



**CASE STUDY
SOUTH AFRICA**

POWERING THE FUTURE

Amplifying youth in South Africa's low-carbon transition



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Executive Summary

South Africa is a major carbon emitter and among the most coal dependent countries on earth.¹ Carbon emissions per person (7.3t) are significantly above the global average (4.7t),² and more than seven times the average for the African continent (1t).³ The country's economy, including its energy sector, has historically pivoted on the mining industry (primarily coal, platinum, and gold), which has been characterised by the exploitation of black, migrant labour in service of colonial and apartheid-era industrialisation. A small number of large conglomerates, involved in mining, minerals beneficiation and crude oil among other sectors, have had privileged access to cheap electricity, infrastructure, and tax breaks, and have held significant power over the state and the economy.⁴ This has not only produced vested interests in a coal-dependent economy, but also grave inequities in access to affordable energy supply, with energy poverty concentrated in poor, black settlements on the outskirts of cities or in rural areas. A severe energy crisis, characterised by persistent blackouts and rising tariffs, has only deepened misgivings about the current energy policy. Meanwhile, low wages, health risks and poor safety have remained a key site of protest for mineworkers in South Africa.

Nearly 30 years after democracy, South Africa remains the most unequal country on earth⁵ and among the hardest places to find a quality job.⁶ Only 40% of South Africa's working-age population is employed,⁷ with more than half of full-time employees earning below the working-poverty line.⁸ While the rate of employment in South Africa's formal sector is shrinking, it's (relatively small) informal economy has seen a steady growth in employment⁹ (particularly for youth¹⁰), demanding new approaches to worker protection, micro-enterprise development, and income insurance that are responsive to informality.

Youth are particularly disadvantaged in the South African labour market.¹¹ Over 45% of young people (aged 15-34) are unemployed,¹² making them twice as likely to be jobless as

¹ PFriedlingstein et al., "Global Carbon Budget," 2022, <https://ourworldindata.org/co2/country/south-africa#per-capita-how-much-co2-does-the-average-person-emit>.

² Friedlingstein et al.

³ Friedlingstein et al.

⁴ Lucy Baker, "Renewable Energy in South Africa's Minerals-Energy Complex: A 'low Carbon' Transition?," *Review of African Political Economy* 42, no. 144 (2015): 245–61.

⁵ World Bank, 'Inequality in Southern Africa: An Assessment of Southern African Customs Union', 2022,

<https://www.worldbank.org/en/news/press-release/2022/03/09/new-world-bank-report-assesses-sources-of-inequality-in-five-countries-in-southern-africa>.

⁶ IMF, 'World Economic Outlook Database', 2022,

<https://www.imf.org/en/Publications/WEO/weo-database/2022/October>.

⁷ StatsSA, 'Quarterly Labour Force Survey: Q2', 2023,

<https://www.statssa.gov.za/publications/P0211/P02112ndQuarter2023.pdf>.

⁸ H Dawson, 'Faking It or Making It: The Politics of Consumption and the Precariousness of Social Mobility in South Africa', *Journal of the Royal Anthropological Institute* 29 (2022): 145–62.

⁹ Beth Vale et al., 'A Transdisciplinary Analysis of the Shape and Implications of Unemployment in South Africa' (Actuarial Society of South Africa, 2023).

¹⁰ Percept, 'Understanding Youth Inequality' (Inclusive Society Institute, 2023).

¹¹ International Centre for Transitional Justice, 'South Africa Most Unequal Country in the World: Report | International Center for Transitional Justice', accessed 29 October 2023,

<https://www.ictj.org/node/35024>; 'South Africa Most Unequal Country in the World: Report | Inequality News | Al Jazeera', accessed 21 August 2023,

<https://www.aljazeera.com/news/2022/3/10/south-africa-most-unequal-country-in-the-world-report>.

¹² StatsSA, 'Quarterly Labour Force Survey: Q2'.

their adult counterparts (35-64 years).¹³ The proportion of young people in South Africa not in education, training or employment (NEET) exceeds that of any other nation.¹⁴ More than a third of youth (aged 15-24) are not in education, training or employment (NEET),¹⁵ with these rates having steadily risen since 2020.¹⁶ Among those young people that are NEET, the overwhelming majority are black, and more than half are women,¹⁷ reflecting and reproducing patterns of historical, systemic inequity.¹⁸ Forty percent have not completed primary schooling (Grade 12) and are therefore entering the labour market with no formal qualifications.¹⁹ More than a third are looking for their first job.²⁰ While being less likely to be employed, young people also have poorer job security and social protection than their adult counterparts.²¹

The impetus for an energy transition in South Africa comes not only from the imperative to ameliorate its climate impact, but arguably even more so from an urgent need to secure and diversify energy supply, alleviate inequality and provide opportunities for its young workforce. Yet the just transition sector, and the youth employment sector, continue to operate largely distinctly from one another.

In response to the mounting pressure to diversify the country's energy mix and fill the gap in generation capacity, the government has accelerated the procurement of privately generated renewable electricity.²² But an economy powered by renewable energy is not automatically more inclusive or equitable; nor is it guaranteed to produce sustainable livelihoods. Given that inequity and injustice have been inherent in the building of South Africa's fossil fuel-based economy, there is an imperative to not simply decarbonise the economy but to restructure it in ways that meaningfully include those on the margins. As such, South African policy frameworks have increasingly been cast in the language of a 'just transition'. The 2020 formation of a Presidential Climate Commission (PCC) to guide an equitable, inclusive energy transition in South Africa has been particularly pivotal to this, culminating in the publication of a Just Transition Framework. In 2021, South Africa joined with international partners to form a Just Energy Transition Partnership and five-year Investment Plan (JET-IP). Despite being cast in the language of the just transition, the alignment of JET-IP with the justice elements of the Transition Framework is contested,²³ as are the political foundations of the Just Transition Partnership which bestows significant power to foreign, Western interests in shaping South Africa's energy transition.²⁴

¹³ StatsSA.

¹⁴ OECD, 'Youth Not in Employment, Education or Training (NEET)', 2022, <https://data.oecd.org/youthinac/youth-not-in-employment-education-or-training-neet.htm>.

¹⁵ Statistics South Africa, 'Quarterly Labour Force Survey: Q1 2023', 2023.

¹⁶ G Mudiriza and A De Lannoy, 'Profile of Young NEETS in South Africa', 2022, <https://www.saldru.uct.ac.za/2022/06/30/profile-of-young-neets-in-south-africa/>.

¹⁷ Department of Higher Education and Training, 'Fact Sheet on NEET', 2023, https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Fact%20Sheet%20-%20NEETs_%20March%202023.pdf.

¹⁸ Vale et al., 'A Transdisciplinary Analysis of the Shape and Implications of Unemployment in South Africa'.

¹⁹ Department of Higher Education and Training, 'Fact Sheet on NEET'.

²⁰ Department of Higher Education and Training.

²¹ Youth Capital, 'Shift: An Action Plan to Tackle Youth Unemployment in South Africa', 2020, https://youthcapital.co.za/wp-content/uploads/2021/06/YOUTH_CAPITAL__SHIFT_.pdf.

²² Lucy Baker, 'Renewable Energy in South Africa's Minerals-Energy Complex: A "Low Carbon" Transition?', *Review of African Political Economy* 42, no. 144 (3 April 2015): 245–61, <https://doi.org/10.1080/03056244.2014.953471>.

²³ Presidential Climate Commission, 'A Critical Appraisal of South Africa's Just Energy Transition Investment Plan', 2023, <https://pcccommissionflow.imgix.net/uploads/images/PCC-analysis-and-recommenations-on-the-JET-IP-May-2023.pdf>.

²⁴ groundWork, 'Contested Transition: State and Capital against Community', 2022, <https://groundwork.org.za/wp-content/uploads/2023/03/gW-Report-2022-for-web.pdf>.

While the language of a just transition has become increasingly commonplace in policy discourse, there is little consensus about what ‘justice’ actually looks like in the context of a low-carbon transition, for whom this justice should be realised, and how it should be enacted. This case study tackles these questions from the vantage point of youth, who are regularly referenced by policymakers, but whose stake in the just transition is yet to be meaningfully realised. Young people are critical stakeholders in South Africa’s energy transition, in part because they are disproportionately excluded from the economy and from policy discourse, but also because they are custodians of the country’s future.

This case study argues that, at the heart of South Africa’s energy transition, is a question of intergenerational justice. *How can we approach and enact the energy transition to change the labour market odds for young people who bear the weight of historical inequality?* It argues that a just transition in South Africa demands a systematic strategy to include youth (black youth and women in particular), who experience the highest rates of unemployment, precariousness, and income insecurity in the country. The case study draws evidence from grey and published literature as well as three case illustrations of how South Africa’s energy transition is unfolding in local settings. These are a) the decommissioning of Komati coal plant in Mpumalanga, b) the implementation of the renewable independent power producer programme in Loeriesfontein, Northern Cape, and c) attempts at creating locally-owned solar hubs in KwaZakhele, Eastern Cape. These illustrations serve as microcosms of the broader challenges South Africa faces in transitioning to a low-carbon economy and lessons to be learned.

Findings of the case study signal the following key lessons in securing a just transition for youth:

Champion and protect local ownership: The renewable energy industry in South Africa is currently dominated by large foreign-owned private companies. While the Renewable Energy Independent Producer Programme (REI4P) sets conditions for local shareholding and black economic empowerment²⁵; labour unions, civil society and a mounting body of research²⁶ suggest that the REI4P is not translating into meaningful local job creation or social upliftment. If regulation does not enforce a substantive commitment to local ownership, and skilling programmes that target local youth, patterns of exclusion and dispossession will be reinforced in the low-carbon transition. Without regulation to curtail big industry, and policy to support community-owned micro-enterprises, there is a high risk that the renewable energy sector will continue to be monopolised by elites. The experiences borne out of the decommissioning of Komati signal the potential consequences of tackling *climate* change without *system* change. By de-prioritising skilling programmes, bypassing local employment, failing to safeguard workers, and sidestepping public consultation; the energy transition at Komati runs the risk of entrenching historical patterns of inequity, in which the interests of public and private elites come at the expense of local people, and inevitably, local youth. Without proper checks, JET-IP could also entrench the indebtedness of Global South economies, while serving the very same economies that benefited from 20th century fossil fuel industrialisation.²⁷

²⁵ Black Economic Empowerment (BEE) policies in South Africa are a set of affirmative action measures aimed at redressing historical economic disparities and promoting the economic inclusion of previously disadvantaged black South Africans in the country’s economy.

²⁶ Boitumelo Malope, ‘Power Struggles: An Exploration of the Contribution of Renewable Energy to Sustainable Development, Decent Work and the “just Transition” through a Case Study of Wind Farm Development Outside Loeriesfontein, Northern Cape Province (2011-2020)’ (PhD Dissertation, University of Stellenbosch, 2022); groundWork, ‘Contested Transition: State and Capital against Community’; Project90x2030, ‘The Role of Ownership in the Just Energy Transition’, 2018, <https://90by2030.org.za/wp-content/uploads/2018/04/Just-Energy-Transition-The-Role-of-Ownership-in-a-Just-Energy-Transition.compressed.pdf>.

²⁷ B Kamanzi, ‘Komati Decommissioning: A Spectre Due to Haunt the Just Transition’, *Amandla*,

The KwaZakhele Township Transition project showed that, despite the potential benefits of expanding community-owned energy systems, very few communities have the financial capabilities to develop and use them.²⁸ Renewable energy entrepreneurship comes with significant cost, presenting barriers to entry, particularly for young people, the urban and rural poor and the working class. Partly because of this, community-driven job creation in the renewable energy sector has been at a relatively small scale, with powerful interests poised to oppose localised and diversified energy production.²⁹ While there is buy-in, resilience, and innovation within the community, policies still work against the historically disadvantaged in society. This is a missed opportunity, particularly for the country's youth.

Take skilling seriously. This applies both to the higher education and training sector and to (public and private) green employers undertaking workplace-based training. Despite repeated policy references to the need for young people to be skilled, reskilled and upskilled for the energy transition, there are currently no government-led skilling programmes operating at scale. Policymakers recognise that technical and vocational training colleges (TVET) have an essential role to play in boosting young people's employability. Simply obtaining a tertiary qualification can increase young people's chances of being employed by 15%³⁰. But this qualification is even more powerful if it equips young people with the skills needed by a changing labour market and an emerging green economy. Green business also has a responsibility to build local skills. For South Africa's youth to have a meaningful stake in the just transition, employers in the renewable energy sector must prioritise skills-building for locally-hired employees. There is the risk that renewable energy independent power producers 'window-dress' local employment to meet REI4P targets, without investing in substantive, transferable skills for young workers, which are essential to their social mobility. A concerted skills-building strategy, that begins well before construction phase, is essential if REI4Ps are to absorb young entry-level workers that are without formal qualifications or prior work experience.

Meet young people where they are: Once they leave school, young people need to gain a foothold in the labour market. But many have the odds stacked against them, with no formal qualifications, no prior work experience, and few social links to the labour market.³¹ They will also be largely excluded from social welfare, unless they have children or a disability. Job-seeking is expensive and long-term unemployment can take both a psychological and a financial toll on young people.³² If we are to support young people's labour market participation (including in the green economy), both the public and private sectors have a role to play in easing the financial and psychosocial toll of young people's experience and helping them get a foot in the door.

Recommendations for key stakeholders in this transition are as follows:

Renewable Energy Employers

Create sustainable quality jobs: While creating new green jobs for young people in South Africa, we must also ensure – rather than assume – that these are quality jobs. Employment

2022,

<https://www.amandla.org.za/komati-decommissioning-a-spectre-due-to-haunt-the-just-transition/>.

²⁸ Jonathan Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy', *Energy for Sustainable Development* 69 (August 2022): 164–78, <https://doi.org/10.1016/j.esd.2022.06.006>.

²⁹ Sustainable Energy Africa, "A Feasibility Study Exploring Energy through Community-Led Socially Owned Renewable Energy Development in South Africa."

³⁰ StatsSA, 'Quarterly Labour Force Survey: Q2'.

³¹ Percept, 'Understanding Youth Inequality'.

³² Youth Capital, 'Beyond the Cost: What Does It Really Cost Young People to Look for Work?', 2022, <https://youthcapital.co.za/beyond-the-cost-research-report/>.

initiatives in the green economy are all-too-often piecemeal and short-term and have not translated into sustainable livelihoods.

Offer transferable skills: Programmes aimed at reskilling and upskilling youth for a new energy economy must offer certified, transferable skills that create demonstrable experience and career ladders for youth. Workplace-based training can also offer young people essential links to employers and mentors.³³ This can help reduce the rate of churn for young people in the labour market, who regularly cycle in and out of disconnected, short-term jobs.³⁴

Recognise young people's aptitudes and circumstances. To curb youth unemployment, employers must find alternative ways of assessing and recognising young people's competencies and experience beyond formal qualifications. Recent research shows the impact of providing an unemployed young person with a documented evaluation of their full skill set: not just their educational qualifications, but also their soft skills, capabilities, experience and learning potential. When young job-seekers in South Africa were given a summary report to share with potential employers, their chances of finding work improved by up to 17% and their earning potential increased by up to 32%.³⁵ In light of the costs involved in travelling to work; young people may also need financial support to keep their first quality job.

Higher education and training institutions

TVETs have a critical role to play in realising a just transition for youth. They must build substantive partnerships with the green energy sector, and wider low-carbon industry (beyond the energy sector), while supporting a pipeline of youth to meet the emerging needs of employers.

Public Policy

Drive equity in affordable energy supply. At present, access to energy in South Africa is starkly unequal, both in terms of affordability and supply. This has knock-on effects for micro-enterprises, particularly in informal settlements and rural areas; for young people's digital inclusion and access to information; and for women whose caregiving burden is often amplified by energy poverty. A just energy transition is not only about greener energy, worker protection, and inclusive economic opportunity; but also more equitable and sustainable access to energy.

Support public employment programmes. Public employment programmes can offer young people critical experience and entry in the labour market, while also strengthening infrastructure and social services in local communities. But public employment programmes must also build transferable skills and exploitable networks to avoid being piecemeal. Given the limited scale of direct jobs in the renewable energy sector; public employment programmes can also produce work in potentially high-absorbing, low-carbon sectors like the care sector or circular waste economy. Promising private-public partnerships are emerging to link young people to quality green jobs at scale.

Expanded social protection should recognise and alleviate the financial *and* psychosocial costs of the job search and offer wrap-around support. This might include cash transfers to support job-seeking, improved access to affordable transport, or programmatic interventions like mentorship and psychosocial services. Cash transfers can alleviate the prohibitive costliness of job-seeking and commuting, making it easier to absorb, and retain, young people as they gain a foothold in the economy (including the low-carbon economy). Extending social protection to young job-seekers can alleviate the psychosocial and financial burden of the job search, and prevent young people from giving up the search for work.

³³ Youth Capital, 'Linked in: Rising through Social and Economic Connections', 2022, <https://youthcapital.co.za/linked-in-werise-socialconnections-brief/>.

³⁴ Youth Capital, 'Shift: An Action Plan to Tackle Youth Unemployment in South Africa'.

³⁵ Harambee, 'It's All about Employability', 2019, <https://harambee.co.za/its-all-about-employability/>.

Youth Employment Programmes

Build linkages to employers: While growing young people's education and skills, we also need to be creating quality livelihood opportunities, and stimulating demand. Linkages between training providers and private businesses must also be strengthened, particularly for technical and vocational training colleges.

Boost skills: Qualifications are a fundamental determinant of young people's employment and labour market outcomes. Supporting young people's livelihoods must start with supporting them to stay in, and complete, schooling. Improving access to, and quality of, basic and secondary school education is essential, but we also need systematic, targeted skills programmes operating at scale to support youth in a low-carbon economy.

Gender-responsive interventions should focus on providing access to finance, land, and affordable childcare and social services, as strategies to boost and sustain women's labour participation.

Support the informal economy: While South Africa's informal sector is small relative to other African countries, it has produced steadily, and significantly, higher growth in employment than the formal economy in recent years,³⁶ particularly for youth.³⁷ With the right support and investment, and increased support for micro, small and medium-size enterprises operating in the green informal sector, South Africa can stimulate vibrant local economies, powered by locally-owned and maintained renewable energy hubs. This will be especially important for youth and women who are disproportionately represented in the informal economy. The private sector can also offer young entrepreneurs (including self-employed youth or micro-enterprises) essential seed capital and professional networks to help them tackle high barriers to entry.

Regulation

Enable the informal economy: Informal enterprises should be enabled, not hamstrung. Responsive regulation should reduce bureaucratic red-tape and unnecessary formalisation, while still safeguarding worker protection and sound governance.

Enforce local ownership: If regulation does not enforce a substantive commitment to local ownership, and skilling programmes that target local youth, patterns of exclusion and dispossession will be reinforced in the low-carbon transition. Without regulation to curtail big industry, and policy to support micro-enterprises, there is a high risk that the renewable energy sector will be monopolised by a small group of elites.

Future Research

This case study has drawn on a growing body of evidence examining and critiquing both the design and implementation of South Africa's just energy transition. Although this literature repeatedly argues for the foregrounding of youth (and women) in the just energy transition, there remains a dearth of evidence on the youth-specific impacts and implications of South Africa's energy transition. As yet, literature on the just energy transition, and literature on youth employment, have not been brought into substantive conversation.

a) **understand the youth-specific impacts** of decommissioning coal, including the social, economic and environmental aspects that might affect young people's labour market participation.

b) **track youth-specific outcomes** (absorption, skilling, retention) in the renewable energy sector and wider low-carbon economies. Continuous monitoring of youth specific outcomes

³⁶ Vale et al., 'A Transdisciplinary Analysis of the Shape and Implications of Unemployment in South Africa'.

³⁷ Percept, 'Understanding Youth Inequality'.

will allow us to understand the real world effects of our transition strategies and identify areas for intervention.

c) Identify and monitor the **skills required** by the renewable energy value chain.

d) **document green employment initiatives** (both within and outside the energy sector) that are showing promise in creating sustainable, quality jobs for youth.

e) **understand the youth-specific impacts of energy poverty** on education, job-seeking, job-retention and income generation.

Acronyms

ANC – African National Congress

BEE- Black Economic Empowerment

CPUT – Cape Peninsula University of Technology

DEA – Department of Environmental Affairs

EWSETA – Energy & Water Sector Education and Training Authority

IRP – Integrated Resource Plan

JET IP – Just Energy Transition Investment Plan

JET P – Just Energy Transition Investment Partnership

MSME – Micro, small and medium-size enterprises

NDC – Nationally determined contribution

NDP – National Development Plan

PCC – Presidential Climate Commission

PCFTT – Presidential Climate Finance Task Team

REI4P – Renewable Energy Independent Power Producer Programme

RES – Renewable Energy System

SARETEC – South African Renewable Energy Technology Centre

TVET – Technical vocational and education and training colleges

1. Introduction

South Africa's per capita carbon emissions (7.3t) are well above the global average (4.7t), and seven times higher than the average for the African continent (1t).³⁸ The country is also vulnerable to the effects of climate change, including the destruction of livelihoods from fires, floods, and droughts.^{39,40} This vulnerability is not evenly distributed, and instead often serves to reproduce the racial, gendered, and spatial inequalities entrenched through colonialism and apartheid. Under apartheid law, cities were reserved almost exclusively for white residents, while racialised people (Black, 'Coloured' and Indian) were removed to informal settlements or rural reserves that were deliberately underserved. Today, rural communities and informal settlements often do not have the infrastructure to mitigate climate impacts or the resources to rebuild after major weather events. These same communities are also most likely to be exposed to toxic fossil fuel pollutants, or to be dispossessed for their land by mining interests.⁴¹ Indeed, "racialised communities have borne the brunt of climate capitalism from cradle (fossil fuel extraction) to grave (climate crisis)."⁴²

South Africa's carbon emissions position it as one of the few African countries whose climate impact warrants an urgent energy transition. But the need for an energy transition is also driven by other forces, which situate South Africa as a compelling case study. The first is that a deepening electricity crisis, which has been characterised by extended blackouts and rising tariffs, is forcing the country to consider new strategies to diversify and sustain energy supply. The economic impact of the energy crisis has been severe, affecting GDP, company closures, job losses, and reduced international investment,⁴³ along with the national cost of living.⁴⁴ The second is that both the energy crisis, and the energy transition, are playing out in the most unequal country on earth with among the world's highest unemployment rates.⁴⁵ South Africa's energy sector has been tied up with a long history of colonial and apartheid migrant labour exploitation, and continues to reproduce inequality by privileging the energy needs of big corporations over those of its most vulnerable citizens.⁴⁶

Today, South Africa is the hardest place on earth to find a job.⁴⁷ Nearly half of young people (15-34 years) are unemployed, most of them women.⁴⁸ Young South Africans are struggling

³⁸ P Friedlingstein et al., 'Global Carbon Budget', 2022, <https://ourworldindata.org/co2/country/south-africa#per-capita-how-much-co2-does-the-average-person-emit>.

³⁹ Singh, Julie Arrighi, Lisa Thalheimer, Maarten van Aalst, S. Li, J. Sun, G. Vecchi, W. Yang, J. Tradowsky, F. E. Otto, and Romeo Dipura. "Climate change exacerbated rainfall causing devastating flooding in Eastern South Africa." (2022).

⁴⁰ Gray, Harriet Brookes, Vis Taraz, and Simon D. Halliday. "The impact of weather shocks on employment outcomes: evidence from South Africa." *Environment and Development Economics* 28, no. 3 (2023): 285-305.

⁴¹ Jacklyn Cock, 'Resistance to Coal Inequalities and the Possibilities of a Just Transition in South Africa', *Development Southern Africa* 36, no. 6 (2019): 860–73.

⁴² Christian Gonzales et al., 'Catalyst for Change: Empowering Women and Tackling Income Inequality', IMF, 22 October 2015, <https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2016/12/31/Catalyst-for-Change-Empowering-Women-and-Tackling-Income-Inequality-43346>.

⁴³ United Nations. Economic Commission for Africa (2018-12). Energy crisis in Southern Africa: future prospects. Addis Ababa. © UN.ECA. <https://hdl.handle.net/10855/41827>

⁴⁴ Sustainable Energy Africa, "A Feasibility Study Exploring Energy through Community-Led Socially Owned Renewable Energy Development in South Africa," 2022.

⁴⁵ IMF, 'World Economic Outlook Database'.

⁴⁶ Baker, 'Renewable Energy in South Africa's Minerals-Energy Complex'.

⁴⁷ IMF, 'World Economic Outlook Database'.

⁴⁸ Statistics South Africa, 'Quarterly Labour Force Survey: Q1 2023'.

to gain a foothold in the labour market. Half of young people that start school do not pass Grade 12,⁴⁹ which is a standard entry requirement among many employers and tertiary institutions. Most young people that are not in employment, education and training live in households with no employed members,⁵⁰ with little to no social links to the formal economy. The financial and psychological toll of extended job-seeking can deepen young people's alienation and depression, making them less likely to seek work⁵¹ or be employed.⁵² Between 2017-2022, the number of young job-seekers (aged 15–34) that had grown discouraged (i.e. had not acted to find work in the previous four weeks) had increased by almost 40%.⁵³ In other words: the current configuration of South Africa's economy, including its energy regime, is untenable not only from a climate perspective, but also because of its inability to support sustainable livelihoods and combat social inequity.

But decommissioning fossil fuel is not straightforward. This is partly because there are highly concentrated, vested interests involved. The state-owned company, Eskom, provides 90% of the country's electricity,⁵⁴ consumes 80% of its coal, and is responsible for 45% of its emissions.⁵⁵ Sasol, a private oil gas company consumes 10% of the country's coal and is responsible for 10% of emissions.⁵⁶ Mining and industry are the country's largest consumers of energy. Together with the energy sector, the mining industry and associated sub-sectors of manufacturing, use their influence to protect profits and reinforce path dependency.⁵⁷

Coal remains an important part of the South African economy. It provides the vast majority of the country's electricity⁵⁸ and is a significant source of foreign exchange.⁵⁹ An estimated 120,000⁶⁰– 150,000⁶¹ people are directly employed in the coal value chain. This is not to mention indirect jobs or income-generation activities. Workers in coal mining support 3-10 dependents,⁶² most of them are women and young people. In their attempts to incrementally shift the energy regime from centralised fossil fuel-based energy to decentralised renewable-based energy; South African policymakers are also grappling with a mandate to safeguard workers, expand sustainable livelihoods, and advance an inclusive economy. These imperatives reflect in policy articulations of the 'just transition' to low carbon. The 2020 formation of a Presidential Climate Commission (PCC) to guide an equitable, inclusive

⁴⁹ H Van Broekhuizen, S van der Berg, and H Hofmeyr, 'Higher Education Access and Outcomes for the 2008 National Matric Cohort', Economic Working Papers (University of Stellenbosch, 2016), <https://ssrn.com/abstract=2973723> or <http://dx.doi.org/10.2139/ssrn.2973723>.

⁵⁰ Youth Capital, 'Beyond the Cost: What Does It Really Cost Young People to Look for Work?'

⁵¹ Melanie du Toit et al., 'Unemployment Experiences in Context: A Phenomenological Study in Two Townships in South Africa', *Journal of Psychology in Africa* 28, no. 2 (2018): 122–27.

⁵² Youth Capital, 'Shift: An Action Plan to Tackle Youth Unemployment in South Africa'.

⁵³ Percept, 'Understanding Youth Inequality'.

⁵⁴ Blanche Ting and Robert Byrne, 'Eskom and the Rise of Renewables: Regime-Resistance, Crisis and the Strategy of Incumbency in South Africa', *Energy & Social Science* (University of Sussex, 2020), <https://hdl.handle.net/10779/uos.23475695.v1>.

⁵⁵ Lerato Monaisa and G Montmasson-Clair, 'A Tale of Life and Death: The Coal Value Chain's Impacts on Local Communities in South Africa' (TIPS, 2022).

⁵⁶ Monaisa and Montmasson-Clair.

⁵⁷ Monaisa and Montmasson-Clair.

⁵⁸ CSIR, 'Statistics on Power Generation for South Africa for 2022', 2022, <https://www.csir.co.za/csir-releases-statistics-on-power-generation-south-africa-2022#:~:text=Coal%20still%20dominates%20the%20South,of%20the%20total%20energy%20mix>.

⁵⁹ Cock, 'Resistance to Coal Inequalities and the Possibilities of a Just Transition in South Africa'.

⁶⁰ TIPS, 'Sector Jobs Resilience Plan: Coal Value Chain', 2020, https://www.tips.org.za/images/TIPS_for_DEFF-dtic_-_S_JRP_for_the_coal_value_chain_final_May_2020.pdf.

⁶¹ Manaiso & Montmasson-Clair, "The tale of life and death: The coal value chain's impacts on local communities in South Africa", 2022

⁶² Monaisa and Montmasson-Clair, 'A Tale of Life and Death: The Coal Value Chain's Impacts on Local Communities in South Africa'.

energy transition in South Africa has been particularly pivotal to this, culminating in the publication of a Just Transition Framework. In 2021, South Africa joined with international partners to form a Just Energy Transition Partnership and five-year Investment Plan (JET-IP) to fund the transition.

While policy discourse on the energy transition in South Africa has increasingly centred the mandate for a *just* energy transition, the realisation of these justice components (including quality employment, skills-building, and local ownership) has been highly contested. The youth-sensitive agenda articulated in the Just Transition Framework, for example, has not translated into the JET-IP, where the focus on skills development, new entrants, and social security, was judged by the PCC to be insufficient.⁶³ Although the current policy frameworks express an intention to prioritise young people as key stakeholders in the just transition; these intentions will not be realised without deliberate, youth-targeted policy and programming, and tracking of youth-specific outcomes. This case study offers a targeted exploration of young people's stake in the journey to a just transition, given that they not only bear the brunt of South African inequality and economic exclusion, but are also custodians of the future that climate change policy seeks to protect. This case study is interested in how the transition to a low-carbon economy might be embedded in an alternative development path in which young people in South Africa – particularly black, women and rural youth – are substantive participants. This means approaching the energy transition as a question of intergenerational justice, asking how we might leverage the transition to change the odds for young people on the margins.

This case study forms part of a larger collaborative project by the Dutch-African knowledge platform INCLUDE, and the International Development Centre in Canada, titled "*A Green and Inclusive Future for Youth in the Global South*". It draws on academic and grey literature from within and outside the knowledge platform, as well as key stakeholder engagements with youth employment and one climate justice advocates. Literature was sourced through convenience sampling of readily available and relevant sources, including academic journals, policy papers, grey literature and reputable databases. These were identified through search engines, citation networks, and stakeholder recommendations, with a focus on literature published after 2015. The case study also draws particularly on Percept's body of work on employment and youth inequality in South Africa.⁶⁴ Stakeholder engagements were held with leaders of two advocacy organisations in South Africa – one focused on youth employment and another on climate justice. Both stakeholders have been deeply engaged in the policy processes of their sector, as well as in research and convening.

The case study begins with a critical analysis of South Africa's energy mix, and a reflection on the policy journey that preceded the country's Just Transition Framework. This includes an analysis of how the energy transition has been implemented in South Africa, both through the decommissioning of coal and the procurement of renewable energy, and the extent to which this implementation has chimed with key justice principles of inclusivity and local ownership. The case study then reflects on the labour market dynamics affecting young people in South Africa, and their implications for a just energy transition. This is followed by three case illustrations, each of which demonstrate how the energy transition is unfolding in local settings, with implications for youth employment and sustainable livelihoods. Finally, we offer a series of recommendations for policymakers, public programmes, green employers, higher education and training institutions, and further research.

⁶³ Presidential Climate Commission, 'A Critical Appraisal of South Africa's Just Energy Transition Investment Plan'.

⁶⁴ B Vale et al., 'Boosting Decent Employment for Africa's Youth' (INCLUDE, 2022), https://includeplatform.net/wp-content/uploads/2022/12/12_12_Boosting-3.pdf; Percept, 'Understanding Youth Inequality'; Vale et al., 'A Transdisciplinary Analysis of the Shape and Implications of Unemployment in South Africa'.

2. Shifting South Africa's energy mix

Table 1: Highlights on the Road to 'Just Transition' Policy

Year	Policy
2003	Renewable Energy White Paper
2010	Initiation of the Integrated Resource Plan
2011	Renewable Energy Independent Power Producer Programme
2012	The National Development Plan (NDP)
2015	The Paris Agreement and introduction of Nationally Determined Contributions (NDC)
2019	National Planning Commission Conference on Pathways to a Just Transition
2020	The National Employment Vulnerability Assessment (NEVA)
	The Presidential Climate Change Commission (PCC)
2022	Just Energy Transition Framework
2022	Climate Change Bill

Coal has long dominated the South African energy mix, contributing 80% to the mix in 2022, with renewable energy technologies (wind, solar PV and Concentrating Solar Power (CSP) and hydro) contributing 13.7%, and nuclear contributing 4.6%.⁶⁵ Of this generation mix, Eskom, a monopolised state-owned company, generates 95% of South Africa's electricity, giving the government a significant stake in coal interests. In addition, Eskom is responsible for 100% of electricity transmission through its ownership of the entire electricity grid, and accounts for 45% of all electricity distribution to end users (municipalities account for the balance).⁶⁶ Eskom's reach and control, which spans the generation, transmission and distribution of electricity in South Africa, illustrates its power in the energy transition dialogue. Another powerful actor in the energy sector is Sasol, a formerly state-owned petrochemical giant that is responsible for the importation of liquid fuels, gas and chemicals. Sasol is second to Eskom in carbon emissions and will be greatly impacted in the move away from fossil fuel based energy sources.⁶⁷

South Africa's energy sector is historically bound up with both a dependence on coal, and a reliance on exploitable cheap labour that can produce cheap energy for minerals-based, export-oriented industry. These symbiotic relationships between the mineral and energy generation sectors (and increasingly also the financial sector) on the one hand, and between these sectors and the state, is often referred to as the 'Mineral-Energy Complex'(MEC).⁶⁸ Historically, the MEC was founded for the dispatch of centralised coal-based energy, as cheaply as possible, to a small group of energy-intensive users. Even today, these so-called Energy-Intensive Users Group of 31 companies consume over 40% of electricity generated by Eskom and continue to "dominate the drafting of energy policy in their favour, including pricing."⁶⁹

⁶⁵ Council for Scientific and Industrial Research, "Statistics on Power Generation for South Africa for 2022," 2022, <https://www.csir.co.za/csir-releases-statistics-on-power-generation-south-africa-2022#:~:text=Coal%20still%20dominates%20the%20South,of%20the%20total%20energy%20mix>.

⁶⁶ Project90x2030, 'The Role of Ownership in the Just Energy Transition'.

⁶⁷ de Jong, Sophie. Powering Justice: Redefining a Just Energy Transition through a South African lens

⁶⁸ Project90x2030, 'The Role of Ownership in the Just Energy Transition'.

⁶⁹ Swilling et al., 2015, p. 13. The current list of Energy Intensive Users Group of Southern Africa members is at <http://eiug.org.za/membership/>.

As it had been prior to the democratic transition, coal mining has been a critical sector for connecting post-apartheid political elites to mining interests. But Eskom is now in a state of financial and operational crisis, demanding repeated state bailouts to repay debt.⁷⁰ This is notwithstanding rampant mismanagement and corruption: particularly in the coal supply chain.⁷¹ Through increased investment and strategic procurement, the African National Congress (ANC) attempted to recast Eskom as an instrument for economic redistribution and the developmental state. But escalating costs, procurement irregularities and failing to improve infrastructure to meet growing demand have instead translated into unreliable, unaffordable energy and grave mis-use of public funds.⁷² In 2023, the electricity crisis is resulting in up to 12 hours of daily blackouts. Power outages have a severe impact on young people's education, livelihoods and future chances: young people struggle to study at night; access to WiFi (and therefore information) shrinks affecting learning, networking and job-seeking; and the cost of sustaining a micro-enterprise climbs.⁷³ Young people are also especially vulnerable to job losses when businesses close.⁷⁴ Nearly 90% of South Africans are connected to the electricity grid, but the cost of electricity, particularly in informal settlements, means that energy poverty is widespread, particularly among black and female-headed households.⁷⁵

The precariousness of the current energy regime is compounded by the fact that coal is also becoming increasingly uneconomical.⁷⁶ While half of South Africa's coal is currently exported, these export markets are drying up and becoming less competitive as carbon tariffs rise.⁷⁷ Increasingly, renewables are also producing energy at lower cost than coal. So, despite the rigidity, influence and collusion of the historical energy regime, a seemingly inevitable energy transition is unfolding.

3. Policy pathway to an energy transition

For two decades, South African policymakers have appreciated the need to utilise renewable energy to meet the national electricity demand.⁷⁸ Growing awareness of the impact of carbon emissions, along with a deepening energy supply crisis have accelerated energy transition policy in recent years.

The 2010 Integrated Resource Plan (IRP) was initiated as a 'living' document, that would be regularly updated, to determine long-term electricity demand and detail how this should be met in terms of generating capacity, type, timing, and cost.

The Paris Agreements of 2015 saw countries around the world, including South Africa,

⁷⁰ Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy'.

⁷¹ A Bowman, 'Parastatals and the Economic Transformation in South Africa: The Political Economy of the Eskom Crisis' 119, no. 476 (2020): 395–431.

⁷² Bowman.

⁷³ NYDA, 'The Impact of Load-Shedding on Youth Enterprises', 2023, <https://www.nyda.gov.za/Portals/0/downloads/Loadshedding%20Report%20Final.pdf>.

⁷⁴ G Espi, M Leibbrandt, and V Ranchhod, 'Age, Employment History and Heterogeneity of COVID Era Employment Outcomes', Wave 3, NIDS-CRAM, 2021, <https://cramsurvey.org/reports/#wave-3>.

⁷⁵ S Ngavara et al., 'Gender and Ethnic Disparities in Energy Poverty: The Case of South Africa', *Energy Policy*, 2022.

⁷⁶ Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy'.

⁷⁷ Monaisa and Montmasson-Clair, 'A Tale of Life and Death: The Coal Value Chain's Impacts on Local Communities in South Africa'.

⁷⁸ Ram, Babu. "Renewable energy development in Africa-challenges, opportunities, way forward." (2010).

committing to the phase out of coal and other fossil fuels.⁷⁹ South Africa's 2019 Integrated Resource Plan (IRP) announced plans to decrease coal generation capacity by nearly 30% by 2030.⁸⁰ In the same year, eleven units at Hendrina, Grootvlei and Komati power stations were closed⁸¹ with intentions to decommission a further six ageing coal power stations by 2030.⁸² In 2020, Sasol announced plans to cut its own carbon emissions by up to 10% by 2030, with a strategy to pivot away from coal towards gas, renewable energy and green hydrogen.

Given the role of coal in the country's economy, the vested interests in coal, and the livelihoods that currently rest (directly or indirectly) on coal power, the decommissioning of coal has been highly contested. Indeed, while the low carbon transition is often promoted as the engine to economic growth and employment creation in the country, it will also displace jobs. This, in a country with record-setting rates of unemployment and inequality, is deeply controversial. Even more so in sectors like mining, where labour unions hold significant bargaining power, have negotiated relative job security for workers.⁸³

Meanwhile, the uptake of renewable energy has been driven by another set of stakeholders, including parts of government, new investors, civil society and advocacy groups.⁸⁴ The Renewable Energy Independent Power Producer Programme (REI4P), launched in 2011, has been critical to shaping the renewable energy systems (RES) landscape. While the IRP outlined how energy would be supplied, the REI4P has been central to procuring RES. This has been done through a bidding process, which has seen private sector investment in wind, solar, photovoltaic, CSP, biomass, biogas and small hydro technologies.⁸⁵ The national energy crisis has produced added urgency in the transition to renewable alternatives, resulting in an increasingly rapid liberalisation of the renewables economy.⁸⁶ Registration processes and licensing requirements for energy production have eased to encourage private sector investment.⁸⁷

While the increase of RES through independent power producers is important for energy supply, these are predominantly owned by foreign multinationals and private investors.⁸⁸ In 2018, after the 4th bid round, 55% of REI4P bids were owned by foreign interests – this proportion had steadily increased over time.⁸⁹ Some unions, activists and civil society groups see the privatisation of the renewable energy sector as a threat to decentralised local ownership models, which could extend the impact of RES beyond environmental protection and cost savings to include socio-economic upliftment.⁹⁰ Although the government has recognised the importance of local ownership in the value chain, instituting requirements for local employment, procurement and ownership in the REI4P bidding process, there are

⁷⁹ Monaisa and Montmasson-Clair, 'A Tale of Life and Death: The Coal Value Chain's Impacts on Local Communities in South Africa'.

⁸⁰ Monaisa and Montmasson-Clair.

⁸¹ Monaisa and Montmasson-Clair.

⁸² Monaisa and Montmasson-Clair.

⁸³ TIPS, 'Sector Jobs Resilience Plan: Coal Value Chain'.

⁸⁴ Jonathan Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy', *Energy for Sustainable Development* 69 (August 2022): 164–78, <https://doi.org/10.1016/j.esd.2022.06.006>.

⁸⁵ Baker, "Renewable Energy in South Africa's Minerals-Energy Complex: A 'low Carbon' Transition?"

⁸⁶ Baker, "Renewable Energy in South Africa's Minerals-Energy Complex: A 'low Carbon' Transition?"

⁸⁷ IMF, "South Africa's Economy Loses Momentum amid Power Cuts: IMF Country Focus," 2023, <https://www.imf.org/en/News/Articles/2023/06/15/cf-south-africas-economy-loses-momentum-amid-record-power-cuts>; The Presidency of South Africa, "Confronting the Energy Crisis: Actions Required to End Load Shedding and Achieve Energy Security," 2022.

⁸⁸ Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy'.

⁸⁹ Neil Overy, 'Ownership in the Renewable Energy Independent Producer Procurement Programme', 2019, <https://90by2030.org.za/wp-content/uploads/2019/05/REI4P-Hi-Res.pdf>.

⁹⁰ Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy'.

doubts as to whether the actual value chain is locally procured.⁹¹ Desires to safeguard jobs and advance socio-economic inclusion while transitioning to green energy, have informed policy around the *just* transition, which is discussed in the next section.

Jonathan Hanto and colleagues⁹² have argued that the national energy sector pivots around four primary objectives that reflect different interests and don't always align:⁹³ Energy availability, Maintaining the profitability of the climate sector, Reducing inequality and employment insecurity, and Environmental and climate protection. Despite some momentum towards an energy transition, competing interests that benefit from coal continue to support the sector's maintenance and expansion, including a complex set of coal-related trade unions.⁹⁴ The IRP 2019 is falling behind its initial targets with delays in procurement agreements, complications around linking renewable energy to the grid, and rules around local ownership and employment.⁹⁵ Between 2000 and 2020, the share of renewables in the energy mix increased by only 4.7%.⁹⁶ Outside of Eskom provision, the remaining 5% of electricity is provided by a combination of plants attached to REI4P, small municipal generators, and private or business generators.

3.1 Policy pathway to a *just* transition

Between 2010 and 2020, policy development in relation to the energy transition was starkly siloed – addressing climate mitigation and adaptation, the renewable energy program, and the impacts of climate breakdown, as largely separate issues (see Table 1).

The 2003 Renewable Energy White Paper, and 2010 Integrated Resource Plan, developed strategies to implement South Africa's energy transition; while a separate line of policy sought to tackle poverty, inequality and unemployment. In 2012, the National Development Plan (NDP) was introduced with a strategy to eradicate poverty and reduce inequalities by 2030. The plan included a focus on environmental sustainability with reference to an equitable transition to a low carbon, climate resilient economy and society,⁹⁷ but no plans as to how this should unfold.

In 2020, the National Employment Vulnerability Assessment (NEVA) analysed expected climate-change impacts on employment in five key sectors: agriculture, chemicals and chemical products, electricity, mining and transport.⁹⁸ The NEVA research was not intended to identify or plan for the skills implications of climate change, but illuminated the need for skills development to address the projected shifts in the job market, with particular focus on the less-skilled workers that would be more vulnerable to job losses than high-level counterparts.

At a Presidential Summit in 2018, it was agreed that a more coordinated and holistic

⁹¹ Baker, Lucy and Sovacool, Benjamin K., *The Political Economy of Technological Capabilities and Global Production Networks in South Africa's Wind and Solar Photovoltaic (PV) Industries* (September 3, 2017). *Political Geography* 60 (2017) 1-12, Available at SSRN: <https://ssrn.com/abstract=3447265>

⁹² Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy'.

⁹³ Hanto et al.

⁹⁴ Hanto et al.

⁹⁵ Hanto et al.

⁹⁶ Hanto et al.

⁹⁷ 'National Development Plan 2030 | South African Government', accessed 20 October 2023, <https://www.gov.za/issues/national-development-plan-2030>.

⁹⁸ Janet Wilhelm, 'TIPS - Sector Jobs Resilience Plan: National Employment Vulnerability Assessment - Analysis of Potential Climate-Change Related Impacts and Vulnerable Groups', 2020, <https://www.tips.org.za/research-archive/sustainable-growth/green-economy-2/item/3988-sector-jobs-resilience-plan-national-employment-vulnerability-assessment-analysis-of-potential-climate-change-related-impacts-and-vulnerable-groups>.

response to oversee a just transition to a low-carbon, climate resilient economy and society. This culminated in the launch of the Presidential Climate Change Commission (PCC) in 2020. The PCC is an independent, statutory, multi-stakeholder body established by President Cyril Ramaphosa to oversee and facilitate a just and equitable transition towards a low-emissions and climate-resilient economy.⁹⁹ The PCC-authored 'Just Transition Framework' was informed by research, policies and public consultations, as well as international best practice, to facilitate consensus around the just transition in South Africa. It is a deliberately human-centred document, centred around distributional, restorative and procedural justice in the energy transition.

At COP26 (2021), South Africa entered into an agreement with the UK, the EU, France, Germany and the US, known as the Just Transition Partnership. International partners committed to mobilising \$8.5 billion (primarily in loans) to facilitate the decarbonisation of South Africa's energy transition and develop new economic opportunities in the green economy.¹⁰⁰ Borne out of this was The Just Energy Transition Investment Plan (JET IP):¹⁰¹ JET IP details the kind of investment needed to adhere to the decarbonisation agreements laid out in the Nationally Determined Contribution (NDC).¹⁰²

Despite the language of the just transition having gained increasing prominence in the policy landscape, and broad consensus about the need for inclusivity in the process, there are diverging ideological positions about the meaning of justice in the context of an energy transition. Broadly, commentators¹⁰³ have identified a dominant, minimalist view that emphasises the social protection of vulnerable workers and advocates to reform and re-skill towards 'green jobs' and 'green growth'. This view is common among political and private sector elites, who have an interest in maintaining the current order, while 'greening' it.¹⁰⁴ But there is also a more radical view held largely by some activist and civil society groups. Here, a just transition demands different ways of producing and consuming that fundamentally reshape power towards greater public ownership and democratic control of key resources.¹⁰⁵ Different labour unions align with different sides of this ideological rift, but have settled on a mandate to protect jobs.¹⁰⁶

How might one interpret justice for *youth* in the transition? Young people's exclusion is entrenched in the country's economic structure: today's youth unemployment rates (45,3% for ages 15-34)¹⁰⁷ are not much improved from the earliest estimates (53.2%), published in 1996.¹⁰⁸ A just transition therefore demands some substantive reorganisation of power, priorities and resources in order to meaningfully include and protect youth in the labour market, and redress decades of historic exclusion.

In addition to ideological tensions, the just energy transition in South Africa faces several

⁹⁹ 'Presidential Climate Commission', accessed 21 August 2023, <https://www.climatecommission.org.za/>.

¹⁰⁰ de Jong, Sophie. Powering Justice: Redefining a Just Energy Transition through a South African lens

¹⁰¹ The Presidency of South Africa, 'South Africa's Just Energy Transition Investment Plan (JET IP): 2023-2027' (The Presidency, 2022), <https://www.thepresidency.gov.za/content/south-africa%27s-just-energy-transition-investment-plan-jet-ip-2023-2027>.

¹⁰² The Presidency of South Africa.

¹⁰³ Cock, 'Resistance to Coal Inequalities and the Possibilities of a Just Transition in South Africa'.

¹⁰⁴ Cock.

¹⁰⁵ Cock.

¹⁰⁶ Cock; Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy'.

¹⁰⁷ StatsSA, 'Quarterly Labour Force Survey: Q2'.

¹⁰⁸ Ariane De Lannoy et al., 'Why Is Youth Unemployment So Intractable in South Africa? A Synthesis of Evidence at the Micro-Level', *Journal of Applied Youth Studies* 3, no. 2 (April 2020): 115–31, <https://doi.org/10.1007/s43151-020-00012-6>.

other challenges, which have been categorised as techno-economic, socio-political, and socio-technical constraints.¹⁰⁹ Techno-economic constraints revolve around interactions between its economic dependence on coal, lack of energy infrastructure, and high investment risks due to lack of funding for renewable energy projects. The socio-political constraints rest primarily on a lack of policy support for renewables, insufficient institutional capacity, corruption, as well as lack of transparency, and poor monitoring, in the implementation of the Renewable Independent Power Producer Programme (REI4P). Finally, the socio-technical constraints include employment insecurity, lack of community engagement and social resistance, and a skills and manufacturing capabilities shortage.¹¹⁰

3.2 Challenges around ownership:

Bound up with South Africa's unfolding energy transition is an emerging political fault-line between coal-based, state-owned Eskom and the privately-driven (mostly foreign-owned) renewable energy sector.¹¹¹ Included in this is a shift from 'big state negotiating with big capital' to a rescaled, fragmented state negotiating with dispersed global capital. Facilitated by government and international finance, these parties jostle for access to the grid. While the generation mix might be changing, consumption remains dominated by the country's energy-intensive users.¹¹² This means that, despite evident competition between a coal-based energy regime and a renewable 'niche', a core set of interests around big industry and energy are arguably still perpetuated.¹¹³ Converting all the power generated by Eskom to renewable energy may result in an energy transition, but it may still result in an energy regime that is led by state policy and private investment with little to no input from the citizens. In other words, "widespread efforts to privatise the energy sector are potentially driving a disorderly market transition rather than a just energy transition."¹¹⁴

It is possible that renewable energy producers become a set of vested interests operating in parallel with coal-based interests. Instead of tackling energy poverty, the RES could simply amount to a new form of accumulation that entrenches historical inequalities.¹¹⁵ "Without a fundamental reorientation of the country's coal-fuelled, consumption-led economy in which cheap black labour remains a key input" fueled by national and international demands, "any meaningful, just, low carbon transition will be hard to achieve."¹¹⁶

Land is also a critical input in both the fossil-fuel-based and renewable energy systems, and a site of major contest in South Africa. Despite 30-years of democracy, white people still own most of the country's land, with direct financial stake in ecotourism, mining, farming, and other land-intensive industries. Landless Black, Coloured and Indigenous people are often seen as lacking in power or agency in these development debates. In other words, public participation here, and in much of South Africa, stacks the odds in favour of land owners, reproducing racialised privilege and dispossession.

In transitioning to a low-carbon economy, there is a risk that the historically colonial structure

¹⁰⁹ Mirzania, Pegah, Joel A. Gordon, Nazmiye Balta-Ozkan, Ramazan Caner Sayan, and Lochner Marais. "Barriers to powering past coal: Implications for a just energy transition in South Africa." *Energy Research & Social Science* 101 (2023): <https://doi.org/10.1016/j.erss.2023.103122>.

¹¹⁰ Mirzania, Pegah, Joel A. Gordon, Nazmiye Balta-Ozkan, Ramazan Caner Sayan, and Lochner Marais. "Barriers to powering past coal: Implications for a just energy transition in South Africa." *Energy Research & Social Science* 101 (2023): <https://doi.org/10.1016/j.erss.2023.103122>.

¹¹¹ Greenpeace, 'Case Studies from Transition Processes in Coal Dependent Communities' (Institute for Sustainable Futures, 2019).

¹¹² Baker, 'Renewable Energy in South Africa's Minerals-Energy Complex'.

¹¹³ Baker.

¹¹⁴ Climate Justice Coalition, "JET Dialogue on Socially Owned Renewable Energy: Concept Note," 2023.

¹¹⁵ Baker, 'Renewable Energy in South Africa's Minerals-Energy Complex'.

¹¹⁶ Baker.

of the fossil fuel industry is repeated through undemocratic, non-participatory practices of land occupation, displacement, and labour exploitation. Reports of the privatisation or occupation of land to advance a 'green agenda' at the expense of local people (also known as 'green grabbing') are not uncommon.¹¹⁷ A renewable energy system will also not bring an end to mining, which has been a driving force of spatial apartheid and racial capitalism in South Africa and is often characterised by poor working conditions.¹¹⁸ For example: the vast majority of the world's palladium, a platinum group metal, is mined in South Africa and is integral to renewable energy storage. The massacre of thirty-four striking platinum mine workers has provoked a deepening national consciousness around the social failings of the MEC and the post-apartheid development trajectory.¹¹⁹ More so, the rate of foreign ownership in the renewable energy system, along with the extent of foreign loans driving the just transition agenda, poses a threat to an inclusive energy future that is owned and shaped by South Africans (nevermind youth).

3.3 Participation and representation of young people:

The Just Transition Framework, which draws on extensive public and youth consultation, affirms that it is not only workers in the fossil fuel chain that are vulnerable, but also youth, women and the unemployed who are affected by both climate crisis and the unintended consequences of mitigation efforts.¹²⁰ It also emphasises the need to empower and equip youth for the needs of the future, to foster local ownership and participation for youth and women in the low-carbon economy, and to increase the participation of youth and women in policymaking. Yet translation of these intuitions into the Just Transition Investment Plan (JET IP) or policy implementation more broadly has been limited. In August 2022, The Presidential Climate Commission held a youth consultation as part of their stakeholder engagements on the JET IP. Youth raised several questions in relation to the funding (grant vs loan) and called for youth representation on the Presidential Climate Finance Task Team (PCFTT). They also drew attention to inadequacy of the justice elements in the JET investment plan.¹²¹ Presently, there are no youth-targeted policies that articulate the youth-specific needs, impacts, and opportunities entailed in the energy transition. Nor is there a plan to track outcomes for young people as the transition unfolds.

¹¹⁷ N Andrew et al., 'Land Consolidation and the Expansion of Game Farming in South Africa: Impacts on Farm Dwellers' Livelihoods and Right to Land in the Eastern Cape', in *Africa for Sale: Positioning the State, Land and Society in Foreign Land Claims and Acquisition* (Brill, 2013), 97–130.

¹¹⁸ N Natrass and J Seekings, "The Economy and Poverty in Twentieth Century South Africa," SALDRU Working Paper (University of Cape Town: Centre for Social Science Research, 2010).

¹¹⁹ Baker, "Renewable Energy in South Africa's Minerals-Energy Complex: A 'low Carbon' Transition?"

¹²⁰ Presidential Climate Commission, 'Just Transition Framework', 2022, <https://pcccommissionflo.imgix.net/uploads/images/A-Just-Transition-Framework-for-South-Africa-2022.pdf>.

¹²¹ 'Youth Involvement in Climate Policy: The Just Energy Transition Partnership – Sacan.Africa', accessed 26 September 2023, <https://sacan.africa/2022/10/06/youth-involvement-in-climate-policy-the-just-energy-transition-partnership/>, South Africa Climate Action Network <https://sacan.africa/2022/10/06/youth-involvement-in-climate-policy-the-just-energy-transition-partnership/>

4.A labour market lens on youth and the just transition

Between the 1930s–1980s, South Africa experienced rapid economic growth as it transitioned from agriculture, to minerals, to manufacturing,¹²² bolstered by explicit state subsidies and other forms of support for heavy industry.¹²³ Stable economic growth until the 1970s disguised weaknesses in the apartheid economy,¹²⁴ which relied on an extractive, colonially entrenched mining sector and the exploitation of cheap, black labour. Meanwhile, the black agrarian economy was increasingly devolved through the proletarianisation of rural communities into an exploitable migrant workforce.¹²⁵ Despite economic growth, these structural changes in the economy were marked by some of the highest unemployment rates in the world and ever-deepening inequality.¹²⁶ Since the 1990s, South Africa has been shedding formal-sector wage jobs, particularly in the mining sector, and has increasingly migrated to a service-oriented economy.¹²⁷ Unemployment, post-apartheid, has remained largely intractable with youth, women, rural and Black South Africans bearing the brunt of historically-defined labour market disadvantages.

Nearly half of young people (aged 15-24) are unemployed,¹²⁸ and more than a third are not in education, training or employment (NEET).¹²⁹ Among those young people (aged 15-24) that are NEET, nearly a third are actively looking for their first job.¹³⁰ Long-term unemployment, and a lengthy unsuccessful job search, can affect mental health and deepens discouragement. Between 2008 and 2021, the number of young people in South Africa that had been looking for work for more than three years tripled.¹³¹ The number that had given up entirely, tripled as well.¹³² After new entrants, discouraged job seekers are the second largest category of young people (aged 15-34) who are not in employment, education or training. This is followed by homemakers,¹³³ most of whom are women, struggling to juggle job-seeking and income-generation alongside caregiving.

Relative to older adults, young people have less work experience, less financial capital, and weak social networks.¹³⁴ In addition to being less likely to be employed than adults, youth are also less likely to hold secure positions. Instead, they are hired on short-term contracts, with no clear pathway to their next job,¹³⁵ and at disproportionate risk of job loss when shocks

¹²² Haroon Borat et al., *Structural Transformation, Inequality, and Inclusive Growth in South Africa*, 50th ed., vol. 2020, WIDER Working Paper (UNU-WIDER, 2020), <https://doi.org/10.35188/UNU-WIDER/2020/807-8>.

¹²³ Borat et al.

¹²⁴ N Nattrass and J Seekings, "The Economy and Poverty in Twentieth Century South Africa," SALDRU Working Paper (University of Cape Town: Centre for Social Science Research, 2010).

¹²⁵ Colin Bundy, "The Emergence and Decline of a South African Peasantry," *African Affairs* 71, no. 285 (1972): 369–88.

¹²⁶ Meyer, Daniel Francois. "An analysis of the short and long-run effects of economic growth on employment in South Africa." *International Journal of Economics and Finance Studies* 9, no. 1 (2017): 177-193.

¹²⁷ Borat, Haroon, Karmen Naidoo, Morne Oosthuizen, and Kavisha Pillay. *Demographic, employment, and wage trends in South Africa*. No. 2015/141. WIDER Working Paper, 2015.

¹²⁸ StatsSA, 'Quarterly Labour Force Survey: Q2'.

¹²⁹ StatsSA.

¹³⁰ Department of Higher Education and Training, 'Fact Sheet on NEET'.

¹³¹ Youth Capital, 'Shift: An Action Plan to Tackle Youth Unemployment in South Africa'.

¹³² Youth Capital.

¹³³ Department of Higher Education and Training, 'Fact Sheet on NEET'.

¹³⁴ Percept, 'Understanding Youth Inequality'.

¹³⁵ Youth Capital, 'Shift: An Action Plan to Tackle Youth Unemployment in South Africa'.

hit.¹³⁶ While there is stark inequality between young people and other generations in the labour market, there is also inequality between youth: young women have less access to employment, earnings and job security than do men; and race and income remain tightly bound.

Youth unemployment in South Africa has historically been framed in terms of supply (i.e. the readiness of young people for the labour market) and demand (i.e. the ability of the labour market to absorb them). As such, responses to youth unemployment are centred on how to create, and prepare young people for, waged work in the formal sector. These have included supply-side responses that have sought to skill and prepare youth to enter the workforce, demand-side responses that have sought to 'create jobs' for youth and stimulate employment in key sectors, and to a lesser extent, 'matching solutions' that aim to better link employers to appropriately skilled young people, and vice versa. Diminishing formal sector wage work has resulted in increased attention being paid to the informal economy as a potential source of youth livelihoods. Here, supporting 'entrepreneurship' (often through formalisation) has served as the dominant frame, but strategies to drive self-employment, informal livelihoods and micro-enterprise often fall outside of entrepreneurship programmes.

This section interrogates each of these frames, and their applicability to a just, youth-inclusive energy transition. In line with existing youth employment research,¹³⁷ this case study argues that, in supporting green livelihoods for young people, neither an exclusive focus on the supply side, nor an exclusive focus on the demand side will serve. In securing quality livelihoods for young people in the low-carbon economy, we cannot rely on the so-called 'formal economy' alone, nor can we expect young people to 'self-start' without support. "We must find systemic and structural ways to support, secure, and protect the multifarious, alternative livelihoods that young people are making for themselves."¹³⁸

4.1 Supply: the skills question

Education and employment outcomes are intertwined in South Africa: less than half of young people that start Grade 1 pass their final 'matric' examinations.¹³⁹ In South Africa, young people without a matric or equivalent qualification are often cut off from pathways to tertiary education, employment and higher earnings.¹⁴⁰ Not only are they less likely than their peers to find a job, but they also stay unemployed for longer periods of time, and have less stable and lower paid jobs when they are employed.¹⁴¹ Only a small minority of young people obtain post-school tertiary qualifications: these youth are 30% more likely to be employed than those without.¹⁴² A youth workforce that is largely without formal qualifications is a significant challenge. The current South African labour market fails to recognise young people's aptitudes beyond formal qualifications, has few high-functioning workplace-based training programmes, and is growing in sectors that demand highly-skilled workers.

¹³⁶ Espi, Leibbrandt, and Ranchhod, 'Age, Employment History and Heterogeneity of COVID Era Employment Outcomes'.

¹³⁷ Vale et al., 'Boosting Decent Employment for Africa's Youth'.

¹³⁸ Vale et al.

¹³⁹ H Van Broekhuizen, S van der Berg, and H Hofmeyr, "Higher Education Access and Outcomes for the 2008 National Matric Cohort," Economic Working Papers (University of Stellenbosch, 2016), <https://ssrn.com/abstract=2973723> or <http://dx.doi.org/10.2139/ssrn.2973723>.

¹⁴⁰ N Branson, A De Lannoy, and A Kahn, 'Exploring the Transitions and Well-Being of Young People Who Leave School before Completing Secondary Education in South Africa.' (SALDRU Working Paper Series No. 244, 2018), http://www.opensaldru.uct.ac.za/bitstream/handle/11090/959/2019_244_Saldruwp.pdf?sequence=1.

¹⁴¹ Branson, De Lannoy, and Kahn.

¹⁴² Statistics South Africa, 'Quarterly Labour Force Survey: Q1 2023'.

If educational outcomes are one driver of youth unemployment, the ‘experience trap’ is another. Young people entering the labour market are challenged with how to gain, and then signal, their experience to employers. Qualitative evidence suggests that new entrants are often denied jobs on the basis of ‘lack of experience.’¹⁴³ After race and gender, being able to demonstrate some work experience appears to be the most important factor in finding work in South Africa, regardless of whether it is formal or informal, paid or voluntary.¹⁴⁴ In order to meet the challenge of youth unemployment, the low-carbon economy will need to find ways to absorb workers with limited qualifications and experience, while also rapidly building transferable skills.

Technical and vocational training (TVET) colleges have a critical role to play in supporting the further education of young people without a matric, linking young people to workplace experience, and boosting young people’s skills and experiences to match the needs of the labour market. The emerging skills demand for the green economy will require Technical and Vocational Education and Training (TVET) institutions to adapt to ever-changing occupational profiles, including at local levels.¹⁴⁵ TVETs in South Africa are currently too weak to support a just transition. They are poorly financed, lack sufficiently skilled instructors, and are not sufficiently linked to other education pathways nor the marketplace. As such, TVETs are often understood (by students and employers alike) as second-rate education¹⁴⁶ and their potential value to supporting young people’s transition into quality jobs is still to be realised.

The JET-IP describes a R2.7 billion reskilling strategy to support the transition to renewables across the country. An estimated R1.6-billion will be allocated to skills development zones in Mpumalanga, Eastern Cape and Northern Cape, which will be run by TVETs.¹⁴⁷ In Mpumalanga, 42-million is allocated to ‘investing in youth.’ JET-IP also looks to increase the number of students enrolled in TVET colleges. But details on when and how these large-scale training operations will get underway remain scarce, and the PCC has criticised the JET-IP for severely underprioritising skills development.¹⁴⁸ Some smaller programmes are underway (See Box 1), but do not come close to the scale needed to make a substantive difference for youth.

Box 1:

A training initiated by the Energy and Water Sector Education and Training Authority (EWSETA), in partnership with RES4Africa, trained 10 lecturers from Nkangala TVET College enhancing their capacity in renewable energy expertise. Another partnership, this time between EWSETA and Power Africa, a US government initiative, will support 100 unemployed, young women learners, as well as 15 (TVET) college lecturers from Gert Sibande, Nkangala and Ehlanzeni, to undergo training towards the attainment of a National Certificate: Electrical Engineering: Renewable Energy.

¹⁴³ De Lannoy et al., ‘Why Is Youth Unemployment So Intractable in South Africa?’

¹⁴⁴ C Marock and C Harrison–Train, ‘Next Generation South Africa’ (British Council, 2018), <https://www.britishcouncil.org.za/next-generation-south-africa>.

¹⁴⁵ K Freimann and G Magnus, “Skills Transition to a Green Future: Measuring the South African TVET System and Providing Input to Support Its Development,” 2023, https://www.giz.de/en/downloads_els/paper%20Skills%20for%20a%20Just%20Transition%20to%20a%20Green%20Future%20final.pdf.

¹⁴⁶ De Lannoy et al., ‘Why Is Youth Unemployment So Intractable in South Africa?’

¹⁴⁷ Jessie Taylor, ‘Powering Ahead in Creating Youth Employment’, *Public Sector Leaders*, 2023, <https://publicsectorleaders.co.za/powering-ahead-in-creating-youth-employment/>.

¹⁴⁸ Climate Home News and Oxpeckers Investigative Environmental Journalism, ‘Uncertainty on Renewable Retraining Frightens South Africa’s Coal Communities’, *Climate Change News*, 2023, <https://changemakr.asia/uncertainty-on-renewable-retraining-frightens-south-africas-coal-communities/>.

Thus far, just transition policy has been accompanied by few substantive skills development programmes, with even fewer focusing on the needs of vulnerable people, and a lack of systematic monitoring mechanisms to track the skills needed for green jobs. This results in jobs being identified on an ad-hoc basis, and weak inter-ministerial coordination which hampers the effective design, planning, implementation, and evaluation of policies on skills development in the just transition.^{149,150}

Supply-side solutions work off a ‘deficit model’ that positions young job-seekers as lacking the capacities that industries and employers need, with little guarantee that the labour market will be able to absorb them or that they will have the support, recognition and resources required to secure a job. This is why they must be complemented by demand-side approaches that can create supportive, responsive environments for young people to be absorbed into the labour market.

4.2 Demand: youth ‘job creation’ and the just transition

In 2019, the coal value chain was estimated to employ around 150.000 formal workers, amounting to 1% of national employment. Coal mining, specifically, accounted for 0.7 percent of South Africa’s national employment and less than 2% of GDP, despite contributing more than half of the country’s emissions.¹⁵¹ Across the country, rates of employment in mining and manufacturing are declining, particularly for youth, who are most likely to be employed in the service industry.¹⁵² In other words, the contribution of coal to inclusive and sustainable growth is arguably severely limited.¹⁵³

Table 2: Employment in the coal value chain¹⁵⁴

Stage of the value chain	Employment (number of jobs)
Coal mining	66%
Power generation (Eskom)	10%
Petrochemical production (Sasol)	22%
Small coal truckers	2%

Still, job losses in the coal sector pose a unique set of employment challenges. First, workers directly employed in the coal value chain, along with their dependents, are highly localised to four municipalities in Mpumalanga where majority of the coal mines, Eskom power stations, and Sasol coal-to-liquids (Secunda) facilities are located.¹⁵⁵ In these communities, coal is a dominant economic activity, whether one works directly in mining or in

¹⁴⁹ International Labour Office. Skills and Employability Branch. "Skills for a greener future: challenges and enabling factors to achieve a just transition." (2019).

¹⁵⁰ International Labour Organization, "Skills for Green Jobs in South Africa", 2018.

¹⁵¹ N Maseko, 'Unemployment and Sustainable Livelihoods: Just Transition Interventions in the Face of Inequality', Working Paper for the Presidential Climate Commission, 2021.

¹⁵² Vale et al., 'Boosting Decent Employment for Africa's Youth'.

¹⁵³ Maseko, 'Unemployment and Sustainable Livelihoods: Just Transition Interventions in the Face of Inequality'.

¹⁵⁴ TIPS, "Sector Jobs Resilience Plan: Coal Value Chain," 2020, https://www.tips.org.za/images/TIPS_for_DEFF-dtic_-_SJRP_for_the_coal_value_chain_final_May_2020.pdf.

¹⁵⁵ Manaiso & Montmasson-Claire, "The tale of life and death: The coal value chain's impacts on local communities in South Africa", 2022

servicing the mining industry, its workers and their families. Jobs created in the renewable energy sector will not necessarily be created in the same geographies where jobs in the coal value chain were lost. The Northern Cape, for example, is emerging as an RES epicentre, while coal is decommissioned in Mpumalanga. Second, 80% of the coal labour force do not have any formal qualifications beyond schooling. The coal industry has not only been able to absorb these vulnerable workers more effectively than other sectors, it also offers higher wages than other 'unskilled' positions, largely because of the collective bargaining power of labour unions.¹⁵⁶ Those who lose jobs in coal may not find similarly paid or secure positions easily. Fifteen percent of those employed in the coal value chain are women, while half are 38 years old or younger.¹⁵⁷

The Department of Environmental Affairs (DEA) has identified four areas for green jobs¹⁵⁸: 1). development and growth of new green sectors and industries; 2). retrofitting of industrial efficiency processes and clean production technologies in existing sectors and industries; 3). growth of existing green energy sectors such as renewable energy and waste recycling; and 4). incentivisation and acceleration of private and public sector investment in restoring critical ecosystems especially after power plants are decommissioned. Informal actors, like street vendors and itinerant workers, who are close to communities are also instrumental in providing employment through delivering environmentally sustainable goods (like organic vegetables) and services (like repairs).¹⁵⁹

In 2018, RES4Africa projected the relative job losses and gains that would be associated with a transition to wind and solar power between 2020 and 2030, and anticipated a net gain in jobs.¹⁶⁰ However, most of these were expected in the construction phase, with fewer in the operation and maintenance phase. And since most components for renewable energy are not produced domestically, the scope for local jobs in construction is limited.¹⁶¹ Timing is also a challenge: while most coal-related jobs will be lost by 2030 when coal-fired power plants are decommissioned and Sasol closes, the spike in new jobs will only be from 2037.¹⁶²

The job creation capacity of the renewable energy sector has limits. As such, prioritising job creation in other non-energy related economic sectors (like manufacturing, waste management, or community and social services) might be more advantageous than focusing on renewable energy employment, particularly in coal-dependent regions.¹⁶³ More so, we cannot only think about replacing existing jobs. Livelihoods need to be expanded, or else half of young people will remain unemployed. Indeed, the deployment of renewable energy and the changes it creates in the economy (including lower electricity prices), hold potential to boost livelihoods.¹⁶⁴

¹⁵⁶ TIPS, 'Sector Jobs Resilience Plan: Coal Value Chain'.

¹⁵⁷ TIPS.

¹⁵⁸ International Labour Organization, "Skills for Green Jobs in South Africa", 2018.

¹⁵⁹ International Labour Organization, "Skills for Green Jobs in South Africa", 2018.

¹⁶⁰ RES4Africa, CSIR, and ERM, 'A Just Energy Transition in South Africa: Socio-Economic Needs and the Positive Impacts of a Future Low-Carbon Economy', 2018,

<https://www.res4africa.org/wp-content/uploads/2020/09/>

RES4Africa-Foundation-A-Just-Energy-Transition-in-South-Africa.pdf.

¹⁶¹ RES4Africa, CSIR, and ERM.

¹⁶² S Burger, 'Timing of New Jobs, Skills Development a Just Energy Transition Worry – World Bank', 2023,

<https://www.engineeringnews.co.za/article/timing-of-new-jobs-skills-development-a-just-energy-transition-worry-world-bank-2023-01-20>.

¹⁶³ L Hermanus and G Montmasson-Clair, 'Making Sense of Jobs in South Africa's Just Energy Transition: Managing the Impact of a Coal Transition on Employment' (TIPS, 2021).

¹⁶⁴ Hermanus and Montmasson-Clair.

4.3 Outside the bounds of the formal economy

While South Africa's informal sector is small relative to other African countries, it has produced steadily, and significantly, higher growth in employment than the formal economy in recent years,¹⁶⁵ particularly for youth.¹⁶⁶ Over the period Q1 2017 – Q2 2022, the proportion of young people employed in the formal sector shrunk by 16%, relative to 6.5% overall. While employment prospects for young people also contracted in agriculture and private households, the informal economy was the only sector in which young people experienced a growth in employment.¹⁶⁷ Outside of formal employment, young people are regularly assumed to be lazy, idle and dangerous.¹⁶⁸ But research¹⁶⁹ illustrates that young people without jobs are routinely creating new strategies to navigate changing labour markets – strategies that could benefit from state and private sector support.

Current monopolies and barriers to entry in the energy sector are a challenge to the creation of informal economies around community-owned energy hubs. Nevertheless, there are many communities across South Africa with informal, commodified energy economies, in which skilled on-the-ground informal technicians are operating illicitly to rewire electricity connections for a fee.¹⁷⁰ Between 2017–2022, amid a deepening energy supply crisis, there was a 42% growth in employment in the informal electricity, gas and water supply sector, while formal sector jobs in these industries shrunk.¹⁷¹

As solar becomes more widespread, a growing body of work in the global South is exploring local-level informal economies of solar technicians servicing households.¹⁷² Eskom's rollout of solar water geysers in government funding housing sites between 2008 and 2013 presented an opportunity to drive and support local renewable economies (both formal and informal). The programme was accompanied by a recognition of the need to train plumbers to install solar water heaters and was anticipated to create 100,000 jobs in the manufacturing, installation, and maintenance of the systems, and reduce energy costs for households. While this initiative held enormous potential, training and employment during installation and maintenance of the solar water geysers varied among contracted companies and few of them made efforts to plan their approach to local training and local ownership. Locally available skills were often ignored.¹⁷³ Government regulation of community-based renewable energy systems must support the development of diverse local economies, in which local people (and young people in particular) can gain skills, livelihoods and a meaningful stake in the energy transition.

In creating opportunities for youth in a low carbon economy, there is an imperative to think about just, quality and stable jobs beyond traditional wage labour. This includes stimulating

¹⁶⁵ Vale et al., 'A Transdisciplinary Analysis of the Shape and Implications of Unemployment in South Africa'.

¹⁶⁶ Percept, 'Understanding Youth Inequality'.

¹⁶⁷ Percept.

¹⁶⁸ H. J. Dawson and E. Fouksman, 'Labour, Laziness and Distribution: Work Imaginaries among the South African Unemployed', *Africa* 90, no. 2 (February 2020): 229–51, <https://doi.org/10.1017/S0001972019001037>.

¹⁶⁹ Dawson and Fouksman; Hannah Dawson, "'Making Plans through Other People": The Social Embeddedness of Informal Entrepreneurship in South Africa', *Social Dynamics* 47, no. 3 (2021): 389–402.

¹⁷⁰ Dawson, "'Making Plans through Other People": The Social Embeddedness of Informal Entrepreneurship in South Africa'.

¹⁷¹ Vale et al., 'A Transdisciplinary Analysis of the Shape and Implications of Unemployment in South Africa'.

¹⁷² J Cross, 'The 100th Object: Solar Lighting Technology and Humanitarian Goods' 18, no. 4 (2009): 367–87.

¹⁷³ Holle Wlokas Wlokas and Charlotte Ellis, 'Local Employment through Low-Pressure Solar Water Heater Roll-out in South Africa' (University of Cape Town: Energy Research Centre, 2015).

local economies through the provision of affordable, decentralised, and community-governed energy supply. This is particularly important for women. Women are disproportionately affected by energy poverty, as the primary carers of households, and those who often hold responsibilities for cooking, cleaning, and child care.¹⁷⁴ By amplifying the burden of care, energy poverty can reduce the likelihood of women entering or staying in the labour market. As in the fossil fuel economy where the underlying structural failures have had women underrepresented in the mainstream formal labour, the green economy is mirroring similar trends with only 32% of the global workforce in renewable energy being female.¹⁷⁵ The extractive fossil fuel economy has historically centred around men being the workers and women being the caregivers.¹⁷⁶ While South Africa's just transition discourse has centred on the rights of workers, these conversations should include consideration of paid and unpaid labour in the informal sector where the majority of women in poor and low-income communities sit.

4.4 Social protection

State welfare in South Africa continues to be delivered under certain pretences; resting on the false assumption that most working-age adults will be able to find formal jobs, insure themselves against short-term unemployment, and contribute to their own pensions. Only those considered unable to work, either because they are too old, too ill, or caring for young children, are eligible for social grants.¹⁷⁷

Until the institution of the Covid-19 social relief of distress grant (SRD), there had previously been no social protection available to unemployed people in South Africa, unless they were disabled, a pensioner, or the primary caregiver of a child. But strong evidence shows the extraordinary costliness of job-seeking, which often leaves young people indebted and disheartened. There is strong evidence that social protection, through programmes like the SRD, can alleviate poverty and unlock participation in the labour market (including the green economy).¹⁷⁸ This is arguably even more pressing for those entering the green economy, where there is limited precedent of major public employment initiatives, and as yet, no national programme operating at scale to skill young people for the energy transition.

Young jobseekers not only need financial support, but also psychosocial support to support their transition into the labour market.¹⁷⁹ Currently, a multistakeholder consortium is piloting a Basic Package of Support (BPS) basic package of support for young people (15-24) outside of education, training and employment. It acknowledges that young people have multidimensional vulnerabilities, including limited qualifications, low income, poor access to transport, restricted access to social protection, poor mental health and limited social networks. The BPS offers referrals to social services, pathways back into education and training, and links them to earning opportunities. Programmes like this hold enormous potential for young people as they grapple with a shifting energy economy, and consequently, a shifting labour market.

¹⁷⁴ Department of Women, "The Status of Women in the South African Economy," 2015.

¹⁷⁵ Irena, 'Renewable Energy: A Gender Perspective', 2019, https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2019/Jan/IRENA_Gender_perspective_2019.pdf?rev=bed1c40882e54e4da21002e3e1939e3d.

¹⁷⁶ TIPS, "Just transition in South Africa: The case of a gender just approach", 2021.

¹⁷⁷ Colin Bundy, "The ANC and Social Security: The Good, the Bad and the Unacknowledged," in *Zola Zweyiya Lecture* (Department of Social Policy and Intervention, University of Oxford, 2015).

¹⁷⁸ T Kohler and H Bhorat, 'Can Cash Transfers Aid Labour Market Recovery? Evidence from South Africa's Special Covid-19 Grant', Working Papers (Cape Town: University of Cape Town, 2021); T Kohler and R Hill, 'Did the TERS Policy Save Jobs during the COVID-19 Pandemic?', *Econ3x3*, 2022, <https://www.econ3x3.org/article/did-TERS-policy-save-jobs-during-covid-19-pandemic>.

¹⁷⁹ Lauren Graham et al., "Siyakha Youth Assets Study: Developing Youth Assets for Employability" (Centre for Social Development in Africa, University of Johannesburg, 2019).

4.5 Public employment

In addition to social protection, public works programmes can offer employment subsidies for young people, facilitating experience and entry in the labour market, while also building valuable local assets. But public employment programmes must also build transferable skills and exploitable networks to avoid being piecemeal. Phase II of South Africa's Presidential Employment Stimulus holds some promise in building communities of social solidarity and driving local low-carbon livelihoods. It includes a National Youth Service programme that will create jobs in waste value chains, and a Social Employment Fund to support work in community and social services.¹⁸⁰

5. Case Illustrations: lessons in quality livelihoods for youth

This section presents three vignettes that illustrate South Africa's energy transition is unfolding in local settings. Together, these case illustrations provide a comprehensive view of the progress and pitfalls in the implementation of South Africa's 'just energy transition', and the implications this holds for the inclusion, capacitation and employment of young people. The first case study examines the decommissioning of Komati, the nation's oldest coal power station, and the extent to which this transition might be perceived as 'just'. The second case illustration explores the challenges faced by local communities in Loeriesfontein in their engagement with wind farms established under the Renewable Energy Independent Power Producer Programme (REI4P). The final case illustration focuses on community-based renewable energy hubs in KwaZakhele and the hurdles they encounter in delivering equitable benefits. These studies collectively underscore the complexities and opportunities in South Africa's journey toward a sustainable energy future emphasising the importance of local communities, workforce development, and transparent governance.

5.1 Komati

South Africa's oldest standing coal fired power station, Komati, was decommissioned in October 2022, as the flagship project of the Eskom's Just Energy Transition Plan and is partially supported by the COP26 JET partnership as well as the World Bank. Komati is intended to be repurposed and repowered, using solar voltaic and battery storage systems.¹⁸¹ This would be accompanied by agriculture and aquaponic projects. But the decommission was not uncontested: the Minister of Electricity, Dr Kgosientsho Ramakgopa, remarked that South Africa had been put under pressure by foreign governments (through the JET partnership and the World Bank) to decommission Komati, despite facing an energy supply crisis.¹⁸² The National Union of Mineworkers (NUM) and other trade unions also

¹⁸⁰ Kate Philip, 'Social Employment – Creating Work That Serves the Common Good', *Daily Maverick*, 2021, <https://www.dailymaverick.co.za/opinionista/2021-12-02-social-employment-creating-work-that-serves-the-common-good/>.

¹⁸¹ Kamanzi, 'Komati Decommissioning: A Spectre Due to Haunt the Just Transition'.

¹⁸² Sipehelele Dlodla, 'Ramakgopa Bucks Official Line on Komati Power Station Decommissioning', 2023, <https://www.iol.co.za/business-report/energy/ramokgopa-bucks-official-line-on-komati-power-station-decommissioning-4db827bb-589e-43ac-8317-2f4f63b9d492#:~:text=Ramokgopa%20bucks%20official%20line%20on%20Komati%20power%20station%20decommissioning,-Electricity%20Minister%20Kgosientsho&text=Minister%20of%20Electricity%20Dr%20Kgosientsho,power%20station%20was%20a>

criticised the decommissioning of Komati, which they believed would further entrench inequality, poverty and unemployment among communities whose livelihoods had been reliant on coal-based industry and remittances.¹⁸³ At the time of decommissioning, over 600 workers were employed at Komati with high levels of unionisation: many had held posts for over a decade.¹⁸⁴ Komati serves as a microcosm of the broader challenges South Africa faces in transitioning to a low-carbon economy.

In decommissioning Komati, Eskom committed to establishing a training centre to reskill workers, which would be undertaken in partnership with the Cape Peninsula University of Technology's (CPUT) South African Renewable Energy Technology Centre (SARETEC).¹⁸⁵ However, clear timelines on when the training facility would be operational were not communicated.

Eskom initially reassured the media and its employees that workers at the Komati power plant would not lose their jobs with its planned closure, but would be redeployed to other stations. However, this promise did not extend to the 300 outsourced workers who provided various services at the plant in maintenance and cleaning.¹⁸⁶ Private companies were invited to tender to operate and maintain the agrivoltaic plant, but with no requirements to hire locally.¹⁸⁷ While the transition at Komati was focused largely on the impact on male workers; women whose formal and informal labour has serviced Komati and its workers, would be affected too.

Eskom issued a tender to private energy developers to build, operate and maintain an agrivoltaic plant at one of the Komati sites and it was revealed that developers were not required to make provisions for incorporating the existing Komati workforce.¹⁸⁸ By May 2023, some economic activity had begun at the plant, but at a small scale.

The Just Transition Partnership has been criticised by civil society for a lack of transparency and limited public consultation.¹⁸⁹ Komati's decommissioning also appears to have unfolded with little to no local participation.¹⁹⁰ One resident remarked that "it was whispered that the plant would close down, but no one wanted to believe it."¹⁹¹ Many of the affected workers had not been consulted nor involved in the decision-making process regarding the plant's

¹⁸³ Dlodla.,

<https://www.iol.co.za/business-report/energy/ramokgopa-bucks-official-line-on-komati-power-station-decommissioning-4db827bb-589e-43ac-8317-2f4f63b9d492>

¹⁸⁴ Mandisa Nyathi, 'Eskom Makes Way for Renewables as 60-Year-Old Komati Power Station Is Shut Down', *The Mail & Guardian*, 31 October 2022,

<https://mg.co.za/environment/2022-10-31-eskom-makes-way-for-renewables-as-60-year-old-komati-power-station-is-shut-down/>

¹⁸⁵ Nyathi.

<https://mg.co.za/environment/2022-10-31-eskom-makes-way-for-renewables-as-60-year-old-komati-power-station-is-shut-down/>

¹⁸⁶ Brian Kamanzi, 'Komati Decommissioning: A Spectre Due to Haunt The Just Transition', 6 December 2022,

<https://www.amandla.org.za/komati-decommissioning-a-spectre-due-to-haunt-the-just-transition/>

¹⁸⁷ Kamanzi, 'Komati Decommissioning: A Spectre Due to Haunt the Just Transition'.

¹⁸⁸ 'Tender: Komati Power Station to Move to Renewable Energy', Yunus Kemp 2023

<https://www.esi-africa.com/tenders/tender-developing-socio-economics-of-repurposing-komati-power-station/>

¹⁸⁹ Kamanzi, 'Komati Decommissioning: A Spectre Due to Haunt the Just Transition'.

¹⁹⁰ Dlodla, 'Ramakgopa Bucks Official Line on Komati Power Station Decommissioning'.

¹⁹¹ Yolandi Groenewald, 'Komati Shutdown: Future Bleak for Communities as People Lose Jobs, Money', *The Citizen*, 30 March 2023,

<https://www.citizen.co.za/news/komati-shutdown-future-bleak-for-communities/>. *The Citizen*, 2023

<https://www.citizen.co.za/news/komati-shutdown-future-bleak-for-communities/>

closure.¹⁹²

The success or failure of Komati Power Station holds significant implications for the future trajectory of the just transition in South Africa – signalling the potential risks of tackling *climate* change without *system* change. By de-prioritising skilling programmes, bypassing local employment, failing to safeguard workers, and sidestepping public consultation; the energy transition at Komati runs the risk of entrenching historical patterns of inequity, in which the interests of public and private elites come at the expense of local people, and inevitably, local youth. Without proper checks, JET-IP could also entrench the indebtedness of Global South economies, while serving the very same economies that benefited from 20th century fossil fuel industrialisation.

In the recent groundWork report which records experiences of communities in the decommissioning of the Komati power station, groundWork's Thomas Mnguni said:

...[W]hen communities are not fully and timeously informed, when they are not engaged in the solutions, when consultants shield government from the people, and cannot give answers about what really concerns people, it cannot be called a fair process. Substantive justice only happens when the benefits and the burdens of the transition are shared fairly – and transparently. It is not the case in Komati and it is not the case in the broader process."¹⁹³

5.2 Loeriesfontein Wind Farm Developments¹⁹⁴

The just transition is not only about the struggles of workers and communities dependent on the coal sector. It is also about creating quality, sustainable livelihoods in renewable and low-carbon industries. While Mpumalanga is the heart of South Africa's coal industry, the Northern Cape is home to just over half the projects in the Renewable Energy Independent Power Producer Programme (REI4P). A case study of the development of two linked wind farms outside Loeriesfontein, a small town in the Northern Cape Karoo, is illustrative of several common challenges that present obstacles to quality, sustainable livelihoods for youth and women in the renewable energy system.

Like many of South Africa's most vulnerable communities, Loeriesfontein has a young population, who stood, in theory, to benefit from the promise of the employment of local people. But most of the local workers that were hired were employed in unskilled roles, on short-term contracts, and only during the construction phase of the project. When government reports on jobs created through REI4P, it is rarely reflected that these are short-term positions, repeating a pattern of high churn in the South African job market, particularly for young people.

Although wages and working conditions on the wind farm were better than those offered by many local employers, meaningful training and upskilling did not materialise. The training that was provided was also not accredited in a way that offered transferable skills. Instead, the obligation to skill a local workforce was met with resentment, as it was neither cost-efficient, nor expeditious. Instead of offering substantive training for skilled positions, the wind farm opted to employ large numbers of unskilled workers to meet targets for local employment. Some reported the over-employment of flag bearers (mostly women) and diggers (mostly men). Although young applicants didn't need formal qualifications to apply

¹⁹² Groenewald. *The Citizen*, 2023

<https://www.citizen.co.za/news/komati-shutdown-future-bleak-for-communities/>

¹⁹³ groundWork, 'Contested Transition: State and Capital against Community'.

¹⁹⁴ Malope, 'Power Struggles: An Exploration of the Contribution of Renewable Energy to Sustainable Development, Decent Work and the "just Transition" through a Case Study of Wind Farm Development Outside Loeriesfontein, Northern Cape Province (2011-2020)'.

for these jobs, those with prior work experience were privileged, creating a barrier for entry-level job seekers.

In line with the REI4P's local economic development scorecard, the windfarm initiated community development projects, purportedly targeting 'women, youth and people with disabilities'. But these programmes were top-down, piecemeal, and often characterised by local patronage politics. A Community Trust was established as part of the ownership structure of the wind farm but it will need strong democratic management to ensure that impoverished households are the targeted beneficiaries.

As the renewable energy sector grows, driven largely by foreign-owned producers, there are significant risks to a just transition for youth – illustrate in the above case study. There is the risk that producers 'window-dress' local employment to meet REI4P targets, without investing in substantive, transferable skills for young workers, which are essential to their social mobility. A concerted skills-building strategy, that begins well before construction phase, is essential if REI4Ps are to absorb young entry-level workers that are without formal qualifications or prior work experience.

Loeriesfontein also illustrates that, in order to stake a claim to the opportunities, energy or profits of renewable initiatives, questions of local ownership must be more substantially addressed. Danish, German and Nordic companies still dominate the wind power industry, with India and China starting to compete. Despite REI4P requirements for local content and socio-economic development, renewable energy can quite easily function as another form of elite accumulation with limited impact on redressing historical inequality or energy poverty.¹⁹⁵ This outcome will mean that young people and women continue to be sidelined. As in the traditional economy, where the underlying structural failures have had women underrepresented in the formal sector, the green economy is mirroring similar trends with only 32% of the global workforce in renewable energy being female.¹⁹⁶

5.3 Community-based energy entrepreneurship in KwaZakhele¹⁹⁷

Renewable energy is more dispersed than fossil fuels (e.g., sun and wind conditions across spaces) and can be provided efficiently at different scales. This presents an opportunity to decentralise and de-monopolise the energy system towards local management.

Community-owned renewable energy hubs offer an opportunity to alleviate energy poverty, and stimulate local informal economies where young people are disproportionately represented. South Africa's micro, small and medium-size (local) enterprises (MSMEs) are under enormous financial strain from regularised power outages. In 2019, the Township Transition Project in Gqeberha established a small 5kW power solar array, which was set up in KwaZakhele informal settlement. This was governed by a neighbourhood cooperative, called Saltuba, with the intention of selling back to the municipal grid. At the time, the municipality had been implementing an innovative system in which homeowners' municipality accounts would be credited when they produced more electricity than they consumed.

But, by the time the Saltuba Cooperative had set up the pilot PV solar array, and was fully functional, this system was no longer operational. Instead, Saltuba fed R20,000 worth of electricity to the municipality, for which it was not paid. This caused understandable disappointment as expectations of income were not met. Additional interventions were

¹⁹⁵ Baker, 'Renewable Energy in South Africa's Minerals-Energy Complex'.

¹⁹⁶ Irena, 'Renewable Energy: A Gender Perspective'.

¹⁹⁷ P Brennan and J Cherry, 'Home Is Where the Power Is: The Saltuba Cooperative', 2021, <https://www.southafricanlabourbulletin.org.za/home-is-where-the-power-is-the-saltuba-cooperative/>.

sought including an off-grid solution. This included the procurement of an inverter and lithium-ion battery that could be used to power a waste recycling business; provide lights, plug points and internet access to the community under load-shedding; and allow residents to create an internet café as well as a community kitchen. These hubs of social connection have been shown to offer critical, emergent income-generating opportunities for young people in the informal economy.¹⁹⁸

There are some movements in policy and regulation to support the development of community-based micro-grids and privately-generated supply. In October 2021 the Electricity Regulation Act was amended allowing small producers of renewable energy to sell up to 100 MW of electricity without having to apply for a licence to do so. Then, in March 2023, a tax rebate was introduced to encourage South African taxpayers to install solar panels on their homes. But this will not benefit most township and working-class households, since they are below the tax threshold.

Despite the potential benefits of expanding community-owned energy systems, very few communities have the financial capabilities to develop and use them.¹⁹⁹ Renewable energy entrepreneurship comes with significant cost, presenting barriers to entry, particularly for young people, the urban and rural poor and the working class. Partly because of this, community-driven job creation in the renewable energy sector has been at a relatively small scale, with powerful interests poised to oppose localised and diversified energy production.²⁰⁰ While there is buy-in, resilience and innovation within the community, policies still work against the historically disadvantaged in society. This is a missed opportunity, particularly for the country's youth.

6. Conclusion

The 'minerals-energy-complex'²⁰¹ that has characterised South African development trajectory thus far, has been based on 'cheap coal, cheap labour and dangerous air pollution', making it both economically and socially unsustainable.²⁰² It has also systematically excluded young, black, income-poor South Africans (women particularly), such that the future chances of young people remain largely tied to those of their parents. For young people to achieve social mobility, and break intergenerational cycles of inequality, they need sustainable, quality livelihoods. By the time they enter the labour market, the vast majority of South Africa's youth have the odds stacked against them: they often have no formal qualifications or work experience, no capital, and few social ties to the formal economy. For the just transition to be truly youth inclusive, and be a vehicle of intergenerational justice; it needs skilling, job creation, social protection and support programmes that meet young people where they are. This will include a) sustaining and reimagining livelihoods for young people in historically fossil-fuel dependent economies, b) expanding low-carbon livelihoods across the country, particularly social and environmental services that restore community ownership and relationships to the land, c) alleviating energy poverty so that young people have access to information and opportunity, and committing to substantive (rather than tokenistic) youth participation in policy and decision-making.

¹⁹⁸ Dawson, "Making Plans through Other People": The Social Embeddedness of Informal Entrepreneurship in South Africa'.

¹⁹⁹ Hanto et al., 'South Africa's Energy Transition – Unravelling Its Political Economy'.

²⁰⁰ Sustainable Energy Africa, "A Feasibility Study Exploring Energy through Community-Led Socially Owned Renewable Energy Development in South Africa."

²⁰¹ Cock, 'Resistance to Coal Inequalities and the Possibilities of a Just Transition in South Africa'.

²⁰² Cock.

Recommendations for key stakeholders in this transition are as follows:

Renewable Energy Employers

Create sustainable quality jobs: While creating new green jobs for young people in Africa, we must also ensure – rather than assume – that these are quality jobs. Employment initiatives in the green economy are all-too-often piecemeal and short-term and have not translated into sustainable livelihoods.

Offer transferable skills: Programmes aimed at reskilling and upskilling youth for a new energy economy must offer certified, transferable skills that create demonstrable experience and career ladders for youth. Workplace-based training can also offer young people essential links to employers and mentors.²⁰³

Recognise young people's aptitudes and circumstances. To curb youth unemployment, employers must find alternative ways of assessing and recognising young people's aptitudes and experience beyond formal qualifications. In light of the costs involved in travelling work; young people may also need financial support to keep their first quality job. Recent research shows the impact of providing an unemployed young person with a documented evaluation of their full skill set: not just their educational qualifications, but also their soft skills, capabilities, experience and learning potential. When young job-seekers in South Africa were given a summary report to share with potential employers, their chances of finding work improved by up to 17% and their earning potential increased by up to 32%.²⁰⁴

Higher education and training institutions

Because of the power of post-school qualifications to dramatically improve young people's chances in a changing labour market; TVETs have a critical role to play in realising a just transition for youth. Their challenge is to remain attuned to the skills needs of the green economy, build substantive partnerships with the green energy sector and low-carbon industry, and support a pipeline of youth to fill the emerging needs of employers.

Public Policy

Drive equity in affordable energy supply. At present, access to energy in South Africa is starkly unequal, both in terms of affordability and supply. This has knock-on effects for micro-enterprises, particularly in informal settlements and rural areas; for young people's digital inclusion and access to information; and for women whose caregiving burden is often amplified by energy poverty. A just energy transition is not only about greener energy, worker protection, and inclusive economic opportunity; but also more equitable and sustainable access to energy.

Support public employment programmes can offer employment subsidies for young people, facilitating experience and entry in the labour market, while also building valuable local assets. But public employment programmes must also build transferable skills and exploitable networks to avoid being piecemeal. Given the limited scale of direct jobs in the renewable energy sector; public employment programmes can also produce work in potentially high-absorbing, low-carbon sectors like the care sector or circular waste economy. Promising private-public partnerships are emerging to link young people to quality green jobs at scale.

Expand social protection should recognise and alleviate the financial *and* psychosocial costs of the job search and offer wrap-around support. This might include cash transfers to support job-seeking, improved access to affordable transport, or programmatic interventions like mentorship and psychosocial services. Cash transfers can alleviate the prohibitive

²⁰³ Youth Capital, 'Linked in: Rising through Social and Economic Connections'.

²⁰⁴ Harambee, 'It's All about Employability', 2019, <https://harambee.co.za/its-all-about-employability/>.

costliness of job-seeking and commuting, making it easier to absorb, and retain, young people as they gain a foothold in the economy (including the low-carbon economy).

Youth Employment Programmes

Build linkages to employers: While growing young people's education and skills, we also need to be creating quality livelihood opportunities, and stimulating demand. Linkages between training providers and private businesses must also be strengthened, particularly for technical and vocational training colleges.

Boost skills: Qualifications are a fundamental determinant of young people's employment and labour market outcomes. Supporting young people's livelihoods must start with supporting them to stay in, and complete, schooling. Improving access to, and quality of, basic and secondary school education is essential, but we also need systematic, targeted skills programmes operating at scale to support youth in a low-carbon economy.

Gender-responsive interventions should focus on providing access to finance, land, and affordable childcare and social services, as strategies to boost and sustain women's labour participation.

Support the informal economy: An enabling environment should be created for small, medium-size and micro-enterprise, facilitating access to finance and markets, as well as training and continuous learning. With the right support and investment, we could stimulate vibrant local economies, powered by locally-owned and maintained renewable energy hubs. This will be especially important for youth and women who are disproportionately represented in the informal economy.

Regulation

Enable the informal economy: Informal enterprises should be enabled, not hamstrung. Responsive regulation should reduce bureaucratic red-tape and unnecessary formalisation, while still safeguarding worker protection and sound governance.

Enforce local ownership: If regulation does not enforce a substantive commitment to local ownership, and skilling programmes that target local youth, patterns of exclusion and dispossession will be reinforced in the low-carbon transition. Without regulation to curtail big industry, and policy to support micro-enterprises, there is a high risk that the renewable energy sector will be monopolised by a small group of elites.

Future Research

This case study has drawn on a growing body of evidence examining and critiquing both the design and implementation of South Africa's just energy transition. Although this literature repeatedly argues for the foregrounding of youth (and women) in the just energy transition, there remains a dearth of evidence on the youth-specific impacts and implications of South Africa's energy transition. As yet, literature on the just energy transition, and literature on youth employment, have not been brought into substantive conversation.

We know very little about the intricate web of consequences that coal decommissioning brings for the youth or how this important demographic navigates a shifting energy landscape. We also know very little about the rate, or determinants, of absorption for young people in the renewable energy sector and adjacent low-carbon industries. Young people's participation in the informal economies that emerge directly or indirectly from sustainable, renewable energy supply is especially invisible. To fully appreciate the long term effects of this transition, we need a keen eye on the youth's involvement in the renewable energy sector, their skilling journey, and their retention within low carbon economies. In addition to limited literature on the displacement or inclusion of youth in the energy transition, there is also little evidence on the ways that young people in particular are experiencing, and responding to, energy poverty and the impacts this might have for their participation in the

labour market. Research in all these areas needs geographic specificity, as the opportunities and challenges for rural and urban youth will differ, as will the experiences of youth in Mpumalanga versus those in the Northern Cape (for example). It also needs gender specificity given the caregiving burden borne by young women, particularly those living in energy poverty, and the impacts this has on their labour participation.

This case study lays the foundation for an inclusive, youth-targeted research agenda to support an energy transition that secures a sustainable and equitable future for South Africa's young people. Further research should seek to:

- a) **understand the youth-specific impacts** of decommissioning coal, including the social, economic and environmental aspects that might affect young people's labour market participation.
- b) **track youth-specific outcomes** (absorption, skilling, retention) in the renewable energy sector and wider low-carbon economies. Continuous monitoring of youth specific outcomes will allow us to understand the real world effects of our transition strategies and identify areas for intervention.
- c) Identify and monitor the **skills required** by the renewable energy value chain.
- d) **document green employment initiatives** (both within and outside the energy sector) that are showing promise in creating sustainable, quality jobs for youth.
- e) **understand the youth-specific impacts of energy poverty** on education, job-seeking, job-retention and income generation.

INCLUDE



THE BROKER

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