MANAGING THE COAL TRANSITION FOR WORKERS IN SOUTH AFRICA : A SCENARIO ANALYSIS OF AGE AND EDUCATION PROFILES OF THE COAL MINING WORKFORCE

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Overview

Recent electricity scenarios for South Africa project that expanding the power system primarily with renewable energy is least-cost. Least-cost is however not the guiding principle to energy policy making. Concerns for employment and distributional impacts are often presented as reasons for political blockage, despite research at both the global and national levels showing net positive employment impacts of a low carbon and green transition. The explanation is that specific groups of workers and communities face the risks and challenges of a transition due to their high exposure to and dependence on carbon-intensive industries.

In South Africa, the geographical and political concentration of the direct fossil fuel workforce – primarily in the coal fields in Mpumalanga province –remains an issue for a socio-economically just and politically feasible transition. The 80 to 90 thousand people strong coal workforce faces job losses as coal power plants retire, and alongside them, the associated mines and transport infrastructure. Even in a least-cost future energy system without climate change policy in South Africa, we foresee a reduction in output from coal mining in South Africa of about 60%, highlighting the urgency of planning for impacts on the coal mines' workforce. This workforce may also face accelerated negative impacts on jobs in coal mines due to exports being affected by electricity market dynamics around the world and climate change mitigation policy, leading to reduced exports and even more rapid closures of coal assets.

Narrow interventions that compensate workers or help them to adjust require analysis of the labour market, and the age, skills, and educational profiles of the workforce. Surprisingly however, very few studies look closely at the detailed characteristics of coal mine workers in South Africa. The objective of this paper is therefore to quantify the magnitude of energy transition risks to employment for coal miners, and to make a first step in identifying potential solutions.

Methods

To achieve this, we explore the current characteristics (age and education) of the coal mining workforce according to existing data, in particular the PALMS dataset of Datafirst. We use plausible scenarios from a linked South African bottom-up (SATIM) and top-down (eSAGE) energy economic model to estimate the impact of timing of a reduction in coal mining output on employment and job losses in coal mining. These scenarios are (1) a constant coal mining employment scenario as a benchmark, (2) a least-cost scenario for the energy system future; and (3) an accelerated transition scenario with more ambitious climate change mitigation. We explore how many forced job losses would take place in coal mining in either scenario. We also explore the part of the labour force for which early retirement would be an option and discuss what options could be feasible for other groups within this labour force. We finally perform a first assessment of the costs and affordability of an early retirement scheme.

Results

A not intuitive finding of our study is that we find indications in labour force statistics for the fact that a part of coal miners leaves the coal mining labour, especially beyond 45 years old and hence many years before the age of retirement – most likely for physical reasons or respiratory health problems. This also holds once one corrects for the demographical build-up of South Africa's working age population. This implies that even in a constant employment scenario the coal mining labour force would experience a net annual outflow of between 1200 and 2000 workers of over 35 years old until 2040.

Results of our scenario analysis shows that, relative to our constant employment benchmark, a least-cost energy future has almost no additional forced job losses, while an accelerated transition scenario would translate to between 500 to 2000 additional job losses per year until 2040. In both cases, the most significant difference is that coal mining would stop hiring new workers. In a least-cost energy future this would concern an average reduction of 1500 net new hires of workers under 35 per year until 2040, and in an accelerated transition scenario about 1800 per year.

We estimate that a significant part of those forced out of coal mining jobs have age and education characteristics that make finding a new job very difficult, especially given the high levels of unemployment and low economic growth in present-day South Africa. In a least-cost energy future about one quarter of the few additional job losses will be not to almost not re-employable at all, while one quarter will have severe difficulty finding new employment, while half of those additionally losing their job will have an average to above average chance of finding new employment in South Africa. This last category seems most suitable for re-skilling or upskilling programmes. In an accelerated transition scenarios these categories become respectively 40%, 26% and 34% of the workers additionally losing their job, meaning that on average about 400 to 600 persons a year until 2040 will have no chance of finding a new job with likely little suitability for a re-skilling programme to chance that outcome. These add to the problem of disappearing new hires in coal mining for the communities concerned.

Advancing the retirement age for coal miners by 5 years would help avoiding the additional forced job losses in an accelerated transition scenario compared to our constant coal mining employment benchmark. Reducing the retirement age by another 5 years would even allow to reduce the number of people leaving the coal mining workforce in the most precarious job market categories by more than half relative to our constant employment scenario, and thus provide relief to an even bigger proportion of older coal mining workers.

Conclusions

The underappreciated issue is that in South Africa 1. A significant number of people leave employment in coal mining on a continuous basis; 2. A least-cost energy future will not change the outflow of employment much, but rather seriously affect new hires, which will reduce the economic chances of younger people in the municipalities concerned, 3. An accelerated transition to a low carbon economy will increase both problems, 4. Even without an accelerated transition the need to create a new economic dynamic in South Africa's coal mining areas is already urgent.

Early retirement can offer a solution for a large part of workers who likely have little to expect from re-skilling programmes. However, the experience of this study shows that much of the data and information needed for planning of a just transition at an appropriately granular level is mostly unavailable, at least publicly. This for instance complicates estimation of the part of the workforce for which re-skilling or upskilling could be a solution. We therefore recommend South Africa's government to start structured collection and publication of this data to support the public debate and decision making.

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