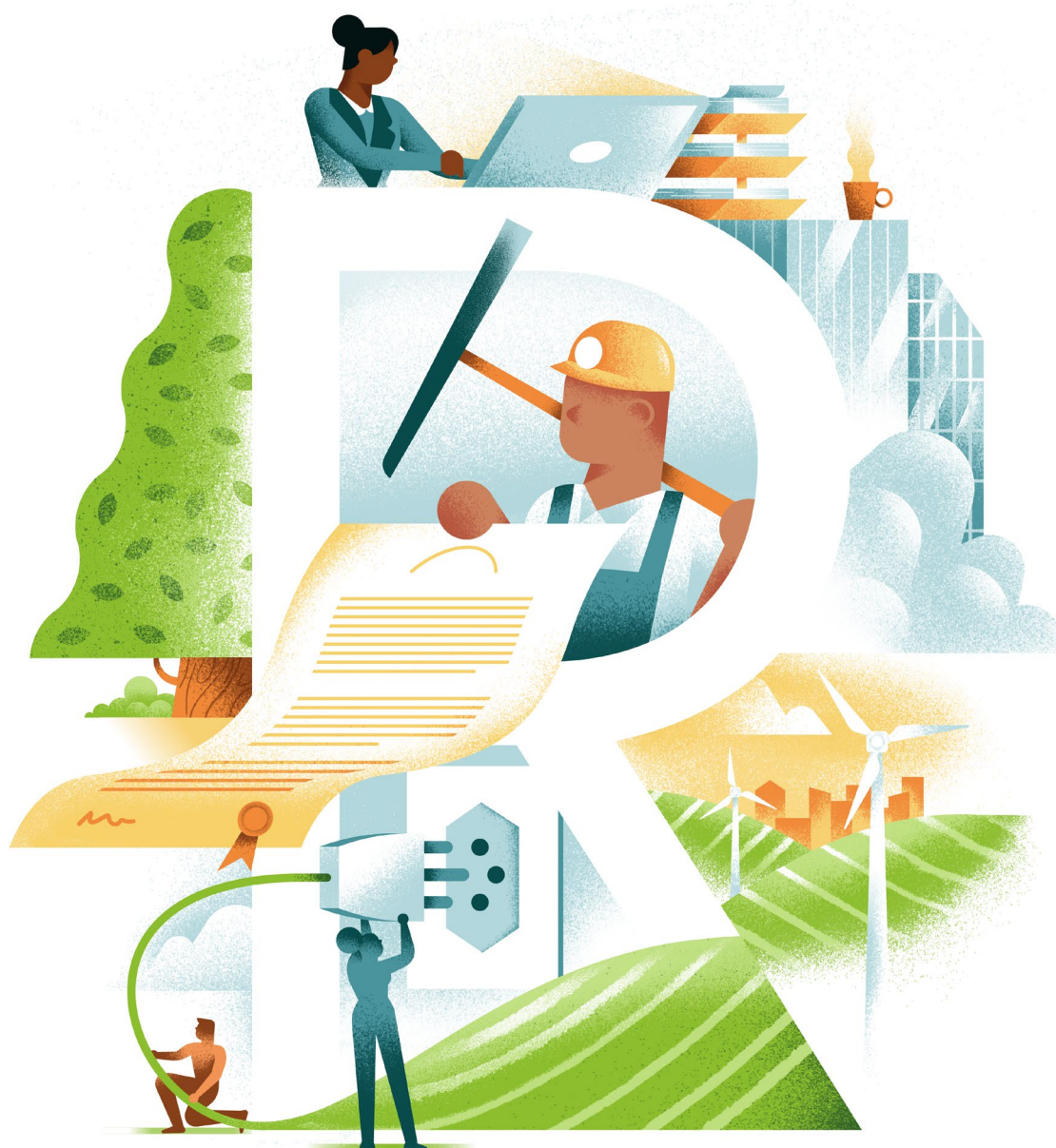


SNAPFI COUNTRY STUDY

*Climate finance to
transform energy
infrastructure as part
of a just transition in
South Africa*

South Africa

JULY 2020



UNIVERSITY OF CAPE TOWN
IYUNIVESITHI YASEKAPA • UNIVERSITEIT VAN KAAPSTAD



SÃO PAULO SCHOOL OF
BUSINESS ADMINISTRATION
Center for Sustainability
Studies





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Keywords

Just transition; international climate finance; South Africa; electricity; debt; poverty; energy transitions; coal transitions; renewable energy; justice; development projects.

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CHAPTER ONE —————>

Introduction

Prior to 2020, the South African economy was facing major socio-economic challenges, struggling to eliminate poverty and reduce persistent inequality. The COVID crisis has deepened the financial crisis, with the last major agency putting the country's rating below investment grade, or 'junk status'. The recovery plan starts with rescue. The climate crisis is longer-term but still needs as urgent action as ever. The country is preparing to enhance its nationally determined contribution in an unprecedented context. Decarbonisation of the electricity sector is a priority – but in the SA context requires careful attention to communities and workers dependent on coal.

The just transition transaction (JTT) is being developed in technical detail since 2019 by Meridian Economics (2020) and making the financial deal is work in progress. In brief, the transaction mobilises blended finance to fund the accelerated phase out of coal, thereby accelerating a transition from coal to renewable energy, and a portion of the concessional funds flows into Just Transition fund. This case study reflects on the JTT, seeking to understand its architecture, the potential to catalyse changes in the complex set of challenges in the electricity sector, by funding accelerated phase-out of coal and a just transition in South Africa, with broader implications for international climate finance. The time-scale of developing the transaction is fluid, while implementation of decommissioning would take many years.

The purpose of the study is to understand the potential of a just transition transaction to accelerate the phase out of coal-fired power and to fund development projects. The purpose requires a specific focus, and it is important to understand what is included in the scope of this case study, and what lies beyond that scope.

The spatial scale of the analysis is national, in that Eskom debt threatens South Africa's financial sustainability. Physically, the Mpumalanga province is a key focus of this study. This province of South Africa contains its Central coal basin, most of the coal-fired power stations, surrounded by poor communities with several small rural towns dependent on coal for livelihoods. Local environmental degradation is visible with poor local air quality. Another negative impact on health is from acid mine drainage. Thus, communities in Mpumalanga are vulnerable in many respects. Mpumalanga is a micro-cosm of the challenges of sustainable energy development in South Africa – environmentally, socially and economically. If a just transition transaction can shift Mpumalanga to development pathway of increased sustainability, then this should be possible elsewhere in the country. In the post-COVID context, JTTs may be an instrument of interest in across the world.

The scope of this case study is national and on the just transition transaction. We place the JTT in the context of Just Transition, understood more broadly internationally and in SA (sections 1.3.1 and 1.3.2), but make no claim to treat the JT comprehensively.

Our focus is on mitigation, and the contribution that a just transition transaction can make in South Africa's electricity sector. As the national utility, Eskom, runs all the coal-fired power plants and its financial situation is a major challenge, detailed information on Eskom is within the scope of the study. Some lessons for other countries are briefly explored in section 2.1.5, but not investigated in detail. Implications of the JTT are focused on the electricity sector, and hence relating to coal; our scope does not include impacts of climate change and adaptation, which are also important in a just transition.

The rest of this Introduction sets the context of research on just transition transaction. It briefly outlines the political economy of South Africa, the relevant policies on climate and development, and the electricity sector specifically. The baseline for GHG emissions is taken from the official plan for electricity, and the transition for workers and communities dependent on coal outlined briefly.

Since this research started in July 2019, two significant changes have taken place. Firstly, a related proposal to use pension funds was advanced, and secondly, the COVID crisis changed the financial landscape globally and in SA. These changes are reviewed to inform the research question and sub-questions, which are laid out before the methodology (including some working definitions). The final part of the Introduction considers international and South African understandings of a Just Transition, before section 2 turns to the transaction.

1.1

Context of development and climate

A just transition addresses both development and climate. It addresses issues of energy and social justice. A transition in the energy sector is from fossil fuels to lower-emissions energy sources and systems is critical for mitigation globally and in SA. To be just, the socio-economic needs of countries, and particularly affected communities and workers, need to be addressed (ILO 2015).

A JTT thus needs to meet multiple objectives, and international climate finance should consider carbon *and* reduction of poverty, inequality, unemployment – or more generally, national development goals. In this way, a just transition can contribute to the global Sustainable Development Goals (SDGs) and the goals of the Paris Agreement. In South Africa, we first need to understand the political economy in which national development and climate policies operate.

1.1.1 SA political economy

South Africa's political economy has been dominated by a Minerals-Energy Complex (MEC). Fine and Rustonjee (1996) in a seminal article coined the term MEC, showing that minerals and energy had an influence on politics disproportionate to the sectors' contribution to economic output. They traced the history into the 1990s, including key industrial policy decisions that favoured mining, electricity and liquid fuel supply and minerals beneficiation. The MEC has shaped the history of energy policy in South Africa (Marquard 2006). The country's dependency on coal was entrenched in the 1970s with massive infrastructure investment in new coal mines, large coal power plants, coal to liquid fuels plants and a massive rise in coal exports – all developments that were very strongly supported by the state (Burton 2011).

In the post-apartheid era, rather than diversifying the economy away from these industries, government industrial policy, funding and incentives, coupled with the liberalisation of the economy, have resulted in an increasing dominance of MEC sectors and a concomitant decline in non-MEC manufacturing, with associated negative effects on employment and socio-economic development (Burton 2011). There are state-owned enterprises (SOEs) for electricity (Eskom), transport, aviation, arms manufacture, putting significant pressure on public finances. Electricity-intensive industry has dominated exports (*ibid*), even as historically low electricity tariffs have started to rise. While diversifying away from coal has been energy policy for more than two decades (DME 1998), shifts have only started occurring with climate policy and more competitive renewables from the 2010's. There continues to be significant state support for new coal-fired power plants, subsidies for new privately owned coal plants, public finance directed at coal mining and direct state involvement in coal extraction, as well as regulated prices for liquid fuels that protect the conversion of coal to liquid fuels, sustaining carbon lock-in (Burton, Lott, and Rennkamp 2018).

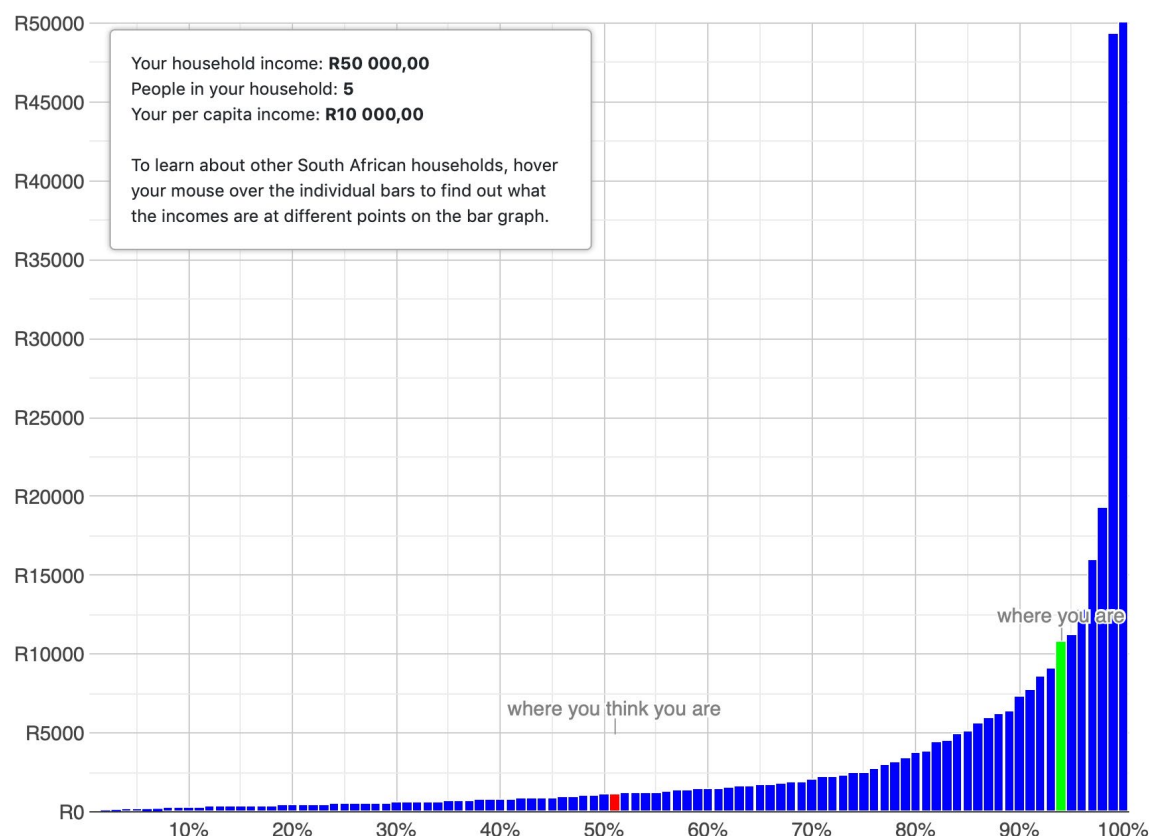
South Africa's past development pathway has led to high emissions, poverty, inequality and unemployment (Winkler 2018). This is a challenging context in which to undertake ambitious climate policy. While impacts on poor communities are understood (as an added stress), reducing emissions has a high opportunity cost – spending on basic needs, social grants and generally socio-economic development. Many of the incumbents in the coal value chain – from mines through electricity and liquid fuel supply to beneficiation – have a vested interest in continuing on an energy development path based on coal. The need for sector jobs resilience plans (SJRP) has long been debated and a proposal for a SJRP focusing on the coal value chain has been developed (Makgetla et al. 2020). In an economy that was in a precarious state before the COVID crisis, realising a just transition is a huge challenge. In this political economy, there is very high political sensitivity to employment gains or losses.

Apartheid produces very high levels of inequality in South Africa, the country having the highest GINI coefficient in the world. Unlike Brazil, which during the Lula administration managed to reduce similarly high disparities in income across its population, inequality has persisted in post-Apartheid South Africa. While it has been argued compellingly that asset inequality is more persistent than income inequality (Piketty 2013), the latter is the more common measure, including in South Africa (Winkler 2018). Figure 1 illustrates a notional household of 5 people – one might think that with a monthly income of R 50,000, this household would be solidly in the middle of the SA distribution. However, the actual position is the green line, whilst the median value is shown by the small red line.

This is underpinned by the robust overall finding of a review of the economics of income inequality, “that inequality in incomes is extremely high from a global comparative perspective and has increased since the democratic transition in 1994” (Leibbrandt and Ranchhod 2017). The exploitation of workers by firms continues, even as the form of work is changing radically.

FIGURE 1

Income inequality in South Africa and across selected countries by ventile



Source: SALDRU income comparison tool (accessed July 2020)

<http://www.saldru.uct.ac.za/income-comparison-tool/>

Economic growth has been “anaemic” since the global financial crisis and this has led to high formal unemployment even by South African standards (StatsSA 2020). Based on a narrow definition, national unemployment stood at 29.1% in the fourth quarter of 2019, and 38.7% by a broader definition that includes discouraged work seekers (StatsSA 2020). Unemployment will almost certainly get worse post-COVID. The National Development Plan (NDP) indicated that economic growth needs to exceed 5% per year for a sustained period to implement its programme (NPC 2011); initial projections post-COVID indicate -2.1% (McKinsey best case) to -16% (long recovery scenario by SA-TIED) for 2020, with a narrower range for 2021 (Hartley 2020 *pers comm*), but these are still highly uncertain. However, no-one is projecting positive GDP growth, so that it seems reasonable to assume that “inequality stemming from an unjust past will continue to anchor the country to an unequal future” (StatsSA 2019) – unless there are a major financial interventions.

Development pathways are the result of decisions by a wide range of social forces or actors, across time and spatial scales. In order to understand how a just transition might shift from historically high-emissions and exclusive development to low-emissions, inclusive development, it is helpful to understand the coalitions supporting change and those opposing (and how these shift over time and specific actors many change allegiances). The relationships between business, industry and government directly impact the formulating national policy, including energy and climate policy. A considerable and concerted government lobbying effort is made by actors and associations that represent industrial sectors – as a general matter, which in South Africa include particularly petrochemicals, minerals, heavy industry, and coal power generation. Such groups would be opposed to more ambitious climate targets, and may argue their position on the grounds of equity against further action (Cunliffe et al. 2019). Rennkamp has analysed policy networks and the discourses of opposing coalitions, finding that “powerful coalitions of coal-related industries and their lobbies have constrained institutional change and managed to delay the implementation of carbon pricing measures” (Rennkamp 2019).

Coal-dominated electricity supply is the largest sector of GHG emissions and also the area where most mitigation can be achieved in the period 2020 to 2050 in SA. Greenhouse gas emissions in Mpumalanga province are mainly from electricity generation. Renewable energy (RE) technologies have become competitive, particularly wind and solar photovoltaics (PV). Ambitious mitigation requires the decommissioning of coal. The existing coal fleet is ageing, yet many communities depend for their livelihoods on coal mines, power stations and downstream beneficiation. The official electricity plan – the 2019 Integrated Resource Plan (IRP) - is a useful starting point, but reflects a ‘political settlement’ across many stakeholders, having been debated for almost a decade. Can international climate finance be used to accelerate the decommissioning of coal plants? This idea is at the heart of an innovative just transition transaction, and the focus of this case study.

1.1.2 Policies, plans and institutions for climate change mitigation

In this context of SA's broader political economy, an overall framework for climate change policy has been developed. To set the scene for the contribution that a just transition transaction can make to mitigation, it is important to understand national policy on climate change, the national development plan (NDP) and the nationally determined contribution (NDC) communicated internationally.

The NDP includes a chapter 5 on “environmental sustainability: an equitable transition to a low-carbon economy” (NPC 2011). The development plan is thus salient for a just transition.

Beyond the chapter in the first (and still current) NDP, the National Planning Commission which developed the NDP has undertaken a two-year process to develop a vision of a just transition. The process has produced a draft 2050 vision pathways for a just transition to a low carbon, climate resilient economy and society (NPC 2019). The final vision for a just transition was to be adopted at a summit- with leaders of government, business, labour and civil society – in early 2020, but this event has been delayed due to the COVID crisis. The NDP remains important to that climate change policy needs to address core developmental challenges – the triple challenges of poverty, inequality and unemployment (NPC 2011).

South Africa adopted climate policy for the first time in 2011, the same year as the NDP. Following a two-year process of consultation, climate policy was adopted in the form of a National Climate Change Response White Paper (NCCRWP) (RSA 2011). The NCCRWP sets out a long-term climate mitigation pathway – a “peak, plateau and decline trajectory” used as the initial benchmark against which the efficacy of mitigation actions will be measured. Peak, plateau and decline (PPD) is a GHG emissions trajectory range after mitigation. The NCCRWP policy refers to the PPD trajectory as the initial benchmark against which the efficacy of mitigation actions will be measured. The PPD is thus the form or shape, which South Africa’s mitigation ambition is to follow. The NCCRWP spells out key points, stating:

“In summary:

- › South Africa’s GHG emissions peak in the period 2020 to 2025 in a range with a lower limit of 398 Megatonnes (10^9 kg) (Mt) CO_{2-eq} and upper limits of 583 Mt CO_{2-eq} and 614 Mt CO_{2-eq} for 2020 and 2025 respectively.
- › South Africa’s GHG emissions will plateau for up to ten years after the peak within the range with a lower limit of 398 Mt CO_{2-eq} and upper limit of 614 Mt CO_{2-eq}.
- › From 2036 onwards, emissions will decline in absolute terms to a range with lower limit of 212 Mt CO_{2-eq} and upper limit of 428 Mt CO_{2-eq} by 2050” (RSA 2011).

The national benchmark trajectory range takes several things into consideration: i) South Africa’s mitigation potential; ii) the requirement for South Africa to make a fair contribution to the international mitigation effort; and iii) South Africa’s national circumstances – what the best pathway is to a low-carbon future, given its development challenges.

South Africa communicated its “Intended Nationally Determined Contribution” (INDC) in September 2015 (RSA 2015). The INDC was therefore communicated before the Paris Agreement was adopted. An INDC becomes a country’s first NDC after ratification of the Paris Agreement, which for South Africa was in November 2016, unless the country specifies otherwise.

In the case of SA, the INDC and the first NDC (RSA 2016) are the same. The first NDC includes mitigation, adaptation and support components.

Mitigation targets in NDCs are sometimes used synonymously with NDCs, though they are a distinct element. South Africa's first (and still current) NDC frames its mitigation target as a fixed level target range, a 'peak, plateau and decline' or PPD trajectory, referring explicitly to national policy and thus building on the NCCRWP. From this PPD trajectory range, two mitigation targets were chosen and included as economy-wide emissions limits in the NDC, in a wide range between 398 and 614 Mt CO_{2-eq} for 2025 and 2030 (RSA 2016). The provincial government of Mpumalanga has made clear for some time that it intends to contribute to climate action (Mpumalanga Provincial Government 2011), has commissioned a greenhouse gas inventory and its working towards a mitigation and air quality strategy.

South Africa's next NDC, applicable to the period 2031 to 2035, is due to be communicated to the UNFCCC in 2024/5. South Africa is in the process of updating its current NDC, which it expects to communicate to the UNFCCC in late 2020 (though with the COVID crisis, this time-line may change). Formally, South Africa already has mitigation targets for both 2025 and 2030, and so would need to only update. However, it seems possible for South Africa to be more ambitious in NDCs to be enhanced in 2020, given that renewable energy is competitive, economic growth has been slow, the flexibility of renewable energy post-COVID, and responding to the urgency of action as made clear in the IPCC special report on 1.5 °C.

1.1.3 Electricity sector

Electricity planning is relevant to just transition. South Africa's official electricity plan is the Integrated Resource Plan (IRP). Following a long process, the previous version of the IRP (DoE (Department of Energy) 2011) was eventually updated with Cabinet promulgating a new IRP in October 2019. The 2019 IRP defines the mix of coal, nuclear, renewable energy and other sources up to 2030 (DoE 2019). The IRP in both 2011 and 2019 took into account a share of the PPD trajectory for the electricity sector.

South Africa's electricity sector has long been dominated by coal, with one nuclear reactor and only since 2010 a rapid growth of renewable energy. Key actors in the sector are the national utility (Eskom), the regulator (NERSA), national government departments with Energy responsible for policy and planning and Public Enterprises the shareholder, municipal electricity supply departments, the SA Local Government Association (SALGA), business – particularly those organised into an Energy-Intensive Users Group -, as well as business organisation (Business Unity SA; and the National Business Initiative being most active), recently firms in the RE industry (with technology-specific association for wind and solar PV), labour unions (including metalworkers and mine-workers), households (not clearly represented) and civil society organisations (active and organised). For an analysis of coalitions favouring fossil fuels (coal) and renewable energy, see Rennkamp and co-authors (Rennkamp 2019; Rennkamp et al. 2017).

Eskom generates more than 90% of electricity supply, with more than 80% coming from coal-fired power stations (Eskom 2019b), mostly located in Mpumalanga. Eskom is a vertically integrated utility, and also controls the transmissions as the system operator. In terms of distribution, Eskom sells power to local authorities for distribution and distributes power directly to consumers. Of the 208 TWh that Eskom of total sales in 2019, 42% went to municipalities, 6% to exports and the remaining 52% sold directly to industrial, mining, transport, commercial and residential customers (Eskom 2019b). Eskom is the provider of the last resort, i.e. has to supply electricity if no other generator can. It currently has exclusive rights to buy from independent power producers (IPPs), effectively controlling access to the grid by competing generators. Though an independent system operator has long been mooted (Pickering 2010), and even gone through Parliament, this reform has not yet taken place.

Mpumalanga province is a micro-cosm of the challenges of a just transition in SA, and within the province, specific municipalities are particularly affected, notably Emalahleni, Steve Tshwete, Msukaligwa and Govan Mbeki districts. The province adopted a climate change declaration in the lead up to COP17 (Mpumalanga Provincial Government 2011) and more recently has developed a green economy strategy (Mpumalanga Provincial Treasury 2018).

Mpumalanga is shown in Figure 2, illustrating the Eskom power stations in the province on the left-hand side and areas of coal mining on the right hand side. The central coal basin which holds most of SA's coal reserves, is located in Mpumalanga.

Historically, Eskom did not have to pay tax and dividends, and was the recipient of other indirect subsidies, such as insurance by the country's Reserve Bank against currency depreciation in the 1980s and early 1990s.

FIGURE 2

Eskom power stations, including coal-fired (left panel) and coal mining (right panel), illustrating Mpumalanga province as key focal point

Eskom power stations



Sources: Eskom for Eskom's power stations¹; lower panel - Minerals Council of SA(Eberhard 2011)²

This gave Eskom a significant financial advantage - the estimated benefit to Eskom was R22 579 million between 1986 and 1998 (G Steyn 2000). Being able to rely on government funding has, according to some, contributed to significant allocative inefficiency (Roberts 2005). Even with this windfall, Eskom's debt burden was high in the 1980s, but since the early 1990s, Eskom was able to reduce its debt-equity ratio in the 1990s. This low ratio was attributed to low demand at the time for further capital expenditure – having followed a period of overbuilding in the 1970s and 1980s (Marquard 2006) - and electricity priced at a very low marginal cost (Davis and Steyn 1998; Eberhard 2000; Van Horen and Simmonds 1998). Eskom's high debt-equity ratio in 1986 at 2.93 declined to 0.85 in 1998 (Grové Steyn 2000), and was reduced further by 11.5% per year to 0.63 in 2000 (Eskom 2000); whereas in 2019 the ratio stood at 3.1 (Eskom 2019a). In a commercial firm, lower debt repayments would have been replaced by higher payments of dividends to shareholders, but this did not happen in the case of Eskom until after 2001.

1 Chamber of Mines of South Africa. 2018. National Coal Strategy for South Africa. <https://www.mineralscouncil.org.za/special-features/604-national-coal-strategy-for-south-africa>

2 http://www.eskom.co.za/Whatweredoing/ElectricityGeneration/PowerStations/Pages/Map_Of_Eskom_Power_Stations.aspx

With the capital costs of power plants having been paid off by consumers and others in the 1970s and 1980s, consumers are currently paying only for coal and distribution costs. The overall effect is that the price of electricity does not reflect true costs (the value of the inputs used to produce electricity): the full capital costs are not reflected, nor are externalities priced. While tariffs have not been cost-reflective, it is difficult to raise them further – and Eskom debt is a major challenge pertinent to the just transition transaction.

In recent years, Eskom's technical performance has been declining. South Africa experience load-shedding from 2008 onwards, something that was unusual until then. Eskom plant energy availability factor (EAF) has declined from assumptions of averaging 86% in the IRP 2011 to “levels below 70%” reported in IRP 2019 (DMRE (Department of Mineral Resources and Energy) 2019). Further discussion on operational challenges is taken up in section 2.1.1.1).

The Minister of Public Enterprises, Pravin Gordhan, put forward a ‘roadmap for Eskom in a reformed electricity industry (DPE 2019). Gordhan previously served as Finance Minister (twice, the second time after his successor Nhlanhla Nene was infamously dismissed by then President Zuma after serving for a weekend). The roadmap indicated “strong Government support in the form of subordinated loans, direct equity injection and guarantees” (DPE, 2019). The roadmap explicitly mentions a Just Transition, including sustainability for workers. It also includes reference to SA’s position on climate change, IRP commitments, Eskom’s plan to reduce emission, sustainability for communities, reflections on the national interest and smart grids (DPE 2019). **The roadmap is not detailed on how the JT is to be financed.**

Power sector reform saw a wave across many countries in sub-Saharan Africa from the 1990s, but was not realized in South Africa (Clark 2001; Eberhard 2005; Kapika and Eberhard 2013). Eskom’s debt crisis appears to be changing that. The 2019 Medium Term Budget Policy Statement presented two phases of unbundling, first a functional separation of generation, transmission and distribution by March 2020, and a second phase with legal separation of distribution and generation by the end of 2021 (National Treasury 2019). The Finance Minister also announced that it will soon be possible for municipalities “in financially good standing” to purchase electricity from independent power producers (Mboweni, 2019b). A new CEO for Eskom was appointed from January 2020, and he has referred to “divisionalisation” (de Ruyter 2020a). Minister Gordhan has described divisionalisation as an early step towards the ultimate separation of generation, transmission and distribution, and an independent transmission entity (Gordhan 2020). Much of the Eskom debt is owed by generation. Anton Eberhard has written extensively about power sector reform since the early 2000’s, and recently has argued for separation of performing from non-performing entities (Eberhard 2019), the latter being in generation and some distribution.

An independent transmission system and market operator (ITSMO) could become financially viable fairly quickly, so that at least the transmission grid is protected from any fall-out on Eskom debt. In a more decentralised power system, independent third-party access to the 'wires' is essential.

The 'new kids on the block' in SA's electricity sector are renewable energy IPPs. The emergence of new entrants has started to change the shape of the MEC, though electricity generation from RE is still small enough not to be an existential threat to the incumbent, Eskom. Apart from some self-generation, electricity supply came from Eskom. While there were long debates about power sector reform (Clark 2001; Eberhard 2005; Eberhard & Godinho 2017b; Wamukonya 2003), reforms were not implemented prior to the Renewable Energy Independent Power Producer Procurement Programme (REI4P) in South Africa. The REI4P is widely considered a success (Baker & Wlokas 2015; Eberhard, Kolker & Leigland 2014; Morris & Martin 2015; Ndlovu & Inglesi-Lotz 2019). The REI4P is a competitive tender process that was launched to facilitate private sector investment into grid-connected renewable energy (RE) generation, and several lessons have been learned (Eberhard & Naude 2016).

South Africa highlighted in its first NDC the investments in the REI4P:

“South Africa has already made significant investments in mitigation. As part of a Renewable Energy Independent Power Producer Procurement Programme (REI4P) has approved 79 renewable energy IPP projects, total 5 243MW, with private investment totalling ZAR 192 billion (approx. US\$ 16 billion). Another 6300 MW are under consideration. Investment in public transport infrastructure was US\$ 0.5 billion in 2012, and is expected to continue growing at 5% per year. South Africa established a South African Green Fund with an allocated US\$ 0.11 billion in the 2011 to 2013 budgets to support catalytic and demonstration green economy initiatives. Resources for the Fund will have to be increased in future to enable and support the scaling up of viable and successful initiatives, including contributions from domestic, private sector and international sources”

RSA 2016

For further discussion of further developments, institutional innovation, rapidly falling costs of wind and solar PV in particular, and the structural challenges that Eskom faces with new entrants, see section 2.1.1.2 below. Ownership models of RE which are an important part of JT are discussed in 2.2.

1.1.4 Concept of just transition transaction

A presidentially appointed 'electricity sustainability task team' have been looking at climate finance, and a just transition transaction being developed by Meridian Economics, promoted by the Presidential Eskom Sustainability Task Team and under consideration by government, including the National Treasury Department (Cohen 2019a; Tyler 2019) – on which some details have been presented (Tyler 2019) and see concept by Meridian Economics (2020) and reported in the media (Cohen 2019a; Davie 2019; Joubert 2019). The opportunity for this transaction arises from the context the Paris Agreement recognition of the close links between climate action, sustainable development and a just transition, the gap in international climate finance targets, and the critical role that DFIs play in realizing global sustainability goals (Meridian Economics 2020).

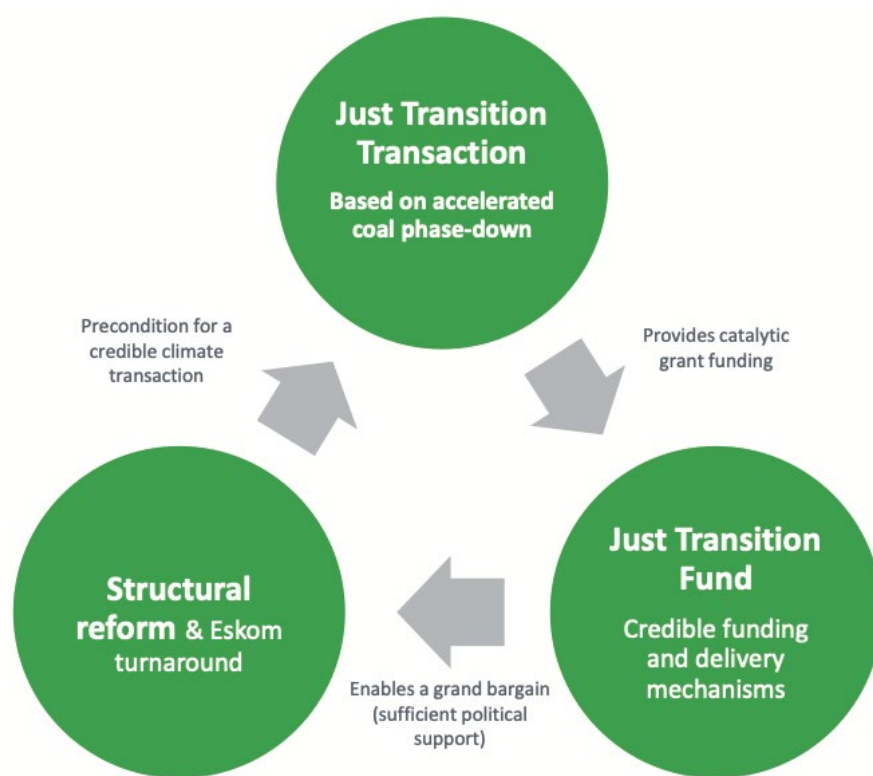
The just transition has been described by Meridian Economics (2020) as consisting of three legs:

- 1.** The South African Government and Eskom will commit to delivering additional, measurable CO₂ reductions over and above the current policy trajectory; in return:
- 2.** Eskom's access to its traditional debt funding sources (DFIs, MDBs, capital markets, banks, etc.) will be restored; while
- 3.** Affected labour and communities will benefit from a Just Transition programme backed by the net proceeds from the transaction, and the crowding in of new energy projects and other infrastructure in Mpumalanga and beyond."

The concept is illustrated in Figure 3 overleaf, and elaborated further in the following. The transaction would fund the accelerated phase-out of coal, leading to emission reductions.

FIGURE 3

Concept of just transition transaction



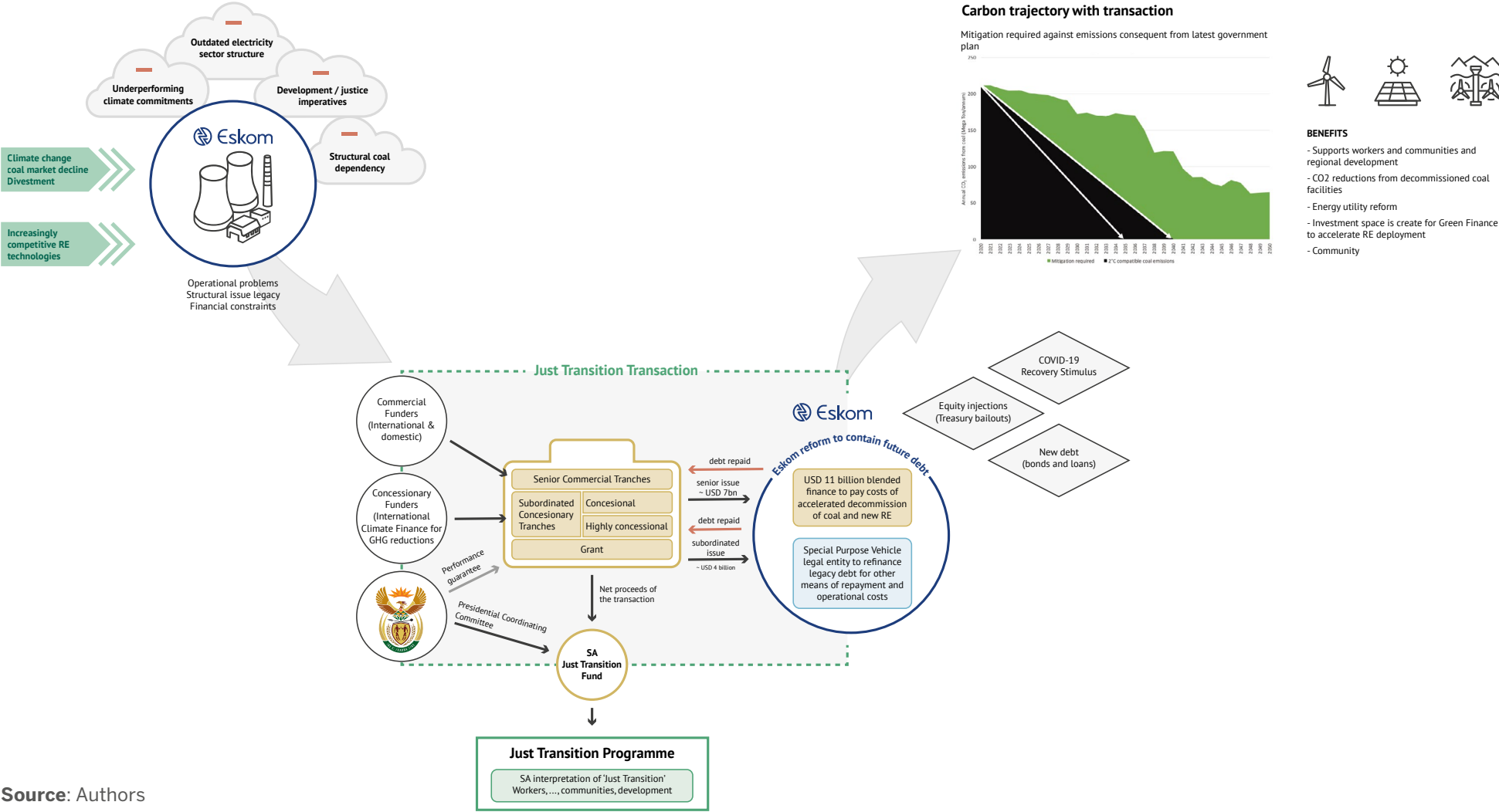
Source: Presentation on behalf of Meridian Economics (Tyler 2019)

Analysis of the JTT is undertaken in detail in section 2.1 of this report; however, the reader is introduced to the concept and elements of the JTT here.

The JTT takes place in a broader context, which is elaborated in the rest of this section. Figure 4 shows the analytical framework within which the analysis of the JTT is undertaken. The JTT is the ellipse at the centre of Figure 4 including key financial flows (see section 2.1.2 below), the complex challenges facing Eskom are shown at top left (and see sections 1.1.3 and 2.1.1), the funding of the just transition on development projects at bottom right (see 2.1.3.3) and reductions of GHG emissions at top right (see 1.1.5). The concept of transition finance is an important innovation, represented by the arrows in v-formation across Figure 4.

FIGURE 4

Overall concept: just transition transaction in the context of broader challenges facing a transformation of SA energy infrastructure



Source: Authors

The JTT as one tool help transform South Africa's energy infrastructure is further analysed in section 2. It is important to note that Figure 4 shows the JTT which is the focus of this case study, as well as illustrating elements that are not directly part of the JTT but relevant to it.

The financial flows are explained in more fully below, but the major financial flows are central to the concept and hence previewed here. Figure 3 illustrates that the JTT funds the additional costs of accelerated phase out of coal directly. Concessional finance flows into the JT Fund, further elaborated below. The JTT does not directly fund payment of Eskom debt (in March 2019 at R440 bn, see section 2.1.1.3), but does enable indirect access to capital markets. Reforms within Eskom address some of its internal issues (operational, structural and financial, see 2.1.1), though this is not explicitly a condition (Meridian Economics 2020). These reforms are increasingly required by National Treasury, in providing equity injections, and the Department of Public Enterprises as the shareholder (DPE 2019; National Treasury 2019b).

The energy transition is only just if it leaves no one behind, in particular communities and workers dependent on coal (section 1.3.3). The JT transaction creates financial flows to the Just Transition Fund that in turn focuses on this issue. Further research is needed on a funding strategy, which would be co-developed with local communities, workers and municipalities. Such a strategy could guide the implementation of development projects that the JT Fund would support.

1.1.5 Reductions from what? Baselines for GHG emissions and decommissioning of coal plants

To understand reductions in greenhouse gas (GHG) emissions, the baseline needs to be understood, and the 'project' – in this case the just transition transaction.

In brief, the JTT funds the delivery of additional, measurable reductions of CO₂ emissions through the accelerated phase-out of coal. The JTT ensures that affected workers and communities benefit from a JT fund, which can fund development projects in a manner that promotes social justice. The JTT does not directly fund payment of Eskom debt, but does enable indirect access to capital markets. The JTT assumes that Eskom reforms address operational, structural and financial challenges. The JTT is elaborated in further detail in section 2.1.2.

Here we move on to the baseline question: To attract large-scale *climate* finance, the transaction must reduce GHG emissions. But emissions reduced from what level?

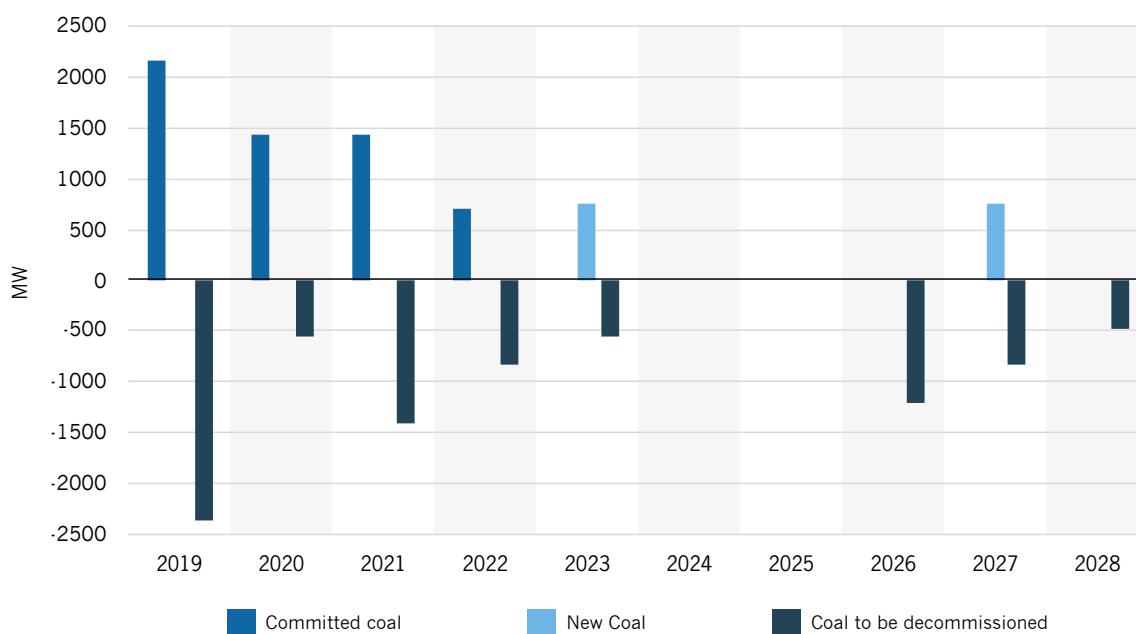
Reports have suggested that the JTT will generate large emission reductions. It would do so in two ways, by reduced emissions from coal-fired power stations which are phased out earlier, which creates space for more low-carbon electricity generating options, notably renewable energy. “Under the new plan, the country would add an additional 10GWs of renewable-energy production capacity over a decade, thereby reducing its potential carbon dioxide emissions by 715-million metric tons by 2050” (Cohen 2019). The reductions depend on the baseline, and what is assumed would have happened without the JTT.

The obvious basis for an emission baseline for the JTT is the IRP 2019 (DoE 2019). The IRP is the official plan and represents what can be achieved in South Africa, making the relevant trade-offs among stakeholders over a long process.

However, the IRP 2019 does not report a GHG emissions projection explicitly. Such a baseline can be derived from the preferred build plan. But this would not be a government-published emissions baseline. The IRP2019 does include a decommissioning schedule for coal, and accelerated phase out could be defined by plants and the years in which they would be retired.

FIGURE 5

New and committed coal added and coal decommissioned in IRP



Source: Authors' own graph, based on data in IRP 2019 (DoE 2019b)

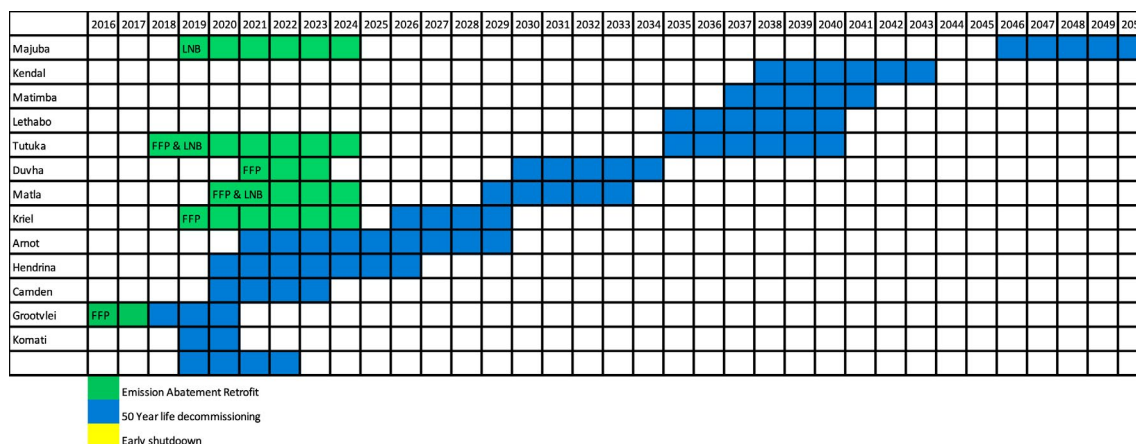
Yet the IRP also includes building of new coal plants. The plan “ensures that coal still plays an important part in the energy mix”, including two new coal IPPs (1.5 GW in total), as well as the completion of units of Medupi and Kusile. The two IPPs have been found to add significant costs apart from the obvious increase in GHG emissions (Ireland and Burton 2018).

Figure 2 takes data from the IRP to show committed coal (Medupi and Kusile), new coal included in the plan and coal plants to be decommissioned.

The official decommissioning schedule is shown in Figure 3. The assumption is that coal plants have a 50-year lifetime and that this is the time at which to retire the stations (ignoring earlier retirement or life-extensions. Life extension is included in the IRP for the Koeberg nuclear power station (DoE 2019). Decommissioning of Eskom coal power plants is planned for as early as 2020 (two plants, Grootvlei and Komati) and 2023 (Camden), then 2026, 2029, 2033, 2034 and so on. The focus in decommissioning in the IRP is to inform the build plan, but the process would require retraining and re-skilling. Eskom has recently established a Just Transition Office, which is developing a social plan (Rambharos 2020).

FIGURE 6

Emission abatement retrofit programme and 50-year life decommissioning



Source: Integrated Resource Plan 2019 (DoE 2019)

Another decommissioning schedule was provided by Eskom in response to a request by the Centre for Environmental Rights (Eskom 2020). The legal centre had made a request under section 23 of the Promotion of Access to Information Act (RSA 2000).

TABLE 1

Station and unit decommissioning dates

	U1	U2	U3	U4	U5	U6	U7	U8	U9	U10
Arnot	2021	2026	2026	2027	2029	2029				
Camden	Under revision before 2030									
Duvha	2031	2031	2032	2033	2033	2034				
Grootvlei	Under revision before 2030									
Hendrina	Under revision before 2030									
Kendal	2039	2041	2042	2042	2043	2044				
Kriel	2026	2027	2028	2029	2029	2030				
Komati	2028	2027	2029	2027	2027	2027	2026	2024	2024	
Kusile	2069									
Lethabo	2036	2037	2037	2038	2040	2041				
Majuba	2046	2047	2048	2049	2050	2051				
Matimba	2038	2038	2039	2040	2041	2042				
Matla	2030	2031	2031	2032	2033	2034				
Medupi		2069	2068	2067	2067	2065				
Tutuka	2035	2036	2037	2037	2039	2041				

Source: Eskom (2020)

The schedule in Table 1 provides more precise information for individual units. It is not identical to the schedule from the IRP, in Figure 3, but does appear to apply the same approach of assuming 50-year life-times. For example, units 4 and 5 of Medupi came online in 2017 and are scheduled to be decommissioned in 2067, earlier than other units. What is clear is that Eskom currently plans to have some coal-fired power stations on the grid well into the second half of the twentieth century. If new coal plants were built by IPPs and applied the same approach, there would be coal-fired power in SA in the 2070s – given the lead-times for building large stations including overruns.

A better assumption for a decommissioning schedule than a fixed life-time is to consider the different performance of plants. Plants would be decommissioned when it no longer makes economic sense to run them, or coal supply agreements expire.

Studies have identified the risks by power station (Burton, Caetano, and McCall 2018) and shown that early retirement of specific stations can save significant costs (Steyn, Burton, and Steenkamp 2017). An important topic that would benefit from further research are decommissioning of individual plants, which constitutes a major project in itself.

The JTT will require more rapid phase-out of coal plants. The decommissioning schedule in a coal-dominated electricity sector relates directly to the GHG emissions baseline. We will return to this question at the end of the paper.

1.2

Changing context of case study

1.2.1 Cosatu proposal to use pension funds ('PIC proposal')

Since the UCT team started research for this case study (July 2019), the proposal for a just transition transaction (JTT) has evolved (Meridian Economics 2020) and a proposal has emerged to utilise funds from South Africa's Public Investment Corporation (PIC) to address Eskom debt. The proposal was put forward by the Congress of South African Trade Unions (COSATU), a trade union federation that has been part of a 'tri-partite alliance' with the African National Congress and the South African Communist Party. COSATU made its 'key economic and Eskom intervention proposals' to a meeting of the alliance in February 2020 (COSATU 2020). Further technical details are contained in a paper by the Alternative Information and Development Centre (AIDC 2020), which is broadly supportive of the COSATU proposal though not in every detail.

1.2.1.1 Differences and similarities

At first reading, the JTT and PIC proposals appear aimed at Eskom debt, but different in that the former draws on international climate finance whereas the latter proposes to reallocate public pension funds. This section examines the two proposals, their similarities and differences. The proposals may not be mutually exclusive, and we also reflect on ways in which the proposals and their supporters might work well together. The question is whether any single solution can address all parts of the Eskom debt; we argue that it is more likely that different parts will be addressed in different ways. What might the relationship be between a domestic deal and international climate finance ?

1.2.1.2 What parts would PIC and JTT fund

The PIC fund provides other means of repaying loans. Two members of the National Union of Mineworkers of SA argued in response that what “we should debate is whether as a country we need a plan to stabilise Eskom or a plan to finance the energy transition from fossil fuels to a low carbon economy” (Cloete and Sikwebu 2020). They point out that the PIC proposal by COSATU is focused on how to save Eskom and its debt (or as we would specify, funding other means to repay loans). The PIC fund provides other means of repaying loans. Other means are important, however, in a context where the alternative of government finance – equity injections or ‘bailouts’ – are no longer possible.

The JTT is to fund the additional costs of decommissioning coal and a just transition. Its contribution of JTT is making Eskom financeable again, relating to the same context of where further equity injections cannot be provided by Treasury. The JTT would not provide funding to repay loans, but indirectly enables access to capital markets. Indirectly means firstly that the investments flow into a blended finance vehicle which lends on to Eskom, and secondly that the improved overall financial position may make Eskom more attractive to investors again. For further detail, see section 2.1below.

1.2.1.3 Unbundling, privatisation and different meanings of restructuring

The South African labour movement has long been opposed to privatisation (Webster and Buhlungu 2004) and actively opposed privatisation of state owned enterprises including Eskom (COSATU 2001a, 2001b; COSATU et al. 2005). COSATU's proposal to use PIC funds does not mention unbundling of Eskom. AIDC argues that using public funds to address debt “is critical to saving Eskom (and other SOEs) and South Africa from more austerity and privatisation” (AIDC 2020). COSATU does however propose significant changes to Eskom. The COSATU proposal identifies many operational problems and issues arising from state capture (see implications for Eskom in section 2.1.1.2).

The JTT is to fund the accelerated phase-out of Eskom coal-fired power stations. The JTT proposal refers to an “outdated electricity sector structure”, though there is no explicit reference to unbundling or restructuring (Meridian Economics 2020) and electricity sector reform was signalled as a condition (Cohen 2019; Tyler and Steyn 2019). Discussions of ‘privatisation’ tend to be divisive in debates around power sector reform, with some arguing for state ownership and others for markets, with very strong views in both camps. In practice, unbundling is likely to be required for independent access to the grid and to scale up renewable energy. In the past, Eskom has not had political support to build renewable energy and it currently is not in a financial position to access capital markets.

In this sense, electricity sector reform is a necessary condition for the just transition transaction and an accelerated phase out of coal. To attract international climate finance at scale, significant emission reductions are required, which can be achieved by less burning of coal and crowding in of renewable energy. To enable more RE, electricity sector reform will be required – exactly how goes beyond the scope of this case study.

If ideological differences about the role of markets and state ownership can be put aside, it seems possible to find common ground between the proposals. Creating an ITSMO may be one element of “restructuring” that is compatible with the JTT and PIC proposals. The REI4P benefited from the IPP office. A transaction manager within Eskom seems an important function, and might enable a utility with fewer coal plants (after decommissioning, supported by JTT). Both the JTT and PIC proposal support renewable energy. There is no reason why a range of ownership models (see section 2.2) cannot co-exist – including roles for community-, socially-, municipally-, privately- and Eskom-owned renewable energy generators. When Eskom will be able to invest in any power, including renewable energy, depends on returning to financial health – in which the JTT can assist. In a highly decentralised future electricity system, who is the ‘supplier of the last resort’ will need to be agreed. Decentralised power is not only technically possible, it also has significant advantage for democratising energy (Hess 2018).

1.2.1.4 Funding the just transition through development projects

International climate finance provides the concessional part of blended finance for the just transition transaction, and also de-risks the commercial tranche, together funding the accelerated phase out of coal. The concessional part flows into just transition fund, for development projects.

What also needs to be financed is “the worker and community-owned renewable generation capacity” (Cloete and Sikwebu 2020) which is an important part of a just transition. The JT Fund could support the reskilling of workers and affected communities, as part of the development project that it would fund and the development of a JT action plan. While the JTT does not finance renewables, as was needed in the past (Meridian Economics 2020), by decommissioning of coal is expected to crowd significant renewable energy capacity funded by third parties .

1.2.1.5 How the proposals and supporters could work well together

This section has examined some differences between the JTT and PIC proposals. It has also pointed to similarities and possible synergies. The two proposals fund different parts of the overall problem of 'Eskom debt'. More acute divides over unbundling can still allow restructuring to be defined around an ITSMO and support for renewable energy. The JTT would provide a source of funding for development projects that is a share of a large deal. Very concretely, there is common cause about funding development projects in Mpumalanga, and providing assistance to workers and communities, as well as the municipalities that deliver services and develop infrastructure, so that so that no-one is left behind (Mpumalanga Provincial Treasury 2018; UN 2015) Looking beyond the proposals to actors supporting them, a coalition can be built in support of a just transition.

1.2.2 Debt and debt relief post-COVID-19

1.2.2.1 ZAR 500 billion recovery package

On 21 April 2020, President Ramaphosa announced “a massive social relief and economic support package of R500 billion, which amounts to around 10% of GDP” (Ramaphosa 2020). He characterised this as part of a second phase in the response to COVID-19 – the first being national lockdown, the second stabilising the economy and protect jobs, and third as recovery. In his concluding remarks, the President said that “our economic strategy going forward will require a new social compact among all role players – business, labour, community and government – to restructure the economy and achieve inclusive growth.”

The Finance Minister, Tito Mboweni, gave further details on 24 April (Mboweni 2020b) and is also to table an adjustment to the budget for 2020/21. The Minister is the political head of National Treasury, and the department published a detailed document on economic measures for COVID-19 (Treasury 2020).

In terms of spending The President said that the socio-economic support package involves: “Firstly, an extraordinary health budget to respond to coronavirus; secondly, the relief of hunger and social distress; thirdly, support for companies and workers; fourthly, the phased re-opening of the economy” (Ramaphosa 2020). A breakdown of the R500 billion package is shown in Table 1 (Table 2 in Treasury (2020), adding a column to show values in Euros.

TABLE 2

South Africa's COVID-19 social relief and economic support package, spending

	ZAR bn	EUR bn
Health interventions	R 20	€ 1
Municipalities support	R 20	€ 1
Social grants	R 50	€ 3
Job support	R 100	€ 5
Wage guarantees	R 40	€ 2
Loan guarantees	R 200	€ 10
Tax and payment deferrals and holidays	R 70	€ 4
Total	R 500	€ 25

Source: breakdown and ZAR from (Treasury 2020), EUR calculated at € 20 / ZAR 1

As one would expect from a social relief and economic support package, the focus is very much on 'red' spending; 'red' here meaning socio-economic spending on basic needs and social justice. South Africa currently has 'red rescue' package, as distinct from the emphasis on 'green stimulus' in Europe; 'green' often being a short-hand for climate action.

1.2.2.2 Funding sources

Many South African's wondered from where the money will come, given that the Finance Minister had already had a challenging task in balancing an 'austerity budget' during his budget speech on 26 February 2020 (Mboweni 2020a) – before COVID was factored in. President Ramaphosa indicated broadly that the R500 billion socio-economic package would come from "reprioritisation of around R130 billion within the current budget" and the rest (R370 bn) to "be raised from both local sources, such as the Unemployment Insurance Fund, and from global partners and international finance institutions" (Ramaphosa 2020). The National Treasury document provides a breakdown of the funding sources, again with the conversation to Euros added for international comparison (but noting that exchange rate volatility is a challenge of its own, exacerbated by COVID).

TABLE 3

Funding sources for South Africa's COVID-19 social relief and economic support package

	ZAR bn	EUR bn
Credit Guarantee Scheme	R 200	€ 10
Baseline reprioritisation	R 130	€ 7
Borrowings from multilateral finance institutions and development banks [†] for business support, job creation and protection	R 95	€ 5
Additional transfers and subsidies from the social security funds	R 60	€ 3
Available funds in the Department of Social Development 2020/21 appropriation	R 15	€ 1
Total	R 500	€ 25

Source: breakdown and ZAR from (Treasury 2020), EUR calculated at € 20 / ZAR 1

[†] International Monetary Fund, World Bank and the New Development Bank

Note that the credit guarantee scheme (CGS) appears as the first line in both Table 1 and Table 2. CGS to support small medium and micro enterprises (SMMEs) emerged in Europe in the 19th century and spread to over 100 countries over the 20th century (Green 2003). In South Africa, the Small Enterprise Finance Agency (SEFA) offers CGS³ to SMME who cannot access finance due to lack of collateral. SEFA does not provide credit directly, but rather a range of credit guarantee products is made available to commercial banks and financial institutions. Is it not clear whether the R200 bn would flow via SEFA (would require further research).

1.2.2.3 Implications (initial take)

South Africa currently intends to borrow R95 bn (EUR 5 bn) and has approached several DFIs. Some commentators have already indicated that the package may not be large enough (Makgetla 2020). Increased borrowing will add to the national debt.

3 <https://www.sefa.org.za/services/product/9>

South Africa's fiscal space was already virtually gone before the COVID crisis. During the first days of the national lockdown, Moody's, the last rating agency that had not yet put South Africa on 'junk status', did so (BS 2020). Another, Fitch, further downgraded SA to lower notches. The country is not unique among developing countries: "Just when developing countries need to manage the pandemic, most have seen their fiscal space evaporate" (Hausman 2020). Hausman suggests that those who do not have fiscal space – most developing countries – borrow for the next two years as much as possible, and that the IMF is the only institution large enough. The IMF has mobilised emergency financing for 102 countries (as of 12 May 2020) (IMF 2020), with reported loans to SA at an interest rate of 1% (Naidoo 2020), but even then capital has to be repaid.

In this context, we need a recovery that is both red and green. All countries will be more indebted post-COVID. However, it is critical to distinguish between those where fiscal space is limited, while for others there is none left at all. Some countries will be able to 'print money' and others not. Printing money is inflationary if the underlying assets are not sound. This means that the choice whether richer countries and regions remain committed to global solidarity or choose economic nationalism (Harari 2020) is important in relation to debt. Some countries, possibly including South Africa, will need debt relief.

While the just transition transaction does not directly address the coal legacy debt of Eskom, it improves the changes of returning the national utility to financial sustainability (or perhaps some of its divisions). In the post-COVID economy, a new role for international climate finance through just transition transactions is more relevant than ever. At least that is what the UCT team thinks and would like to discuss with other partners.

1.3

Just transition: internationally and in South Africa

Divestment pressure reduces finance for fossil fuel infrastructure, presumably including high-emission electricity generation, while green finance flows into green infrastructure, such as renewable energy and other cleaner energy technologies. Transition finance is needed in the period approaching the tipping point (as RE gets cheaper than coal for electricity, but not yet in all sectors) and before all of the new sectors are financial self-sustaining.

The just transition transaction is a proposed multi-billion dollar performance-based ICF transaction to support and accelerate South Africa's just energy transition (Tyler 2019). The opportunity for the design of the JTT arises from DFI mandates to fund a just transition in support of the 2015 Paris Agreement on climate change (*ibid*). Also, SA has been identified as a key focus country for demonstrating globally replicable just transition models (Meridian Economics 2020). South Africa is a key emerging economy with anticipated high emissions growth, and the electricity sector is a major contributor to its current total GHG emissions (DEA, 2018). This makes the deal important for enhancing mitigation ambition.

The JTT proposal is particularly significant for ICF because of the unprecedented scale of the deal (Cohen 2019b). At the heart of the deal is the use of ICF to catalyse systemic carbon reductions and incentivize domestic commercial investments. It creates a highly innovative use of ICF to address socio-political and economic barriers to achieving climate and development goals. The deal also sets up financial flows to fund socio-economic aspects of a just energy transition in South Africa through the creation of a Just Transition Fund (Tyler 2019).

Conditions for the JTT ICF include the structural reforms in the power sector, financial turnaround for Eskom and on accelerated phase-down of coal power carbon emissions (*ibid*). These pre-conditions for the transaction seek to address

the political impasse related to the energy transition and job losses across the coal industry and concerns about resources to address socio-economic issues, and the question of the future form of Eskom and whether it will exist as a public or private company.

Broader domestic support for the JTT is sought through the factors that will help to improve the country's economic outlook and thereby also political stability. SA's rising fiscal deficit, increasing debt burden, low economic growth and sub-investment grade (junk) status are directly associated with Eskom's financial and operational problems. Political stability can be enhanced by measures to improve Eskom and SA's investment ratings and to directly address labour union and civil society concerns about increased unemployment as a result of the privatisation of state-owned enterprises

The value of the JTT strategy can be understood within the context of domestic challenges to decarbonize the electricity sector and conceptualisation of a Just Transition in South Africa. While the concept of a just transition is increasingly used in international climate (including ICF) discussions, the meaning and approach differs in different contexts. For this reason, in this case study we seek to first understand 'just transition' as it is framed internationally, and what is called for as part of a Just Transition in South Africa. The following sub-sections highlight domestic barriers to transforming the energy sector within South Africa and considers some potential financial instruments to overcome these challenges. Having considered these factors, we provide an answer the question: **What is JT transaction in terms of the overall concept and high-level elements, and what was the process to develop it?** Our answer (not 'the' answer) to this question forms part of addressing the overall research question and the first sub-question, in section 1.3 above.

1.3.1 What is Just Transition? International interpretation

In the international context, conversations about just transition arise from the recognition that responses to climate change that bring about both opportunities and challenges. The initial conceptualisation of a "just transition" is attributed North American trade union demands for support for workers who faced losing jobs in the 1990s due to policies to prevent air and water pollution (ILO 2015; Rosemberg 2010; Smith 2017b, 2017a).

The concept of a "just transition" is now entrenched in international sustainable development and climate fora. The Paris Agreement preamble forefronts "the imperative of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities" (UNFCCC 2015).

The UN International Labour Organisation (ILO) Guidelines for a just transition towards environmentally sustainable economies and societies for all (ILO 2015) highlight the needs of the workforce and the creation of decent work and green jobs as part of any just transition (ILO, 2015). The ILO describes characteristics of a JT, including sufficient planning, the integration in implementing all sustainable development policy, the need for well-managed process, and for the inclusion of meaningful social dialogue at all levels to bring about fair burden sharing and to ensure that nobody is left behind (ILO 2018). At the COP24 climate conference in Katowice in Poland, some Heads of State adopted the ‘Solidarity and Just Transition Silesia Declaration’ reiterating the “imperatives of a just transition of the workforce and the creation of decent work and quality jobs” (HoSG, 2018).

A just transition in a modern society would be equitable and characterised by distributive fairness and justice – to the extent that this is possible. It requires that the transformational change to low-carbon economies in response to the climate crisis in a manner that “no one is left behind” (UN 2015). The implication of this more equitable approach is that it is more likely to be more broadly supported.

1.3.2 What is Just Transition – a South Africa interpretation

In the South African context, descriptions of a just transition include a broader economic and social target because they explicitly recognize that fossil-fuel economy transformation impacts will ripple across regions and the economy. The loose framing of the international conceptualization (outlined above) - that transition to a lower carbon economy should not impose excessive losses on workers and fossil fuel dependent communities, but that it should create opportunities for them – is accepted.

A key distinction of the use of the term ‘just transition’ in SA is that in SA a JT places strong emphasis on the need to address societal issues of poverty and inequality as a priority (Montmasson-Clair 2019; Strambo, Burton & Atteridge 2019; Swilling & Annecke 2012; Winkler 2018). It recognises links between poverty and equality, and the historic and current structure of the SA economy and its dominant means and modes of production. Recognition of these links moves the conversation beyond that of active labour market policies - green jobs, social protection and retraining -, even to debating reform of the current socio-economic system (Scholtz et al. 2019).

The risks of replicating or intensifying poverty and inequality through processes of transformation are also recognised, as are opportunities for more equitable societal outcomes, specifically for employment and redistribution of power and resources, and to carve an alternative development path (Scholtz et al. 2019). Some voices speak of 'greening of the developmental state' - a call for government to pursue all economic opportunities arising from decarbonization (Swilling, Musango & Wakeford 2016)-, and for rejuvenation of local economies that have become fossil-fuel dependent (Montmasson-Clair 2019). The extent of impacts (positive and negative) means that a just transition should engage stakeholders and planning across the economy and society (Montmasson-Clair 2019).

Opportunities for more distributively equitable and environmentally just economic activities are not limited only to renewable energy enterprise. These can be identified through inclusive multi-stakeholder collaboration processes (Strambo , Burton & Atteridge 2019). These multi-stakeholder processes will create forums to build common understanding about what a just transition means (*ibid*), and about what interventions to enact and on who manages them (Montmasson-Clair 2019).

The conceptualisation of a 'just transition' for South Africa reveals a strong appetite for transformation of the socio-economic relations that structure its energy system. In the words of the President:

“As part of ensuring a just transition we will need to put measures in place that plan for workforce reskilling and job absorption, social protection and livelihood creation, incentivising new green sectors, diversifying coal dependent regional economies, and developing labour and social plans as and when ageing coal-fired power plants are decommissioned.”

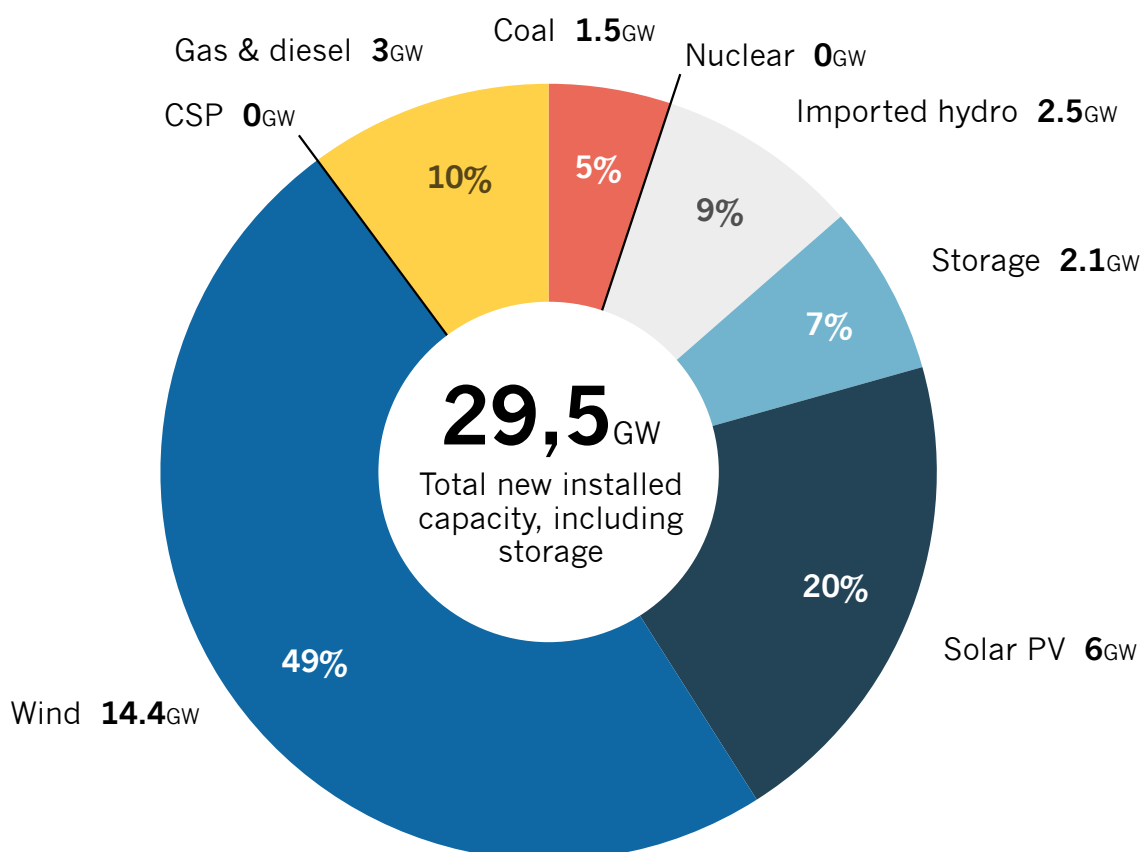
Ramaphosa 2019

In SA, a just transition tends to focus on the transformation of the electricity sector's dependence on coal-fuel electricity plants. There is increasing recognition of broader dimensions of the just transition, yet most public debate remains on inequalities in moving away from coal (Cock 2019a). The IRP 2019 for future electricity procurement mandates that most of all new electricity generating capacity will be provided via new renewable energy, though most existing capacity remains based on coal (DoE 2019). Figure 4 shows almost half the new capacity coming from wind (49%), with another fifth from grid-connected solar photovoltaics (PV). The new capacity additions of hydroelectricity, which would be imported from Inga in the Democratic Republic of Congo, though this is subject to high uncertainty.

Also note that Figure 4 includes storage, which does not generate electricity, the importance of which will increase as shares of renewable energy increase. At the same time, the IRP still includes plans to build another 1.5 GW of new coal (beyond Medupi and Kusile), which would increase GHG emissions; but neither nuclear nor concentrating solar power up to 2030.

FIGURE 7

New capacity added in IRP 2019 (GW)



Source: Authors' own graph, based on data in IRP 2019 (DoE 2019b)

New renewable energy makes up 69% of new generating capacity in SA's electricity plan, the IRP. The plan will have to be implemented and RE faces challenges in the political economy, as described above. The IRP is an important domestic mitigation measure, mentioned in SA's first NDC.

Achieving the mitigation target range in the NDC and potentially increasing ambition in SA's next NDC face significant challenges. These are the very challenges that a JTT needs to overcome.

1.3.3 Transition for communities and workers dependent on coal

On the one hand, labour unions are in general support of a just transition, however their viewpoints differ on what this means for reformation of the economy and industrial relations (Cock 2019b). They share high levels of concern about the inevitable job losses associated transitioning away from coal, especially in the light of existing high levels of unemployment and poverty. These losses include from coal mines, through coal-fired power plants and coal-to-liquids, to beneficiation downstream.

Concerns about workers losing jobs and communities losing livelihoods have mobilised vocal support for coal, and against anticipated coal sector job losses as a result of renewables procurement under the REI4P. In March 2017, truck drivers representing the Coal Transporters Forum blocked major highways entering Pretoria in protest after Eskom announced planned coal plant closures to address excess generation capacity resulting from the REI4P (ENCA 2017). The National Union of Mineworkers (NUM) similarly threatened a national protest against the plan (ANA reporter 2017). Then, in the face of increasing pressure from climate change activist movements, NUM proposed that 'clean coal', using potentially emerging technologies like Carbon Capture and Storage', might better serve both climate and labour interests (Cock 2019a).

Labour support for threatened coal workers reached the High Court in 2018 with a NUMSA, joined by COSATU (one of the three main union federations), applied to stop the signing of PPAs under the REI4P, for the reason that it would likely lead to coal power plant closures and job losses affecting 30,000 families (LegalBrief 2018). This move prompted environmental activist organisation Greenpeace to accuse NUMSA of a move to sabotage renewable energy in favour of coal (Alfreds 2018). In fairness, NUMSA opposes any privatisation of national electricity supply, renewables or coal. Rather, it promotes the notion of energy democracy, taking the ideological position that the energy sector is part of 'the commons' with social ownership and democratic control (Cock 2019a; Scholtz et al. 2019).

Indeed, SOEs, and by extension Eskom and coal, are perceived to be the leading instruments for enacting the 'developmental state'. The concept of the SA government as a developmental state means that it's focus is on fighting poverty and deprivation AND the expansion of economic opportunities of all its citizens (Mbeki 2006). The call for a stronger role by the developmental state is thought to be strong now, notably for national interest in the energy sector (Swilling 2020). As such, some unions are categorically opposed to privatisation of SOE's and to the unbundling of Eskom, which they believe might be a precursor to future privatisation and an 'unjust transition' (Scholtz et al. 2019).

Sub-national government also takes on the role of the developmental state. For example, Mpumalanga Province had developed a Green Economy Development Plan focusing on interventions to support the just transition towards a low carbon and climate resilient economy and society. It explicitly recognises inequality of potential negative impacts and it states that, “The Just Transition strategy will be more biased towards protecting the most vulnerable members of our societies which include women, children, people with disabilities and the poor” (Mtshweni-Tsipane 2020).

One way of potentially addressing labour and environmental movements concerns and debates around the production of energy in a just transition might be through public ownership of renewables, especially for vulnerable communities. Labour unions and civil society are in general agreement that ownership is important, but no commonly preferred models are identified (Scholtz et al. 2019). As one example, NUMSA has long called for socially owned renewables – a socialist conceptualisation of renewables that achieves energy supply, and provides equitable dividends to the communities and workers directly involved in the production and consumption of energy (NUMSA 2012).

The literature provides examples of social or community ownership of renewables that can inform the debate (see section 2.2 below). Assessment of these examples highlights some resource needs, and possibly these needs might be met in part by a Just Transition Fund. Nonetheless, it should be noted that South African literature includes recommendation for further research into community ownership and specific examples in the context of a just transition for South Africa (Overy 2018).

The creation of renewables projects might create more sustainable livelihoods, but it might not bring a job for an individual worker in a coal plant. The 2018 jobs summit agreed on a presidential climate change co-ordinating commission to oversee a just transition, but little has been heard from it since.” (Winkler 2019). A raft of urgent and considered interventions are required to address the needs of workers and of regional economies dependent on coal, as a matter of urgency and before implementation of any coal decommissioning plan.

1.3.4 Institutions, instruments and actors that could meet the needs of workers and communities

What interventions might a just transition package contain? Table 3 below contains potential interventions and elements for a just transition package for South Africa. These elements seek to address regional development challenges as well as declining economic activity in the coal sector (Burton, Marquard, and McCall 2019).

The interventions support addressing unemployment in coal regions as a priority, accompanied by structural support through investment in diversification of industry through building on already tested alternatives and economic specialization that builds on regional competitive advantages (Burton et al. 2019). A just transition would include not only workers in the coal supply chain, but also the discouraged unemployed, many of which are youths (ages 15-24) (*ibid*). It could respond to community calls for jobs and for unions, and decent, quality work (*ibid*). The coal value chain includes coal mines, coal-fired power stations, and down-stream beneficiation (SA-CRM 2013). In Gauteng and Mpumalanga, coal is also used in households for various end uses, and associated with indoor air pollution and health impacts (Nkambule and Blignaut 2012; Riekert and Koch 2012; von Schirnding, Yach, and Klein 1991).

The interventions respond to community and labour and social justice movement calls for restoring “soft attractiveness factors” like clean air and water to the regions, and to demands for food security, access to public transport and healthy environments (Burton et al. 2019).

Table 3 below illustrates some of the many actors that might play important roles in planning and implementing a just transition package. This list is not exhaustive. Further thinking will be needed on institutional reforms and financing options (*ibid*).

TABLE 4

Potential elements of a just transition package for South Africa

Instrument or goal	Rationale	Example where possible	Institutional innovation and financing option	Research required	Actors
1. Transition pathways and decent work					
Worker transition schemes for Eskom and coal mining employees	Skilled workforce, economic justice	Worker regional transfer programmes with on-the-job retraining. In-company redeployment. Retraining options for workers with transferable skills. Integrated multi-purpose retraining programmes. Natural retirement, voluntary redundancy, or bridge to pension for older workers	Eskom/tariffs, mining houses, grant funding, national fiscus	Contextual factors on work- force age, skills, options/costs of early retirement, redeployment, retraining	Workers, Eskom and mining houses, other industrial players, CSMI
Workplace placement schemes/ support	Assisting unemployed youth to obtain skills for job interviews, practice, placements	http://harambee.co.za/ National Business Initiative's employability scheme	Grant/philanthropic funding, Youth wage subsidy scheme, Other		Unemployed youth, companies, unions, National Business Initiative
2. Location of innovation or energy transition projects; related diversification					
New utility-scale energy infrastructure in former mining areas	Leverage existing transmission infrastructure and expertise	Geographical procurement of utility-scale renewable energy in former mining areas (coal and gold)	Innovation in REIPPPP procurement rules required for locational allocation. Potential for municipal generation/ procurement. Commercial finance. Development Finance Institutions (DFIs).	Optimal capacity allocation, jobs created per GWh, skills needed, potential or pathways for existing power stations workers to migrate into new plants	Municipalities, SAREC, DMRE, banks, National Treasury

TABLE 4 [continued]

Instrument or goal	Rationale	Example where possible	Institutional innovation and financing option	Research required	Actors
3. Improvement of local infrastructure; location of innovation or energy transition projects; related diversification					
Residential rooftop solar	Income generation for low-income households and social ownership model	Feed-in tariffs provided for low-income households to sell electricity to the grid	Institutional innovation in energy markets at municipal level. Developmental finance for capital expenditure. Distributor subsidy/feed-in tariffs	Cost-benefit, socio-economic and risk analyses. Technical/grid feasibility assessments	Municipalities, Eskom, NERSA, DMRE, National Treasury – and Provincial Departments, CoGTA, SALGA and local NGOs and communities
4. “Smart specialisation”: supporting the growth of economic activities that build on an assessment of the region’s strengths and competitive advantages. In coal regions, this could include existing power, rail or port infrastructure, land availability, cultural and industrial heritage, skills of the local workforce, existing industries with growth potential, etc.					
“Related diversification”: developing industries that are related to existing economic activities and industries but do not depend on coal					
Renewable energy assembly and manufacturing	Paris-compatible pathway requires very rapid and high roll-out of renewable energy: 172 GW from 2020–2050. Leverage skilled workforce	No extant example in Mpumalanga, existing assembly and component capacity developed during REIPPPP but some closed/decreased after REIPPPP procurement hiatus	Procurement rule change to promote geographical localisation Commercial finance DFIs/concessional	GW allocation, jobs/GWh, skills needed, potential or pathways for existing power stations workers	SAREC, DTI, DMRE, Provincial Trade and Economic agencies
Other manufacturing	Leverage Mpumalanga’s close links to markets, good transport links, and experienced industrial workforce	Need research on place-based opportunities for Mpumalanga and potential competitive advantage in existing and new sectors Increased support for existing manufacturing capabilities	Concessional/ developmental and commercial finance, dependent on sector analyses	Detailed analysis of economic, innovative and scientific potential of different sectors, and need and options for incentives.	DTI, TIPS, IDTT, Provincial trade and development, GreenCape

TABLE 4 [continued]

Instrument or goal	Rationale	Example where possible	Institutional innovation and financing option	Research required	Actors
Agriculture and agro-processing	Leverage high potential arable land in Mpumalanga	Bio and fibre crops on rehabilitated land Agriculture value chain assessments and agro- processing hub (Nkomazi)	Concessional, DFI and commercial finance, industrial policy incentives	Detailed analysis of economic potential, required capabilities, investments and incentives	Agbiz, IDTT/ CCRED, Agri-SA, National and provincial departments of Agriculture, DTI, TIPS, Minerals to metals (UCT), MEGA
5. Improvement of local infrastructure; improvement of “soft attractiveness” factors; location of public sector activities in the region; smart specialisation					
Education and literacy	Address low literacy rates and long-term skills deficits	Teacher training for literacy, USAID Reading readiness programme ECD programmes Community college project University campuses	Grant funding Social and Labour Plans Socio-economic development spend from new RE plants in region Department of Higher Education and Training	Role of existing educational in-situations and existing barriers	Mpumalanga University and Dept of Education University of Pretoria and TUT Emalahleni campuses, Nkangala TVET
Rehabilitation of mining land, catchment clearing/ ecological services, considering climate impacts and adaptation (possibly distinct work-stream)	Legal requirement for mining- affected communities, address water scarcity and pollution etc. Utilise rehab funds for large- scale employment of local communities Potential for commercial opportunities in degraded land and agriculture	Mine Water Co-ordinating Body Green Engine Room Biofibre economy on degraded land Catchment clearing and ecological systems services for employment Grounded	Mining rehab funds Concessional/DFI Commercial opportunities		Mine Water Coordinating Body, mining companies, Minerals Council, SETAs municipalities, unions, rehabilitation firms Mpumalanga Tourism and Parks Agency

TABLE 4 [continued]

Instrument or goal	Rationale	Example where possible	Institutional innovation and financing option	Research required	Actors
Food security	Small-scale poultry, agriculture, hydroponics and aquaponics		Grant funding		
Integrated transport systems and spatial planning	Just transition means more than just a technology transition. Public transport is key to meeting mitigation and economic justice goals		Government expenditure DFI Commercial		

1.4

Research questions, design, methods and working definitions

In the context elaborated above, the case study will explore the following research questions:

- › How can climate finance-policy packages transform SA's energy infrastructure and ensure a just transition in SA's electricity sector?
 - » What catalytic role might international climate finance have in the SA electricity sector in crisis, a climate crisis that requires the accelerated phase out of coal globally and the triple challenge of unemployment, poverty and inequality?
 - » What institutional innovation in ownership models would support renewable energy, both in terms of buy-in and scale?

These questions have implications for Eskom, the national fiscal framework and will become more pointed with the COVID crisis (the latter occurred well after the design and half the work on this case study). While national in focus, the just transition will have a particularly geographical focus in Mpumalanga province.

To explore these questions, we adopt an inter-disciplinary, “mixed methods” approach, appropriate to the novelty of the topic and seeking to undertake the research rigorously (Sovacool, Axsen, and Sorrell 2018). We draw on qualitative and quantitative information in existing reports; hold in-depth discussions with key informants, including in two national workshops (one at the design stage, in November 2019, and one at draft report, June 2020); conduct interviews to fill gaps and add additional information; and combine this information into a rich case study. The quantitative information includes results from previous energy-economy-environment modeling, but we will not undertake new model runs.

The research does not draw on any specific theoretical framework. Sustainability

transitions research sought “to conceptualize and explain how radical changes can occur in the way societal functions are fulfilled” (Köhler et al. 2019a), but has had limited focus on labour and none (that we know of) on transition finance. In reviewing its work over the last decade, this community of practice acknowledges that themes salient to the just transition have received insufficient attention: “Social inequality, poverty and lack of access to modern services such as sanitation or education in low-income economies might be considered more important than global environmental rationales such as climate change” Historical-cultural activity theory has developed methodologies for formative interventions and studied transformative agency (Sannino and Engeström 2018), but focuses at the level of activity, not at national scale. Actor-network theory explains change in social and material conditions in relation to networks of relationships (Latour 2005), but tend to describe change ex post, whereas we seek to understand a transition being developed and its future implications. There is no single “theory of just transition”. We do not seek to develop one here, as the focus is applied.

In order to aid understanding and rigour of analysis, we clarify some terminology. What explain what we mean by climate finance and various qualifiers; debt and financial instruments; and additionality. The section concludes with a brief discussion of a salient new concept, transition finance.

Climate finance is finance for mitigation and adaptation. In more detailed terms, climate finance aims at reducing emissions, and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts. The UNFCCC Standing Committee on Finance continues work on operational definitions of climate finance (SCF 2018), and our working definitions is intended to be broadly consistent with the SCF. International climate finance means climate finance flowing between countries.

Distinctions have been made in recent climate negotiations between providing and mobilising climate finance. These distinctions continue to be contested, and some historical context is important. Under the UNFCCC, the richer countries (Annex II) agreed to provide finance “to meet the agreed full incremental costs of implementing measures” by developing countries (UNFCCC, 1992: Article 4.3). Much of the spending by the Global Environment Facility as the operating entity was on mitigation, for example renewable energy which was more expensive than alternatives – hence incremental costs. For some technologies, relative prices have shifted, while for others, incremental costs are still an obstacle (e.g. concentrating solar power; zero carbon steel).

Under the Paris Agreement, the obligations for developed countries to provide finance continue (Article 9.1), other countries are encouraged to also provide support voluntarily (Article 9.2) and developed countries should lead in “mobilizing climate finance from a wide variety of sources” ... progressing beyond previous efforts (Article 9.3) (UNFCCC 2015b). The decision adopting the Agreement provides that Parties “shall set a new collective quantified goal from a floor of USD 100 billion per year, taking into account the needs and priorities of developing countries” before 2025 (UNFCCC 2015a). Article 2.1 (c) aims to make “finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development”; it is important to note that this is the context of global temperature limits (2.1 a) of well below 2 °C and 1.5 °C, adaptation (2.1 b) and all as a global response “in the context of sustainable development and efforts to eradicate poverty” (UNFCCC 2015b). Hence climate finance is linked to sustainable development, even specifying poverty. The just transition transaction is relevant to international climate finance.

Terminology related to debt and financial instruments in this paper uses the following working definitions:

- › A **loan** is money lent by a financial institution to another organisation. The organisation receiving the loan incurs a debt which has to repay the loan, the principal amount lent to it and interest on the loan. In simple terms, a loan has to be repaid with interest.
- › **Bonds** are a fixed income instrument typically issued by government or a corporate entity, which incurs a debt to the bond holder. Bond issuers must repay the principal at a later date, the maturity date. In some cases, bond issuers must also pay interest traditionally at a fixed interest rate known as the coupon rate, commonly paid out twice per year. In simple terms, bonds have to be repaid at a later date.
- › **Equity injections** are investment of capital into a company or institution. The institution is typically in financial crisis and requires capital to lower debt ratios and / or stimulate growth. Equity injections are on the fiscal balance sheet as expenditure, but are not repaid. In the SA context, the institutions are state-owned enterprises and for this case study, Eskom. National government is the 100% shareholder of Eskom (via DPE) and equity injections are provided by National Treasury. In simple terms, equity injections are not repaid and are also known as ‘bail-outs’.

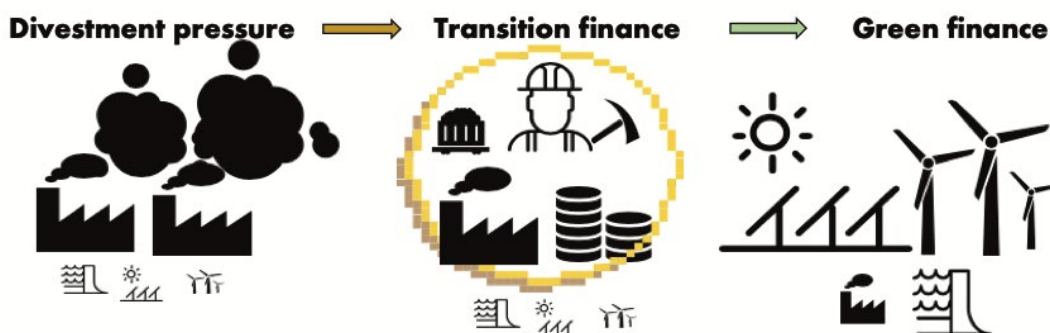
The just transition transaction funds additional costs of phasing out coal and a just transition. The word ‘additional’ raises the question of how fast coal would have been decommissioned anyway – a question of additionality. We know from the CDM debates that additionality is a counter-factual, that can be understood with some approaches, but cannot be nailed down quantitatively – and will be an issue under Article 6 of the Paris Agreement as well (Ellis et al. 2007; Kartha, Lazarus, and Lefranc 2005; Michaelowa et al. 2019; Schneider 2009; Winkler et al. 2001). For this paper, we assume that additional decommissioning means faster than the baseline in the official electricity plan (see section 1.1.4). In principle, we should avoid double counting of mitigation or finance (Schneider et al. 2019; UNFCCC 2015b).

A new concept of “transition finance” has been introduced in a paper informing the OECD’s Development Assistance Committee (DAC). The concept is developed in support of the SDGs and Agenda 2030. “Transition is the journey to sustainable development, and transition finance the financing of that journey. The analysis of transition finance focuses on the evolution and interaction of public (ODA and OOF) and private (FDI and remittances) sources of finance” (Piemonte et al. 2019).

The paper sets out different milestones and tipping points, exploring the change over time and in different countries (by income group) of the interaction of public (official development assistance and other official flows) and private (foreign direct investments and remittances) sources of finance. “Applying these concepts to the more granular level of sector analysis (e.g. social sectors, energy), it appears that transition finance flows differently to different sectors, with longer dependence on ODA of certain sectors like health (but also sharper decline in assistance), resulting in major transition finance gaps.”

FIGURE 8

Climate finance as transition finance, bridging the gap between pressure to divest from coal and rise of green finance



Source: Authors' own figure, drawing on Meridian Economics (2020)

The JTT could be understood as a form of transition finance. We turn in the following section to analysis of the just transition transaction.



CHAPTER TWO —————>

Transforming SA energy infrastructure and a just transition

Coal-fired power has dominated the energy supply, for most of electricity and 30% of liquid fuels. In South Africa's electricity sector, wind and solar PV are now the least-cost options for new power plants (see section 1.1.3 above). The REI4P was started with public funding, but most investment in capital expenditure is private. Electric vehicles are starting to enter the SA market, though not yet least-cost. Nevertheless, these changes in relative prices raise the question what role international climate finance might play in transforming SA's energy infrastructure further? A just transition, leaving no-one behind, is *sine qua non* for acceptability in a country with persistent inequality and high levels of poverty (see 1.1.1), which will be exacerbated by COVID-19 (see 1.2.2).

'Least cost' alone is proving an insufficient condition to bring about transformation of energy sector, at the pace and scale required for South Africa to make more ambitious contributions to global efforts at mitigation. What is the role of climate finance in accelerating a phase out of coal in a just transition of SA's electricity sector?

The focus of this case study - a just transition transaction - needs to be understood in broader contexts. Accelerating mitigation is essential in the context of urgent action and rapid emission reductions being required to address the climate crisis (IPCC 2018). Yet more stringent mitigation targets in the South Africa context will fail to be achieved, if the challenges to energy infrastructure are not considered. A just transition adds a crucial social component to an energy transition, the transformation of energy infrastructure. The focus here is on the electricity sector, which is a critical part of the just transition in a broader sense (the latter also including other forms of energy, and adaptation to the impacts of climate change). The electricity sector faces a complex set of challenges, going well beyond techno-economic solutions.

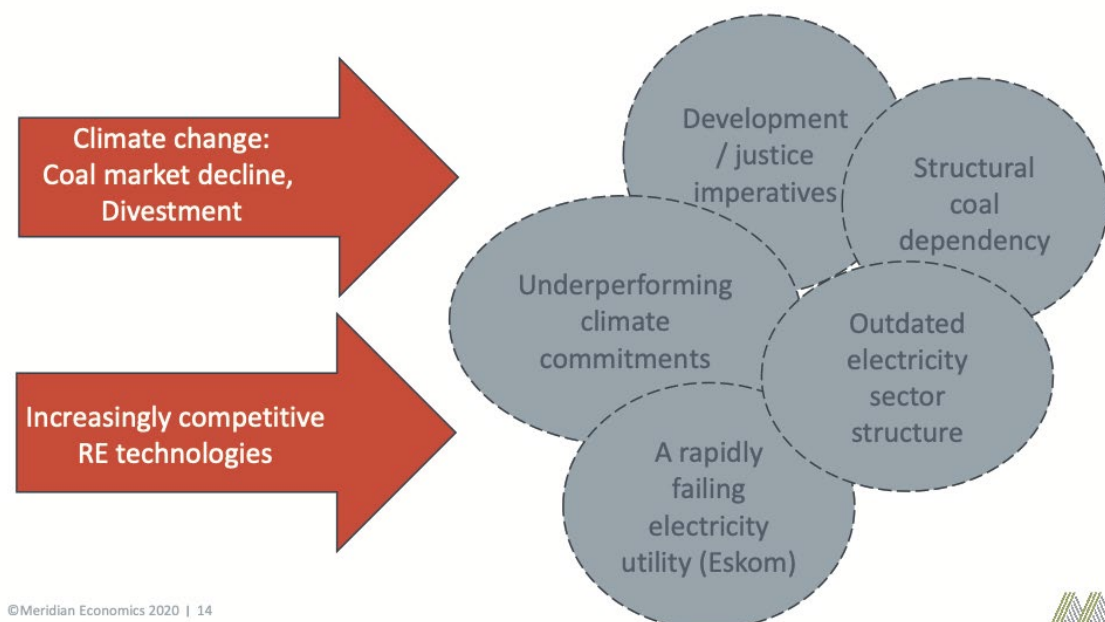
In undertaking technical analysis for the just transition transaction, Meridian Economics (2020) show the domestic problem complexes coming under increased external pressures.

In Figure 9, climate change is a driver on a coal-based electricity sector as are renewable energy technologies in which prices have fallen internationally and in SA. Note that finance is not explicit in the domestic 'bubbles' on the right hand side, though there are many connections to finance implicitly.

The electricity sector faces a set of complex problems, from security of supply, operational inefficiencies, divided view on unbundling a vertically-integrated utility, no vision for the end-state of the sector and – the elephant in the room – massive debt. During the Zuma administration, Eskom was also subject to "state capture" (Public Protector 2016) considered by a group of academics a key part 'betrayal of the promise' of post-Apartheid South Africa (State Capacity Research Project 2017). Together, these multiple problems amount to a sector that was in crisis, even before the COVID crisis hit South Africa in early 2020.

FIGURE 9

Intersecting domestic problem complexes come under further transition-related external pressure



Source: Meridian Economics (2020)

It would go far beyond the scope of this case study to address all the policy problems of the electricity sector. A just transition transaction cannot on its own deliver solutions to all the challenges in the sector, nor deliver all the mitigation effort that SA should be making to make a fair contribution to limit temperature increase to “well below 2 °C” and pursuing efforts for 1.5°C (UNFCCC 2015b).

The focused question is what catalytic role might international climate finance have in the SA electricity sector in crisis, a climate crisis that requires the accelerated phase out of coal globally and the triple challenge of unemployment, poverty and inequality? This is a critical part of the overall research question outlined in section 1.4 above. The role of international climate finance (ICF) is most catalytic in the form of a just transition transaction (JTT), which funds the accelerated phase out of coal and the just transition itself. This means it addresses a complex set of challenges, not resolving them all but creating possibilities of change. Given the overall policy trilemma in the previous paragraph and the context in section 0 above, we argue that simply ‘adding ICF’ does not lead to better policy outcomes. A transaction that aimed only at accelerating mitigation would, we argue, fail. By better, we mean outcomes that address the underlying challenges, the root causes of the problem. **A more radical analysis requires understanding how changes in the policy space might be encouraged through climate finance. This requires understanding of the political and institutional environment.**

2.1

A just transition and accelerated decarbonisation

2.1.1 Key elements of the problem of a just transition and decarbonisation

South Africa's the parastatal electricity company Eskom has had a monopoly on electricity supply, controls transmission and more than half of distribution (see 1.1.3). However, the utility has faced significant operational, structural and financial problems that have intensified over recent years. These challenges have brought into sharper focus structural problems in the electricity market. The just transition transaction has the potential to help solve some of these challenges.

2.1.1.1 Operational problems

South Africa has experienced periods of electricity shortages in recent years, (2007-2008, 2014-2015, February – March 2019, December 2019 – March 2020). These shortages have multiple causes including planned and unplanned maintenance, and technical defects in new coal plants. An overarching cause of this was the delay in commissioning new capacity in the 2000s, and the delays experienced in bringing new capacity online (Pickering, 2010; Martin and Winkler, 2014; Baker et al., 2015; Eberhard and Godinho, 2017)

Eskom group annual results for the year ended 31 March 2019 reveal problems concentrated in generation activities as a result of these technical factors like age in some plants and poor construction in the case of Medupi and high price coal supply contracts (Eskom 2019a). Some of the oldest plants in the coal fleet are recommissioned previously mothballed plants and this makes the system unreliable and unpredictable. Cost cutting on maintenance in recent years has led to a demanding maintenance schedule for, more rolling blackouts in the first half

of 2020 and appointment of a specialist to implement 'philosophy maintenance' (Creamer 2019, 2020), though the coronacrisis led to reduced demand during a national shutdown.

In addition to these operational challenges, there are four structural issues. By structural issues, we mean challenges with electricity tariffs; a previous monopoly struggling with competition from IPPs; corruption; and non-payment.

2.1.1.2 Structural challenges

The first structural challenge relates to electricity tariffs. Tariffs for Eskom and municipal distributors are set by the National Energy Regulator of South Africa (NERSA). For municipalities, NERSA publishes guidelines, each municipality then applies for approval of its annual tariffs to NERSA, which then considers and approves them. For Eskom, NERSA has a published methodology for multi-year price determinations (MYPD) (NERSA 2016). Historically, electricity tariffs have been kept relatively low, for complex historical reasons (Marquard 2006) that enabled Eskom to claim to have the cheapest electricity in the world (Eskom 2020), as well as political imperatives to keep tariffs low for industry and newly connected and typically poor residential customers. Electrification has been one of main success stories of the post-Apartheid government has been electrification, increasing access to electricity from around one-third in 1990 to 87% in 2017 (StatsSA 2019) and reportedly reaching 90% by 2018 (ANA reporter 2018). Poorer households have benefitted from electrification, and a free basic electricity tariff (FBET) make physical access affordable. Yet further increases in Eskom electricity tariffs are politically unpalatable. A counter-vailing consideration is that tariffs have not been fully cost-reflective. In recent years, NERSA has awarded tariff increases below the rates that Eskom applied for in their MYPD applications. Eskom generally will pass on tariff increases to its customers and to municipalities who serves non-Eskom customers in their distribution areas. If tariffs are insufficient to cover Eskom's cost, as a state-owned enterprise which is 100% owned by government, Eskom will approach Treasury for funding. The fiscus is funded by taxes, so this means that taxpayers ultimately pay. Therefore, building new electricity generating capacity is paid either by customers or taxpayers.

Another structural challenge is that Eskom has historically had a monopoly on electricity supply (Marquard 2006). With significant capacity added under the REI4P (but a smaller share of electricity generated), Eskom has been reluctant to purchase power from IPPs, as it needs funds for its own cashflow. While bid tariffs have fallen sharply over the several round to around 5 US\$/kWh (Kruger & Eberhard 2018), tariffs in the earlier bid windows were higher – and still have to be paid for typically 20-year-long power purchase agreements. There is no serious doubt, however, that grid-connected new wind and solar PV are now cheaper than new coal or nuclear power in South Africa.

A third structural challenge is that Eskom became associated with corruption related to coal supply – the ‘state capture’ referred to above. Detailed analysis of the implication for Eskom were compiled as a resource for Parliament’s public enterprises inquiry, civil society, journalists & engaged citizens (Eberhard & Godinho 2017a). Merely providing more funding to Eskom, without improving efficiency of its use, preventing corruption or misspending, will not help address problems in maintenance, cost-plus mines, or now in new plant.

Fourthly, Eskom has structural problem with non-paying customers. Non-payment by some municipal distributors and many Soweto residents lead to financial losses of R30 billion (DPE 2019). A particular challenge to a Just Transition is that several municipalities in Mpumalanga are among those owing payments to Eskom, and given poor financial health, might not be able to pay IPPs either. The President restated the principle that those who use electricity must pay for it, and Ministers and officials tried to resolve non-payment. Eskom has attempted to reduce supply but been challenged in court (DPE 2019).

2.1.1.3 Financial constraints

Eskom’s financial problems have been at least two decades in the making (Eskom n.d.). As outlined under the structural issues above, tariff increases have been insufficient to cover costs. According to Eskom’s CEO, current tariff average is approximately 23% below the average price in the IRP 2019, creating a revenue shortfall in the region of R67 billion a year (de Ruyter 2020a). Borrowing for the two large coal-fired power plants, Medupi Power Station (4 788MW) and Kusile Power Station (4 800MW), together reportedly costs more than two and a half times the initial budget because of delays and cost overruns (Creamer 2019). Technical problems at both plants are cause for ongoing inefficiencies and the plants are expected to be fully operational, Medupi from the end of 2020 and Kusile at the end of 2023 (de Ruyter 2020b). Failed revenue collection from municipalities and customers in Soweto township amounts to nearly R50 billion in April 2019) (de Ruyter 2020a)

Eskom’s annual debt interest payments are reported as between R28 bill to R20 billion per annum (de Ruyter 2020a), and total debt service (interest and principal) for 2018/2019 is estimated at R63.3 billion (DPE 2019). Eskom is unable to meet these obligations; its debt service coverage ratio declined from 0.9 in 2018 to 0.5 in 2019 (Eskom 2019a). This means that earnings before interest, tax, depreciation and amortization (EBITDA) covered half of the total debt service for 2018/2019, while its interest rate coverage fell from 1.2 to 0.9 (*ibid*). In other words, EBITDA (including a Treasury bailout of R49 billion) covered 90% of the debt interest alone.

Debt has built up, with debt securities and borrowings provided by lenders and investors (bond holders) increasing. "Eskom’s long-term debt is currently at R441

billion (as at March 2019), up from R255 billion in 2014. Over the next five years, interest payments of approximately R148 billion and debt repayments of R180 billion are anticipated" (DPE 2019).

Government provides Eskom with R350 billion of debt guarantee. In addition, National Treasury has provided equity injections or 'bailouts'. Recently, these included allocation of R23 billion per year for three years in the February 2019 budget (Mboweni 2019). The medium-term expenditure framework (MTEF), which forms part of the MTBPS, committed this scale of equity injection funds in the near-term, amounting to cash injections of R69 billion (\$ 4.7 billion) over three years (National Treasury 2019). In addition to the principal of the debt, interest payments add to the total cost, which "averages R85 billion over the next three years" (National Treasury 2019b), indicating interest payment of R5.3 bn per year.

In the 2020 budget speech, the Finance Minister indicated that this scale of equity injection would continue for a total of ten years: Government will do "whatever it takes" to ensure a stable electricity supply. As I said, it is our number one task. We have allocated R230 billion over ten years to achieve the restructuring of the electricity sector" (Mboweni 2020a). The present value of the bailouts up to 2028 is R167 billion, assuming an interest rate of 6% (though rates are variable under COVID).

Treasury has extended many guarantees for state-owned entities – not only Eskom, but also South African Airways, Transnet, the SA Broadcasting Corporation and Denel. The Medium Term Budget Policy Statement stated that "several large state-owned companies (SOEs) are in crisis as a result of governance failures, poor operational performance and resultant unsustainable debt burdens" (National Treasury 2019).

Eskom's debt repayments include bank loans (the most senior in repayment priority), bond principal and interest. Loans account for approximately 40% of the debt in May 2019 (Burkhardt 2019).

It is estimated that approximately R200 billion of Eskom's current debt is foreign. Eskom is locked into large number of international transactions that it technically cannot service. This potentially stranded debt puts the SA economy at risk. Debt in state-owned enterprises (SOEs) has become a systemic problem for South Africa. The Minister of Finance in an earlier budget speech had already bluntly stated that the "SOEs pose very serious risks to the fiscal framework" (Mboweni 2019). Government has extended sovereign guarantees for R683 bn by 2019, of which Eskom had the largest facility at R350 bn, more than half (51%).

Given the above, Eskom does not have access to capital markets. The debt of the state-owned enterprise has put increasing pressure on the fiscus. "If Eskom is unable to issue debt in the financial markets, or the cost of doing so becomes

prohibitively expensive, government may be called upon to provide further support to enable financial obligations to be met" (National Treasury 2019b)". The Ministers of Finance and Public Enterprises have increasingly indicated that bailouts are conditional on greater 'operational efficiency', and setting time-lines on unbundling, seeking to resolve operational and structural challenges (see also section 1.1.3 above). Already severely challenged to the extent of a financial crisis, Eskom struggles to raise further debt in the context of global coal disinvestment.

2.1.1.4 Potential finance mechanisms to address this finance gap

Alternatives financial mechanisms that might be employed to separate the utility's current financial circumstances from transformation of national energy infrastructure include the following:

TABLE 5

Financial mechanisms that might close Eskom's finance gap

Financial mechanism	Actors	High level implications
Market-based mechanisms		
Market-based mechanisms might include an emissions trading system, as provided for by Article 6 of the Kyoto Protocol, within which foreign government(s) would buy emissions reductions brought about by accelerated decommissioning of coal-fueled power plants.	<ul style="list-style-type: none"> › national governments 	These emissions reductions would then be accounted for as contributions toward another country's NDC. They could not be counted towards SA's NDC. Article 6 requires avoiding of double counting.
Blended finance		
Blended finance uses development finance to mobilize additional finance towards the sustainable development objectives in developing countries (OECD DAC 2017). This ability to blend different financial streams can significantly multiply the value of development finance. (in the JTT, blended finance has a particular meaning, see 2.1.3.2 below)	<ul style="list-style-type: none"> › state sponsored investment funds › multilateral finance institutions, development banks, green banks › institutional investors 	Blended finance might on the one hand add to transactional costs, on the other it brings flexibility when some of the investment needs falls outside the scope of donor grant and DFI strategic investment areas.
Institutional investment – local and international		
Given national and Eskom ratings, investors would be seeking assurances in terms of capital assets.	<ul style="list-style-type: none"> › institutional investors › domestic financial institutions 	For this to be an option, SA / Eskom would need to overcome junk status. Domestic investment would assist in recovery of the domestic economy

Source: breakdown and ZAR from (Treasury 2020), EUR calculated at € 20 / ZAR 1

Financial mechanism	Actors	High level implications
<p>Prescribed assets</p> <p>The potential use of domestic pension and provident funds and other retirement savings to fund investments in the public sector might support economic growth.</p>	<ul style="list-style-type: none"> › National Treasury (Department) › Pension Investment Corporation Board › domestic financial institutions (pension funds?) 	<p>Local economists warn of risks inter alia to SA's international credit ratings which would in turn undermine the country's ability to raise foreign finance (Collocott 2019)</p> <p>Other risks include lower pension fund market returns, disincentives for discretionary savings, and a GEPP shortfall that would be covered by taxpayers. Investor confidence might suffer leading to foreign capital outflows and falls in private sector investment (<i>ibid</i>). SA's international credit rating might fall and undermine access to foreign finance.</p>
<p>Sovereign wealth fund</p> <p>Possible funding sources include, the proceeds of spectrum allocation, petroleum, gas or mineral rights royalties, the sale of noncore assets, future fiscal surpluses and "money we set aside," (Mboweni, 2020). A sovereign wealth fund is a potentially effective vehicle for managing windfalls like commodity price spikes.</p>	<ul style="list-style-type: none"> › Presidency › National Treasury Department 	<p>SA intends to establish a Sovereign Wealth Fund for saving and investment purposes, and the Finance Minister plans to submit a bill on this fund during the current parliament (Mboweni, 2020).</p>
<p>Debt swap</p> <p>The state or lenders to Eskom or Eskom bondholders take on Eskom's debt in return for part ownership (equity) of Eskom's assets.</p>	<ul style="list-style-type: none"> › State investment body: PIC › Development finance institutions such as: Industrial Development Corporation IDC, Bank of South Africa (DBSA) 	<p>The new holder of Eskom debt would hold executive powers within Eskom.</p> <p>Eskom has a debt : equity ratio of 3.1 (Eskom 2019a), so the new holder of all Eskom debt would be owed three times the equity (historically held 100% by government, Public Enterprises). Those taken on debt would hold majority stake in Eskom.</p>

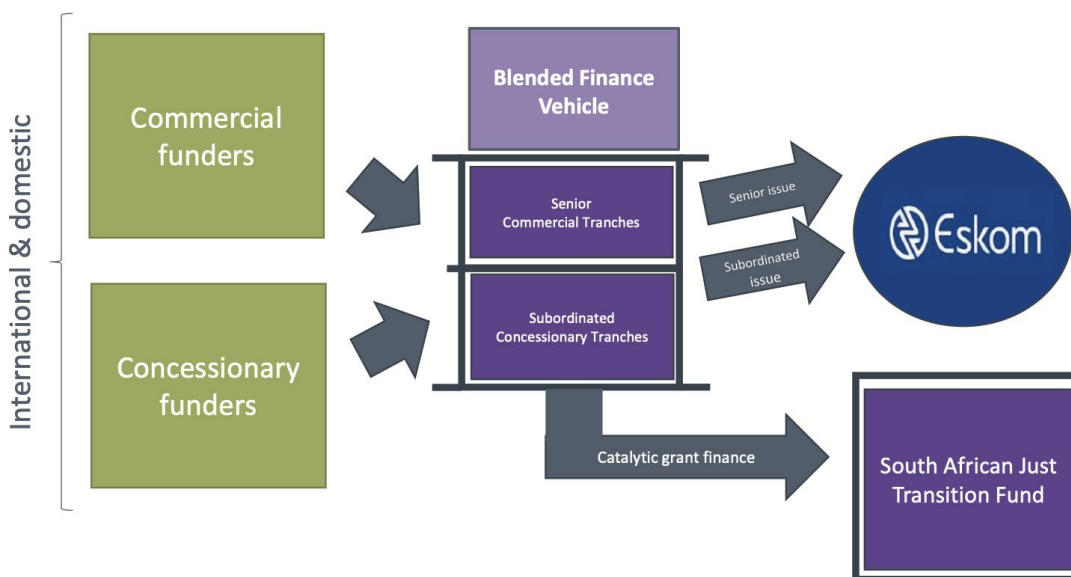
2.1.2 Just transition transaction

2.1.2.1 Financial flows

The transaction can be understood by considering the high-level financial flows, illustrated in Figure 10 below). **The JT transaction is premised on the principle that the international DFI community will make funding available in return for demonstrating accelerated reductions in carbon emissions to 2050. More specifically, the transaction would seek to secure both grant and concessionary (subsidised) loan facilities to SA from the DFI community on the pre-condition that SA accelerates decarbonisation of the electricity sector by bringing forward the dates of decommissioning for the most carbon-intensive national power plants, thereby creating demand for new (renewable energy technology) generating capacity (Meridian Economics 2020).**

FIGURE 10

High level financial flows (concept)



Meridian Economics 2020 | 25



Source: Meridian Economics (2020)

An important element of the transaction, from an international climate finance (ICF) perspective, is that the ICF funds an overwhelmingly coal-based utility to create the conditions for private financing of renewables.

The funding focuses on coal rather than on low carbon technologies. The deal not does not make an explicit conditionality the restructuring of the energy sector, unbundling of Eskom generation, transmission and distribution into separate companies. However, it is consistent with the introduction of an Independent Transmission and System Operator (ITSMO). The ITSMO would help with bringing in more IPPs, and elements of the JT transaction would reinvigorate the market for private capital investment in renewables.

To attract international climate finance, the deal will have to show that there are significant emission reductions. If this were framed as conditionality, it would raise issues of sovereignty and dependencies, yet in practice it is clear that DFIs will wish to see the mitigation effect. This need not be accounted in the same way as tons would not be sold on a carbon market, but some commensurability between the scale of investment and scale of mitigation seems sensible.

2.1.2.2 What exactly is the JTT funding?

The JTT funds the additional costs of decommissioning coal (point 1, below) and the JT fund; but does not directly fund other means of repaying loans (point 2). In other words, the JTT will improve Eskom's ability to manage its debt, but is not aimed at repaying stranded debt. However, by funding the accelerated decommissioning, the JTT enables Eskom to access capital markets again, albeit indirectly via a blended finance vehicle. For the purposes of this paper and for better understanding in the public debate, we propose the following short terms to distinguish different costs that need to be funded:

1. Additional costs of decommissioning coal

2. Fund other means of repaying loans

Each of the two parts is unpacked to convey the underlying issues.

2.1.2.2.1 Additional costs of decommissioning coal

Additional means faster than in the baseline for GHG emissions in the electricity sector, assumed to be commission of coal in the IRP (see section 0).

The costs are the additional energy system costs of accelerating the decommissioning of coal, as modelled in a scenario in which coal-fired power stations or units within stations are retired earlier than in the IRP. (The JTT architecture also sees concessional part of financing support the JT Fund, but this is not related to the Eskom debt, which we are addressing here.)

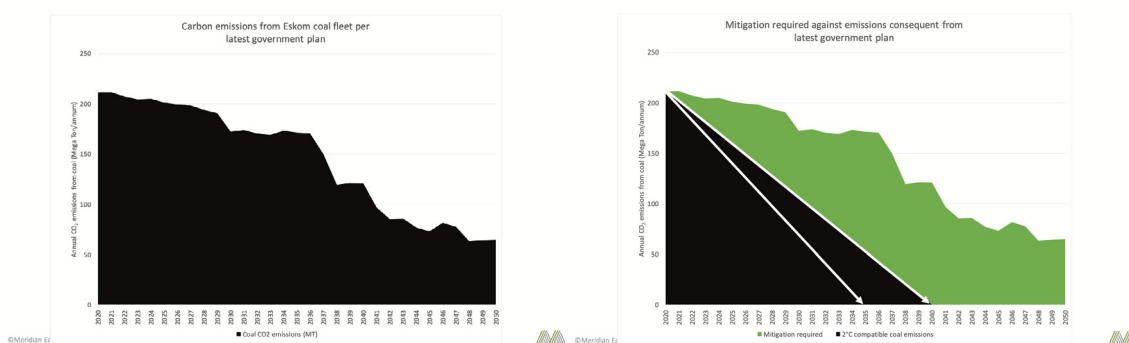
The just transition transaction means that international climate finance is used to accelerate the phase out of coal. While we have emphasised that no official emissions baseline exists (section 0), an illustrative baseline has been developed by Meridian Economics (2020), as shown in Figure 11.

FIGURE 11

High level financial flows (concept)

CARBON TRAJECTORY WITHOUT TRANSACTION

CARBON TRAJECTORY WITH TRANSACTION



Source: Meridian Economics (2020)

2.1.2.2.2 Fund other means of repaying loans

The transaction provides blended finance in which international climate finance provides loans at concessionary rates, subordinated to loans from domestic financial institutions at commercial rates. These loans flow into a blended finance vehicle (BFV) and are lent on to Eskom at near-commercial rates. In this way, Eskom regains access to capital markets. All loans have to be repaid. These are 'other' means of repaying loans because the usual ways of repaying loans are no longer viable. In the past, loans were repaid either by Eskom customers or SA taxpayers.

A. Tariffs by customer:

Loans would be paid back by accumulated revenues from earnings, which are the product of sales of electricity times a tariff. Electricity tariffs are regulated by the National Energy Regulator of South Africa (NERSA). In recent years, NERSA has consistently awarded tariff increases below the rates that Eskom applied for in multi-year price determinations (MYPD). Eskom generally will pass on tariff increases to its customers and to municipalities who serve non-Eskom customers in their distribution areas. Tariffs have not been fully cost-reflective (Eskom 2012). The success of electrification has made it politically difficult to raise residential tariffs (see 2.1.1.2) and key industrial customers have an interest in maintaining historically low tariffs. Further tariff increases are politically difficult and unlikely to be sufficient to cover operational costs and repay debt with interest.

B. Equity injections by Treasury:

When increased tariffs funded by customers are not viable, Eskom would approach Treasury for equity injections. Equity injections are not repaid, as explained above. These funds are taken from the fiscus, and thus funded by taxpayer. The limits on further bailouts are a key part of the financial constraints faced by Eskom (see 2.1.1.3). If SOEs are unable to refinance debt, there may be major consequences for public finances (National Treasury 2019a). In this context, Treasury is hardly in a position to extend further sovereign debt guarantees.

There are other financial instruments which would not directly provide Eskom with funds to repay loans, but improve its financial position in other ways.

C. Bonds:

Eskom issues bonds – international, domestic > 1 year and domestic < 1 year (Eskom 2019b). One option is that the maturity date of existing Eskom bonds could be delayed, so that the principal would be repaid later. However, this does not provide new funding to repay loans, though it does improve Eskom's overall debt : equity ratio.

D. Bankruptcy:

Commercial companies might declare bankruptcy. Creditors would either have to write off the loan entirely as a bad debt or those creditors first in line might be paid back x% on the Rand, taking a 'haircut'. However, government provides Eskom with sovereign debt guarantees, so Eskom cannot easily approach their creditors in the same way.

E. Selling assets:

Theoretically, Eskom could sell assets to raise capital. However, given its poor financial position, operational inefficiencies, and structural challenges, Eskom seems unlikely to find buyers (see section 2.1.1.4 above).

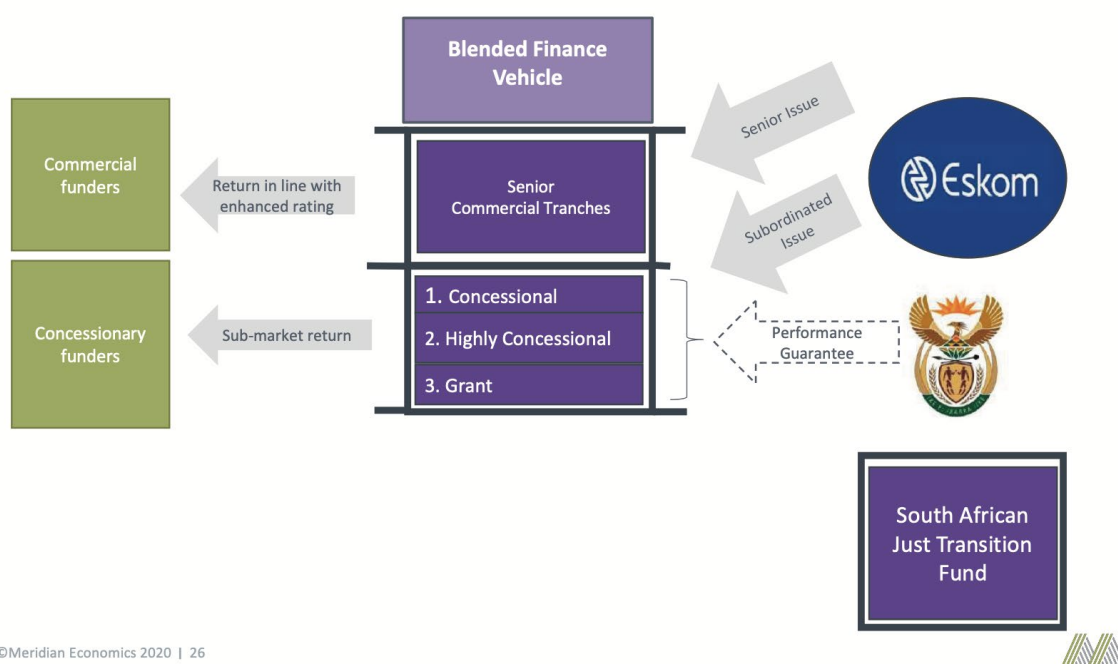
2.1.2.3 Summary of what JTT funds and what it does not fund

The JTT, then, funds the additional costs of decommissioning coal. It does not fund means of repaying loans, in that international climate finance will not 'bail out' legacy coal debt.

The JTT is a separate matter to another part of the Eskom debt problem, which is that neither increased tariffs nor further bailouts are viable. Other means of repaying loans are needed, in addition to the JTT (the options of bonds, bankruptcy or selling assets above, or pension funds or a SPV as discussed in section 2.1.3.4).

FIGURE 12

Debt service flows



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Source: Meridian Economics (2020)

The JTT does contribute to by committing Eskom to a more viable business model (keeping it solvent as it decarbonises) and restoring its access to funding and thereby contributing to de-risking Eskom. The JTT working together with other instruments can thus potentially create a positive feedback loop to manage debt and the reduce the cost of finance.

2.1.3 Financial architecture and institutional design of the just transition transaction

The previous section has outlined what the Just Transition Transaction (JTT) is, how it might overcome challenges facing a transition in SA's electricity sector and introduced the overall concept. But how might a JTT be designed? This section considers more details of financial architecture, the vehicles, actors and financial flows. It also outlines a key developmental component, a Just Transition Fund. Finally, it reflects on governance and institutional design relating to the JTT and the fund.

2.1.3.1 Financial architecture

Figure 10 illustrates important design elements of Just Transition Transaction (JTT). Two structures are a blended finance vehicle (BFV) for JTT and a South African Just Transition Fund (JTF). The BFV would be housed at an existing institution, not yet determined.

Key actors include commercial and concessionary funders, National Treasury and Eskom. International development finance institutions (DFIs) would likely provide the concessionary finance (denominated in US\$), while the commercial funders are both international and domestic. Eskom is a key actor, receiving debt finance which it cannot access directly at present. A newly created Presidential Coordinating Committee oversees the JTF.

The arrows show expected financial flows in a high-level outline. The commercial funding is the senior tranche, with concessionary finances subordinated, i.e. international DFIs would be paid after commercial investors. The blended finance vehicle lends on to Eskom, making available loan finance at near commercial rates and under a set of appropriate covenants. The BFV allocates most of the concessionary portion and releases the proceeds to the JTF.

In order to access climate finance, the JTT needs to demonstrate that it will reduce emissions. The design envisages “measured achievement of South Africa’s and Eskom’s annual performance in meeting agreed reductions in the CO₂ intensity of its electricity” (Meridian Economics 2020). Mitigation is related to the question of baseline, analysed further in section 0 above.

While the JTT is being pursued and has not yet been finalised (as of March 2020), the scale is expected to be large. A member of the team undertaking technical work on the JTT has described it as a “globally significant financial transaction to support and accelerate a key developing country’s just energy transition” (Tyler 2019). At the UNSG Summit in 2019, a statement on behalf of the President indicated a scale of \$11 billion (Ramaphosa 2019).

The indication is that the BFV would provide “a long-term (~20yr) debt facility of approximately \$ 11 bn to refinance the national utility Eskom, conditional on additional mitigation and social action, with credible remedies” (Meridian Economics 2020). The overall funding is R150 – R200 billion, depending on exchange rates). The concessional component could be raised at a below sovereign, concessionary interest rate. Of this, concessionary international finance might raise \$4 billion (about a third), and some \$7 billion is expected to come from commercial lending, at correspondingly higher interest rates.

Ongoing financing of existing coal assets (“legacy assets”) is an operational requirement of an accelerated transition (Meridian Economics 2020). While not directly financing repaying of loans, the concessional funds help keep Eskom solvent.

Only the concessional part would be raised in foreign currency. With the Rand being volatile, and even more so since the COVID-19 crisis, the exchange rate risk needs to be managed.

Forward cover to hedge exchange rate risk would be added to the cost of the debt and is built into financial modeling. It has the benefit of hedging volatility for all parties, as the exchange range is set at the start of the 20-year loan period.

2.1.3.2 Blended finance vehicle for just transition transaction and fund

Key to the just transition transaction is a blended finance vehicle (BFV). The BFV would channel blended finance for the accelerated phase out of coal-fired power, and also resource the Just Transition Fund, as illustrated in Figure 10 above (Meridian 2020). There are major purposes of the BFV. Firstly, it will make finance available to Eskom at attractive near commercial rates, subject to appropriate conditions. Secondly, the BFV will retain the bulk of the value of the subsidy initially, and then release a portion over time to a Just Transition Fund, subject to delivery of SA and Eskom annual performance to meet measurable targets to reduce the CO₂ intensity of its electricity (Meridian Economics 2020).

The finance is blended in two dimensions – combining domestic and international sources, as well as commercial and concessional loans. Figure 10 above illustrates how domestic commercial loans (in ZAR) are to be blended with international climate finance at concessional rates (in \$, subordinated) (Tyler 2019). In other words, the transaction could be backed by development finance institutions and private funders (Cohen 2019a).

The percentage points by which the concessional components are below commercial rates will differ. For example, loans by the International Finance Corporation are expected to be less concessional than those by the World Bank or other multi-lateral development banks.

The need to include domestic finance is driven in part by the scale of mitigation, which appears not to attract the full \$11 billion investment. The design illustrated in Figure 10 above suggests both concessional finance and carbon payments; care will have to be taken not to double-count the value of carbon.

The location of the BFV will have to be carefully chosen. The counter-parties to the just transition transaction are government represented by National Treasury, Eskom and the Just Transition Fund.

2.1.3.3 Just Transition Fund: spending on development projects

The Just Transition Fund is a critical component of the architecture. To make the transition from coal to renewable energy a just one, no-one just be left behind. This means that the funds should be used for development projects and programmes. The vision is that the Fund supports “social programmes and kick-starts an unprecedented democratic era green industrialisation programme with associated growth and employment benefits” (Meridian Economics 2020). A geographic focus for such projects might well be Mpumalanga province – the heart of the central coal basin, most coal-fired power plants, high unemployment and a micro-cosm of the challenges that SA faces. The establishment of the JT Fund would “catalyse raft of diverse development projects and programmes” initially in Mpumalanga (Meridian Economics 2020). Supporting development projects will be important to affected communities and workers (Davie 2019), and hence contribute to social justice.

The source of funding for the just transition fund is the concessional part of the loans, enabled by international climate finance. The interest rate differential would accrue to the Fund.

There is no published estimate of the scale of funds that is expected to flow into the JT Fund. However, assuming that say 1% point of concessional finance flowed to the Fund, and that the concessional component is \$4 billion (R 64 billion @ R16/\$), then that would mean R 640 million (\$ 40 million) per percentage point. Assuming the loan is for 20 years and 2% below commercial rates, simple multiplication yields around ZAR 26 bn (\$1.6 bn), though financial modeling would be needed.

The entity that would host the JT Fund is “yet to be determined” (Meridian Economics 2020). Presumably it would be a South African financial institution with a public mandate, for example the Development Bank of Southern Africa (DBSA). Regardless of the host finally determined, the institution and spending of the JT fund should be subject to multi-stakeholder governance arrangements, with oversight by a Presidential Coordination Committee.

At the national workshop held for this project, participants emphasised the importance of the quality of projects and directing capital to the right places. Good governance and institutions would be required to ensure that poor communities and workers dependent on coal benefit from the funding of projects, and take ownership as much as possible (see ownership models in sections 1.3.3 and 2.2).

2.1.3.4 Special purpose vehicle for non-JTT debt?

Since the just transition transaction does not directly address Eskom legacy coal debt, a special purpose vehicle (SPV) has been suggested to fund other means of repaying loans, as well as operational finance requirements. A SPV would help to isolate as much of the bad debt related to debt for 'legacy' coal plants. Other parts of the system, notably transmission, could be financially viable (and hold 'good debt'). Eskom financial crisis relates to both the stranded debt and refinancing debt. As existing debt matures, if Eskom's financial position worsens too much, it may become unable to refinance the existing debt. To isolate this problem, the SPV would be a new legal entity with its own board, and thus finance would not flow to Eskom (nor to Treasury).

There are different perspectives whether a SPV is the most appropriate tool (as expressed during a national workshop discussing an early outline of this case study). One view is that public funding should not be ring-fenced, and that there are many pressing needs – jobs, national health insurance, free basic education, debt in higher education, aviation, etc. In that context, this perspective would hold that no special case should be made for Eskom. There should be consistency in not prescribing assets, as that would lead to some share of investment is allocated to certain government-approved instruments, and thus not others. A different view is that there is a case for a SPV, since Eskom debt is a bigger risk to the economy as a whole. Eberhard (2019) argues that fiscal debt take-over into a refinancing mechanism, a SPV, is preferable to the other main options: continuing equity injections as in the past, or direct fiscal take-over. The SPV could refinance Eskom debt at near-government rates, be implemented rapidly and separate performing from non-performing entities (Eberhard 2019). Yet another view is that the focus on structure is not the key question, that the purpose should be identified and then a fit-for-purpose structure would follow. The challenges of governance apply, regardless of which vehicles are used.

2.1.3.5 Challenges for governance of the just transition

This case study outlined the complex challenges facing the electricity sector, including operational, structural and financial constraints (see section 2.1.1). The issues are part of a broader and changing context of in the context of development (O), with particular challenges in SA's political economy (1.1.1 above). Problems such as corruption, mismanagement and others have arisen in the changing relations between Eskom, in its current model, and the state.

Similar dynamics might play out in relation to the just transition transaction, albeit with different actors. Despite the shift from the Zuma to a Ramaphosa presidency, relatively few arrests have been made of those responsible for 'state capture' – and more fundamentally, the interest groups are still active.

Vested interests in across the coal value chain might oppose the Just Transition – or seek to secure rents within it. With the introduction of concessional international climate finance, blended with domestic commercial finance, good governance will be critical. While this case study looks at ownership models that would distribute economic and political power, without governance mechanisms, investments might not flow in that direction.

Private finance, particularly when sourced from large, financially weighty multinational corporations or multilateral development banks, implies some measure of influence, control, and, inevitably, power. How the priorities of local workers and communities weigh compared to corporate profitability and bond ratings remains to be seen. If some of the JTT finance were raised via carbon markets, another set of intermediaries would come into the picture. These questions point to the importance of governance and institutions.

At the high level, a Presidential Climate Change Coordinating Commission (P4C) was agreed at a Jobs Summit convened by President Ramaphosa in November 2018. Section 1.7 of the Framework Agreement focused on the Just Transition and states that: “Social Partners agree that a statutory body should be established under the Presidency in the form of a Presidential Climate Change Coordinating Commission (PCCCC) to coordinate and oversee the Just Transition, including how to maximise the opportunities for jobs, including the quantity and quality of jobs. This body could be accommodated in the recently released Climate Change Bill” (RSA 2018). By June 2020, the P4C had not yet been established and the Climate Change Bill was still delayed due to the COVID pandemic.

The P4C will be a statutory body, overseeing the just transition. Once a national vision for a just transition has been adopted based on a good draft (NPC 2019), the P4C should take over. The P4C will have a major coordination function, across all three tiers of government and working closely with communities, labour and business. The P4C would need to relate to communities in Mpumalanga, labour (COSATU, SAFTU), local municipalities, CoGTA and SALGA; business leadership in South Africa, National Treasury, DEFF and many others. There is great potential – to promote pro-climate industrial action plans, policies that create employment, social plans (including those developed by communities in Mpumalanga, interfacing with Eskom’s work on a social plan), drawing on sectoral jobs resilience plan – including, but not limited to coal, and overseeing the funding of development projects through the JT Fund. Yet a detailed design of an institution that needs to manage transformative change has not been undertaken (or not in the public domain). Thematic focus areas would include energy (and particularly electricity), social plans, finance and industry. Specific work programmes need to be defined – not top-down, but by the local communities.

A significant limitation of this case study is that it has not examined the governance of the just transition. Some initial thoughts are offered in this section, above, but this topic would benefit from a dedicated research effort of its own.

2.2

Ownership models for renewables

The JT Fund is instrumental in enabling a “grand bargain” that results in structural reform of the electricity supply sector. This in turn leads to ‘Crowding in’ a portion of 10 GW of RE capacity over 10 years. The transaction will create blended finance for large-scale RE (wind, solar PV, perhaps also CSP?), mostly grid connected.

RE industrialization programme

In terms of wider economic benefits, a renewable energy infrastructure build programme could drive an industrialisation programme and bring some localisation of the technology value chain. Renewable power plants typically have lifespans of 20-30 years, and an infrastructure build plan of say between 2-3 GW per year could provide a significant amount of ongoing production and operational jobs.

The development of a renewables manufacturing industry will require the state's commitment to continuous and long-term deployment of renewables. Localisation of the renewable energy development value chain would be considered an important element of the transition (Overy 2018). The potential for localised job creation is already in evidence in the REI4P, and this suggests that there could be new employment opportunities for current coal sector employees and other job seekers. For example, an Mpumalanga official reports that more than 100,000 job losses are expected in only two municipalities in the Nkangala Districts, not counting other associated sectors. The establishment of a renewables manufacturing plant in this area may serve to offset some of these losses.

Analysis of the employment impacts of expanding electricity generation in SA through renewables build programmes finds significant job creation benefits, as well as the need for skills training and education (Hartley et al. 2019). This research was based on the electricity generation mix predicted to meet the

projected growth in energy demand and the predicted decommissioning timeline of coal power plants in the country by 2050 (*ibid*). It finds that in SA, electricity generation build programmes with higher shares of renewables are shown to lead to the highest net employment figures, despite a decline of 35-40% in coal jobs between 2020 and 2050 (Hartley et al. 2019). Jobs in renewable power generation are concentrated in the services, construction and manufacturing sectors (*ibid*). Across scenarios for different rates of renewables build, around 70% of new power-sector jobs associated with renewable energy are categorised as highly skilled, defined as workers with an educational attainment level above Grade-12, - although employment is also created in other skill groups (Hartley et al. 2019).

Significantly, the research indicates that renewables build programmes can create employment opportunities in almost all sectors – including the mining sector, which experiences a net increase in employment despite job losses in coal mining (*ibid*). Impressively, the employment impacts of renewables reach beyond the renewables programmes alone and could create up to 1.6 million additional jobs economy-wide by 2050 (Hartley et al. 2019). Yet large overall employment benefits at national scale in the long-term do not address the immediate concerns of those whose livelihoods are lost in a phase out of coal.

Ownership matters

In the context of a just energy transition, social / community / municipal ownership models that are smaller in scale and provide distributed generation may be an important factor in creating broad support for electricity infrastructure transformation. Proposals to privatise electricity supply face resistance from labour unions. Reasons for this include, fears that private corporations would take control of national assets, and the opinion that the energy transition is more efficiently handled under a single vertically integrated electricity entity (Anon 2019). Furthermore, the REIPPPP has been criticised for falling short of providing productive opportunities for local communities (*ibid*).

Referring back to our second research question, “what institutional innovation in ownership models would support renewable energy, both in terms of buy-in and scale?”.

What might constitute institutional innovation?

Institutional innovation would overcome barriers to the provision of social and community level benefits. These might include, but not be limited to, the provision of affordable electricity, revenues, or socio-economic development, for example infrastructure and capital for economic enterprise or community services, particularly in those areas affected by mine closures and coal plant closures.

2.2.1 Renewable energy ownership models – drawing on international experience

International experience provides examples of renewable energy ownership arrangements. Table 6 below includes a summary description of models that may be suitable in SA from the international literature. The models are assessed on the basis of perceived transferability and benefits at the local level in the SA context in relation to a JT.

Most renewable energy ownership models for municipalities and communities require institutional arrangements with municipalities and, or the national electricity utility. The ownership models are listed in according to the anticipated level of municipal involvement, from most to least.

TABLE 6

Renewable energy project ownership models for municipalities and communities, examples from international literature

Ownership arrangement	Description	Level of municipal involvement	Suitability in South Africa	Institutional innovation	Societal / community implications / benefits
A. Long Term Power Purchase agreements					
<p>Municipalities or municipal utilities can enter guaranteed off-take agreements called Power Purchase Agreements (PPAs).</p> <p>Developer installs and operates an energy project for a fixed revenue stream, typically over a 15-25 years.</p> <p>The PPA reduces perceived business risk and lowers the cost of capital investments, resulting in better returns for the developer and a lower-than-retail price of energy for the municipality.</p> <p>PPAs are typically delivered on a Design, Build, Operate and Transfer basis, so that ownership transfers from the energy generator developer to the off-taker municipality or municipal utility at the PPA's expiry.</p>	<p>A. On-site PPAs</p> <p>Municipal governments can enter on-site PPAs, e.g. the developer installs and operates solar PV panels on the rooftops of city-owned buildings which are to be powered by them. Excess supply can be sold to the utility through a feed-in-scheme and excess demand can be bought from the utility.</p> <p>B. Off-site PPAs</p> <p>The city can also enter off-site PPAs with an off-site clean energy generator to buy clean energy for one of the city's facilities.</p>	<p>Municipalities/municipal utilities would require:</p> <ul style="list-style-type: none"> › strong credit-rating score to enter a PPA, failing which, they may be required › to secure guarantees from a superseding government structure or › pledge assets as collateral to the developer and its financiers. › resources to acquire or commission good transactions advice to negotiate fair risk allocation in these long-term binding agreements, and understand the implications for their credit ratings. 	<p>PPAs are suitable for municipalities with the required credit rating and resources to acquire or commission good transactions advice.</p> <p>The transaction costs of PPAs are such that is worthwhile only for contracts of several megawatts, so municipalities and their utilities are likely the smallest units of organisations to enter renewable PPAs anywhere.</p> <p>For example, the City of Johannesburg was unable to enter a bilateral PPA with a developer for a municipal waste to energy project because it failed a regulatory value-for-money test: the energy tariff was higher than Eskom's average electricity price, the developer entered a PPA (20 year Build Own Operate Transfer) with the national utility Eskom and the municipal utility under the REI4P for a with a profit-sharing agreement with the municipality. The developer will transfer ownership of the plant to the municipality at the expiry of the PPA (Franks et al. 2015).</p>	<p>Municipal utilities.</p> <p>Municipality or municipal utility sets up wheeling agreements.</p> <p>National utility – municipality - developer PPA that provides profit-sharing for the municipality and transfers ownership at the end of the project.</p> <p>Success relies on competitive electricity tariffs, i.e. on Eskom tariffs being higher than historically set by NERSA.</p>	<p>Municipal control of electricity supply may:</p> <ul style="list-style-type: none"> › Overcome reliability problems and lower tariffs through competition. › Municipal ownership of the RE plant at the end of the PPA. › Potential municipal revenue through profit-shares. › No community ownership.

Source: Own table, created from literature review contribution by Vivid Economics

TABLE 6 [continued]

Ownership arrangement	Description	Level of municipal involvement	Suitability in South Africa	Institutional innovation	Societal / community implications /benefits
	<p>C. Sleeved and aggregated sleeved PPAs</p> <p>Municipalities without utilities can enter 'sleeved PPAs' when they are unable to contract clean energy directly in their area.</p> <p>The municipality will enter a PPA with the renewable energy generator and simultaneously enter a linked PPA with its incumbent utility.</p>	<p>The utility manages the offtake of power from the generator and takes management fees to credit the renewable generator electricity supply against the municipal demand requirements (Hedges 2017).</p> <p>To defray the costs of the long negotiation period to document sleeved PPAs, can create a consortium of multiple buyers of sleeved PPAs, (aggregated sleeved PPAs), e.g. Boston has with 19 other USA cities (GeoCode International UG 2017:19).</p>	<p>The high level of complexity and transactions costs associated with sleeved PPAs in unnecessary because South African cities have access to sources of renewable energy for near-proximity generators.</p>	<p>Not suitable because transaction has high level of complexity and high costs.</p>	
	<p>D. Synthetic/virtual PPAs</p>	<p>Municipalities can also enter "synthetic" or "virtual" PPAs when they are unable to directly contract renewable energy in their area.</p> <p>The generator in another part of the world exchanges the floating revenues it earns from selling its energy on the spot market for fixed payments from the municipality or consortium of municipalities (Gurch 2017).</p>	<p>Requires an accessible spot market or access to foreign markets.</p> <p>High transaction costs for complex contract to be able to calculate the risk of being "out of the money" in these contracts-for-difference.</p> <p>Unnecessary high cost because South African municipalities do have opportunities for directly contracting renewable energy in their areas.</p>	<p>Not suitable because transaction has high level of complexity and high costs.</p>	

TABLE 6 [continued]

Ownership arrangement	Description	Level of municipal involvement	Suitability in South Africa	Institutional innovation	Societal / community implications /benefits
B. Lease model / PAYGo leases					
<p>The municipal utility/business plans, installs, finances and maintains a household renewable energy generator.</p> <p>The customer makes a fixed regular periodic payment to the municipal utility/business over a term ranging from 6 months to 8 years in the case of most PAYGo leases (Lighting Global et al. 2020) to 20 years in higher-income contexts (Irvine, Sawyer, and Grove 2012). The customer operates the generator at their own liability.</p> <p>This model is called a lease model in USA and Germany (C40 Cities 2018; GeoCode International UG 2017), and the PAYGo model in a developing world context (correspondence with an off-grid advisor at Tetra Tech, 17 March 2020).</p>	<p>Lease-to-own Ownership transfers to the customer upon completion of the contract term</p> <p>Operating lease Ownership remains with the utility/business, which dismantles the system upon the contract end.</p> <p>This does not involve any upfront investment costs for an operating lease in this, the most popular version of the lease model in Germany (market size is EUR 3.4B). Ownership remains with the municipal utility/business.</p> <p>By contrast, in the developing world context, deposits are a common feature of PAYGo contracts. PAYGo contracts provide more flexibility than regular lease contracts, allowing customers to upgrade or downgrade the amount of power and energy they purchase from one month to the next (correspondence with advisor to the CEO of BBOX, 17 March 2020).</p> <p>The PAYGo nano-grid: The commercial business installs a renewable energy generator base station in a house at the centre of a village. In return for keeping the equipment safe, the dwellers of the house receive electricity without charge. The generator serves c.50 homes and businesses via aerial cabling up to 200 metres away. Each customer's electricity use is metred (MeshPower Rwanda 2020).</p> <p>Ownership remains with the solar energy vendor.</p>	<p>Germany (GeoCode International UG 2017);</p> <ul style="list-style-type: none"> › Municipalities can offer feed-in-tariffs for on-grid houses with leased renewable generators, as several have in South Africa (Strydom and Morar 2018); and › Local governments can subsidise the daily PAYGo rate that lower-income households pay (Romisher 2019). 	<p>Options in SA:</p> <p>Household owner occupant Approximately 35% of South Africans own their own dwelling (de Villiers 2019).</p> <p>Household landlord sub-lease to tenants. Landlords could enter lease-to-own arrangements with the municipal utilities/business and sublease the renewable energy generators to their tenants on an operating-lease basis.</p> <p>Pay as you go (PAYGo) leasing. A PAYGo model with mobile money, may initially not perform well in SA for the reason that mobile money does not have wide uptake (unlike in rural areas in East Africa (Lighting Global and Vivid Economics 2019)). SA companies MTN only relaunched its mobile money service in South Africa this year and Vodacom shut down this service in 2016 (MyBroadband 2020; Shapshak 2018).</p> <p>Feed-in-tariffs facilitate the use of the lease model in on-grid municipal settings such as in Germany and the USA. The South African utility Eskom does not seem to cater a feed-in-tariff for households (Strydom and Morar 2018), but some municipalities do.</p> <p>In the Western Cape, nine municipalities have piloted / are piloting feed-in-tariffs for households. The Western Cape has the most solar rooftop installations (301) of the nine provinces (Strydom and Morar 2018).</p> <p>The Eastern Cape has one municipality with an approved feed-in-tariff and has the second most installations (154) (Strydom and Morar 2018).</p>	<p>Lease or PAYG institutionalisation. Feed-in-tariffs.</p>	<p>Lease to own model: ownership transfers to the customer upon completion of the contract term;</p> <p>OR</p> <p><i>No upfront investment costs for an operating lease and ownership reverts to developer at the end of lease.</i></p>

TABLE 6 [continued]

Ownership arrangement	Description	Level of municipal involvement	Suitability in South Africa	Institutional innovation	Societal / community implications /benefits
Prepaid renewable generators with tax incentives (B2C)	Customers pay the upfront cost of a solar system, but do not own it. They receive electricity with maintenance and warranties covered by the installing company for the lifespan of the system and receive tax credits over the first few years (Irvine et al. 2012).	Tax incentives spread over a number of years are key to this model's attractiveness to customers, so either the municipality, provincial or the federal state need to be able to offer these.	Suitable for wealthy citizens / organisations. This model depends on state tax credits to be attractive for those who are able to afford the upfront cost as well as feed-in-tariffs for household units.	Setting up of feed-in schemes. Tax credits exist for businesses under Sections 12B and 12L of South Africa's Income Tax Act (Western Cape Government 2017), rather than for households.	
Sale-and-lease back of citizen-owned renewable power plant model to the municipal utility	Citizens <i>pay for and own solar panels in a plant</i> (Wien Energie 2020). The utility pays them a regular, fixed payment for leasing the system from the citizen-owners. This model is used in Vienna.	While the Vienna municipality piloted this scheme, there is nothing to stop it from being replicated by commercial businesses.	Wealthier citizens with capital who are looking for an investment with low risk and low-to-medium return could engage in this. Ownership remains with the investors, whom it pays a fixed-monthly income. International crowdfunding is used by a SA company Community Energy for upfront capital for design, build, operate and maintain solar systems for use by schools, property developers and corporates (Community Energy 2020).	Requires innovation / insurance to address risks of theft and vandalism.	

TABLE 6 [continued]

Ownership arrangement	Description	Level of municipal involvement	Suitability in South Africa	Institutional innovation	Societal / community implications /benefits
O&M contracting ('self-consumption model')	<p>A municipal utility / business can install the renewable energy system, <i>owned by the household / multi-occupancy building / institutional owner of buildings</i>, and is contracted to perform maintenance (GeoCode International UG 2017).</p> <p>The household / building(s) consumes some and sells some electricity back to the municipal utility/business through <i>net-metering, net billing or feed-in schemes</i> (C40 Cities 2018).</p> <p>This model can work in new multi-occupancy buildings either with direct wires or with smart metres.</p>	Municipal utilities act as competition to commercial businesses in this model.	<p>Applicable for wealthier citizens with the capital to buy their own renewable generators, or, in the case of new multi-occupancy residential buildings, stand-alone segments of a generator owned by themselves and their fellow apartment owners.</p> <p>The model can also be used for where the municipality is the customer, as the City of Durban is for five of its city-owned buildings.</p>	<p>Setting up of net-metering, net billing or feed-in schemes for community set-ups.</p> <p>Institutional innovation to provide start-up capital for poorer communities.</p> <p>Potential for creating small revenues to fund towards start-up capital for new projects.</p>	
Energy performance contracting by households from a municipal utility or businesses	<p>The municipal utility/business sells energy savings by acting as a hired project manager. It designs, develops, finances and manages <i>the energy savings project by retrofitting customers' buildings and installing and integrating renewable energy systems and equipment owned by its customers</i>.</p> <p>It is paid by the household from the energy savings realised (C40 Cities 2018; GeoCode International UG 2017) in fixed monthly payments.</p>	Municipal utilities act as competition to commercial businesses in this model.	<p>Not applicable for poor communities / households with low electricity consumption.</p> <p>This service would best serve high energy consumers (industry and high-income and large households, since electricity demand is strongly correlated with household income and dwelling size (Ye et al, 2018)).</p> <p>The model may be boosted by tax deductions for businesses for energy efficiency under Section 12L of South Africa's Income Tax Act (Western Cape Government 2017).</p>		

TABLE 6 [continued]

Ownership arrangement	Description	Level of municipal involvement	Suitability in South Africa	Institutional innovation	Societal / community implications /benefits
<p>'Community energy' projects</p> <p>Community initiatives to bring renewable energy into their neighbourhood usually require minimal involvement from public entities but can be boosted through municipal support.</p> <p>(3) Social enterprises and civil societies</p>	<p>In the UK, the main sources for the necessary upfront capital for projects up to £200,000 are community shares and for larger projects are loans (Braunholtz-Speight et al, 2020).</p> <p>Community shares are non-transferable, withdrawable shares in a society with an asset lock, applied in the UK to societies with at least £10,000 in share capital and at least 20 members (Community Shares Unit 2018). The operating social enterprises or organisations are often run by no more than three full-time staff with the assistance of dozens of (local) volunteers.</p>	<p>Municipalities or the national utility or municipality can encourage community projects through price guarantee schemes, such as FiTs (as is the case with majority of UK community projects).</p> <p>Alternatively, municipalities could incentivise the public sector to enter into long-term electricity contracts with community-led providers (Braunholtz-Speight et al, 2020).</p>	<p>In the South African context, not-for-profit social enterprises can play the role of running renewables projects that provides community shares.</p> <p>Lifeline Energy is an example of a not-for-profit social enterprise in Cape Town that produces electricity from solar and wind energy. It uses the generated electricity to power radios and MP3 players for educational purposes (Lifeline Energy 2020). The produced energy is used for the device only, hence this scheme does not depend on FiTs or other price guarantees.</p> <p>Municipalities in South Africa have started piloting FiTs with success.</p>		
<p>Community-led tender supported by tax incentives and non-profit technical assistance</p>	<p>Communities pool their finances and time to tender for a contractor to install renewable energy generators at their homes (Irvine et al. 2012). Ownership rests with the participating households.</p> <p>This approach benefits from volume discounts, builds confidence in the choice of contractor and the associated price, and overcomes customer inertia.</p>	<p>The City of Portland (USA) provided community organising, technical assistance, project management and rebates for community-led tenders of household rooftop PV panels (Irvine et al. 2012)</p>	<p>South African municipalities would need to identify neighbourhood leaders to organise community schemes.</p>	<p>Rebates for community-led tenders to overcome the lack of financial capital in communities.</p> <p>Institutional capacity to resource and support communities.</p>	

2.2.2 Renewables ownership in the Just Transition

2.2.2.1 A role for Eskom?

Eskom might partner with municipalities or communities. An Eskom-partnership of this nature is being piloted at Lynedoch EcoVillage near Stellenbosch in the Western Cape. This micro-grid system was installed in 2016 by the Eskom's Research, Testing and Development Laboratory network (Bloem 2019). The embedded system consists an array of an array of a twenty-seven resident household embedded photovoltaic (PV) solar system array, inclusive of smart meters (Bloem 2019). Initial assessment of this experimental pilot suggests useful learnings for developing this option for sustainable 'intentional' communities (*ibid*). A role for local government. Municipalities may have a role to play in in enabling or participating in arrangements for community ownership.

2.2.2.2 Community ownership

This section is based on a report published by Project 90by2030, a South African environmental and social justice movement. A number of models have been proposed with the intention that a significant level of ownership is social or community in nature. The table below focuses on variations of what is termed 'community energy' project in Table 6's list of ownership models in international literature.

The models for community ownership are assumed to fall in one of two generation categories. The first is community owned small-scale embedded generation (SSEG), for example in low- income apartment blocks or in "solar farms" with localised energy distribution (Overy 2018). This option includes as actors, community members and the municipal utility. Sources of finance would need to be identified and a protocol settled on for identifying beneficiaries (*ibid*). Project maintenance models and ownership and executive control agreements would need to be careful consideration and negotiation (*ibid*). The second is the community-owned mini-grid (*ibid*). Communities might be energy self-sufficient or supply the municipal or national utility. Participating communities would require significant support to develop technical capacity, understanding of regulations and to secure funding (*ibid*).

TABLE 7

Renewables ownership models for communities

Ownership models	Actors	Funding options	Examples and assessment of their benefits for communities
The open investment model allows individuals and small businesses hold junior participation rights in the form of shares or credit.	Private RE developers Individuals Small businesses hold junior participation rights in the form of shares or credit	› investment	International example exists in Germany. Junior investors have no say in the running of the project. Investors are located anywhere, so it's not a driver for local benefits.
The community benefit or compensation model is driven by private RE developers and structured to benefit local community members affected by the project.	Private RE developers Local community	› developer owned	International example exists in England. Community benefit payments are voluntary, and amounts are questioned. No community control Benefits fund community projects; schools and education/ training, and environment and heritage
The community connected model or the split-ownership model . Developers are legally required to offer ownership rights to community members.	Develops Community members	› Developer or municipal utility offers ownership rights to community members	International example exists in Denmark. Community do not acquire decision-making rights. Benefits dispersed to share-holders only, not to wider community
A for-profit community-based model established by community members.	Community investors	› investment	International examples exist in USA and Germany. Profits are returned to investors. Benefits are not widely dispersed to the community
In the not-for profit community-based model, the ownership set-up can vary. It returns revenues to further cooperative and/or community development.	cooperatives, community trusts or non-profit enterprises	› membership fees › investment options › sliding scale tariffs that subsidise poor homes	International examples exist in Spain, Denmark, Brazil. These projects provide welfare benefits, e.g. investment in local projects, free energy for participants in financial difficulties

2.3

Conclusion

This case study set out to explore how climate finance-policy packages can transform SA's energy infrastructure and ensure a just transition in SA's electricity sector. Two sub-questions were put forward in the Introduction (see section 1.4). What catalytic role might international climate finance have in the SA electricity sector in crisis, a climate crisis that requires the accelerated phase out of coal globally and the triple challenge of unemployment, poverty and inequality? And what institutional innovation in ownership models would support renewable energy, both in terms of buy-in and scale?

On the second question, we found that community ownership is critical to buy-in, with two types being community owned small-scale embedded generation and community-owned mini-grids. Significant institutional innovation is needed in a context historically dominated by a vertically integrated utility, Eskom, that had a monopoly on electricity supply. We also found possibilities for institutional innovation within Eskom – and the crises of climate, debt and a post-COVID world may unblock long-standing resistance to serious reform of the state-owned enterprise.

An important area for further research includes a focus on Mpumalanga, with only initial considerations outlined in this case study. Piloting models of community ownership requires a bottom-up, community- and locally-driven process in the province. We also point to the need to co-develop a funding strategy with local communities, workers and municipalities, which could provide guidance of the JT Fund's spending on development projects.

Turning our attention from the local to the global. Can learnings from a transition transaction in SA be applied in other countries? The UCT team would be very interested in exploring this question in relation to research on just transition in Germany, the EU, Brazil, India, and Indonesia (if the respective partners are interested). We would expect that some lessons might be applicable, while other factors will be context-specific. On the latter, we would expect to see more similarities in countries with high coal dependence and socio-economic risk in an energy transition (India, Indonesia, other countries with coal-dominated energy sectors – Germany, Poland). The implications of pre-salt oil in Brazil may also be of interest, though the commodity is significantly more volatile in its prices and these are determined internationally, unlike coal. There will be differences in institutional arrangements (e.g. structures of utilities). Many countries are starting just transition processes, and that would be a desirable condition to undertake a case study. In different contexts, international climate finance could accelerate the phase out – or avoid new building of – fossil fuel energy supply. How the just transition for affected communities and workers will be funded is likely a common concern. The European Green Deal includes significant provision for distributing funding within the Union. The Amazon Fund has historically funded REDD+. The JT fund in South Africa would fund development projects in Mpumalanga. What can we learn from these approaches?

The just transition transaction would be a globally significant financial transaction to accelerate the phase out of coal-fired power plants in South Africa. If realised at the scale of \$11 billion, it is expected to be the “largest and most significant global climate finance transaction to date” (Davie 2019). Beyond the transaction itself, what are the implications for climate finance? And particularly our understanding of international climate finance? If the finance relates to coal, is it still climate finance?

The answer on the last question is yes, in a dynamic context. While international climate finance under the UNFCCC has typically funded incremental costs of renewable energy and other technologies funding the *phase-out* of coal and potentially other fossil fuels is an important new focus. The approach to international climate finance under the Paris Agreement aims to make financial flows consistent with low-emissions and climate-resilient development pathways (see 1.4.3 above). Renewable energy technologies, especially wind and solar PV, are now least-cost in many countries, including South Africa. Projects are bankable, and do not need concessional finance. In these cases, there are now incremental benefits rather than incremental costs. **Just transition transactions, we propose, are a way of implementing Article 2 of the Paris Agreement.** Further thinking is needed on how to make finance flows consistent with a pathways towards low greenhouse gas emissions and climate-resilient development.

The just transition transaction represents a shift to funding the phase out of coal. One element is that international climate finance supports the additional costs of accelerating decommissioning.

The transaction is not funding the 'legacy debt' of existing coal-fired power stations. Other means of paying those debts are needed, as distinguished in section 2.1.2.2 above. Funding the faster decommissioning of coal does contribute to financial sustainability, by enabling access to capital markets. The extent to which coal-fired power will be funded depends on global financial markets and trends in divestment. By 2019, over a hundred global financial institutions having indicated that they would exit coal (Buckley 2019). The South African context with chronic operational and structural issues, including state capture, had particular historical factors shaping legacy debt. Further research might investigate to what extent other coal phase out programmes face the issue of legacy debt.

For the transition to be just, no-one can be left behind. This applies first and foremost to the affected communities and workers, both in terms of assistance in relation to their existing livelihoods (see 1.3.3) and creating new livelihoods including ownership of renewable energy systems (see 2.2). The JT Fund in this case study of South Africa is a concrete example of funding the socio-economic transition costs. The impacts on local government and particularly the most vulnerable municipalities, will require a major socio-economic process. Some affected individuals and households may migrate to other provinces. Management of the transition will require more than studies (including this one) and a facilitated process.

COVID-19 will require all countries to take up more debt. Countries that have no fiscal space will require debt relief or forgiveness (see 1.2.2 above). Since the just transition transaction can assist with financial sustainability, we postulate that such transactions will become highly relevant in the post-COVID world.). The financial architecture of the JTT includes blending international and domestic finance and spending on development in a manner that promotes social justice. Some modifications may be needed to account for even more 'negative' fiscal space and to address the health and socio-economic impacts of the pandemic. Yet broadly speaking, the JTT design seems well suited to promote a greening of a 'red', socio-economically focused rescue-and-recovery package. This is an opportunity for international climate finance to be relevant to the major challenge to socio-economic development that the world is facing in 2020, and for an unknown time into the future.

Is the climate finance for a just transition transaction always international? In the case study for South Africa, the concessional component plays a critical role, but it crowds in what is expected to be a larger (two-thirds) component of domestic commercial finance. Is finance at the scale required for just transitions always blended - international and domestic, concessional and commercial? Are there other and possibly better models of financing a just transition?

Transitions do not take place instantly. Existing generation needs to be kept running and grid stability maintained. Support for the transition towards more decentralised, smart grids is needed.

On the first sub-question, the case study demonstrates that international climate finance as part of a just transition transaction in South Africa can have a catalytic role. This finding should be understood in a nuanced sense, in that it is clear that ICF on its own is not sufficient, the finance is blended with domestic commercial funding. Much as a catalyst is not the only element in a reaction but works only with reagents in a chemical reaction, ICF can be catalytic by changing other elements. In this understanding, ICF is no 'silver bullet' nor does it resolve all the problems in SA's electricity sector. That said, the JTT, if realised at the scale being discussed, can have a catalytic effect on the accelerated phase out of coal and thus make a very large contribution to mitigation in the country. The emission reductions are partly direct, with fewer GHG from coal-fired plants being decommissioned, but also indirect (or catalytic) by 'crowding in' renewable energy. Renewable energy technologies are increasingly competitive and thus do not require public funding – in particular, 'green finance' for wind and solar PV is commercial finance. The JTT plays a catalytic role as transition finance. As the downward pressures on investment in fossil fuels by global financial institutions are starting to reduce investment in coal in SA, and as 'green finance' is scaling up, transition finance is needed to make the change – notably decommissioning coal-fired power plants faster – and to keep the system going, notably the transmission grid. Last but perhaps most important in the SA context – the JTT is catalytic in responding to the triple challenge of unemployment, poverty and inequality. The JTT could make climate action something that is supported by poor communities, workers and local authorities in Mpumalanga, changing it from a concern by a few middle-class environmental activists to a broadly supported programme. In this sense, our answer to a component of the research question (see 1.4) is positive.

In summary, the just transition transaction potentially redefines what we mean by (international) climate finance.

References

- AIDC. 2020. *The PIC, Eskom Debt & Financing a Just Energy Transition*. Cape Town, South Africa.
- Alfreds, Duncan. 2018. 'Greenpeace Hammers NUMSA over IPP Interdict'. *News24*, March 14.
- ANA reporter. 2017. 'NUM to Protest over Eskom Plans to Phase out Coal-Powered Stations'. *The Citizen*, March 6.
- ANA reporter. 2018. 'Eskom Expresses Pride on Improved Access to Electricity'. *Business Report*,.
- Anon. 2019. *Deep Transition: Delving into Social and Economic Justice in Transitions to a Climate-Responsive Economy*.
- Baker, Lucy, Jesse Burton, Catrina Godinho, and Hilton Trollip. 2015. *The Political Economy of Decarbonisation: Exploring the Dynamics of South Africa's Electricity Sector*. Energy Research Centre, University of Cape Town.
- Bloem, Sharné. 2019. 'Assessing the Sustainable Infrastructure of a Low Carbon Community: Lynedoch EcoVillage Case Study'. Stellenbosch University.
- BS. 2020. 'Covid-19 Impact: Moody's Cuts South Africa's Credit Rating to Junk Status. 28 March'. *Business Standard*.
- Buckley, Tim. 2019. *Over 100 Global Financial Institutions Are Exiting Coal, with More to Come*.
- Burkhardt, Paul. 2019. 'South Africa Burdened by Utility's near \$35 Billion Debt Load'. *Bloomberg*, May 15.
- Burton, Jesse A. S. 2011. *The Role of Industrial Policy in Pursuing Climate Change Mitigation Objectives in South Africa: Industrial Energy Demand and the Minerals-Energy Complex in Post-Apartheid South Africa. Publishable Paper (Summary of MSc Thesis)*. Energy Research Centre, University of Cape Town.
- Burton, Jesse, Tara Caetano, and Bryce McCall. 2018. *Coal Transitions in South Africa: Understanding the Implications of a 2°C-Compatible Coal Phase out Plan for South Africa*.
- Burton, Jesse, Tawney Lott, and Britta Rennkamp. 2018. 'Sustaining Carbon Lock-in: Fossil Fuel Subsidies in South Africa'. Pp. 229–245 in *The politics of fossil fuel subsidies and their reform, chapter*, edited by J. Skovgaard and H. Van Asselt. Cambridge: Cambridge University Press.
- Burton, Jesse, Andrew Marquard, and Bryce McCall. 2019. *Socio-Economic Considerations for a Paris Agreement-Compatible Coal Transition in South Africa. Policy Paper for Climate Transparency*. Energy Research Centre, University of Cape Town.

- C40 Cities. 2018. *Clean Energy Business Model Manual*. London.
- Clark, Alix. 2001. 'Implications of Power Sector Reform in South Africa on Poor People's Access to Energy: Lessons for Africa'. in *Proceedings of the African high-level regional meeting on energy and sustainable development for the ninth session of the Commission*.
- Cloete, Karl and Dinga Sikwebu. 2020. 'Outcry against Cosatu's Call to Use State Pensions to Save Eskom Muddies Waters: Plan's Weakness Is Focus on Saving Power Utility Rather than on Guiding and Financing Energy Transition'. *Business Day*.
- Cock, Jacklyn. 2019. 'Resistance to Coal Inequalities and the Possibilities of a Just Transition in South Africa'. *Development South Africa* 36(6: Inequality in South Africa):860–73.
- Cohen, Michael Mike. 2019. '\$11 Billion Green-Energy Initiative Takes Shape in South Africa'. *Bloomberg*, September 16, 9–12.
- Collocott, Charles. 2019. 'Recent ANC Comments on Prescribed Assets for Financial Institutions – Brief II of II'.
- Community Energy. 2020. 'Affordable Solar Energy Powered through Your Local Community'. *Community Energy Website*.
- Community Shares Unit. 2018. *Community Shares Handbook*. Community Shares.
- COSATU. 2001a. 'Eskom Conversion Bill. Press Statement'. http://www.Cosatu.Org.Za/Press/2001/Eskom_Conversion_Bill--29005.Html.
- COSATU. 2001b. 'Submission on the Electricity Restructuring. Submitted to the Minerals and Energy Portfolio Committee'.
- COSATU. 2016. 'A Just Transition to a Low-Carbon and Climate Resilient Economy: COSATU Policy on Climate Change - a Call to Action'.
- COSATU. 2020. 'Key Eskom and Economic Intervention Proposals'.
- COSATU, NUM, NUMSA, and SAMWU. 2005. 'Submission on the Electricity Regulation Bill (B29 – 2005 (Reintroduced))'.
- Creamer, Terence. 2019. 'Technical Defects at Medupi and Kusile Resulting in Serious Underperformance'. *Engineering News*, February 1.
- Creamer, Terence. 2020. 'Eskom Gearing up to Run Philosophy Maintenance "as a Project" Following Covid-19 Hiatus'. *Engineering News* 1 April.
- Cunliffe, Guy Edward, Christian Holz, Kennedy Liti Mbeva, Pieter Pauw, and Harald Winkler. 2019. *Comparative Analysis of the NDCs of Canada, the European Union, Kenya and South Africa from an Equity Perspective*. Energy Research Centre, University of Cape Town.
- Davie, Kevin. 2020. 'Trying to Fix Eskom While Being Kept in the Dark'. *Daily Maverick*, February 19, 1–13.

- Davis, Mark and Grové Steyn. 1998. *Electricity in South Africa*. London: Financial Times Energy.
- DME. 1998. 'White Paper on Energy Policy for South Africa'.
- DMRE (Department of Mineral Resources and Energy). 2019. 'Integrated Resource Plan 2019'. 98.
- DoE. 2019. 'Integrated Resource Plan (IRP 2019). Government Gazette No. 42784. October'.
- DoE (Department of Energy). 2011. 'Integrated Resource Plan for Electricity, 2010-2030. Government Gazette No. 34263 6 May 2011'.
- DPE. 2019. 'Roadmap for Eskom in a Reformed Electricity Supply Industry. Department of Public Enterprises'.
- Eberhard, Anton. 2000. *Competition and Regulation in the Electricity Supply Industry in South Africa*. University of Cape Town.
- Eberhard, Anton. 2005. 'From State to Market and Back Again: South Africa's Power Sector Reforms'. *Economic and Political Weekly* (10 December):5309–17.
- Eberhard, Anton. 2011. *The Future of South African Coal: Market, Investment and Policy Challenges. Working Paper #100*. Stanford: Program on Energy and Sustainable Development.
- Eberhard, Anton and Catrina Godinho. 2017. *A Review and Exploration of the Status, Context and Political Economy of Power Sector Reforms in Sub-Saharan Africa, South Asia and Latin America. MIR Working Paper*. Cape Town: Graduate School of Business, University of Cape Town.
- Ellis, J., H. Winkler, J. Corfee-Morlot, and F. Gagnon-Lebrun. 2007. 'CDM: Taking Stock and Looking Forward'. *Energy Policy* 35(1).
- ENCA. 2017. 'Protesting Truck Drivers Block Major Highways into Pretoria'. March 1.
- Eskom. 2000. *ELI South Africa Report*. Sandton: Eskom RDSM.
- Eskom. 2012. 'International Benchmarking of Electricity Tariffs. Research Report by LTE Energy'.
- Eskom. 2019a. *Eskom Group Annual Results for the Year Ended 31 March 2019*. Eskom Holdings.
- Eskom. 2019b. *Integrated Report*. Sandton: Eskom Holdings.
- Eskom. 2020. *Affirmation That Record Requested Does Not Exist (Promotion of Access to Information Act No 2 of 2000, Section 23) - Kendal Compliance Enquiry. Letter by B McCourt of Eskom to T Lloyd Centre for Environmental Rights. 28 April Refreence Number: PAIA 0087*. Megawatt Park, Sandton.
- Eskom. n.d. 'ESKOM 2000 - 2008 - Our Recent Past - "Shift Performance and Grow Sustainably"'. Retrieved 4 March 2020 (<http://www.eskom.co.za/sites/heritage/Pages/2000.aspx>).

- Fine, Ben and Zavareh C. N. 330. 96. FINE Rustomjee. 1996. *The Political Economy of South Africa : From Minerals-Energy Complex to Industrialization*. London: C. Hurst.
- Franks, Lana, Megan Euston-Brown, Aurelie Ferry, and Sofja Giljova. 2015. *City of Johannesburg Municipal Landfill Gas to Electricity Grid-Tied Project*. Johannesburg.
- Friederike, E. L. Otto, Wolski Piotr, Lehner Flavio, Tebaldi Claudia, Oldenborgh Geert Jan van, Hogesteegeer Sanne, Singh Roop, Holden Petra, S. Fučkar Neven, C. Odoulami Romaric, and New Mark. 2018. 'Anthropogenic Influence on the Drivers of the Western Cape Drought 2015–2017'. *Environmental Research Letters* 13(12):124010.
- GeoCode International UG. 2017. *New Business Models for Municipalities in the Electricity and Energy Sector*. Pretoria.
- Gordhan, Pravin. 2020. 'Interview: Public Enterprises Minister Pravin Gordhan. Interview by Chris Yelland'. *Daily Maverick*, March 5.
- Green, A. 2003. *Credit Guarantee Schemes for Small Enterprises: An Effective Instrument to Promote Private Sector-Led Growth?*, *The United Nations Industrial Development Organization (UNIDO) Working Paper No. 10, August 2003*.
- Gurch, Matthew J. B. 2017. 'Financing Projects with Virtual PPAs'. *Norton Rose Fulbright Website*.
- Harari, Yuval Noah. 2020. 'The World after Coronavirus'. *Financial Times*.
- Hartley, Faaiqa, Jesse Burton, Guy Cunliffe, Bryce McCall, Tara Caetano, Ntombifuthi Ntuli, Ruan Fourie, and Lehlogonolo Chiloane. 2019. 'Future Skills and Job Creation through Renewable Energy in South Africa: Assessing the Co-Benefits of Decarbonising the Power Sector. Doi: 10.2312/lass.2019.009'. in *COBENEFITS study*, edited by A. Okunlola, D. Jacobs, N. Ntuli, R. Fourie, S. Borbonus, L. Nagel, and S. Helgenberger. Pretoria and Berlin: Council for Scientific and Industrial Research and Institute for Advanced Sustainability Studies.
- Hausman, Ricardo. 2020. *COVID-19 Macro-Economic Consequences for Developing Countries. Presentation at Webinar, 2 April*. Centre for Development and Enterprise.
- Hedges, Andrew. 2017. 'Corporate Renewable PPAs: A Framework for the Future?' *Norton Rose Fulbright Website*.
- Hess, David J. 2018. 'Energy Democracy and Social Movements: A Multi-Coalition Perspective on the Politics of Sustainability Transitions'. *Energy Research and Social Science*.
- Van Horen, Clive and Gillian Simmonds. 1998. 'Energy Efficiency and Social Equity: Seeking Convergence'. *Energy Policy* 26(11):893–903.
- ILO. 2015. *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All*.
- IMF. 2020. 'Response to COVID-19: Questions and Answers'.

- IPCC. 2018. 'Global Warming of 1.5°C An IPCC Special Report on the Impacts of Global Warming of 1.5°C above Pre-Industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change',. *Intergovernmental Panel on Climate Change* 1–32.
- Ireland, Gregory and Jesse Burton. 2018. *An Assessment of New Coal Plants in South Africa's Electricity Future: The Cost, Emissions, and Supply Security Implications of the Coal IPP Programme*. Cape Town: Energy Research Centre, University of Cape Town.
- Irvine, Linda, Alexandra Sawyer, and Jennifer Grove. 2012. *The Solarize Guidebook: A Community Guide to Collective Purchasing of Residential PV Systems*. Second. Portland: National Renewable Energy Laboratory.
- Kapika, Joseph and Anton Eberhard. 2013. *Power Sector Reform and Regulation in Africa: Lessons from Kenya, Tanzania, Uganda, Zambia, Namibia and Ghana*. Cape Town: HSRC Press.
- Kartha, Sivan, Michael Lazarus, and Maurice Lefranc. 2005. 'Market Penetration Metrics: Tools for Additionality Assessment?' *Climate Policy* 5(2):147–65.
- Köhler, Jonathan, Frank W. Geels, Florian Kern, Jochen Markard, Elsie Onsongo, Anna Wieczorek, Floortje Alkemade, Flor Avelino, Anna Bergek, Frank Boons, Lea Fünfschilling, David Hess, Georg Holtz, Sampsa Hyysalo, Kirsten Jenkins, Paula Kivimaa, Mari Martiskainen, Andrew McMeekin, Marie Susan Mühlemeier, Bjorn Nykvist, Bonno Pel, Rob Raven, Harald Rohracher, Björn Sandén, Johan Schot, Benjamin Sovacool, Bruno Turnheim, Dan Welch, and Peter Wells. 2019. 'An Agenda for Sustainability Transitions Research: State of the Art and Future Directions'. *Environmental Innovation and Societal Transitions*.
- Latour, Bruno. 2005. *Reassembling the Social - An Introduction to ANT*.
- LegalBrief. 2018. 'Court Action Delays IPP Contract Signing'. LegalBrief Environmental. Retrieved 14 May 2020 (<https://legalbrief.co.za/diary/legalbrief-environmental/story/court-action-delays-ipp-contract-signing-3/print/>).
- Leibbrandt, Murray and Vimal Ranchhod. 2017. *A Review of the Economics of Income Inequality Literature in the South African Context*. Cape Town: Programme to Support Pro-Poor Policy Development and Department of Planning, Monitoring and Evaluation.
- Lifeline Energy. 2020. 'About Lifeline Energy'. *Lifeline Energy Website*.
- Lighting Global, GOGLA, ESMAP, IFC, World Bank, Vivid Economics, and Open Capital. 2020. *Off-Grid Solar Market Trends Report 2020*. D.C.
- Lighting Global and Vivid Economics. 2019. *Pay-As-You-Go Market Attractiveness Index 2019*. D.C.
- Mailovich, Claude. 2020. 'The PIC Would Invest Only in "Credible" Business Case for Eskom'. *BusinessLive*.

- Makgetla, Neva. 2020. *Opening the Economy. Where Are We Now? Presentation*. Tshwane: Trade & Industrial Policy Strategies.
- Makgetla, Neva, N. Maseko, Gaylor Montmasson-Clair, and M. Patel. 2020. 'Sector Jobs Resilience Plan: Coal Value Chain. Proposals Commissioned by Department of Environment, Forestry and Fishers and Department of Trade, Industry and Competition'.
- Marquard, Andrew. 2006. 'The Origins and Development of South African Energy Policy'. University of Cape Town.
- Martin, Brenda and Harald Winkler. 2014. *Procurement Models Applied to Independent Power Producer Programmes in South Africa*. Energy Research Centre, University of Cape Town.
- Mbeki, Thabo. 2006. 'Address of the President of South Africa, Thabo Mbeki, on the Occasion of the Budget Vote of the Presidency: National Assembly, Cape Town, June 7, 2006.'
- Mboweni, Tito. 2019. *Budget Speech by the Minister of Finance. 20 February*. Cape Town: National Treasury.
- Mboweni, Tito. 2020a. *Budget Speech by the Minister of Finance. 26 February*. Cape Town: National Treasury.
- Mboweni, Tito. 2020b. *Remarks by Minister of Finance, Mr Tito Mboweni, during the Media Briefing to Outline R500bn Economic Support Package. 24 April*. Pretoria: National Department of Health.
- Meridian Economics. 2020. 'The Role of Transition Finance for Climate Mitigation: A Just Climate Transaction for South Africa'.
- MeshPower Rwanda. 2020. 'How It Works'. *MeshPower Rwanda Website*.
- Michaelowa, Axel, Lukas Hermwille, Wolfgang Obergassel, and Sonja Butzengeiger. 2019. 'Additionality Revisited: Guarding the Integrity of Market Mechanisms under the Paris Agreement'. *Climate Policy* 1–14.
- Mpumalanga Provincial Government. 2011. *Climate Change Declaration: Adopted at Summit at Ehlanzeni District Municipality, 7 October*. Nelspruit: Department: Economic Development and Tourism, Mpumalanga province.
- Mpumalanga Provincial Treasury. 2018. *Economic Growth and Development Perspectives. Presentation to the Select Committee on Finance*. Cape Town: Parliament of the Republic of South Africa.
- Mtshweni-Tsipane, Refilwe. 2020. 'State of the Province Address by the Premier of Mpumalanga Province on 25 February 2020'.
- MyBroadband. 2020. 'MTN Launches Mobile Money in South Africa'. *BusinessTech*, January.
- Naidoo, Prinesha. 2020. 'South Africa Eligible for \$4.2 Billion in Emergency IMF Funds'. *Bloomberg*, April 21.

- National Treasury. 2019a. 'Budget Review'.
- National Treasury. 2019b. 'Medium Term Budget Policy Statement'.
- Nkambule, Nonophile P. and James Blignaut. 2012. 'The External Costs of Coal Mining: The Case of Collieries Supplying Kusile Power Station'. *Journal of Energy in Southern Africa* 23(4):85–93.
- NPC. 2011. 'Our Future - Make It Work: National Development Plan 2030'.
- NPC. 2019. '2050 Vision and Pathways for a Just Transition to a Low Carbon, Climate Resilient Economy and Society. Draft Proposal Version Two, October. National Planning Commission'.
- NUMSA. 2012. '11th National Congress Resolutions on "Building a Socially-Owned Renewable Energy Sector in SA". Resolution Adopted by the National Union of Metalworkers of South Africa in 2012.'
- Overy, Neil. 2018. *The Role of Ownership in a Just Energy Transition*. Cape Town.
- Pickering, Mark. 2010. *Towards an Independent System Operator for South Africa. Prepared by Meridian Economics*. Energy Research Centre, University of Cape Town.
- Piemonte, Cécilia, Olivier Cattaneo, Rachel Morris, Arnaud Pincet, and Konstantin Poensgen. 2019. *Transition Finance: Introducing a New Concept*. Paris.
- Piketty, Thomas. 2013. *Capitalism in the Twenty-First Century*. Paris: Éditions du Seuil and Harvard University Press.
- Public Protector. 2016. *State of Capture. Report No. 6 of 2016/17*. Pretoria.
- Ramaphosa, Cyril. 2019. *Statement of H.E. President Cyril Ramaphosa of South Africa Handed to the United Nations Secretary-General on the Occasion of the Climate Summit, 23 September 2019*. New York: Republic of South Africa.
- Ramaphosa, Cyril. 2020. *Statement by President Cyril Ramaphosa on Further Economic and Social Measures in Response to the COVID-19 Epidemic*. Tshwane: Union Buildings.
- Rambharos, Mandy. 2020. 'Personal Communication, Eskom Just Transition Office'.
- Rennkamp, Britta. 2019. 'Power, Coalitions and Institutional Change in South African Climate Policy'. *Climate Policy* 1–15.
- Rennkamp, Britta, Sebastian Haunss, Kridtiyaporn Wongsas, Araceli Ortegad, and Erika Casamadrid. 2017. 'Competing Coalitions: The Politics of Renewable Energy and Fossil Fuels in Mexico, South Africa and Thailand'. *Energy Research & Social Science* 34:214–223.
- Riekert, Johannes W. and Steven F. Koch. 2012. 'Projecting the External Health Costs of a Coal-Fired Power Plant: The Case of Kusile'. *Journal of Energy in Southern Africa* 23(4):52–66.

- Roberts, Simon. 2005. 'Industrial Development and Industrial Policy in South Africa – a Ten Year Review'. in *South African Economic Policy under Democracy: a 10-Year Review*. University of Stellenbosch.
- Romisher, Joshua. 2019. 'Former PAYGo CFO: Smart Subsidies Can Scale Energy Financing'. *CGAP Blog*.
- Rosemberg, Anabella. 2010. 'Building a Just Transition: The Linkages between Climate Change and Employment'. *International Journal of Labour Research* 2(2):125.
- RSA. 2000. *Promotion of Access to Information Act (Act No 2 of 2000)*. *Government Gazette 20852 of 3 February 2000*. Cape Town: Parliament.
- RSA. 2011. 'National Climate Change Response White Paper. Government Gazette No. 34695, Notice 757 of 2011'.
- RSA. 2015. 'South Africa's Intended Nationally Determined Contribution (INDC). Online 25 September 2015'.
- RSA. 2016. 'South Africa's Nationally Determined Contribution (NDC). 1 November'.
- RSA. 2018. 'Presidential Jobs Summit: Framework Agreement. 4 October'.
- de Ruyter, Andre. 2020a. 'Addressing the R450bn Question of Eskom's Shaky Relationship with Nersa. Interview with Chris Yelland (Part 4)'. *Daily Maverick*, April 23.
- de Ruyter, Andre. 2020b. 'Eskom Boss on Restructuring Needed to Meet Future Vision. Interview with Chris Yelland (Part 1)'. *Daily Maverick*, April 16.
- SA-CRM. 2013. 'The South African Coal Roadmap. Technical Report (Technical Work by The Greenhouse)'.
- Sannino, Annalisa and Yrjö Engeström. 2018. 'Cultural-Historical Activity Theory: Founding Insights and New Challenges'. *Cultural-Historical Psychology*.
- SCF. 2018. 'Biennial Assessment and Overview of Climate Finance Flows. Technical Report'.
- von Schirnding, Y. E. R., D. Yach, and M. Klein. 1991. 'Acute Respiratory Infections as an Important Cause of Childhood Deaths in South Africa'. *South African Medical Journal* 80(2).
- Schneider, Lambert. 2009. 'Assessing the Additionality of CDM Projects: Practical Experiences and Lessons Learned'. *Climate Policy* 9(3):242–54.
- Schneider, Lambert, Maosheng Duan, Robert Stavins, Kelley Kizzier, Derik Broekhoff, Frank Jotzo, Harald Winkler, Michael Lazarus, Andrew Howard, and Christina Hood. 2019. 'Double Counting and the Paris Agreement Rulebook'. *Science*.
- Scholtz, Louise, Tatjana Von Bormann, Louise Naudé, Khodani Mulaudzi, Tracey Davies, and Steve Nicholls. 2019. *Deep Transition: Delving into Social and Economic Justice in Transitions to a Climate-Responsive Economy. Report to the Lewis Foundation • Phase 1, August 2019*.

- Shapshak, Toby. 2018. 'How Mobile Money Continues To Boom In Africa'. *Forbes*, November.
- Smith, Samantha. 2017a. *Just Transition: A Report for the OECD*.
- Smith, Samantha. 2017b. *The Imperative of a Just Transition*.
- Sovacool, Benjamin K., Jonn Axsen, and Steve Sorrell. 2018. 'Promoting Novelty, Rigor, and Style in Energy Social Science: Towards Codes of Practice for Appropriate Methods and Research Design'. *Energy Research & Social Science* 45:12–42.
- State Capacity Research Project. 2017. 'Betrayal of the Promise: How South Africa Is Being Stolen'.
- StatsSA. 2019. 'Inequality Trends in South Africa: A Multi-Dimensional Diagnostic of Inequality'.
- StatsSA. 2020. 'Quarterly Labour Force Survey. Quarter 4: 2019. Statistical Release 11 February 2020'.
- Steyn, G. 2000. *A Competitive Electricity Market for South Africa: The Need for Change and a Strategy for Restructuring South Africa's Electricity Supply Industry*. Pretoria: for the Department of Minerals & Energy.
- Steyn, Grové. 2000. *A Competitive Electricity Market for South Africa: The Need for Change and a Strategy for Restructuring South Africa's Electricity Supply Industry*. Pretoria.
- Steyn, Grové, Jesse Burton, and Marco Steenkamp. 2017. *Eskom's Financial Crisis and the Financial Viability of Coal-Fired Power in South Africa: Implications for Kusile and the Older Coal-Fired Power Stations*. Cape Town: Meridian Economics.
- Strydom, Adel and Geeta Morar. 2018. 'Rooftop Solar: While Municipalities Focus on Feed-in Tariffs, a Much Larger Problem Persists'. *Sustainability Institute*.
- Swilling, Mark. 2020. 'Judgment Date with Judge Dennis Davis, Episode 1: Mark Swilling'. *Daily Maverick*.
- Treasury, National. 2020. 'Briefing by National Treasury on the Financial Implications of COVID-19 on Both the Economy and Budget. Joint Standing Committee and Select Committee of Finance and Appropriations, Parliament of South Africa. 30 April '.
- Tyler, Emily. 2019. 'Just Transition Transaction, South Africa. Presentation by Meridian Economics at. Financing the Future Summit. 10-11 September. Cape Town, South Africa.'
- Tyler, Emily and Grové Steyn. 2019. 'A Transformative Just Transition Climate Transaction for South Africa'.
- UN. 2015. 'Resolution Adopted by the General Assembly on 25 September 2015: Transforming Our World: The 2030 Agenda for Sustainable Development. A/RES/70/1 (Sustainable Development Goals - SDGs)'.

- UNFCCC. 1992. 'United Nations Framework Convention on Climate Change'.
- UNFCCC. 2015a. 'Decision 1/CP.21, Document FCCC/CP/2015/10/Add.1'.
- UNFCCC. 2015b. 'Paris Agreement. Annex to Decision 1/CP.21, Document FCCC/CP/2015/10/Add.1, 29 January 2016'.
- de Villiers, James. 2019. 'This Is the Share of South Africans Who Now Own Property'. *Business Insider South Africa*, May.
- Webster, Edward and Sakhela Buhlungu. 2004. 'Between Marginalisation and Revitalisation? The State of Trade Unionism in South Africa'. *Review of African Political Economy*.
- Western Cape Government. 2017. 'Clean Energy Tax Incentives'. *Energy Security Game Changer*.
- Wien Energie. 2020. 'Citizen Power Plants'. *Wien Energie Website*.
- Winkler, H., R. Spalding-Fecher, J. Sathaye, and L. Price. 2001. 'Multi-Project Baselines for Potential Clean Development Mechanism Projects in the Electricity Sector in South Africa'. *Journal of Energy in Southern Africa* 12(4).
- Winkler, Harald. 2018. 'Reducing Inequality and Carbon Emissions: Innovation of Developmental Pathways'. *South African Journal of Science* 114((11/12): Art. #a0294):7.
- Winkler, Harald. 2019. 'How Can We Reduce Inequality and Carbon Emissions at the Same Time? For a Fair Move towards Renewable Energy, the Livelihoods of Workers and Communities Dependent on Coal Must Be Addressed'. *Business Day*.

Appendix:

Comparison of JTT and PIC proposals with possible synergies

In the main report, the just transition transaction was compared to COSATU proposal to use pension funds from the Public Investment Corporation. Table 6 lists the similarities and differences between the two tables in more detail. A version of this table was discussed in a meeting on 18 March 2020, facilitated by Harald Winkler for the UCT team (the meeting was originally planned as an in-person seminar at UCT, but due to the coronacrisis, it was held virtually). The meeting was attended by participants working closely on both proposals and others with an interest. The Chatham House Rule applies and no statements are attributed. The UCT team had prepared an earlier version of the table. The column on 'possible synergies' was added subsequently.

This section has examined some differences between the JTT and PIC proposals. It has also pointed to similarities and possible synergies. The two proposals fund different parts of the overall problem of 'Eskom debt'. More acute divides over unbundling can still allow restructuring to be defined around an ITSMO and support for renewable energy. The JTT would provide a source of funding for development projects that is a share of a large deal. Very concretely, there is common cause about funding development projects in Mpumalanga, and providing assistance to workers and communities, so that no-one is left behind. Looking beyond the proposals to actors supporting them, a coalition can be built in support of a just transition.

TABLE 8

Comparison of JTT and PIC proposals: Similarities, differences and possible synergies

	Just Transition Transaction (JTT)	Public Investment Corporation (PIC)	Possible synergies
	PROPOSAL (central ideas)		Areas where the proposals and their supporters could work well together
Central proposal	<p>JTT funds additional costs of decommissioning coal and just transition</p> <p>International climate finance provides concessional part of blended finance to accelerate phase out of coal. Concessional part flows into just transition fund, for development projects.</p> <p>Does not directly fund repayment of loans, but enables access to capital markets and keeps Eskom solvent as it decarbonises</p>	<p>PIC fund provides other means of repaying loans</p> <p>Invest PIC funds to repay loans, sourced primarily from Public Investment Corporation (PIC), which oversees the Government Employees Pension Fund (GEPF)</p>	<p>Funding two different parts of total Eskom debt – PIC directly for repaying loans, JTT indirectly providing access to capital markets</p>
Key conditions	<p>Accelerated phase down coal fired power stations and unbundling Eskom</p> <p>(Meridian Economics 2020)</p>	<p>“A commitment by government that it will not be privatised.</p> <p>That no worker will be retrenched.” (COSATU 2020)</p> <p>Reskilling and redeployment of workers under a just transition (Merton 2020b)</p> <p>No explicit phase out of coal, beyond conversion of coal to gas at end of plant life.</p> <p>Discussion of restructuring of Eskom would focus on criminality and worker ownership (of a utility via government, and for renewable energy by social owned RE)</p>	<p>Unpacking restructuring</p> <p>JT Fund could support reskilling of workers and transition costs for communities where coal power plants are closed down</p>

<http://www.saldru.uct.ac.za/income-comparison-tool/>

TABLE 8 [continued]

	Just Transition Transaction (JTT)	Public Investment Corporation (PIC)	Possible synergies
Diagnosis of main problem	Governance and institutional structure Coal risks: large debt of Eskom's existing coal fleet, and new coal risky investment in carbon-constrained world (already happening, more so in future)	Corruption and criminality Corporatization of Eskom, having it operate as a private company has contributed - (AIDC)	
Just transition	Central to concept (Meridian Economics 2020; Tyler 2019)	Mentioned in COSATU proposal "A Just Transition plan be developed and implemented for workers at power stations and coal mines reaching the end of their life spans and their host communities, in particular Mpumalanga, Limpopo and the Eastern Cape." (COSATU 2020) More detailed explanation in earlier document (COSATU 2016)	Just transition is common cause. JT benefits workers, communities, climate. Coalition can be built in support
Coal phase out - timing	<i>Accelerated</i> phase out of coal, i.e. faster retirement of coal-fired power plants	Coal phase out only at end of life, no retrenchments.	
Technical analysis by	Meridian Economics (Meridian Economics 2020; Tyler 2019) but distinct from Eskom Sustainability Task Team	Alternative Information & Development Centre (AIDC 2020), but distinct from Cosatu	
FINANCE – TECHNICAL			
Scale of debt to be addressed	\$ 11 bn (Meridian Economics 2020; Ramaphosa 2019) ZAR 200 bn @ R18.2/\$ (exchange rate volatile)	R250 bn Reduce Eskom debt from R450 bn to R200bn ... social compact between govt, PIC and DFIs (COSATU 2020)	

TABLE 8 [continued]

	Just Transition Transaction (JTT)	Public Investment Corporation (PIC)	Possible synergies
Concessional component	ZAR72 bn (\$4bn) – no published estimates, assume concessional part is smaller than commercial (\$7 bn)	<p>All of it?</p> <p>Extend loan based on “surplus resources” of GEPP at zero or below market (AIDC 2020)</p> <p>GEPP, but also development finance institutions, Unemployment Insurance Fund (UIF) (Davie 2020).</p> <p>R 6 bn interest free loan from ‘haircut’ on Eskom bonds (see below)</p>	
Concessional rate	<p>X % below market rates</p> <p>For every percentage point, ZAR 0.64 billion / year</p>	0% “or below market interest rates” with condition on transforming Eskom (AIDC 2020)	
Vehicle for financing	<p>Blended finance vehicle (BFV)</p> <p>To 1) make finance available to Eskom at attractive rates; and 2) release concessionary amount s.t. performance on CO2 intensity (Meridian Economics 2020)</p> <p>[Eskom Sustainability Task team also separately proposed a SPV]</p>	Special purpose vehicle (SPV) (COSATU 2020) would be used to restructure Eskom’s debt, aiming for sustainable level (Davie 2020)	
Type of finance	<p>Blended - combines domestic and international; commercial and concessionary loans</p> <p>domestic commercial loans (in ZAR)</p> <p>international climate finance at concessional rates (in \$, subordinated) (Tyler 2019)</p> <p>Backed by DFIs and private banks (Cohen 2019).</p>	7% of the R2.2-trillion managed by the PIC (Mailovich 2020) on behalf of the Govt Employees Pension Fund (GEPP)	
Flow of funds	Donors funds flow into BFV, which lends debt finance to Eskom	Probably give public money directly to Eskom Treasury	

TABLE 8 [continued]

	Just Transition Transaction (JTT)	Public Investment Corporation (PIC)	Possible synergies
	WHO PAYS (BACK) ?		
Repaying loan	<p>BFV repays senior commercial tranches and sub-ordinated concessionary tranches</p> <p>BFV lends on to Eskom – debt finance (Tyler 2019);</p> <p>So Eskom has to repay, which assumes it becomes financially viable again or part of it (ITSMO)</p>	<p>Even at 0%, principal has to be repaid. “critical to understand that this is not a blank cheque or a donation” (COSATU 2020)</p>	<p>While the language differs, there is consensus that loans have to be repaid. Differences about interest at some rate or zero.</p>
Electricity tariffs		<p>R250bn is stranded even with Eskom’s proposed tariff increase, and NERSA awarded less.</p> <p>Tariffs are too low even if Eskom were perfectly efficient, and it is clearly not efficient, and much of the money is being stolen and misspent. but giving them more money under these circumstances will not fix the problems of under investment in maintenance, cost-plus mines, or now in new plant</p>	<p>Structural issue for both proposals</p>
	SOCIAL AND INSTITUTIONAL		
Social compact	<p>Not explicitly, but could build on NPC Vision for JT</p> <p>Summit should happen ‘soon’ – delayed to March 2020 and then post-COVID</p>	<p>“COSATU’s approach is based upon a social compact, where all parties from government to labour, business and society make a contribution and where necessary, a sacrifice for the sake of the national interest.” (COSATU 2020)</p>	<p>Social compact for vision of a just transition must include Eskom, unions, and all stakeholders</p>

TABLE 8 [continued]

	Just Transition Transaction (JTT)	Public Investment Corporation (PIC)	Possible synergies
Institutional home	Will have to be carefully chosen, possibly DBSA	“DFIs” (COSATU 2020), i.e. Development Finance Institutions Development Bank of Southern Africa (DBSA) and Industrial Development Corporation (IDC) (AIDC 2020) New Development Bank?	DBSA could be supported
Funding JT – detailed proposal	JT Fund – receives part of concessional portion, over time. As above, ZAR 0.64 billion / year for each percentage point		at 3%, close to R2 bn / year for development projects in Mpumalanga – should be supported by all
Are pensions at risk?	If Eskom fails, and whole economy and all pensions are at risk. JTT aimed at Eskom not going down.	AIDC and others argue that pensions are not at risk, as GEPP changes as part of the 1994 negotiations from a pay-as-you-go scheme to fully funded. 108% funded, above legal requirement of 90%, so even if all withdrew – not plausible – sufficient funds (AIDC 2020; Brown 2020) GEPP can take ‘hair-cut’ on existing Eskom bonds without risk (AIDC 2020) (see below) Changed, because PIC investments in JSE lost 20-30% of value with COVID;	Post-COVID, pensions at risk. Synergy in protecting what is possible.

TABLE 8 [continued]

	Just Transition Transaction (JTT)	Public Investment Corporation (PIC)	Possible synergies
CLIMATE ACTION			
Explicit mention of climate change / crisis / emergency	Integral, and specific “77% of SA’s greenhouse gas emissions are from energy; ~40-45% from electricity” (Meridian Economics 2020)	COSATU mentions in relation to electric vehicles, and public and private investment in RETs locally, 4 provinces, helping workers whose jobs are at risk (COSATU 2020) AIDC section on ‘Lead South Africa on a path towards a just transition away from fossil fuels’ (AIDC 2020)	Common support, difference in how explicit the support is in specific proposal. Synergy
Accelerated coal phase-out	Yes, core to climate finance	Claims that research shows natural attrition requires no retrenchments; if decommissioning “goes too fast, retrenchments will take place”; if too slowly, younger workers eventually retrenched (AIDC 2020; Swilling 2020) Difference between decommissioning and shut-down	
IMPLICATIONS FOR ELECTRICITY SECTOR			
Propose unbundling of Eskom	Yes, into Gx, Tx and Dx Suggests that ITSMO can become financially viable Absence of transaction manager in Eskom is part of problem	Not unbundling, importance of public ownership Eskom should have role in renewables (AIDC Eskom research, forthcoming)	
SUPPORTING AND OPPOSING ACTORS AND COALITIONS AND THEIR IDEAS			
Key proponents	President (statement to UNSG Summit) (Ramaphosa 2019) Eskom Sustainability Task team ? (no longer meets)	COSATU – interventions to ANC NGC (COSATU 2020)	

TABLE 8 [continued]

	Just Transition Transaction (JTT)	Public Investment Corporation (PIC)	Possible synergies
Support expressed by	Individuals labour: Economic Justice (Neil Coleman); business: some – Assoc of Savings and Investment of SA; Eskom – CEO; Finance – Minister Mboweni	Pravin Gordhan, Tito Mboweni, Cyril Ramaphosa; some economists (Mkhabela 2020)	
Other conditions (beyond 'core' conditions above)		Plus: Audit Eskom contracts and expenditure, seize looted assets, dismiss mismanagers, coal suppliers and IPPs reduce prices, Eskom generate RE, debt recovery plan from munics etc, reduce management size, reskill workers, representation on Eskom Board (COSATU 2020)	

