



PRESIDENTIAL
CLIMATE COMMISSION
TOWARDS A JUST TRANSITION

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A Presidential Climate Commission Report

Recommendations from the PCC on South Africa's Electricity System

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ABOUT THE PRESIDENTIAL CLIMATE COMMISSION

The PCC is a multi-stakeholder body established by the President of the Republic of South Africa to advise on the country's climate change response and pathways to a low-carbon climate-resilient economy and society. In building this society, South Africa needs to ensure decent work for all, social inclusion, and the eradication of poverty. Those most vulnerable to climate change, including women, children, people with disabilities, the poor and the unemployed need to be protected, and workers' jobs and livelihoods also need protection. The PCC facilitates dialogue between social partners on these issues – and in particular, defining the type of society we want to achieve, and detailed pathways for how to get there.

ABOUT THIS REPORT

This report presents the PCC's recommendations for South Africa's electricity system. The analysis and recommendations are based on significant research, evidence, and stakeholder engagement with all social partners, and is set against the current

national policy framework, notably the National Development Plan, the Just Transition Framework, and South Africa's climate commitments (the NDC).

The recommendations form part of a series of three reports, all available on the PCC website, that should be read together:

1. The Electricity Planning Recommendations Report (this report) describes the recommendations of the PCC to the President of the Republic and Cabinet based on our research and engagement with stakeholders.
2. The Stakeholder Perspectives Report details the unfiltered perspectives of the stakeholders consulted in preparing the PCC recommendations on electricity planning.
3. The Technical Report holds the summary of our technical research work that informed the consultations and recommendations report.

These recommendations focus on South Africa's electricity system (i.e., electrical energy/power). While climate change will drive low carbon transitions across the broader economy and wider energy sector (e.g., transport and liquid fuels), the current focus is on electricity, largely due to the current electricity crisis and the concurrent review of the Integrated Resource Plan (IRP) 2019. The supporting technical report provides an objective critique of existing electricity plans/studies. Over time, the scope of research and recommendations will expand to include other energy sub-sectors. Terms like "energy efficiency" and the "just energy transition" should therefore be understood within the context of the electricity sector.

Where the reader may disagree with the conclusions reached in this document, or where readers feel key pieces of information have been missed, the Commission welcomes additional research and insight. Such information should be sent to mitigation@climatecommission.org.za. The Commission will investigate all recommendations and questions that are substantiated with well researched, data-driven evidence.

EXECUTIVE SUMMARY

Electricity is critical for development. Affordable and reliable electricity for all should therefore be a national priority. Furthermore, due to the magnitude of climate risk, electricity planning should take into account the requirements of mitigating climate change. Policy makers must consider energy security, energy access, and environmental and social sustainability when planning.

Failure to take into account climate considerations would expose South African citizens, especially the poor, to more frequent, increasingly severe physical climate impacts as well as inhibit our trade competitiveness and access to capital. These recommendations¹ have been compiled to aid policymakers in considering the climate constraint (carbon budget) and the Just Transition when undertaking electricity planning. In particular these recommendations provide input into the review of the Integrated Resource Plan (IRP) currently underway.

President Ramaphosa in his State of the Nation Address stated that “we will continue our just transition to a low carbon economy **at a pace our country can afford** and in a manner that ensures energy security”. The pace at which we should decarbonise divides stakeholders. Advocates for a slower pace arguing variable renewable energy based systems are not energy secure and that the developmental cost in terms of the impact on the livelihoods of coal workers and their dependents are too high. Advocates for a faster pace of transition arguing that variable renewable energy systems are secure, that coal workers need protection through a Just Transition, and that failure to transition speedily will have negative impacts on trade, access to capital, air quality and human health, and impacts from climate change, including on water and food security.

Given the importance of electricity for development, electricity planning should be anchored on least cost pathways. All models reviewed showed that a least cost energy model would be made up of investment in variable renewable energy (wind and solar), storage (batteries and pumped hydro) and peaking support. None of the models build new coal or nuclear or have gas at high utilisations.

Any deviation from this least cost pathway would add system cost and must be justified by a strong developmental argument.

The PCC expects a policy adjusted IRP to promote approximately 50 to 60 GW of variable renewable energy by 2030, supported by co-located storage, and between 3 and 5 GW of peaking support (for example gas, running at low utilisations). The IRP would be enhanced by focussing on transparent, spatial planning centred on grid access points. This will provide additional necessary detail and guide procurement, provide additional steer for the required investment in skills and institutional development, enhance energy security, and inform road and port infrastructure upgrading. It will also provide a clear indication of where short-term investment in the grid could maximise grid access and where long-term grid investment should lie. Transparent communication of these plans, supported by robust Just Transition implementation, will go a long way to support building trust in resolving load shedding and building a sustainable electricity future. ***The IRP should therefore take a spatial, grid-focussed approach, in a manner that creates a public and transparent detailed resource plan to end load shedding and establish a holistic, centralised planning process.***

The PCC supports government emergency response efforts to enhance the Energy Availability Factor (EAF). However this should not be done in lieu of renewable energy generation construction. Both strategies should be pursued in parallel. The PCC also support government’s ongoing efforts in respect of the restructuring of the electricity supply industry, the unbundling of Eskom into generation, transmission and distribution subsidiary companies, the establishment of an Independent System Operator and an Independent Market Operator, the establishment of electricity markets (day ahead, balancing and ancillary services), and the establishment of a diversified, competitive generation sector. We propose that these efforts need to be accelerated.

¹ To be read alongside the accompanying technical and stakeholder engagement reports available on the PCC website.

There is a need for pricing reform throughout the electricity value chain **and a study on electricity pricing reform in South Africa, and how it can support a Just Energy Transition, is recommended.** Currently Eskom is not able to recover its full costs, which leads to borrowing to cover operational expenses, often diesel supplies. This is unsustainable and drives worsening EAF. Furthermore, as the electricity system transitions to variable renewable energy (VRE) and the grid becomes more central to planning, the restructuring of tariffs is critical to ensure that the fixed costs of supply (transmission and distribution) can be fully and transparently recovered through tariffs. Pricing also impacts local government power utility business models and municipal revenue models. Providing technical and financial support to municipalities to implement electricity reforms is core to successful power reform and local government service delivery and financial sustainability. Electricity access and energy poverty should be included in the pricing reform study, considering the benefits and practicalities that should be taken to overhaul and increase Free Basic Electricity and ensure that any price increases are not carried by the poor.

All stakeholder groups strongly held that current emergency and long-term electricity planning must be aligned with the Just Transition Framework. The Just Transition Framework is centred on realising the

jobs benefit of transition through a focus on industrial policy and economic diversification, labour market interventions (skills) to equip the labour force to participate in this economy, and support of workers (income support and protection) while we transition. This was echoed in stakeholder engagements with participants arguing for an increased focus on several aligned areas:

- To create additional jobs government should incentivise green industrial development, economic diversification and the localisation of key transition value chains, particularly in regions that are at-risk.
- Investing in human resource and skills development is an immediate priority.
- Integrated government planning needs to support those most impacted by load shedding, particularly SMMEs and indigent households, as well as provide and enhance social protection measures, particularly for those workers and communities impacted by the transition.

While rooted in electricity systems these are economy wide objectives that will require the participation of all of government, working closely with key social partners.

1. ELECTRICITY AND A JUST TRANSITION

THE JUST TRANSITION AND SOUTH AFRICA'S DEVELOPMENTAL NEEDS

South Africa's National Development Plan (NDP) 2030² sets out the national interest through ambitious economic development targets for addressing unemployment, poverty, and inequality – referred to as the triple challenge. Access to reliable, affordable, and sustainable electricity plays an important role in addressing the triple challenge. Climate change presents an existential threat to South Africa's development agenda via both biophysical risks and transition risks. The NDP recognises this and calls for a just transition to low carbon electricity to help address both the triple challenge and the climate crisis.

Electricity is strongly linked with economic development. Higher GDP is correlated with greater electricity use, access, reliability and affordability.³ While correlation does not imply causation, there are reasons to believe that this is so. Electricity is an important input to production and in realising opportunity at many scales within an economy. Large power users, such as a datacentre, a mine or a smelter can't operate efficiently without a reliable supply of electricity. Neither can small businesses, sole proprietors or entrepreneurs, like a hairdresser or a contract welder. Arguably, the impact of poor access or power interruptions is greater for these smaller enterprises and vulnerable communities (e.g. the poor, women and youth). They do not have the resources (e.g. savings or insurance) to easily replace lost goods or lost income, nor can they easily afford alternative power sources (like generators, inverters and rooftop solar).

Electricity is also critical for delivering public services like healthcare and education. At a household level, electricity improves wellbeing, health and productivity. It enables access to time savings, communication and education, as well as heating, cooling and refrigeration. The direct investment in electricity infrastructure also creates jobs and thus directly improves GDP.

Reliable access to affordable electricity is, therefore, a critical tool for directly and indirectly addressing South Africa's triple challenge and ensuring a Just Transition to a low-carbon and climate resilient economy. Sustainable Development Goal (SDG) number 7⁴ aims to “ensure access to affordable, reliable and sustainable modern energy **for all**”, and encapsulates both the developmental and environmental challenges that many countries face.

This challenge is compounded by the need to mitigate climate change. Meeting the 1.5°C temperature target, for example, requires global emissions to be halved by ~2035, and then to reduce to 90% by 2050 (relative to 2020 levels), while sequestering any residual, hard-to-abate emissions thereafter to reach Net Zero emissions in 2050 and beyond.⁵ Some of the impacts of climate change are unavoidable, and while every effort must be made to mitigate climate change, a Just Transition also requires that the adaptive capacity and resilience of affected communities and citizens is strengthened.⁶

THE ENERGY TRILEMMA

Policymakers are therefore required to navigate a pathway that simultaneously provides the cheapest and most accessible electricity, that is also reliable and stable and that meets the requirements of climate change (and other environmental needs) embedded in South Africa's NDP and Nationally Determined Contribution (NDC). The World Energy Council coined the Energy Trilemma to describe these broad requirements of meeting SDG7 and enabling sustainable economic development. Their framework would see electricity systems balance three, sometimes competing, priorities: Energy Equity (access and affordability), Energy Security (Reliability and Stability) and Environmental Sustainability (climate change, water-use and air quality), and in South Africa and other developing countries, Social Sustainability (e.g. employment, livelihoods, skills) would be added as a fourth priority.

2 RSA. 2012. National Development Plan 2030: Our future - make it work.

3 Kelsey Jack, March 2022. How much do we know about the development impact of energy infrastructure?

4 Global Goals 7: Affordable and clean energy.

5 SBTi. 2021. Pathways to Net Zero. SBTi Technical Summary.

6 PCC. 2022. A Framework for a Just Transition in South Africa.

CLIMATE CONSTRAINTS

International trends are clear – economies are moving away from traditional fossil fuel-based electricity infrastructure towards variable renewable energy-based electricity infrastructure. The same is true here in South Africa. The Integrated Resource Plan 2019 (IRP2019), currently under review, provides that most new generation is from renewable-based technologies (wind and solar PV). The IRP2019's least-cost scenario did not build any new coal or nuclear. There remains, however, significant debate about whether South Africa is moving fast enough to meet our climate commitments and the requirements of science to mitigate the worst impacts from climate change this century. Additionally, in the face of the current electricity crisis, many stakeholders advocate for additional new generation to close the supply gap and ensure reliable and sustainable electricity into the future.

There is also significant trade and capital risk to South Africa as the rest of the world transitions and starts to consume, produce and trade different commodities. Our export commodities are carbon intensive, therefore subject to border adjustments (e.g. steel, fertilizers), and are often commodities where demand will decline over time (e.g. coal). Furthermore, capital in South Africa is more costly than for developed countries and is becoming proportionally worse for emissions intensive sectors. South Africa's specific export and credit risk profile is therefore extremely vulnerable to these global changes. Transitioning will inevitably occur and should South Africa transition too slowly relative to the rest of the world, economic competitiveness would be undermined .

These recommendations and the accompanying technical report have been compiled to aid policymakers in considering the climate constraint (carbon budget) when undertaking electricity planning. In line with the Just Transition, the report also considers how human development and social justice issues must be factored into the decision making process. The recommendations are based on the best available science and studies and informed by the views of stakeholders contained within a more detailed stakeholder consultation report.

2. DECISIONS – BALANCING INTERESTS AND UNCERTAINTIES

Many of the questions stakeholders have posed through the engagements over several months, have been in respect of President Ramaphosa's statement that *"we will continue our just transition to a low carbon economy **at a pace our country can afford** and in a manner that ensures energy security"*⁷. Many stakeholders are questioning what concessions are provided to developing countries? Should South Africa's pathway to a low carbon and climate resilient economy be slower, given the country's current energy crisis and manifest developmental challenges? Should the country's Net Zero ambition look beyond 2050? Is there room to invest in fossil fuels, if not coal then why not gas? And should policymakers assume that innovative carbon capture technologies will be commercially available and reliable, thus extending the use of coal while addressing climate change? What are the transition and protection measures in place for those employed in the coal sector? How will this transition be managed to ensure these measures are sustainable? How will the funding requirements be met to ensure that South Africa does not incur unsustainable debt?

Policy makers must weigh up a wide array of competing interests, uncertainties and scientific evidence. Modelling provides an excellent basis to make these decisions, but the models themselves are based on certain assumptions (e.g. about future demand, how technologies will change over time, what capital might cost, and how to discount costs over time). One important assumption is the pace at which technologies mature and become scalable (learning rates). For example, will variable renewable energy technologies like wind and solar PV continue to get cheaper, and how quickly? How quickly will storage technologies evolve? Will continued use of fossil fuels negatively impact the economy through trade-risks, reduced access to international finance and environmental externalities (e.g. climate change impacts, water and air pollution)? The uncertainty in these models often increase as events get further away in time. The models therefore are not the final answer.

However, they provide one of several inputs in a decision-making process, and provide a useful basis from which to begin.

THE INTEGRATED RESOURCE PLAN

In the case of the IRP, the process also begins with modelling. To date, various scenarios are run through models to evaluate the impact of specific assumptions. Policymakers then consider a wide range of other factors and data to arrive at a policy-adjusted IRP. This then forms the basis for electricity generation planning in South Africa. In the past, the IRP has been relatively short term focused. However, it is our understanding that the updated IRP will provide insight to 2050, and will include consideration of transmission requirements.

LEAST COST SYSTEMS AND CLIMATE CONSTRAINTS

Key local and international models were reviewed in preparing these recommendations and the technical report. All models conclude that, even if no climate restrictions are put in place, a least cost electricity system comprises variable renewable energy (wind and solar), storage (batteries and pumped hydro) and peaking support (typically, but not necessarily gas). None of the models, including the IRP2019 least cost scenario, build new coal or nuclear, even though these are technology options within the models. This is because these technologies are not the least cost options. The basis for considering different electricity futures, therefore, depends on other considerations that can motivate for a deviation away from least cost.

Policymakers considering whether they should deviate from a least cost model are pulled in two directions. Some stakeholders suggest that more fossil fuels are needed to ensure reliable

supply, and some suggest that the transition to Net Zero emissions in the electricity sector must be accelerated. In South Africa, this debate centres primarily around coal, nuclear and gas. Inclusion of both in the electricity mix causes an increase in electricity costs, to varying degrees. For example, new coal fired power is more expensive than renewables, if one adds coal to the least cost energy mix the cost of electricity increases. This is also true of gas (unless limited to peaking support for a renewable-dominated electricity mix). It is critical therefore, that the decarbonisation of the electricity sector follows a least cost pathway.

In addition, if fossil fuels were added to the mix, this would reduce the amount of carbon emissions available (i.e. the carbon budget) to other economic sectors, which are generally harder and more expensive to decarbonise, relative to the electricity sector. Consequently, through allocating the carbon budget across economic sectors to maximise economic and social return, South Africa is effectively designing its economy.

Accelerating coal transition, relative to a least cost pathway, incurs additional costs and would also render the electricity system cost more expensive, albeit marginally. Accelerating the phasing out or reducing the output of coal has positive climate, environmental and human health benefits, but puts jobs and livelihoods at risk. Policymakers must weigh up both sides of the debate and make choices that, given uncertainty, are not without risk.

Returning to the role of electricity in development affirms how important these decisions are. More expensive electricity puts a drag on economic development and can lead to unjust outcomes. Negative outcomes are worse in particular for the poor. Decisions cannot, therefore, be taken lightly. Any deviation from a least cost pathway would add cost and must be justified by a strong developmental argument.

3. CONCERNS – WHAT DO STAKEHOLDERS VALUE?

Stakeholder views were gathered through specific engagements with social partners and communities. Their core concerns are summarised below but a complete report from our engagements entitled “Stakeholder Perspectives on the PCC Recommendations on Electricity Planning in South Africa” can be found in a separate report.

ENERGY SECURITY AND EQUITY

A primary concern of stakeholders is energy security, given its linkages to their well-being, livelihoods and broader economic development. There are stakeholders who believe that a variable renewable-based electricity system is not secure or reliable. This view largely stems from the variability of renewables (e.g. solar PV can only generate electricity when the sun shines) that would result in disruptions to electricity supply.

Advocates of this view also often doubt that renewable electricity is cheaper than fossil fuel-based electricity, thereby doubting if renewables can achieve energy equity (i.e. access and affordability). Their argument is largely based on the upfront capital requirements and need for additional investments in storage and peaking solutions for variable renewable electricity, which are not required on the same scale under fossil fuel-based systems.

These concerns over security and equity associated with renewable electricity systems are addressed with empirical evidence in the technical report. Consideration of local and international studies lead us to believe that variable renewable energy systems, well managed, are secure and are least cost.

SOCIO-ECONOMIC SUSTAINABILITY

A key concern of transitioning to a renewable-dominated electricity system is the impact it will have on the coal value chain and the welfare

of people and the communities that directly and indirectly depend on it. The coal value chain is a major employer (in which employees are protected by collective bargaining led by the labour union movement) and is part of the cultural identity of many regions in South Africa. If investment in this sector was halted or slowed, these communities would be owed a significant degree of financial and social protection. However, some stakeholders argue that if further investment were to be made in coal, employment could be maintained and created, and it wouldn't have to necessitate the scale of interventions required to provide the necessary financial and social protection. While workers and communities that are at-risk across the coal value chain certainly need to be supported through the transition, calls for additional investments in coal ignore risks to the broader economy that this would present (e.g. climate change impacts, air pollution, trade-related transition risks and access to finance).

Other stakeholders have raised concerns over these broader economic risks, and advocate accelerated coal closure and transition to renewable electricity systems. They have expressed fears about how biophysical, policy and technology related climate change impacts reduce access to international markets, and how reduced international competitiveness could impact on South Africa's developmental agenda. International markets are increasingly looking to regulate trade based on the carbon intensity of their imports. The carbon intensity of South Africa's export commodities are at significant risk of climate-related trade barriers (e.g. the European Union's Carbon Border Adjustment Mechanism (CBAM))⁸. These risks would have significant impacts on South Africa's international competitiveness, key export sectors, the balance of payments and employment across several sectors.

Furthermore, these stakeholders are worried about future access to capital markets associated with slow climate action. Capital markets are increasingly concerned with climate change and will not provide capital to industries that are not aligned with the climate transition. Many South African lenders and banks have policies that prohibit investment in new coal. This is also true for access to public capital and preferential, risk-bearing donor or philanthropy support. The World Bank estimates the need

⁸ PCC, 2023. <https://pcccommissionflow.imgix.net/uploads/images/PCC-WorkingPaper-CBAM.pdf>

to invest R4-trillion (plus an additional R2-trillion in Just Transition and R2-trillion in resilience and adaptation) in net present value through to 2050 to meet our transition needs.⁹ It is unlikely that South Africa's balance sheet can support the transition without increased access to local and international public and private finance.

ENVIRONMENTAL AND HEALTH IMPACTS

One of the strongest arguments by stakeholders in favour of accelerating the transition from coal-fired power is concerns over air pollution, and the devastating health impacts it causes. A recent report looking at the health impacts of Eskom's coal plant fleet¹⁰ suggests that air pollution from coal-fired power plants, when considering Eskom's current planned retirement schedule and emission control retrofits, would be responsible for 79 500 air pollution-related deaths from 2025 until their end-of-life. Full compliance with the Minimum Emissions Standards (MES) at all plants that are scheduled to operate beyond 2030 would avoid a projected 2 300 deaths per year and avoid economic costs of R42-billion (USD2.9-billion) per year. Other avoided health impacts would include 140 000 asthma emergency room visits, 5 900 new cases of asthma in children, 57 000 preterm births, 35 million days of work absence, and 50 000 years lived with disability. The study estimated that requiring the application of best available control technology at all plants, instead of the current Minimum Emissions Standards, by 2030, would avoid 57 000 deaths from air pollution and economic costs of R1-trillion (USD68-billion) compared to the Eskom plan.

Finally, stakeholders are concerned about biophysical climate change impacts (e.g. severe storms, flooding, droughts, etc.). Climate change risks threaten food, water and energy security, carry significant economic costs, reduce economic growth, and could increase regional migration and social disruption. These impacts will affect the whole economy, not just one sector or value chain, and put South Africa's development agenda at significant risk (i.e. increasing, rather than decreasing, poverty, inequality and unemployment).

⁹ World Bank. 2022. Country Climate Development Report for South Africa.

¹⁰ Centre for Research on Energy and Clean Air. 2023. Health impacts of Eskom's non-compliance with minimum emissions standards.

4. KEY CONSIDERATIONS IN MAKING RECOMMENDATIONS

LONG TERM ELECTRICITY PATHWAYS TO NET ZERO IN SOUTH AFRICA

In making the recommendations in this paper, the Commission has reviewed several local and international studies¹¹ that consider climate compatible electricity sector pathways. The balance of evidence is in favour of:

- No new coal, and managed coal closure at end of economic life.
- Renewable dominant energy systems are least cost (and are becoming increasingly cheaper over time). VRE systems are shown to be as secure and reliable as traditional fossil fuel-based systems.
- The benefits of access to international trade and finance, increased geopolitical influence, reduced health effects from improved air quality, and of course, relatively lower impacts from climate change when achieved, mitigate and compensate for risks associated with the transition and suggest that South Africa should investigate accelerated transitions under stricter carbon budgets.
- Transitioning to VRE systems does, however, require protecting the workers and communities that are impacted most by the transition away from coal-fired power. The combination of benefits of VRE systems benefiting the poor and protecting those made vulnerable by the transition is the essence of a Just Energy Transition.

¹¹ NBI, BSG and BUSA. 2022. Decarbonising South Africa's Power System.; ESRG UCT. 2022. Exploring Net Zero pathways for South Africa. An initial study. ; CSIR and Meridian Economics. 2020. Technical Report: Systems analysis to support increasingly ambitious CO2 emissions scenarios in the South African electricity system. ; World Bank. 2022. South Africa Country Climate and Development Report.; DMRE. 2019. Integrated Resource Plan 2019.; PCC. 2021. South Africa's NDC targets 2025 and 2030.

The various scenarios across models demonstrate that more aggressive decarbonisation, driven by accelerating coal closure, can result in either a reduced electricity system cost (-2% less than a reference scenario) or an increase in electricity price of up to 8%, depending on the carbon budget applied. In less ambitious carbon budget scenarios, the price of electricity could come down as the cheaper renewable energy options become more commonplace. In more ambitious carbon budget scenarios, the higher electricity cost does have a drag effect on GDP, but this is offset by positive GDP impacts of investing in renewable energy and transmission infrastructure and higher economic and individual productivity, as well as decreased volatility and market risk. The World Bank CCDR¹² suggests that an accelerated coal closure scenario “could almost double GDP between 2022 and 2050, which would be equivalent to average growth per year of about 2.3% during this period, or double the rate achieved between 2009 and 2019.” This growth would provide greater opportunity for participation in the economy.

The long-term recommendation is clear. South Africa should adopt a least cost electricity pathway and seek opportunities to close coal faster, predicated on achieving energy security. This means rapid and large-scale investment in renewables, storage, balancing power and peaking support. Given the need to connect ever-increasing amounts of renewable energy, sometimes far from the user base, investment in upgrading and expanding the grid is essential. This applies to both the transmission and distribution grid infrastructure. A detailed spatial plan based on the public and private project pipeline for high-voltage generation and wheeling requirements, as well as the updating and consideration of municipal network development plans is required for the development of this plan.

Further work is required to determine what a cost effective and internationally accepted carbon budget would be appropriate, including air quality considerations. This would help structure long-term planning and provide an anchor point for negotiations with international trade partners.

ELECTRICITY CRISIS AND RESPONSES

South Africa’s current electricity crisis requires interventions in the short term. How would electricity policy decisions change in the short term to address the urgent need for electricity access, and would these decisions compromise the long term, least cost and climate compatible energy mix? The answer is no. In the short term, the least cost, no-regret option remains renewables, batteries, and balancing and peaking support, for example from gas. Not only are these the cheapest, secure options, but they are also the only options with build times short enough to make a meaningful impact on load shedding. Furthermore, they are the options that will attract the best finance terms. In fact it is likely that new coal-fired power is simply not financeable.

The short-term government and private sector response is heading in the right direction. The appointment of an Electricity Minister overseeing practical action from Operation Vulindlela (OV) and the National Energy Crisis Committee (NECOM) is an important step forward. The support thrown behind the transition by the President (in his emergency plan and State of the Nation Address), and by the National Treasury in the budget review, give real weight to systemic reforms that enable a renewable energy dominant system. These efforts, combined with government working to implement the Just Transition Framework, and funded by the Just Energy Transition Investment Plan (JET-IP), will help to ensure that the necessary transition is well managed and is indeed a Just Transition. Despite some mixed policy messages coming from different departments, there are positive practical steps forward that have resulted in real progress. Eskom’s land leasing programme will add 2000 MW to the grid, Operation Vulindlela’s risk mitigation programme will add about 800 MW, and the private sector response to the removal of the 100 MW cap has resulted in an estimated 9000 MW in the pipeline. More detail is reported by the Presidency on the implementation of the action plan¹³. All of this will go a long way to reduce load shedding.

¹² World Bank. 2022. South Africa Country Climate and Development Report

¹³ Presidency, 2023. <https://www.thepresidency.gov.za/download/file/fid/2677>

The efforts being undertaken by various government bodies can be divided into five broad categories:

- Fix Eskom Generation (measured by an increasing Energy Availability Factor);
- Accelerate new generation;
- Governance, market, and pricing reform;
- Investment in the grid; and
- The Just Transition.

If load shedding is to be resolved, and South Africa restored to a sustainable electricity path, each sub-activity in each of these categories deserves significant attention and effort. All of them must be successfully executed to achieve this goal. The PCC supports government emergency response efforts to enhance the Energy Availability Factor (EAF). However this should not be done in lieu of renewable energy generation construction. Both strategies should be pursued in parallel. In particular, we support government's ongoing efforts in respect of the restructuring of the electricity supply industry, the unbundling of Eskom into generation, transmission and distribution subsidiary companies, the establishment of an Independent System Operator and an Independent Market Operator, the establishment of electricity markets (day ahead, balancing and ancillary services), and the establishment of a diversified, competitive generation sector. We propose that these efforts need to be accelerated.

The Presidential Climate Commission (PCC) will execute its monitoring and evaluation mandate by regularly reporting against a dashboard of these aggregated initiatives. In this way, it is hoped that transparency and accountability in electricity reform will be increased. Furthermore, the PCC maintains that honest and open communication with the public will engender trust that these efforts will see the end of load shedding.

5. RECOMMENDATIONS

There are, however, a few specific recommendations the PCC wishes to make. Some in support of existing measures, some requiring additional focus, and some where further work is needed to make strong, fact-based decisions in the future. The PCC recommends the following:

5.1 TRANSMISSION AND DISTRIBUTION SYSTEM AND SPATIAL PLANNING

The PCC expects a policy adjusted IRP to promote approximately 50 to 60 GW of variable renewable energy by 2030, supported by co-located storage, and between 3 and 5 GW of **peaking support (for example gas** running at low utilisations to support balancing and peaking). There should be no new coal, and gas, **if any is needed**, should be kept to the role of peaking support. The IRP would be enhanced by focussing on transparent, spatial planning centred on grid access points. This will provide additional necessary detail and guide procurement, provide additional steer for the required investment in skills and institutional development, enhance energy security, and inform road and port infrastructure upgrading. It will also provide a clear indication of where short-term investment in the grid could maximise grid access and where long term grid investment should lie. Transparent communication of these plans, supported by robust Just Transition implementation, will go a long way to support building trust in resolving load shedding and building a sustainable electricity future.

The transmission grid should be moved to the centre of electricity planning, both in the short and the long term. This would align with intentions to separate Eskom into three separate operating entities where the independent system and market operator would be responsible for electricity planning and the functioning of the market. Furthermore, the grid is currently the main constraint to adding new generation in South Africa. Consequently, by focussing the construction of generation where there is grid access, new capacity can be maximised, especially if storage is co-located to support supply when the grid becomes congested. To give this effect, the queuing systems for grid access will need

to be made transparent so that the project pipeline is known, allowing grid planning to be responsive and dynamic.

Distribution is also an important part of the grid, and working with local government to address distribution weaknesses and municipal capacity is essential. Energy efficiency, demand side management and battery storage on the city side of transformers will also alleviate grid congestion, and reduce demand and, therefore, the need for load shedding. **The IRP should therefore address this spatial, grid-focussed plan, in a manner that creates a public and transparent detailed resource plan to end load shedding and establish a holistic, centralised planning process.**

5.2 PRICING REFORM AND LOCAL GOVERNMENT BUSINESS MODELS

There is a need for pricing reform throughout the electricity value chain. Currently Eskom is not able to recover its full costs, which leads to borrowing to cover operational expenses, often diesel supplies. This is unsustainable and leads to spiralling energy availability factors as Eskom pushes assets harder to meet demand and earn revenue and is unable to adequately fund maintenance. Furthermore, as the electricity system transitions to variable renewable energy (VRE) and the grid becomes more central to planning, the restructuring of tariffs is critical to ensure that the fixed costs of supply (transmission and distribution) can be fully and transparently recovered through the tariffs.

In addition, as households and businesses start generating their own renewable electricity, they will want to feed this back into the grid and offset their installation costs. This will impact local government power utility business models and municipal revenue models. There are varying perspectives on pricing in South Africa, with policy messages and determinations from NERSA misaligned. **Expanding on existing work, a Presidential sponsored independent study on electricity pricing reform in South Africa, and how it can support a Just Energy Transition, is recommended.**

Providing technical and financial support to municipalities to implement electricity reforms is core to a study on pricing. Several municipalities still struggle to deliver basic services, including electricity. It is, therefore, critical for a Just Energy Transition, that municipalities are supported, both technically and financially, to deliver an affordable, secure and sustainable electricity supply. This includes understanding tariff and business model reform, skills development, improving administration systems to handle feed-in tariffs and energy efficiency interventions, and support in local electricity planning (e.g. distribution network development plans, including wheeling of power, and expanding and maintaining distribution infrastructure). SALGA is an important partner in this regard.

However, while tariffs need to reflect the efficient cost of service provision, any increase in electricity prices would negatively impact low-income households and small businesses, reducing their access to electricity and increasing energy poverty. Therefore, to avoid these risks, low-income households and small businesses need to be supported through, for example, the expansion of the free basic electricity allocation and progressive tariff structures/subsidies. **Electricity access and energy poverty should be included in the pricing reform study, considering the benefits and practicalities that should be taken to overhaul and increase the Free Basic Electricity allocation and ensure that any price increases are not carried by the poor.**

5.3 ENSURING A JUST ENERGY TRANSITION

All stakeholder groups strongly held that current emergency and long-term electricity planning must be aligned with the Just Transition Framework. The Just Transition Framework is centred on realising the jobs benefit of transition through a focus on industrial policy and economic diversification, labour market interventions (skills) to equip the labour force to participate in this economy, and support of workers (income support and protection) while we transition. This was echoed in stakeholder engagements with participants arguing for an increased focus on several aligned areas:

5.3.1 SUPPORT THOSE MOST IMPACTED BY LOAD SHEDDING, PARTICULARLY SMMEs AND INDIGENT HOUSEHOLDS.

SMMEs and low-income households are disproportionately impacted by loadshedding because, generally, they cannot afford alternatives (e.g. generators, solar PV). Small businesses often fall outside of the incentives promoted in the recent budget speech as they do not have access to capital for investment into rooftop solar, generators or inverters. They need specific support that enables them to access alternative electricity sources, at an affordable rate, to see out load shedding. They also need to be supported via increased access to insurance, to protect their alternative energy sources, given their disproportionate exposure to crime, for example. Not all indigent households receive their free basic electricity (FBE) allocation. Only about 30% of indigent households receive FBE allocations, about R9-billion per year fails to reach its intended beneficiaries¹⁴. This is partially due to administrative and skills challenges faced within local government and partially due to misappropriation. It is important that FBE reaches households that deserve it. Furthermore, a review of the amount of FBE allocated to each household (50 kWh a month) is required. Some stakeholder feedback suggested that a just allocation of FBE could be as much as 350 to 400 kWh per household a month. Other stakeholder feedback suggest that FBE should not be increased without deep and sustainable reforms to the sector, including governance reforms that ensure FBE reaches its intended beneficiaries. Increasing access to electricity to those who do not have physical access, through either grid extension, mini-grids or solar home systems is equally important. Mini-grids and solar home systems would require conducive policy and regulatory environments, as well as innovative business models. Community ownership models should also be piloted as a means for enabling energy access and a Just Energy Transition.

5.3.2 Invest in human resource and skills development.

This should include: (i) the reskilling and upskilling of existing workers so that they are better equipped to navigate the transition; (ii) future proofing the education system by accounting for future skills and labour force requirements, particularly those required for the transition and new green industries; and (iii) prioritise foundational skills across the education system to improve the adaptive capacity of the broader workforce. Prioritising skills development for populations that are at-risk (e.g. coal value chain dependant, woman and youth) will be important for building their resilience and addressing existing inequalities.

5.3.3 Support green industrial development, economic diversification and localisation of key transition value chains, particularly in regions that are at-risk (e.g. Mpumalanga).

This includes developing competitive industries to locally extract, produce and manufacture inputs (green copper, nickel, steel, cement etc.) and support services (design, engineering, and maintenance) for green technologies, including renewable energy technologies, battery cells, electric vehicles, and green hydrogen. This is vital for creating new, decent work for existing and new workers that are at-risk. Support for SMMEs to better capitalise on the opportunities the low carbon transition presents, is equally important. There are several entities working to support all spheres of government in Mpumalanga, including Impact Catalyst, Green Cape, TIPS, various local and international development finance institutions, donor programmes, and the Mpumalanga Green Cluster, as well as the PCC itself. The PCC will play a role in coordinating these programmes, as well as building the capacity of workers and communities to participate in decision-making processes that impact their lives. Furthermore, Eskom's Just Energy Transition Plan and Office is leading the repurposing, and where feasible, the repowering of coal plants and surrounding land to create alternate employment and economic options.

¹⁴ PARI, 2021. <https://pari.org.za/broken-promises-good-intentions-bad-trade-offs-and-unintended-consequences/>

5.3.4 Provide and enhance social protection measures.

This includes “traditional” social protection measures (e.g. grants, unemployment insurance, etc.) for workers who, for whatever reason, cannot transition to alternative low carbon livelihoods. It also includes the provision of universal access to basic services (e.g. clean energy, water, sanitation, transport, education, healthcare, etc.) so that workers and communities can leverage these services in building their resilience to external shocks (either from climate change or the energy transition).

While rooted in electricity systems these are economy wide objectives that will require the participation of all of government, working closely with key social partners.



**PRESIDENTIAL
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TOWARDS A JUST TRANSITION

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