dark to well-illuminated, and often very wet, as the coal is hosed down as it is cut and transported, to reduce dust.

Unsurprisingly given these conditions, unions have played a central role in this industry over centuries, but since the industrial reforms of the Howard government era (1996-2007), the sector is increasingly characterised by labour hire, contract workers and reduced unionisation. The fieldwork took place immediately prior to the passing of federal "same job, same pay" legislation,[40] and workers spoke of working in a crew alongside another worker with a different shirt from a labour-hire company, doing the same work, but on different pay and conditions. They spoke of the way this undermined a sense that they were working together as equals, in work that heavily relies on coordination and mutual support for safety. There was also a sense that over-reliance on inexperienced contract workers in times of boom was unsafe. This apprehension extended to workers who were trained in other regions, where safety and risk were sometimes described as less of a concern. While such insights could be read as parochial, they point to a highly contextual and geographically specific labour process, where distinct safety and risk management cultures have evolved over time.

Navigating precarious work: A household perspective

For workers with partners or families, it is at the household level that decisions are made around work – paid and unpaid. The experiences of coal worker households in the Illawarra diverge from more remote mining communities such as those described by Gibson-Graham in central Queensland, where women were left with few economic possibilities. Here, a highly diversified economy means work opportunities are available across a broad range of industries, so juggling two working lives with care responsibilities worked in several ways. In household interviews, some partners (all women) chose to work in lower-paid sectors such as retail or administration, where work was

plentiful and they could maintain flexibility and work around their partner's shiftwork in the coal sector. In other households, coal workers spoke about choosing certain shift patterns so they could be there for their families – to see their children in the evening, to be present at weekend sport, and to care for children while their partner worked. This was often enabled by the specific shift patterns and relatively good remuneration of mining, as described by Participant 3:

> The best thing about this career and this industry is that I can work four days, then switch off and I've got three days at home with the family. Yeah, I don't take that for granted.

Participants also spoke of the predictability that rostered work offered them, allowing them to participate more fully in family life and actively volunteer in the community. One consistent theme that emerged from interviews was the equitable sharing of care, with many coal workers reporting sole care of small children on their non-rostered days. As Participant 21 explained: "[My partner] basically works on my days off. We sort of share parenting, I suppose. I have the kids on my days off and obviously on her days off she's got the kids …" This points to the way paid and unpaid work is navigated at the household level, and not at the individual worker level – where industrial relations and broader social dialogues around work are often anchored. Participants also spoke of engagement in a wide range of volunteer and community activities, from participating in social groups such as organised surfing competitions, to coaching children's sporting teams, volunteering on suicide prevention hotlines, and engaging in local environmental campaigns. These dynamics have been to date largely overlooked in transitions discourse, yet they point to how households have been able to make sectoral conditions work in their favour, creating unexpected social benefits that make the work distinctively attractive compared to other employment options.

While such roster arrangements create valuable opportunities for family and community life, they exist within a broader context of corporate power dynamics that do not often favour workers. Coal workers spoke about how employers regularly negotiated changes to shift patterns, impacting not just themselves, but the work of partners and patterns of family life. Beyond changes in shift patterns, households are left to navigate cyclical precarity in a boom/bust industry dominated by global commodity markets. Forced redundancy is a longstanding central characteristic of coalmining work, although this has intensified in recent decades as ownership has shifted from a single vertically integrated operator (BHP) to a mix of global corporate resources entities, some more economically secure than others. This precarity was described by Participant 12 in the following way: "People used to say, you're not a true coal miner until you've been retrenched! … it can change so quick."

These experiences of redundancy and insecurity are felt at the household level, and were explained as stressful experiences. This was described by the partner of a coal worker, Participant 2, in the following way: "At the end of the financial year, they'd always threaten to fire everyone and change everyone's job, and that constant not knowing."

To address household stress in times of precarity, participants spoke of multiple strategies for preparing for potential redundancy – partners taking up work or increasing hours in anticipation, workers upskilling into more secure roles in the mine (from production workers to Deputies or through different certificates in areas like rescue and WHS), and workers holding onto trade qualifications and licencing outside the industry "just in case." Workers with longer careers in the industry spoke about the need to pay off mortgages when times were good, and how they had advised younger or more inexperienced workers not to over-capitalise in "boom" periods, as there would definitely be a "bust" coming around the corner.

Many workers reported trying to leave the industry at various times of their own accord, or being forced to find other work during downturns. It is important to note that they often returned to coalmining afterwards driven by economic necessity – with many finding their qualifications insufficient to maintain comparable living standards in other industries. We found the experiences of many participants echoed research findings on redundancies in other industrial sectors including steelmaking and automotive manufacturing: that workers draw on their informal networks to find alternative work, and that older workers without trade qualifications were most at risk of being unemployed.[41] Given this context of employment precarity and the uncertain future of metallurgical coal in the region, our research explored how households understood their economic futures in the context of decarbonisation. What emerged was a striking diversity of values, approaches and experiences among participants.

Accounting for divergent views on the future of coal

Illawarra coal workers and their households face significant uncertainty about the future of the sector in the region, with no clear policy direction to guide their future planning. As a result, many are left to hedge their bets on the sector's future at the household scale, cobbling together company announcements, reports of global market dynamics, and commentary from the media, politicians and labour institutions, each of which are politicised in their own way. As a result, participants held varied views about the future of the metallurgical coal industry. Where some participants saw the industry in the region had only a few years to continue, others like Participant 7, felt it had decades of viability: "I think with metallurgical coal that might push that out to 35, 40 years, potentially."

While most participants expressed confidence in their own immediate job security, their outlook for future generations was markedly different. Almost all participants with younger children expressed their desire for their children to work in other sectors, given their own lived experiences of labour insecurity. As Participant 1 reflected: "It's not something that I'd be looking for my kids to start a career in at this stage. But I think it'll probably see me out. Possibly I've got twelve years left." This relative confidence about short-term job security stemmed largely from participants' identity as *metallurgical* coal miners. They emphasised how metallurgical coal remained essential to current forms of steelmaking globally. Some participants went further, challenging the notion that their jobs were complicit in climate change by highlighting the central need for steel – and therefore metallurgical coal – in renewable energy infrastructure.

Participants also expressed diverse views on climate change and its relationship with the industry. While some did not believe that coalmining had negative environmental impacts, others expressed personal discomfort about working in resource extraction, but saw it as the best available option for supporting their families. This complexity was particularly evident in the case of Participant 17, who intended to become an environmental activist in retirement: "When I finish my mining career, I'll probably go the other way because, like I said to you, I don't agree with the processes and what they do. It's very bad for the environment." This perspective challenges (often progressive) narratives that portray coal miners as indifferent to climate change, or that seek to frame employment as primarily a moral rather than an economic choice. In a region with historically limited opportunities for those without formal qualifications, coalmining enables some households to maintain a stable standard of living. More recently, the rising cost of living and lack of housing affordability has intensified in Australia creating additional pressures. This is particularly the case in the high-amenity coastal suburbs of the Illawarra, where internal migration has driven costs even higher. In this context, transitioning to lower-paid employment has become increasingly unfeasible for families dependent on mining income.

In making sense of the industry's future, participants described the multitude of strategies and sources they drew from, including company briefings, national and local media, informal discussions with other workers and analysing trends in global commodity markets for metallurgical coal online. In general, participants demonstrated sophisticated understandings of how global market factors intersect with local forces such as state planning regimes, which have recently made mine extensions more challenging due to environmental impacts and localised opposition. The changing social dynamics of the region also shaped how coal miners understood their working futures. As Participant 21 observed: "Everyone started moving in from out-of-town, saying, 'Why the

hell is there a coal mine here?' It's like, well, news flash, this whole area was a coal mine!" This comment reflects some growing tensions between the region's industrial history and its emerging identity post-Covid, which is more closely tied to the natural assets of the escarpment and ocean, and the rise of a substantial professional and service economy.

Despite varying views on timelines, many participants shared a view that no single factor will bring about the end of the coal industry in the Illawarra, but rather, it is going to be "death by a thousand cuts," from intersecting forces. Mine owners face increasing difficulty securing licence approvals, particularly for operations located under the water catchment and pushing up against the National Park. The region's demographic shift has introduced a growing professional class who have no economic connection to the region's heavy industries and highly value its natural amenity, leading to opposition to industrial expansion. Meanwhile, global investment in carbon-intensive sectors such as coal is declining, leaving operations increasingly dependent on less financially stable capital, with high debts and less resilience through downturns.

While our research was conducted in an extended boom period characterised by labour shortages where experienced workers had some agency in negotiating conditions, history suggests that this will not be sustained. Recent developments support this view, with the closure of Russell Vale mine due to operational safety breaches, and Australian resources operator South32's sale of two Illawarra assets to a global consortium, GM[3], primarily funded through Singapore. Collectively, these factors suggest the trajectory for the coal sector within the Illawarra is much more likely to involve mine-by-mine closures, rather than a coordinated regional transition.

Conclusion

Our empirical research demonstrates the need for more nuanced conversations about coal transitions, attuned to place-based specifics at the regional scale. While media and policy attention has understandably focused on thermal coal regions facing a capital-led withdrawal from coal-fired power generation, regions like the Illawarra – dominated by export-oriented metallurgical coal – face distinctly different challenges. These regions, sitting outside dominant transition narratives and newly legislated policy initiatives such as the Net Zero Authority, are highly vulnerable to the risk of an uncoordinated and unplanned end to their industry. The impacts are likely to be uneven within regions, with workers holding formal qualifications and transferable skills more readily transitioning to new and alternative industries compared to those whose expertise is primarily industry-specific.

Labour precarity, driven by global export markets, has long been a defining feature of coalmining, with impacts felt most acutely at the household level. Adopting a household lens in transition planning reveals important perspectives

on the social dynamics of industrial transformation that are often overlooked in current policy approaches. As Fairbrother and colleagues observed in relation to the end of coal-fired power generation in Gippsland,[42] partners and other household members should be included in support measures such as employment guidance and training packages. Likewise, evidence from historical experiences of industrial transformation should inform contemporary responses – where research has found that structural adjustment programmes have often failed to deliver real outcomes for workers, who ultimately end up relying on local networks to secure employment. While avoiding the individualisation of responsibility that has characterised labour relations in Australia for some time, transition planning must recognise and work with these local and relational dynamics.

Perhaps most importantly, our research reveals how working in the Illawarra's coal sector has facilitated positive forms of household and community life, through shared-care arrangements, community engagement and volunteering. This finding challenges simplistic moral narratives about coal workers and communities.[43] Rather than viewing coal workers – through the lens of individual choice or cultural identity – as part of the problem, we seek to understand their positioning within broader structural constraints. Illawarra coal workers and their households navigate their own personal circumstances in a context shaped by global capital flows and a complex policy landscape. This perspective suggests the need for transition approaches that recognise both the distinctive place-based vulnerabilities and the valuable social arrangements that have evolved around mining work, while also acknowledging the structural forces that constrain workers' agency over their working futures.

Notes

1 Connor, "Energy Futures"; Ey and Sherval, "Exploring the Minescape"; Fleming et al., "Understanding the Resource Curse"; Goodman and Worth, "The Minerals Boom"; Weller and Beer, "State Structures."
2 Baer, "The Nexus of the Coal Industry and the State."
3 Sheldon et al., "The Ruhr or Appalachia?"; Snell, "Just Transition?"; Weller, "The Geographical Political Economy"; Weller, "Just Transition?"
4 IEEFA, 2024, "Australia's Coal Export Market."
5 Colvin, "Contextualizing Coal Communities"; Rainnie and Snell, "The Australian Net Zero Economy Authority."
6 ILO, *Guidelines for a Just Transition*. See also Flanagan, "A Transition with Teeth" in this volume.
7 MacNeil and Beauman, "Understanding Resistance"; Edwards et al., "Towards a Just Transition"; Cha, "A Just Transition for Whom?"; Della Bosca and Gillespie, "The Coal Story."
8 Colvin, "Contextualizing Coal Communities"; Colvin and Przybyszewski, "Local Residents' Policy Preferences."
9 Atkins, "The Geographies of 'Stranded Communities'"; Colvin and Przybyszewski, "Local Residents' Policy Preferences"; Weller, "The Geographical Political Economy"; Snell, "Just Transition?"; Fairbrother, "When Politics Meets Economic Complexity."

10 Colvin, "Contextualizing Coal Communities."; Edwards et al., "Towards a Just Transition."
11 Here we especially look to build on Katherine Gibson's work in Central Queensland's remote mining communities in the 1990s (see Gibson, "Hewers of Cake"; Gibson-Graham, *The End of Capitalism*), along with other important work on households and regional economic change within and beyond geography, including in the Australian context, Head et al., "Zones of Friction"; McDonald et al. "Mining Work, Family and Community"; Bamberry, "Households and Citizenship."
12 Head et al., "Zones of Friction."
13 IEA, *Emissions Measurement*.
14 Geoscience Australia, "Coal."
15 DCCEEW, "Resources and Energy Quarterly, Dec 2024."
16 See Vogl, "Steel Beyond Coal" for a comprehensive overview of progress on the decarbonisation of steelmaking internationally, with a European focus.
17 Auger et al., "The Future of Coal Investment."
18 Parkinson, "Wind and Solar Smash Output Records."
19 DCCEEW, "Resources and Energy Quarterly, December 2024."
20 United Nations, "Paris Agreement."
21 DCCEEW, "Resources and Energy Quarterly, September 2022."
22 DCCEEW, "Coal and Coal Seam Gas – Regulation."
23 Queensland Treasury, "State Budget 2024–25."
24 DCCEEW, "Resources and Energy Quarterly, December 2024."
25 See Hughes et al., *Coal and Gas Futures* for a comprehensive overview of Asia-Pacific demand, including India.
26 Eklund, *The Making and Breaking of Port Kembla*.
27 Donaldson et al., *A History of Aboriginal Illawarra*.
28 ABS, "Illawarra.".
29 Eklund, *The Making and Breaking of Port Kembla*.
30 Eklund, *The Making and Breaking of Port Kembla*.
31 Eklund, *The Making and Breaking of Port Kembla*.
32 Burrows, "Unemployment in the Illawarra."
33 Advantage Wollongong, *Wollongong: A City Transformed*.
34 ABS, 2021.
35 Deloitte, *The Decentralisation of Work in the Illawarra*.
36 Deloitte, *The Decentralisation of Work in the Illawarra*.
37 Eklund, *The Making and Breaking of Port Kembla*; O'Brien and Burrows, "Assessing the Effectiveness."
38 For example, in NSW see Work Health and Safety (Mines and Petroleum Sites Regulation) 2014.
39 See also Dahlgren, *Digging Deeper*; Della Bosca and Gillespie, "The Coal Story.".
40 *Fair Work Legislation (Closing Loopholes) Act 2023*.
41 O'Brien and Burrows, "Assessing the Effectiveness."; Barnes and Weller, "Becoming Precarious?" See also Barnes, "From Occupational Steering," in this volume for a related discussion of occupational citizenship.
42 Fairbrother et al., "Jobs and Skills Transition."
43 Huber, *Climate Change Is Class War*.

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