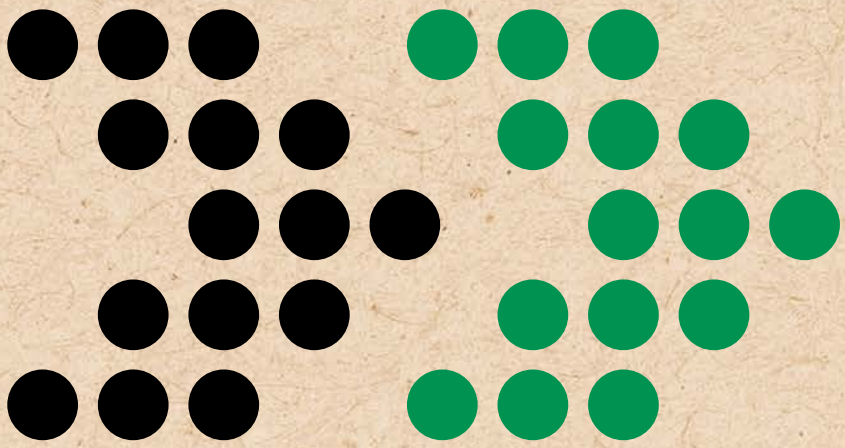
JUST TRANSITION COSTS AND COST FACTORS

A Decomposition Study



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Contents

Executive summary

A just transition in a fossil fuel-dependent region requires investments in several areas to rebuild a resilient and equitable economy while addressing energy security concerns. An analysis of the just transition plans and financial needs of several coal regions reveals that these financial requirements can be classified into the following eight cost components, each with its own set of specific outcomes:

1. Mine reclamation and repurposing;
2. Decommissioning of thermal power plants;
3. Labour support and transition;
4. Economic diversification;
5. Community resilience;
6. Green energy investments;
7. Revenue substitution and energy price support; and,
8. Planning and governance.

This study attempts to identify cost factors for each component based on a suitable denominator — the capacity of decommissioned thermal power plant (TPP), reduced coal production, affected worker or affected population. These factors have been derived based on the just transition investment plans of three coal regions. These are:

1. South Africa's Just Energy Transition Investment Plan (JET IP) for 2023-27, which aims to retire about 30% of the coal-based TPP capacity and reduce the coal use in electricity generation by about 30%. This plan focuses on the Mpumalanga province, which has the highest coal dependence.
2. Territorial Just Transition Plan (TJTP), for 2021-2027, of the Lusatian lignite mining area in Brandenburg, Germany, which aims to retire about half of the TPP capacity and 37% of the lignite production.
3. TJTP (2021-27) of Silesia voivodeship (province), Poland, covering the Upper Silesia coal basin in Poland, which aims to retire about 75% of the coal-fired power capacity and reduce coal production by about 23%.

A comparative analysis of the investment plans of the three regions reveals that just transition investments are highly influenced by local conditions. However, there are similarities in the cost factors for specific components.

- The decommissioning cost of TPPs per megawatt (MW) capacity is estimated at $55,000 in South Africa and $160,000 in Germany. The differential cost is primarily accounted for by the compensation paid to private power plant owners for foregone profits in Germany.
- The cost of reclamation and repurposing of coal/ lignite mines is $28.9 million per million tonnes per annum (MTPA) of coal capacity for Mpumalanga and $17.2 million per MTPA for Silesia. The difference is mainly because of the types of mines and the liabilities that companies have to bear.
- The cost factors for green energy investment demonstrate wide variation, from $5.1 million per MW of decommissioned TPP for South Africa to $0.1 million per MW in the case of Silesia and Lusatia. The difference is primarily due to nationwide green energy investment plan of South Africa versus the regional green energy investments in Silesia and Lusatia.
- The cost for economic diversification per MW of decommissioned TPP is very similar in Mpumalanga, Silesia and Lusatia, at around $0.16 million to $0.19 million.
- The community resilience costs are also similar across the three regions at about $ (PPP) 366 to $ (PPP) 471 per affected person. Community resilience is also about 20% of the total just transition investments.

- The labour support costs show wide variations ranging from about $22,100 per worker in the case of South Africa to $14,285 in Silesia and $6,315 per worker in Lusatia. The difference is due to pre-existing and alternate labour support structures in the European countries.
- The costs for planning and governance range from 2% to 4% of the total just transition investments.

Building an understanding of the cost components and factors is crucial to estimate the funding support that coal-dependent economies will need in the coming decades. While the investment requirements vary across regions depending on the existing state of social infrastructure, fossil-fuel dependence and economic diversification needs, this study identifies the main cost components and factors that can be considered for just transition planning and investments.