Mintek and Transalloys provided equipment and the raw material used throughout the project. The paper is published with permission of Mintek.

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The Just Transition and the Coal Mining Sector in South Africa

Megan Cole, Mzila Mthenjane, and Andrew van Zyl

Growing concern over the impacts of climate change across the world has led to the widely-shared goal of a 'just transition' to cleaner energy sources and reduced dependence on coal. Different definitions are used for the just transition, but a key feature is that no-one is left behind when changes are made to energy and economic systems to mitigate climate change. That involves sharing the costs and benefits of the changes fairly, supporting workers with new jobs or retraining, and supporting communities through broader economic changes. Crucial to the just transition is preventing further societal fragmentation along wealth, race, age, and gender lines.

Internationally, there has been a transition away from coal mining, particularly in Europe, and a growing awareness of the need for new policies to address job losses, skills shortages and changing value chains and supply chains. South Africa is under pressure to do the same, as the world's seventh largest coal producer and the fourteenth biggest CO_2 emitter. In addition, South Africa is going to experience greater temperature increases than the global average and adaptation to climate change is a growing concern.

There are 72 operating coal mines in South Africa, largely in Mpumalanga Province, supplying the domestic and export markets. They are owned by 32 mining companies who directly employ over 92 000 people and support approximately 170 000 jobs indirectly. According to available life-of-mine data, at least 17 of these mines could close by 2030 (total production of 33 Mt/a), a further 22 mines by 2040 (100 Mt/a), and 13 mines (47 Mt/a) by 2050 (Figure 1). They supply coal to 15 Eskom power stations, which employ over 12 000 people. Most of these power stations are pushing the limits of their design life, and six of them will be decommissioned by 2030 (9.3 GW), a further four by 2040 (14 GW), and three more by 2050 (12.3 GW). New coal-based power projects, when considered in the light of the cost and time overruns of Kusile and Medupi, would not come on stream fast enough to prevent severe energy shortages even if financing was available and there were no climate considerations in play.

This indicates a clear path to decarbonization and means that the transition away from coal to renewable energy is already planned and will likely occur without premature closure implied by the 'just transition'. In fact, mining companies are contributing to the transition by installing their own renewable energy solutions at mine sites, with a commitment of 6.5 GW by 29 companies across various commodities planned to date. This approach is a shared and responsible pathway to the energy transition given our domestic energy and economic challenges. Despite ambitious commitments to low carbon growth, political and governance factors have hindered the rollout of renewable energy. However, renewable projects that have proceeded have performed well and there is some cause for optimism now that regulatory progress has been made. Further research may also show that employment in the energy sector in a renewable energy dominant economy may be higher.

The Just Transition and the Coal Mining Sector in South Africa *(continued)*

The impact of mine closure on host communities is significant, disruptive, and should not be underestimated. Coal mines currently operate in two metros and 21 local municipalities, home to over 10 million people. Specifically, there are at least 50 coal mining host communities (4 cities, 24 towns, 14 townships, and 8 rural villages) that are home to 2.5 million people. These communities already have low levels of employment (39% unemployed), income (37% below the poverty line), education (45% of adults have Grade 12/NQF4), and internet access (Figure 2) and thus are vulnerable to a changing energy system and local economy. The level of basic services varies significantly but is lowest in rural areas with the lowest income levels and fewest job opportunities. Importantly, many of the local municipalities are under financial stress and will struggle to cope with mine closure and the resultant loss of revenue and support.

The South African approach to the 'just transition' needs to take into account these local realities and the narrative needs to support an effective transition that does not undermine the economy or the social licence to operate of the coal mines that are currently an essential part of the energy system. Much work has already been done on stakeholder engagement, but clarity is needed on the drivers and nature of the transition, which in reality is a planned socio-economic transition to closure, in addition to environmental considerations.

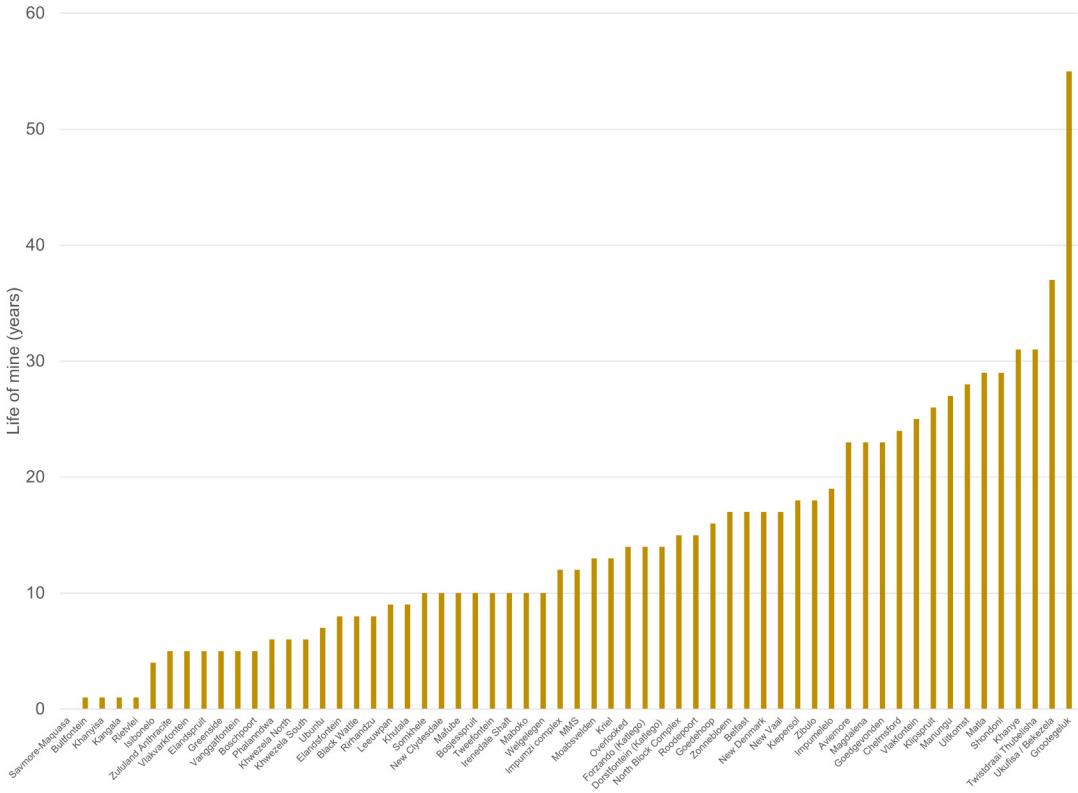

Figure 1 – Life-of-mine of coal mines in South Africa

Figure 2 – Social wellbeing barometer for coal mining host communities in South Africa