

# ERSA Research Brief

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## The importance of new power generation in South Africa<sup>1</sup>

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### **Introduction**

The lack of adequate and reliable electricity supply has been directly affecting the South African economy since the first series of blackouts occurred in 2008. Recognising the looming crisis, Eskom and the Department of Energy launched the New Build Programme in 2005 whereby previously mothballed coal-fired power stations such as Camden and Grootvlei were recommissioned and two new modern coal-fired power stations, Kusile and Medupi, with a generation capacity of 4800MW were commissioned to be built. However, delays in the building of these new power stations, inadequate maintenance of existing plants, along with a steady increase in demand relative to a stagnant supply culminated in a second wave of load shedding across South Africa at the end of 2014. At the time of writing, South Africa's economy is in desperate need of an expansion of electricity supply to facilitate economic growth and development. In this regard, the role of Kusile and Medupi is essential, and provides the motivation for the research conducted in this study.

### **Modelling and main findings**

Our research analysed the economy-wide impact that the additional electricity generation capacity from Kusile and Medupi will bring to the South African economy in the medium to long run. We used a dynamic CGE model, UPGEM<sup>3</sup>, to conduct our analysis. Our model's baseline projections considered the Department of Energy's Integrated Resource Plan for electricity generation growth and National Treasury's latest Budget Review for macro variable forecasts over the period 2011-2030. In the policy simulation we isolate and measure the contribution of Kusile and Medupi during this period.

As expected, our policy simulation results show that economic growth will be severely harmed in the medium term without the additional electricity generation capacity scheduled to be brought online through Kusile and Medupi. Our simulation results indicate that the contribution of these two stations' additional generation capacity to baseline electricity supply growth was 14.5% and around 3.1% to real GDP growth, by 2020. This supports the view that inadequate electricity capacity in recent years has already cost the South African economy billions of Rands. On a macro level, we found that investment expenditure, in particular, is heavily dependent on the expected growth in electricity capacity and infrastructure. Up to 2020, around 10 per cent of investment activity is facilitated, directly or indirectly, by the building of Kusile and Medupi. Given its close link to real aggregate investment expenditure, our results may also then be interpreted to show that the construction industry gains the most from the additional activity allowed for by the building of these two power stations over this period.

A key result that emerged from the modelling simulations was that the problem of excess demand relative to tight supply in the electricity market will be greatly relieved once the additional capacity from Kusile and Medupi is installed. The current conditions, which as previously mentioned have contributed to

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<sup>3</sup> University of Pretoria General Equilibrium Model is a dynamic CGE model of the South African economy built in collaboration with the Centre of Policy Studies in Melbourne, Australia.

widespread blackouts and load shedding in the country since 2008, must be considered within the context of electricity's regulated pricing structure. Eskom, a price-regulated state-owned enterprise (SOE), is not allowed to raise electricity prices in the short-run when demand exceeds supply, as might be the case in other free market enterprises. The model shows that if electricity prices were subject to market forces, the building of Kusile and Medupi's additional capacity would have contributed to a significant slowdown in electricity price increases over the next decade. Within the context of Eskom as a regulated SOE, we interpret this particular result as showing that the building of Kusile and Medupi will lead to fewer blackouts as adequate reserve margins in the electricity sector are restored.

The contribution of this research lies in the quantitative evidence it provides regarding the benefits that the additional generation capacity of Kusile and Medupi will bring to the local economy. Alternatively viewed, our results may also be interpreted as showing the damage to the economy as a result of inadequate electricity supply in recent years. It is clear that the South African economy needs the extra generation capacity in order to facilitate economic growth, prevent widespread blackouts and reduce upward pressure on electricity prices. Related to our findings on the contribution of Kusile and Medupi, our research also indicates that the expected growth in electricity demand will be large enough to warrant the building of both these power stations, despite recent and projected increases in electricity prices.