

Submission in response to South Africa's proposed updated First Nationally Determined Contribution under the Paris Agreement

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Key messages

- 1) South Africa can significantly accelerate its electricity sector transition ambition beyond the IRP 2019, putting the country on track to align with the Paris Agreement goals and reap massive socio-economic benefits domestically.
- 2) Committing to this acceleration will put the country in pole position amongst emerging coal dependent economies to secure large scale climate finance to manage the unavoidable transition costs of moving away from legacy coal dependency.
- 3) A bold level of electricity sector mitigation ambition will be required to secure this large-scale climate finance assistance. However, this ambition simultaneously mitigates the high systemic risk of South Africa's carbon intensive economy, provides a large green economic stimulus and comes at no greater cost than that of the current IRP 2019.
- 4) Given that the bulk of mitigation required during the implementation period of the first NDC comes from electricity, the offer of an accelerated electricity transition would enable South Africa to reduce the lower bounds of its 2025 and 2030 mitigation targets.
- 5) As a result, South Africa's mitigation climate finance requirements would be commensurately increased, and front-loaded in the first half of the first NDC implementation period.

There is a limited window of opportunity to gain the advantages of being a front-runner in undertaking a Paris-aligned electricity transition, both in terms of securing climate finance at scale to assist, and for accessing the economic advantages. The second NDC in 2025 will have seen this opportunity pass.

South Africa's final updated first NDC must therefore:

- **signal the potential to accelerate its electricity transition ambition beyond that of the IRP 2019,**
- **request additional international climate finance support in terms of pace and scale, to enable the realisation of this additional ambition through the Just (Energy) Transition Transaction.**

Introduction

Meridian Economics is a specialised advisory group and think tank providing executive-level decision support, strategic advice and data analytics capabilities with a particular focus on South Africa's just energy transition. We develop evidence-based outputs to inform decision-making processes in the power sector, and continue to provide thought leadership into the electricity, climate and finance space both in South Africa and internationally.

The focus of our comments in this submission are on:

- 1) Creating the space within the updated first NDC to offer significantly increased mitigation ambition in the electricity sector beyond that of the IRP 2019.
- 2) Increasing the level of financial support requested to commensurately accommodate an increased electricity sector ambition, specifically through a large-scale, concessional transition finance transaction for Eskom – the Just (Energy) Transition Transaction.

The level of electricity sector mitigation ambition in the proposed updated first NDC

- Given its reliance on coal, the electricity sector is identified as being a priority sector for mitigation in the proposed updated first NDC, both in terms of long-term decarbonisation of the South African economy and as a key implementation challenge during the first NDC implementation period.
- The proposed updated first NDC states that the implementation of electricity sector decarbonisation will have economic and social consequences for the coal-producing areas which need to be addressed as part of a Just Transition.
- Implementation of the IRP 2019 is implicitly considered as South Africa's highest possible level of electricity sector ambition.
- The proposed updated first NDC states that climate finance (Article 9 of the Paris Agreement), including transition finance, will be required to implement the IRP 2019, together with a 'well-resourced Just Transition strategy'.

The systemic importance of the electricity sector

- The electricity sector is systemically important for South Africa's long-term decarbonisation and development aspirations.
- Electricity is where the largest volume of South African emissions can be mitigated at lowest cost (DEA, 2014).
- Electricity is also systemically important to the economy, as South Africans know well from the chronic loadshedding of recent years. An adequate supply of low cost and decarbonised electricity is critical to South Africa's future prosperity. Research shows that an increase of electricity generation between two and three times will likely be needed to decarbonise hard to abate sectors (Bataille, 2020; IEA, 2020).
- Accelerating South Africa's electricity sector transition also provides the potential for a massive post-Covid green stimulus, based on accelerated clean energy investment, localisation of value chains and resolution of South Africa's chronic power shortages.
- It is therefore appropriate that the key focus in the 10 year first NDC implementation period is the transition in the electricity sector, including Just Transition considerations.



The IRP 2019 is insufficient to enable South Africa’s long-term decarbonisation

- Given the electricity sector’s absolute emissions contribution, its carbon intensity and the prevalence of low-cost mitigation options (South Africa’s renewable energy resource endowment), it will have to do the early heavy lifting to meet South Africa’s long term decarbonisation aspirations and alignment with the Paris Agreement goals.
- Recent analysis by Meridian Economics and the CSIR - the 2020 Ambitions study (ME, 2020/03 and ME, 2020) - suggests that adhering to the IRP 2019 will very likely put South Africa’s alignment with the Paris Agreement goals beyond reach.
 - o The Ambitions study investigated the extent to which greater ambition is required in the power sector, using the concept of carbon budgets to indicate allocation of effort between the present and 2050, and accounting for the significant uncertainties inherent in moving from global to national to sector level carbon budgets,
 - o The findings show that the range of cumulative power sector emissions which would likely enable South Africa to meet the objectives of the Paris Agreement fall within the green shaded area of Figure 1 below, between 2.0 Gt – 3.4 Gt, with an emphasis on 2.3 Gt (darker shading).The current IRP 2019 trajectory (reflected in the modelled scenario from the Meridian Economics / CSIR 2020 Ambitions study, the ‘Current Policy Trajectory’) lies well outside of this range.
 - o These findings are aligned with analysis undertaken by UCT’s Energy Systems Modelling Group and international analysis on coal phase down¹

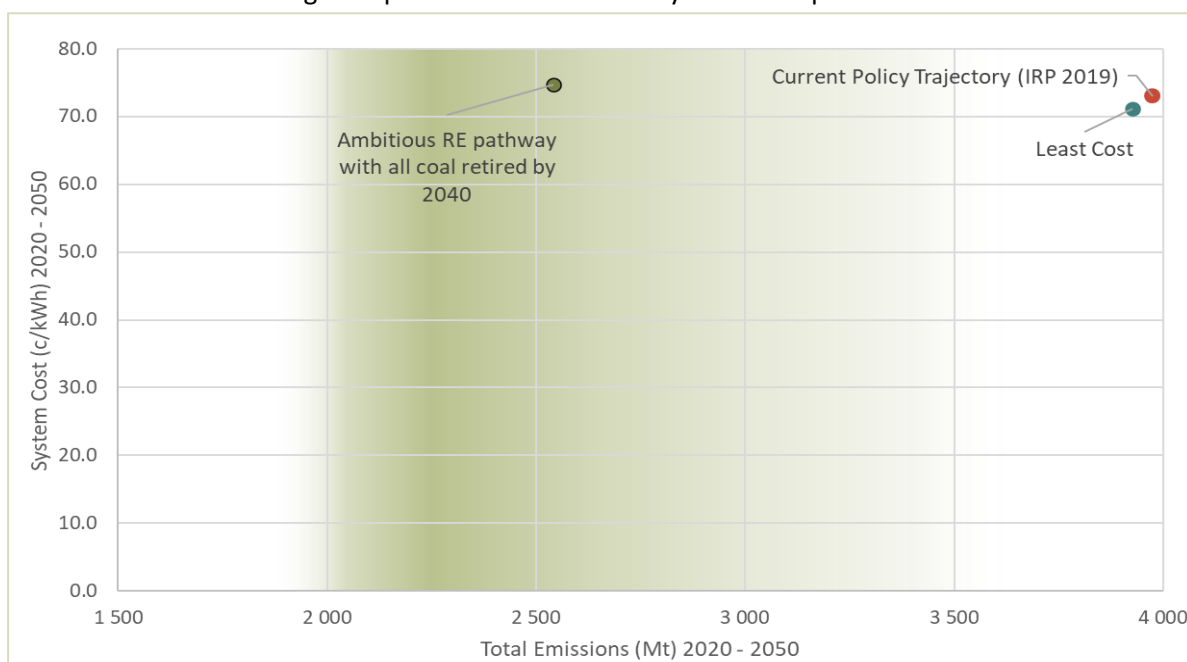


Figure 1. Future power generation system cost vs cumulative CO2 Emissions for an ambitious mitigation (ME, 2020).

¹ Meridian Economics, 2020/03 and 2020; McCall et al, 2019; Burton et al, 2018; Climate Analytics, 2020, Carbon Brief, Feb 2020.



Greater transition ambition in the electricity sector this decade is critical.

- The proposed updated first NDC rightly prioritises implementing a just transition in the electricity sector in the implementation period (2021- 2030).
- However, the Ambitions work shows that, despite 10,000MW of Eskom’s coal fired capacity retiring this decade under the IRP 2019, this rate of decarbonisation is too slow to put South Africa on a long-term decarbonisation pathway that is aligned with the Paris Agreement goals.
- In order to achieve Paris alignment, the following further steps are required:
 - o The coal fleet must be run at a lower utilisation rate than currently anticipated in the IRP 2019, resulting in emissions for the decade being 10% lower than the IRP.
 - o Even if it could be financed, the 1500MW additional coal capacity anticipated in the IRP 2019 cannot be built.
 - o A build rate of at least 6GW of new renewable energy capacity per annum must be achieved by 2026 (and possibly earlier given the delays with implementing the IRP and chronic power shortages), and maintained throughout the first NDC implementation period to:
 - eliminate load shedding and keep the lights on during this decade
 - provide a strong enough build rate to accommodate the acceleration of the coal fleet phase down in the 2030s
- **There is no risk that South Africa will build renewables too fast.**² Achieving long term decarbonisation of South Africa’s economy requires the construction of a massive renewables fleet. An abundant supply of low carbon electricity will be critical to enable emissions reductions in hard-to-abate sectors such as transport, building and industry.
- The urgent, large scale renewables investment programme required will over time enable the managed phase down of the coal fleet and bring enormous economic benefits for South Africans.
- The proposed first draft updated NDC rightly focuses on electricity for the NDC implementation period (2021 – 2030). More specifically though, the challenges in this sector are:
 - o to urgently initiate the accelerated transition away from coal dependency;
 - o to ensure that sufficient renewables and supporting technology build rate momentum is achieved, to enable the remaining coal fleet to be decommissioned in the 2030s;
 - o to achieve sufficient mitigation in electricity so as to leave space for the hard to mitigate sectors in the pathway to long term decarbonisation.

But what about the cost?

- The Ambitions study compared the future costs of different electricity generation scenarios all of which provide equally reliable and secure power supply.
- It finds that the IRP 2019 is not the least cost future scenario for the electricity sector. Implementing it will mean paying more to emit more (see Figure 1, (ME, 2020)).
- Due to disruptive cost declines in renewable energy technologies, it is now possible for South Africa to achieve substantial, additional emissions reductions at little extra cost relative to a least cost scenario.

² In some areas Eskom does of course face significant challenges with expanding the power grid fast enough to accommodate the required rapid growth in RE generation throughout the country.



- The Ambitions study finds that up to 1GT additional mitigation would incur a *cost saving* relative to the IRP 2019. The “additional costs” of accelerating up to 1.5Gt are so small as to be within the modelling uncertainties.
- Figure 1 above demonstrates this: the strongly Paris aligned electricity sector mitigation scenario ‘Ambitious RE pathway and coal off by 2040’ is associated with an electricity system cost increase that is in the noise of the modelling uncertainties compared to the modelled projection of the IRP 2019 (‘Current policy trajectory’).
- Compensation for the upfront additional costs of accelerated decarbonisation in electricity can be secured from the international climate finance community through an Eskom / South Africa Just (Energy) Transition Transaction³ (see final section below), as can grant finance to cover Just Transition elements.

An ambitious electricity sector transition is a least regret pathway for South Africa.

The electricity sector is systemically important for achieving South Africa’s policy objectives in climate change mitigation, economic development and transformation, and just transition.

An ambitious electricity sector transition aligned to the Paris Agreement goals will both mitigate the risk posed to the South African economy through its carbon intensity and bring enormous economic benefits for South Africans:

1. Triggering an exceptionally large green economic stimulus and recovery plan

- Accelerating renewables build can be private sector financed and provide a massive post Covid economic stimulus. It will do this both by triggering large scale investment in generation and grid expansion, and by resolving South Africa’s chronic power shortages and load shedding. This strategy constitutes by far the most significant economic recovery lever available to South Africa and can come at no cost to the fiscus.
- A bold and ambitious commitment to accelerate the decarbonisation of the electricity sector will provide a strongly positive signal for renewable energy investment in South Africa. The country’s exceptional renewables resources (Bofinger, 2016; Jain & Jain, 2017) and mature grid and financial infrastructure make it an attractive destination for investment, as demonstrated by the remarkable success of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) in this regard.
- The contribution of a large renewable energy roll-out to South Africa’s green industrialisation, and its support for a just transition can further be maximised by industrial policy initiatives such as the South African Renewable Energy Masterplan which aims to localise most of the renewables value chain, including in regions that are negatively impacted by the coal transition.

2. Enabling access to catalytic financing for a just transition

A Just (Energy) Transition Transaction on the basis of a credible commitment to an accelerated electricity sector transition would also provide catalytic finance to support South Africa’s most

³ Announced by the President in UN Climate Summit Statement, Sept 2019
<http://www.dirco.gov.za/docs/speeches/2019/cram0923.htm>; Announced by Eskom CEO as a central part of the utility’s turn-around strategy <https://www.engineeringnews.co.za/article/eskom-sets-up-just-energy-transition-office-as-it-mulls-repurposing-options-for-power-stations-2020-06-25>



affected coal workers and regions in the form of a 'Just Transition Fund'. This could be channelled to support three key focus areas:

- the establishment of an institutional structure to coordinate transition support efforts;
- providing compensation, retraining and employability support for coal mining and coal power generation workers;
- assisting declining mining municipalities to upgrade public infrastructure and establishing the basic infrastructure for green industrial activity to attract manufacturing / industry investment⁴.

3. Reducing carbon intensity across the economy

- South Africa has one of the highest electricity sector carbon intensities in the world (Carbon Brief, 2018), representing a systemic risk to the economy as the world seeks to decarbonise, including scope 3 (consumption) emissions and investment portfolios.
- Similarly, the carbon intensity of South African exports is the highest in the world, and unlike many other countries has not changed significantly over the past 10 years (Montmasson-Clair, 2021).
 - International carbon pricing, including through carbon border tariff adjustments, is set to expand and intensify as global decarbonisation continues, making South African exports increasingly vulnerable (World Bank, 2020)
 - For example, the European Union is rapidly advancing its consideration of a Carbon Border Adjustment Mechanism with a view to implementation in the next few years.
 - Greater mitigation ambition in the electricity sector is crucial for maintaining South Africa's international competitiveness.
- Scope 2 (electricity-related) emissions largely lie outside the control of business, but are significant determinants of carbon footprints and therefore investment decisions.
 - An accelerated electricity sector mitigation ambition will significantly reduce electricity emissions over time, in most cases this is the most significant lever for reducing company carbon footprints.
 - Figure 2 below – drawing on the Ambitions study analysis – demonstrates the impact power sector emissions intensity of an accelerated electricity sector transition compared to the IRP 2019 scenario.
 - Whilst this impact is most stark after 2030, it is dependent on the investment in an accelerated electricity transition this decade.

⁴ See Meridian Economics (2021) "[Financial support needs for Mpumalanga's economic transition: a scoping study](#)"



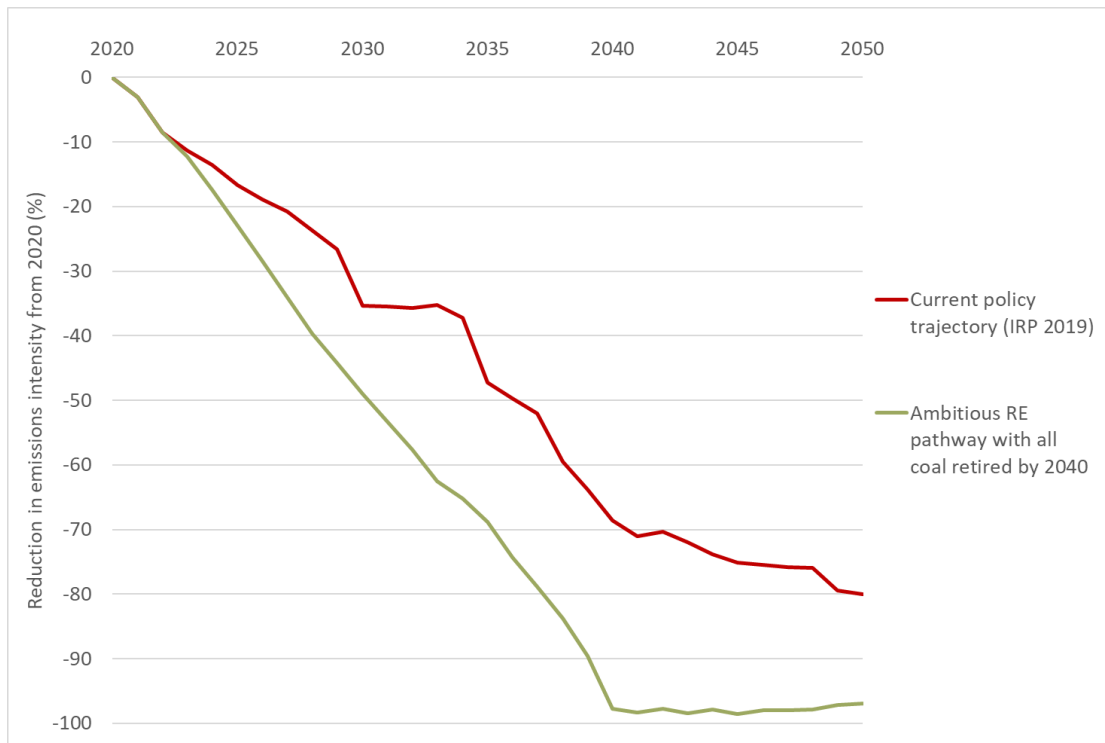


Figure 2: Power sector emissions intensity reduction for IRP pathway vs a more ambitious RE pathway (Meridian Economics analysis based on ME 2020)

4. Unlocking investment opportunities in the international green economy

- Achieving the Paris Agreement temperature goals requires rapid transition and innovation in the global energy system. This translates into new growth opportunities in emerging technologies such as green hydrogen and electric / fuel cell mobility.
- In order to take advantage of these opportunities and attract massive inward investment South Africa needs an abundant supply of decarbonised electricity – significantly more than is currently factored into the demand assumptions of electricity modelling analyses (Bataille, 2020; IEA, 2020)
- Achieving the level of supply required, far beyond current levels (which are inadequate even for supplying the existing economy), necessitates an urgent and large-scale renewables build.

5. Enabling Eskom's return to financial sustainability

- Eskom's current financial challenges present a systemic risk to the country. Eskom's debt burden escalated to R480 billion in 2020, more than 70% of which is government guaranteed (National Treasury, 2020). Eskom is struggling to raise finance in capital markets, in part due to its carbon intensity, which results in the utility having to fund its long-term assets with increasingly short-term debt (Eskom, 2019).
- An accelerated electricity transition, and in particular if associated with the Just (Energy) Transition Transaction (see final section), will contribute to placing Eskom – currently unbundling into separate entities for generation, transmission and distribution – on a sustainable financial trajectory, and restore its access to the markets, reducing reliance on and risk to the sovereign.
- Such a transformed Eskom is well positioned to ensure South Africa has access to the abundant low cost, low emissions electricity required for economic growth and recovery.



International climate financial support for an accelerated electricity sector transition ambition

A commitment to an accelerated electricity transition will enable South Africa to secure large scale climate finance over and above that in the proposed updated first NDC.

In response to this opportunity, Meridian Economics has incubated and elaborated a Just (Energy) Transition Transaction, which Eskom is championing both as part of its Just Energy Transition initiative and as a centrepiece of its sustainable financing plan.

The carbon intensity of South Africa's power sector and the abundance of its renewable energy resource endowment provides the sector with the capacity to deliver large scale CO₂ mitigation at no additional cost and great benefit to the economy. In the context of rapidly escalating global concern about the climate crisis, this "asset" can be leveraged to deliver great advantage to South Africa as it grapples with its post Covid economic challenges.

1. What is the Just (Energy) Transition Transaction?⁵:

- The Just (Energy) Transition Transaction is a large (~\$12Bn - \$15Bn) multilateral blended climate finance transaction framework, based on ~1/3 highly concessional and ~2/3 commercial finance.
- The Transaction provides a long term (~20yr – 25yr) concessional debt facility to Eskom and / or the Sovereign, with drawdown over ~5 years.
- Public climate financiers (Sovereigns, Development Finance Institutions (DFIs), Multilateral Development Banks (MDBs) and Climate Funds) provide concessional funding to Eskom / South Africa in return for a credible commitment to large scale additional mitigation in the South African electricity sector at a highly cost-effective rate (~7\$/tCO₂).
- Access to the concessional value in the Facility is conditional on Eskom / South Africa making measurable, verified progress to deliver substantial additional mitigation and social action, subject to credible remedies.
- The concessional terms in the Transaction must deliver sufficient value to:
 - o compensate for techno-economically premature acceleration of renewable energy buildout⁶,
 - o offset the cost of stranding coal regulatory asset base due to early closure,
 - o provide catalytic grant finance for a just transition programme in the Mpumalanga coal region.
- Key developed countries (US, UK and Germany) currently see South Africa as a leading contender for implementing such a Just (Energy) Transition Transaction, with the aim to jointly launch the Transaction as a flagship initiative at COP26. However, it is widely accepted that the initiative has to be driven from South Africa.
- There is also a limited window for South Africa to respond to this opportunity which, without sufficient South African interest shown, will quickly move on to other emerging coal dependent economies.
- **In order to keep this opportunity open, South Africa's final updated first NDC must:**

⁵ See Meridian Economics (2020) *South Africa Just Transition Transaction proof of concept* and Dr Grové Steyn's presentation: *Transition Finance and Power Sector Reform in South Africa (2020)* and <https://www.bloomberq.com/news/articles/2019-09-16/-11-billion-green-energy-initiative-takes-shape-in-south-africa>

⁶ We will build more RE earlier before the learning curve has further reduced costs.



- **signal the potential to accelerate its electricity transition ambition beyond that of the IRP 2019,**
- **request additional international climate finance support in terms of pace and scale, to enable the realisation of this additional ambition by supporting the Just (Energy) Transition Transaction.**

2. Implications for South Africa's request for international climate financial support

- The proposed updated first NDC records that, over the period 2018-19, South Africa received an annual average of \$2.4bn of climate finance of which only 11% was grant finance, and which was overwhelmingly for mitigation projects.
- The proposed update further indicates that South Africa aims to access a total of \$4.5bn by 2025 and \$8bn by 2030, equally distributed between adaptation and mitigation.
- It therefore follows that the target amount requested annually for mitigation by 2025 (\$2.25bn) is not significantly different to that received annually in 2018-19. The proposed first updated NDC indicates that this finance will be used for the expansion of renewables investment, the shift away from coal including technology and capacity-building, energy efficiency, green transport and just transition programmes.
- Were South Africa to commit to an accelerated electricity sector transition under the auspices of a Just (Energy) Transition Transaction, it would secure an additional \$3bn per annum for mitigation between 2022-2027 (~\$15bn released over 5 years), specifically to address the costs of a rapid transition away from coal.
- South Africa's climate finance needs would therefore be front-loaded towards the first half of the first NDC implementation period.
- In addition, a significant portion of this (~1/3) would be in the form of highly concessional finance, different to the 11% historical pattern.
- Undertaking a Just (Energy) Transition Transaction is aligned with the proposed updated first NDC's key goal of accessing a step-change in historical levels of climate finance during the first NDC's periods of implementation (to 2030).
- The Just (Energy) Transition Transaction is aligned with the proposed first updated NDC's intention that just transition programmes for affected workers and communities are supported.
- Further, an accelerated electricity transition ambition has clear and robust 'additionality fundamentals', as opposed to those of the IRP 2019. There is no mention in the IRP 2019 itself that climate finance will be required for implementation, and the plan includes the building of new coal fired power, anathema to the international climate finance community. The accelerated electricity sector transition underpinning the Just (Energy) Transition Transaction delivers significant additional mitigation at a highly attractive cost to donor countries and great economic benefits for South Africa.

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