

Electricity supply and demand scenarios for the Southern African power pool

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ABSTRACT:

The study presents long-term electricity supply and demand scenarios for the twelve countries in the Southern African Power Pool, based on detailed bottom-up demand analysis for all countries and a set of internally consistent development scenarios. Total regional electricity demand and supply increase by eight to fourteen times from 2010 to 2070, with major shifts in both the sectoral composition of demand and the geography of demand, with South Africa becoming a much smaller share. On the supply side, the fuel mix shifts from coal and toward hydro in the medium term, but towards other renewables, such as solar, in the longer term, particularly in the scenarios with the fastest decline in capital costs for renewables. This leads to declining unit carbon dioxide emissions in the more aggressive scenarios, even though total power sector emissions still increase. The unit cost of generation for the entire region is stable across all scenarios. The potential transformation of the supply sector would require a fundamental shift in resource use, grid management and infrastructure development in the region, as well as greater regional integration. This also implies significant institutional capacity development in the SAPP Coordination Centre or similar structures for cooperative management of resources.