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SAM TAMBANI RESEARCH INSTITUTE

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QUARTERLY RESEARCH REPORT

Where is the “Just” in the Just Energy Transition Financing Plan?

South Africa's JET-IP and Organisation Labour's Concern about Privatisation

Profit-Shifting in South Africa's Mining Industry: Pointers and Remedies for Trade Unions

An Assessment of the Feasibility of Renewable Independent Power Producers (IPPs)



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For inquires contact:

Ms Lerato Mathibedi • Email: Leratom@satri.org.za • Tel: 010 593 7238

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Where is the “Just” in Just Transition Financing Plan?

Examining South Africa’s Just Energy Transition Investment Plan (JET-IP)

Sinenhlanhla Sithole



The energy transition is ongoing and in South Africa, as it unfolds, the transition is continuously met with new demands from different stakeholders. The consensus among trade unions and workers in South Africa is that the transition should be “just”. From a trade union perspective, for the energy transition to be considered “just” it should entail social dialogue with all concerned parties, should provide for social protection, guarantee rights at work, protect jobs, and should create jobs. The pre-requisites of the energy transition justness should happen concurrently. The most recent development in South Africa’s energy transition is the country’s enacting an investment plan which has been baptised as the Just Energy Transition Investment Plan (JET-IP). Given the many actors and interest groups in energy transition in the country, it is important that the workers’ constituency be on the lookout that the “just” element in the energy transition is maintained. Against this background, this paper critically examines the JET-IP in the context of supporting the just energy transition based on the “just” pre-requisites of workers. It is observed that the plan does not, based on its prescriptions, adequately address the key demands of organised labour in achieving a just energy transition. The paper provides an overview of South Africa’s journey on the just transition thus far and thereafter highlights the key aspects of the JET-IP. The paper discusses how the JET-IP finance is reflective of organised labour’s demands for a Just Energy Transition. Based on the findings, the paper recommends more inclusivity in terms of stakeholder engagement as well as various social protection measures for affected workers and communities. Localisation and less prioritisation of private interests is recommended.



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Introduction and Background

The call to heed climate change by shifting power generation in South Africa's energy sector from dirty fossil fuel energy generation to cleaner, greener energy generation using renewables has been intensified. This is in a bid to reduce carbon emissions. South Africa has shown its commitment to reducing its carbon footprint through the Nationally Determined Contributions (NDCs). South Africa's first NDC was communicated under the Paris Agreement in 2016. The Paris Agreement seeks to halt the increase in global temperature to 1.5 degrees above pre-industrial levels, which is a challenging goal. There have been calls to consider both 1.5 and 2 degrees (COP 17, Durban 2011); however, countries under the Paris Agreement NDC are allowed to determine their own mitigation targets (PCC, 2021). To this end, South

Africa submitted its NDCs in 2020, prior to COP26 in Glasgow in 2021. The commitment was to reduce emissions within a range of 420-350Mt carbon dioxide by 2030. Both these numbers are reflective of the 1.5 degrees and 2 degrees' global temperature goals, respectively, in the sense that if South Africa reduces emissions within its set target range, then it would have achieved its global temperature goals. However, very key to achieving these goals is the availability of financial support for transitioning to lower carbon technologies (SA JETIP, 2022).

As a result, various governments have partnered up with South Africa by pledging funds in the form of loans, donations, grants, and investments to assist the country to accelerate the decommissioning of their coal-fired power stations and replace them with renewable energy (JETIP 2022; Presidency, 2022; European Commission, 2022). As stated above,

various governments have pledged an initial support of \$8.5 billion to South Africa to achieve its transition goals in the short term (2023-2027). Ideally, this show of support from the international community should assist South Africa to achieve one of the central demands of the Just Energy Transition of leaving no worker and community behind. Moving towards cleaner forms of energy generation is likely to lead to job losses in particular sectors and could create new forms of inequality for those that stand to be impacted. Leaving no one behind is, therefore, critical to a just energy transition as it considers the need for those communities and workers that are exposed to the changes to have safeguards in place. The UNFCC report (2023) stresses the importance of countries having just transition and economic diversification policies that are inclusive and based on social dialogue and stakeholder engagement to ensure that no one

is left behind. Social dialogue is in line with labour demands of what constitutes a Just Energy Transition.

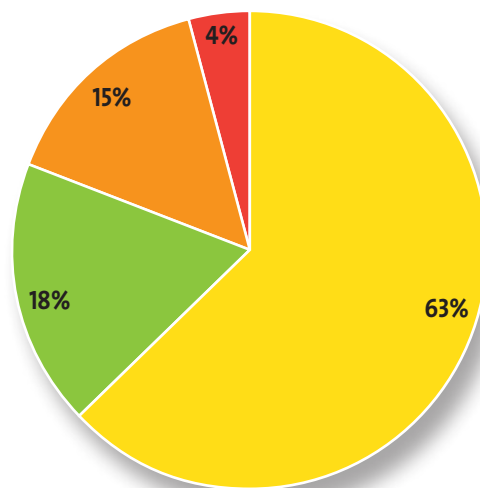
Based on its prescribed pace and intended goals in the short term (2023-2027), organised labour has rejected the JET-IP, citing that it does not align with the basic demands of social protection and employment protection and creation in the long term. Trade unions under COSATU, in their submission to the PCC on the JET-IP, explicitly stated that: “We demand that the JET-IP be taken directly to NEDLAC for a line-by-line negotiation with all stakeholders; with all the details relating to existing and proposed financial documents to be shared” (COSATU 2023). This is a clear indication that labour does not accept the document in its current form, as it was presented to the country. Below, the JET-IP and its financial prescriptions will be detailed. The argument will then be made that this Investment Plan will only exacerbate and not alleviate the already existing socio-economic issues the country faces - which organised labour is seeking to avoid with this energy transition.

What is the JET-IP and what are its Financial Prescriptions?

Unveiled by the South African president at a special virtual meeting of the PCC (Presidency, 2022), the Just Energy Transition Investment Plan (JET-IP) is a national plan aligned to the country’s NDC targets which outlines the country’s Just Energy Transition path. It was drafted by the Presidential Climate Financial Task Team (PCFTT) which was established by President Cyril Ramaphosa in February 2022. The plan, according to the PCC (2022), seeks to ensure increasing energy security, address the risks of climate change, boost economic growth, and create quality jobs. Other aims include improving energy access for poor households and promoting local manufacturing

and beneficiation (JET-IP, 2022). The JET-IP is set out for a five-year period from 2023-2027 and highlights mainly the scale of investment required to achieve a climate resilient, low carbon economy in line with NDC targets. The scale of investment is estimated at \$8.5bn from governments who have all made a political declaration to support South Africa’s ambitious emission reduction targets. The financial support comes in the form of concessional and commercial loans, grants, and financial guarantees. It is, however, currently unknown how much of this pledge is securely in the hands of the South African government. As a result, COSATU (2023) has made a call for all agreements signed under the \$8.5bn JET-IP to be published in

the opportunity to foster industrial development, innovation, and economic diversification through the anticipated new opportunities that would come from transitioning to a low carbon economy. This is also a key consideration for organised labour in that a Just Transition in energy should grant those that stand to be affected the necessary social protections through promotion of sustainable development as espoused in the country’s National Development Plan (NDP). This means ensuring that there are adequate safeguards and guarantees in place to ensure job security and economic diversification for the workers and communities affected, in an attempt to sustain livelihoods. Below is the financial allocation as highlighted in the JET-IP:



● Grants ● Concessional Loans ● Commercial Loans ● Guarantees

Graph 1: Financial breakdown of \$8.5bn

full. A majority of the funds are being mobilised towards renewable energy in this allocated five-year period, which highlights that the bulk of the new generation investment will come from the private sector (IEJ, 2022).

One commendable aspect of the JET-IP is that it recognises the impacts (direct and indirect) that the energy transition is likely to have on workers, communities, and livelihoods; and it commits to leaving no one behind. This also presents the country with

The chart above highlights that a large chunk of the pledged financial support comes in the form of loans - both concessional and commercial - which are 81% combined, whereas grants only account for 4% (JET-IP, 2022). The table below outlines the financing needs per sector which will be supported by the \$8.5bn from IPG (JET-IP, 2022).

Whilst there is no indication of how much of the \$8.5 billion has already been secured, the above are the

Table 1: Financial allocation of the US\$8.5bn

US\$ Billion	Electricity	NEV (New Electric Vehicle)	GH ₂ (Green Hydrogen)
Infrastructure	6.9	0.2	0.5
Planning and Implementation Capacity	0.7		0.2
Skills Development	0.012		
Economic Diversification and Innovation	0.022		
Social Investment and Inclusion	0.016		

Source: South African Presidency 2022

identified funding needs towards the country's Just Transition in the five-year period - 2023-2027.

How Reflective is the JET-IP of Organised Labour Demands?

Organised labour demands for a Just Transition as per ILO (2018) guidelines are that it should be reflective of social dialogue. This allows all social partners that will be impacted by the transition to have a voice in how it should unfold, to uphold their interests. Another demand is that for social protection where safeguards are put in place for workers and communities that stand to be impacted by changes brought about by the transition. Other demands are that rights at work as well as employment protection and creation be outcomes in the transition.

In aligning these demands to the JET-IP, the first concern is that there was no meaningful social dialogue on the drafting of the plan with stakeholders from organised labour and civil society - despite them offering to form part of the task team. In their submissions to the PCC on the JET-IP, labour and civil society organisations (COSATU 2023 and Life After Coal (LAC) & Fair Finance Coalition Southern Africa (FFCSA) 2023) noted with concern the exclusion of these bodies from the drafting of the JET-IP. LAC & FFCSA (2023) highlight that other stakeholders should have

been involved to form part of the process to co-create and design solutions for advancing a truly just transition for South Africa. COSATU (2023) also noted that meaningful social dialogue could have resulted in the plan not being heavily pro-capital, but this was not the case as labour was excluded from the drafting, formulation, and substantive consultations that led to the published JET-IP draft.

In terms of social protections, the plan is found lacking. For instance, allocations above towards *Social Investment and Inclusion*, *Skills Development*, as well as *Economic Diversification and Innovation* are going to receive a rather small portion of the \$8.5bn dollars. Many people stand to lose jobs should the transition be carried out at the proposed pace of the JET-IP (2023-2027). Re-skilling and up-skilling of workers is insufficiently addressed, especially in the short term. A stronger commitment needs to be made by IPG partners towards skills development at the same scale that jobs will be lost, as only R2.7bn is allocated to skills development. These are key levers towards combating socio-economic impacts of unemployment, poverty, and inequalities; and insufficient funding allocation is pledged on fast-tracking these along with the infrastructure component. The plan should be able to highlight "positive economic, social, and decent work gains" (ILO 2020) as part of its contribution to leaving no

worker and community behind.

Whilst the plan may be able to create employment opportunities through its large commitment (\$6.9bn) to infrastructure, this employment is seasonal as is the case with infrastructure. Once the infrastructure is operational it is not labour intensive, and this is a concern to be addressed by placing safeguards for those who will be affected by this allocation. Furthermore, the plan does not speak to the creation of local markets as manufacturers of renewable energy products. This would have contributed to economic diversification opportunities and employment creation.

Another aspect that deviates from the plan being "just" is that the majority of the climate finance is in the form of loans - and loans cannot be considered climate justice finance, concessional or not. What they do is they exacerbate existing debt and still need to be paid back with interest, regardless of the successes or failures of the projects the money was meant for.

Finally, the overall objective of the JET-IP (2022) as articulated in the president's message is having a low carbon economy, and that the process is one that must address the socio-economic issues of poverty, unemployment, and inequality. This is an ideal that is reflective of organised labour demands; however, the plan makes a contradiction by asserting



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the pace of implementation as accelerated from 2023-2027. This will not allow the country to align itself with the achievement of its “just” goals.

Importance of Directing Finance Towards Socio-Economic Imperatives in the Climate Transition

Due to the already adverse impacts of climate change that the globe is experiencing, there is growing need and urgency to minimise the impacts of climate change. One of the ways in which this can be achieved has been the proposal to fast-track transitions in line with NDC targets that countries have set for themselves to minimise carbon emissions. The fast tracking of these transitions is said to be highly dependent on financial in-flows from the developed world to the developing world. As a result, there has also been growing partnership between the global north and the global south, where the global north is said to have a moral obligation to assist the global south through the facilitation of financial flows of climate finance (Anantharajah & Setyowati 2022:1).

As seen with South Africa’s financial allocations of the \$8.5bn in its JET-IP towards social investment and inclusion and skills development,

there is already lack of investment towards the socio-economic imperatives of the transition. However, in turn, the country through the same investment plan is looking to accelerate the transition through building renewable energy infrastructure whilst the decommissioning of coal-fired power plants continues. This highlights the high inequalities that climate financing is likely to exacerbate in the country’s energy sector through displacement of workers and communities.

The reason that climate financing does not look at prioritising socio-economic imperatives is often because, as seen in the JET-IP through heavy investment in infrastructure, finance is prioritised for large scale projects with a foreseeable return on investment (Anantharajah & Setyowati, 2022). This results in smaller projects and developers being excluded in financial considerations. The ILO (2020:4) further highlights that despite growing availability of climate finance, it barely integrates “social and employment dimensions of climate transition in financing activities.”

For organised labour, this is problematic because one key expectation of a “just” transition is to leave no one behind. However,

studies show that what climate finance does is to tend to maintain or exacerbate existing inequalities in countries where finance is directed. Furthermore, Saul (2019) claims that it is mainly neo-liberal institutions and entities that promote market-based strategies for climate mitigation and adaptation that are the real “winners” of climate finance benefits. ILO (2020) further highlights the importance of ensuring that just transition outcomes are inclusive and fair. All these concerns are a clarion call to align climate finance with socio-economic benefits - where it is not only markets and neo-liberal institutions that benefit, but also the workers and communities that will be impacted by the changes.

Conclusion and Recommendations

In various social dialogue engagements, organised labour has placed forward recommendations on what is likely to make the plan “just”. Below are a few of the recommendations:

- Firstly, it is important to include ALL key actors in any important just transition processes of social dialogue and not only in the last stages where they are required to comment on mature and final documents. This is because these

stakeholders have with their expertise and experience which could contribute to a wholly Just Transition for South Africa.

- The “just” element in the plan is missing. For instance, whilst the plan believes in combating poverty, unemployment, and inequality, it gives no guarantees on what the social protection measures are that will achieve this; nor does it direct finance towards appropriate safeguards. The recommendation is that a full assessment of the jobs that are to be impacted in the affected sectors be done and appropriate safeguards should be put in place to compensate the potential loss of livelihoods. These include social security grants or living wages, reskilling and upskilling to different sectors of the economy for those that can be re-skilled, and early retirement packages for those close to retirement age. The transition to green energy must be made expansive if it is to leave no worker and community behind.

- The plan should also consider local markets to become the manufacturers of renewable energy products - from the raw material phase to finished product phase. This allows for contributions towards beneficiation and economic diversification, leading to new job opportunities for local citizens in new industries.
- The plan is very heavy on the offering of loans to South Africa towards achievement of this accelerated energy transition. With the global north obliged to assist the global south with transitioning due to their culpability of polluting global south countries, the assistance should instead be mainly in the form of grants and donations.
- Finally, the plan should not prioritise private international interests over national interests. It should consider its developmental goals and duty towards citizens and not chart forward a renewable energy path that does not address,

amongst other things, energy poverty.

In conclusion, climate finance has a long way to go, especially towards addressing elements of justice. There are still gaps in investment plans, such as the South African one, as well as case studies from other countries who receive international climate finance. Countries of the global north should consider extending more donations and grants as opposed to loans, and also with very minimal conditionalities if their true aim is to genuinely aid “just” transitions in recipient global south countries. South Africa needs to reconsider some of the aims and objectives in the Just Energy Transition Investment Plan. The plan should be more reflective of relevant social protection measures that will ensure that no one is left behind by adequately addressing the three socio-economic ills of poverty, inequality, and unemployment.

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South Africa's Just Energy Transition Investment Plan and Organised Labour's Concerns About the Privatisation of the Local Energy Sector

Martin Kaggwa



This article assesses South Africa's Just Energy Transition Investment Plan (JET-IP) adopted in November 2022 in the context of trade unions' concerns regarding privatising the local energy sector. Trade unions organising in the mining and energy sectors have been consistent in their stance that although they are not against energy transition to lower emission energy sources, the core responsibility of providing energy to the people should remain in the hands of the State. Energy should continue to be viewed as a public service and a merit service. This cannot happen when the energy sector is privatised, as profit will take precedent over other considerations. From a trade union perspective, it is important to interrogate all interventions that the country embarks on as part of the energy transition, so as to ascertain that these do not lead to energy becoming a private service in the country. The JET-IP happens to be one such interventions. Based on JET-IP underlying assumptions, the amount of funds it has secured and how they are allocated, it is apparent that the JET-IP is geared towards privatisation of the country's energy sector. The article uses content analysis to evaluate the extent to which the provisions of JET-IP may be promoting privatisation of the energy sector in the country, and by extension encouraging the demise of the country's state-owned energy entity - Eskom. A number of JET-IP provisions confirm trade unions' fears that despite the government's assurance that the energy transition will not necessarily be accompanied by the privatisation of the energy sector, this is not likely to be the case. This article recommends that trade unions should lobby and ensure that provisions in the plan that are pro-privatisation are amended, before they can endorse the plan and agree to be part of it.



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Introduction: Trade unions' stance against neo-liberalism and privatisation

Trade unions are a key stakeholder on South Africa's socio-economic development path (Seekings, 200). Apart from being the custodians of workers' interests, they often represent the interests of communities where workers reside. Trade unions are also pivotal in influencing the policy direction of the country in the interest of workers, communities, and the country at large.

The trade union movement perspective, in general, tends to lean towards people-centred development, given their mandate to safeguard

the well-being of workers. Unions in South Africa have, therefore, continued to be vanguards against the exploitive tendencies of neo-liberalism in any form that they may manifest (Desai, 2003) (Narsiah, 2002).

One of the major challenges confronting the world is climate change and its adverse effects on humanity. There are concerted efforts, on a global scale, for everybody including trade unions to be part of initiatives aimed at combating adverse climate change. Specific to South Africa, trade unions are faced with the conundrum of how to embrace the transition to the low carbon emission energy regime in a way that still guarantees

livelihoods to their members, given the significant number of people employed in the country's high emissions value chain (Rathzel, et al., 2018) (Rathzel & Uzell, 2011). It is estimated that more than 500,000 South Africans earn their living, directly and indirectly, from the country's existing high emission energy sector (South African Mining Development Association, 2019).

Unions do recognise the reality and the need to take measures to mitigate climate change through emission reduction, hence they have reluctantly and cautiously participated in the energy transition processes in the country (Rathzel, et al., 2018). However, their apprehension on the energy transition has been

heightened by the neo-liberal undertones of the interventions that are being proposed by South Africa's international partners (Sikwebu & Aroun, 2021). To their dismay, some of these neo-liberal interventions to energy transition have already been accepted by the South African government.

Beyond limiting emissions and subsequently contributing to the noble public good of a favourable climate for mankind, proponents of unqualified energy transition have highlighted other benefits relevant to trade union interests that will result from the transition. Among such benefits is increase in trade in critical minerals, like PGMs, that South Africa has in abundance. It is motivated that increase in trade of such minerals, coupled with the manufacturing of products needed for clean energy generation, has the potential to create jobs to replace those that may be lost in the process (Moyo, 2015) (Borel-Saladin & Turok, 2013). Nevertheless, trade unions are not convinced - given the proposed processes of the transition and how their neo-liberal undertones are likely to lead to opposite outcomes.

Against this background, this paper discusses how these neo-liberal undertones of South Africa's JET-IP have led to trade unions' rejection of the program.

Historical trade union concern about unbundling of Eskom and its privatisation

In 2019 the South Africa government announced that Eskom, the state-owned energy company that was responsible for energy generation, transmission, and distribution, was to be unbundled. The unbundling process involved splitting Eskom into 3 separate entities, that is: generation, transmission, and distribution - under Eskom Holdings (SA Government,

2019). The proposal to unbundle Eskom was made against the backdrop of Eskom facing a number of challenges, the main ones being:

- a) high debt levels,
- b) corporate governance deficit,
- c) potential corruption tendencies and state capture, and
- d) inconsistent power supply.

The rationale for splitting Eskom was that it would lead to specialisation and eliminate inefficiencies that emanated from running a vertically integrated monopolist entity. Architects of the unbundling reasoned that multiple suppliers and modern systems in the country's energy would guarantee efficient energy provision outcomes.

Trade unions vehemently opposed the unbundling of Eskom. The unions observed that the decision to unbundle Eskom did not take into consideration Eskom's core mandate of providing electricity in an efficient and sustainable manner to all the citizens of the country. The decision to unbundle was mainly based on a profit-making motive; it ignored the developmental role of Eskom. Moreover, it was not aligned to the specific problems that Eskom faced.

The National Union of Mineworkers (NUM) and the National Union of Metalworkers of South Africa (NUMSA), the two main unions organising in the energy sector, pointed out that unbundling Eskom would result in job losses, would disadvantage poor workers and vulnerable communities, and that it was just a first step towards privatisation the country's energy sector (News24, 2021).

Specific to poor workers and vulnerable communities, the unions pointed out that the unbundling of Eskom was based on the wrong assumption that each unbundled entity would be able to pay the other, and hence sustain the energy supply

model. The reality though was that there was a high possibility that the entity responsible for distribution would not generate enough revenue from poor communities to be able to pay the distribution entity. With the failure of one entity to pay the other, it was probable that the entire unbundled energy supply model could collapse. The model was also silent on the broader National Development context which by implication made it to be counter to the national development agenda as espoused in the 2030 National Development Plan.

The union's position against unbundling Eskom was also supported by some international experience of unbundling state-owned energy utilities. For example, a comprehensive World Bank study of 116 privatised power utilities in 10 Latin American countries found that privatising energy utilities had led to employment reduction of almost 40% (Pudney, 2018).

The National Union of Mineworkers further observed that the unbundling of state-owned energy utilities was not a new phenomenon in Africa. It had taken place in Ghana, Uganda, Kenya, and Nigeria - with the common outcome of displacing the State from energy generation and provision of electricity to the citizenry. The empirical evidence from other Africa countries confirmed that unbundling was indeed the first step towards energy privatisation.

Thus far, the position of unions in South Africa has been and continues to be that the unbundling of Eskom, the state-owned energy supply entity, is a wrong solution to the problems that the entity faces. The move goes against the country's 2030 National Development Plan objectives, especially that of raising employment to 24 million by 2030. The unbundling of Eskom is an indirect way of privatizing a national asset through which government can ensure that



the vulnerable access energy as a basic human need.

Despite the unions' rejection of the unbundling and subtle privatisation of Eskom right from the start, the South African government has been implementing some steps linked to the unbundling of Eskom; the adoption and implementation of a JET-IP being the latest of such developments.

Manifestation of the privatisation intent in the provisions of the JET-IP

At the heart of neo-liberalism is the privatisation of public entities, a process that involves substitution of the State by profit-oriented private sector actors in the provision of public goods and services to the citizenry (Narsiah, 2002) (Gumede & Asmah-Andoh, 2006). In the specific case of South Africa, the state-owned public entity that is responsible for energy generation is Eskom. So one of the manifestations of neo-liberalism would be the privatisation or displacement of Eskom from its energy provision function in the country.

As part of the energy transition, both subtle and direct pressure is being put on government to take away some of the functions of Eskom and allocate them to the private sector, which is practically privatisation. This subtle privatisation agenda is eminent in the provisions of the JET-IP as one of its key actualising policies of the energy transition in the country.

In the preamble, the Just Energy Transition Investment Plan (JET-IP) makes it explicit that the success of the program would be dependent on public and private sector resources. In other words, both the government and the private sector are supposed to work in tandem if the JET-IP is to succeed. The proportion of contribution in terms of finance and

activity distribution is not stipulated but when one delves into the details of the plan, it becomes apparent that the role of the State is being reduced to 'borrowing money'. The private sector, on the other hand, is being enabled to take the lead in all major aspects of energy generation, transmission, and supply. The State is being reduced to providing a supportive role and being a bearer of the business risk of energy provision in the country.

A critical review of the subsequent sections of the Just Energy Transition Investment Plan reveals provisions that promote, in a subtle way, privatisation of the country's energy as trade unions had predicted. The next section highlights the provisions of the JET-IP that are pro-privatisation.

Skewed allocation of JET-IP finances to areas that support private actors in the renewable energy space:

According to the program, 69% of the JET-IP finances have to go towards investment in electricity generation, especially to renewable energy generation; 12.3% towards investment in green hydrogen, and the remaining 8.5% towards New Energy Vehicles (NEVs) (SA Government, 2022). So, the bulk of the investment is supposed to go to renewable energy initiatives. Although this bias is understandable in the context of climate change mitigation, it fails to take into consideration that in the energy transition period for South Africa, there is a need to stabilise non-renewable energy supply.

Deeper insight regarding this finance allocation becomes more apparent when one considers details in the allocation of the secured USD8.5 billion under the Inter Government Partnership (IGP) (SA Government, 2022). The IGP funding is the only secured funding under the broad JET-IP. Under the IGP, USD6.9 billion, equivalent to 81% of the

total IGP secured funds, is allocated to infrastructure investment – specifically for investment into an alternative grid to transmit the electricity to be produced by private renewable energy producers from different locations of the country.

The investment in an alternative grid is done against the background of the state-owned entity – Eskom – being constrained in participating in renewable energy production. The national treasury has taken the stance that any funding that it would extend to Eskom should go towards energy generation. As a result, Eskom is reduced to being a spectator of energy generation including participation in renewable energy.

Prioritising investing in aspects that compete with, rather than improve, Eskom's inefficiency:

Beyond allocation of JET-IP finances in favour of private actors in the renewable energy space, it is noted that none of the infrastructure investment is being ear-marked for upgrade or improvement of the existing energy grid that Eskom already owns. What this means is that a big portion of the investment is to be spent on putting up an alternative grid to that owned by Eskom. Such investment, by implication, will erode Eskom's competitive edge in the energy space. The entity will have to use old infrastructure to transmit its own generated energy, while the private actors will have a new and probably more efficient energy grid to use.

Given the fact that the JET-IP plan emphasises private participation in renewable energy production, investment in alternative grid infrastructure to Eskom's means that the South African government will be borrowing money to make it feasible for the private actors to participate and make profit from energy generation, while strangling its own participation in the energy



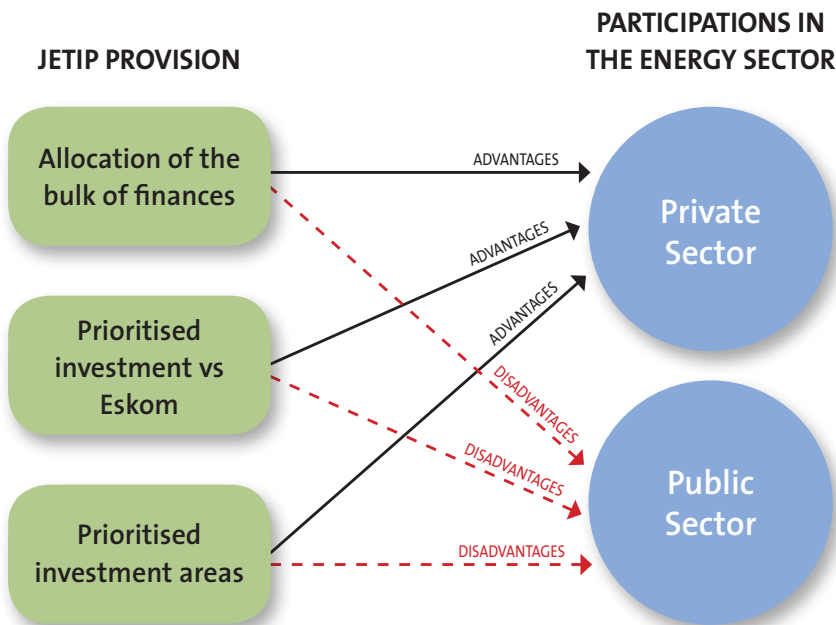


Figure 1: JET-IP provisions and participation in South Africa’s energy sector – Private vs Public sectors

space through Eskom. This presents a classic case of government funding of privatisation of the country’s energy sector, and taking on all the investment risks involved. By contrast, the private sector is being enabled to come into the energy space just to make profits in a market-guaranteed and risk-free environment.

Prioritising investment in areas where government has minimal footprint:

Beyond government funding its own exit from energy generation and provision to the citizenry, the JET-IP priorities investment in areas where government participation is minimal – areas where the private sector is more active relative to the government.

Coming second to infrastructure investment, JET-IP funds are directed towards investment in a hydrogen economy, followed by investment in ‘green’ transport. Economic activities in both these sectors is dominated by the private sector. In fact, the role of government in these sectors has been the provision of incentives and subsidies.

With government having no footprint in these other greening targeted sectors, investment channelled to them will not open up opportunity for government to participate therein. Figure 1 summarises the impact of 3 key provisions on the participation of private actors and government in South Africa’s energy space and by implication the impact of these provisions on the privatisation of energy provision in South Africa.

Conclusion

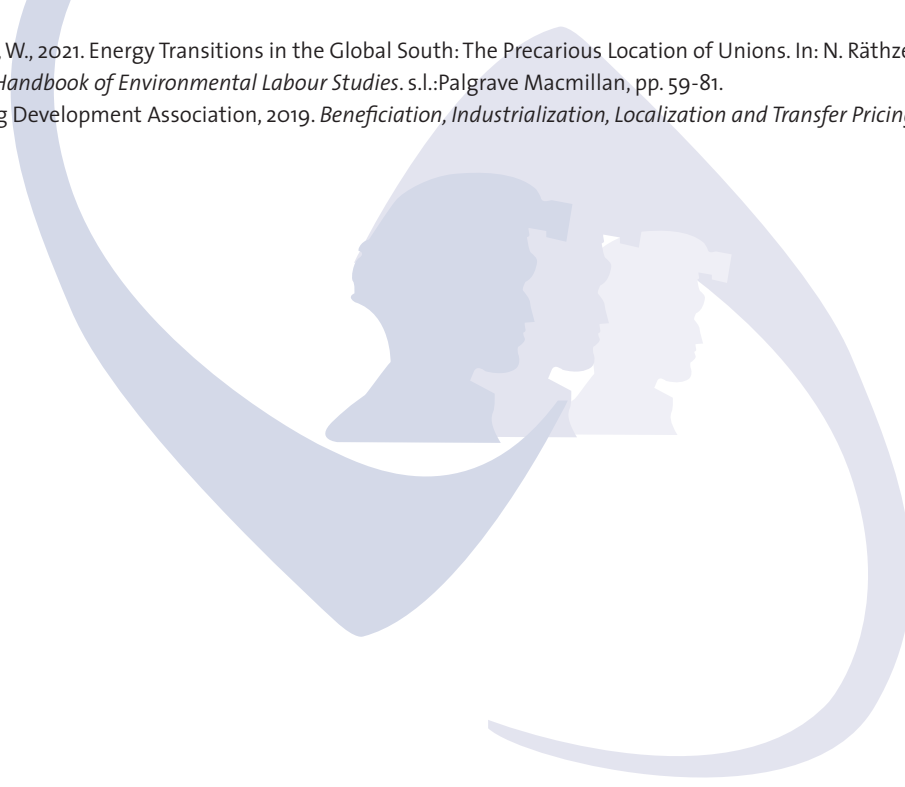
Key provisions of the JET-IP do explicitly and implicitly push for the privatisation of the country’s energy sector. A critical review of the JET-IP reveals that space is created for private actors to participate in energy generation and distribution, with the government taking the investment risks.

There is a clear misalignment of a number of JET-IP propositions with the country’s National Development Plan, as the aspect of energy access to all South Africans being a right rather than a privilege is not explicitly taken into account in the plan. Moreover, the plan, if implemented as it is, will displace government as the custodian of citizens’ interests in the provision of energy. With this implicit privatisation, government will be stripped of the means to use energy and energy policy to direct its national development agenda.

Ultimately, a number of JET-IP provisions confirm trade unions’ fears that despite government’s assurance that the energy transition will not necessarily be accompanied by the privatisation of the energy sector, this is not likely to be the case. Trade unions, in their own capacity or under their different federations, should continue to lobby and ensure that provisions in the JET-IP that are pro-privatisation are amended before they endorse the plan as a tool for just energy transition in the country.

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Profit-shifting in South Africa's mining industry:

Pointers and remedies for Trade Unions

Zolisa Mpange



Profit-shifting is when corporations transfer profits made in a country in which they operate to a tax haven. According to the Alternative Information Development Centre, this phenomenon is prevalent in South Africa. The biggest profit shifters tend to be multinational corporations that have business presence in different countries. Profit-shifting, among other concerns, makes it difficult for trade unions to make a case for higher wages for their members as the employers misleadingly claim that they are making a loss. Hence, profit-shifting 'legitimizes' the payment of low wages. Although it is done in secrecy, there is a need for trade unions to appreciate and take into consideration the possibility of profit-shifting happening as they engage in wage negotiations with the employers. With this in mind, this paper discusses workers' concerns on profit-shifting in the mining sector. It highlights the 'red flags' for potential profit-shifting and suggests remedies or lines of action that trade union representatives ought to take when they suspect that the employers may be engaged in profit-shifting. Broadly, the article suggests that if a company is declaring losses and yet it has subsidiaries or related companies that are making profits, locally or internationally, this is a red flag for potential profit-shifting. The second red flag is when a company that has been consistently declaring profits suddenly declares a loss when the market conditions in which it operates have not changed drastically. The article proposes that when profit-shifting is suspected, trade unions need to compare company performance information from different sources to establish consistence of such. Where discrepancies exist, the trade union should contest the declared financial information citing possible profit-shifting. In the long term, to minimise the risk of profit-shifting stifling better wages for works, trade unions ought to lobby government to make it mandatory for mining companies to create a publicly accessible database containing information on their beneficial owners. Secondly, trade unions should lobby government to make it a requirement in South Africa for mining companies to publicly disclose the financial reports of each of their subsidiaries, regardless of where they operate.



Photo by Dominik Vanyi, Unsplash

Introduction

Despite its vast mineral wealth and other economic advantages, South Africa faces numerous economic challenges. Profit-shifting is one of the economic challenges that the country is facing. It is a practice used by multinational corporations to pay as little as possible in wages and taxes (Oelofsen, 2021).

Profit-shifting entails a multinational corporation transferring profits made in the country in which it operates to a tax haven. By doing so, the profit-shifting company under-reports the value of its profits in the country in which it operates, allowing it to pay as little in wages as possible, while also paying less or no tax there. Profits transferred to a tax haven are then taxed at a very low rate or not at all, depending on whether the tax haven has a very low or no corporate tax rate (Tax Justice Network, n.d).

The most common way for a multinational corporation to shift profits is to make payments to

affiliated group companies situated in a low or no tax country. The affiliated companies could be a parent company, sister company or subsidiary. This process increases the group's overall profits available to shareholders. These intra-group payments are frequently in the form of royalties and interest payments, which can be deducted from pre-tax profits (Guj, Martin, & Readhead, 2017; Tax Justice Network Africa, n.d; Ngozo, 2020).

Profit-shifting is fueled by developing countries that have adopted an open economic policy in order to attract investment and trade. This has resulted in multinational corporations having the freedom to move profits from one country to the next. This characterizes today's global economy (Oelofsen, 2021).

Aside from open economic policy, industries that are export-based and dominated by multinational corporations, such as the mining industry, are a major source of profit-shifting in developing countries

(Oelofsen, 2021). This is due to the fact that companies in industries such as mining often operate in multiple countries and have a complex supply chain involving multiple companies and jurisdictions, which creates opportunities for profit-shifting (Oelofsen, 2021; Dlodla, 2020; PwC, 2020; News24, 2019).

In recognition of the existence of profit-shifting, and its adverse effect on countries and workers, this paper discusses workers' concerns about profit-shifting in the mining sector. It reflects on the 'red flags' for potential profit-shifting, and suggests remedies or lines of action that trade union representatives ought to take when they suspect that the employers may be engaged in profit-shifting. The rest of the paper is structured as follows:

- Section 2 provides an overview of the manifestation of profit-shifting risk in South Africa's mining sector.
- Section 3 gives a brief discussion on the effects of profit-shifting on wage negotiations.
- Section 4 highlights the red flags

of potential profit-shifting taking place, and the actions that should be taken by trade unions when profit-shifting is suspected.

- Section 5 carries the conclusion and recommendations.

A Brief Overview of Profit-shifting Manifestation in South Africa's Mining Industry

There is no single method that can be used to estimate how much money is lost as a result of profit-shifting in South Africa's mining sector. Estimates can instead be made using a variety of sources, ranging from international government trade statistics to case studies of individual corporations' financial statements.

According to the report by the United Nations University World Institute for Development Research entitled 'Southern Africa — Towards Inclusive Economic Development' on profit-shifting and corporate tax avoidance (SA-TIED, 2018), South Africa loses approximately R7 billion per year due to profit-shifting by multinational corporations. This amounts to approximately 4% of total corporate income tax receipts (SA-TIED, 2018). The study reviewed records of foreign-owned companies operating in South Africa and discovered that companies with a parent company registered in a tax haven report 80% less profits than similar companies without a tax haven parent company.

The key finding of SA-TIED report (2018) is that the largest multinational corporations are responsible for nearly all profit-shifting in South Africa. The biggest 10% of multinational corporations with tax haven affiliations are responsible for 98% of profit-shifting in South Africa (SA-TIED, 2018). Among these, the biggest profit shifters by industry are multinational corporations in the mining sector, accounting for 28% of the problem.

Moreover, there have been a number of high-profile cases in South Africa's mining sector involving allegations of profit-shifting. For example: in 2012, Lonmin, a platinum mining company in Marikana, was accused of engaging in profit-shifting so that it could pay less in wages and reduce its tax liability. Specifically, it was alleged that the company had set up a complex web of subsidiaries and had engaged in suspicious transactions with a subsidiary in Bermuda, a known tax haven. The transactions had enabled the company to artificially shift profits to a low-tax jurisdiction and avoid raising workers' wages and paying higher taxes in South Africa (Oelofsen, 2021).

One of the key ways Lonmin was said to have engaged in profit-shifting was by using transfer pricing (Forslund, 2015). Transfer pricing refers to the practice of setting prices, with ulterior motive, for goods and services sold between related parties, such as subsidiaries within the same corporate group. By manipulating the prices of these transactions, companies can shift profits to entities located in low-tax jurisdictions, where they can be taxed at a lower rate (Forslund, 2015).

In the case of Lonmin, it was alleged that the company had artificially inflated the prices it charged its South African subsidiary for the platinum it produced, and then transferred the profits to a subsidiary in Bermuda, a tax haven with a zero per cent corporate tax rate. It was alleged that between 1999 and 2012, R1.228 billion was transferred from Lonmin's South African Subsidiary to Bermuda. This practice allowed Lonmin to reduce its tax liability and pay less in wages (Forslund, 2014; Forslund, 2015).

The allegations of profit-shifting by Lonmin were brought to light in the aftermath of the Marikana massacre in August 2012, in which 34 striking miners were killed by the police. The employees had engaged in strike

action over low wages, demanding a living wage of R12 500 (Sacks, 2012). This demand was rejected by Lonmin because it was unaffordable.

The allegations of profit-shifting sparked public outrage and calls for greater transparency and accountability in South Africa's mining industry. Based on the amount of money allegedly transferred to Bermuda by Lonmin's South African subsidiary, the Marikana Mine could have met the 2012 demands for a basic wage of R12 500 after tax, if Lonmin had cancelled the Bermuda arrangement.

Other examples of profit-shifting in South Africa's mining industry include the use of trade mis-invoicing. This occurs when multinational corporations represent different invoices in the export and import countries on purpose (IGF, n.d). For instance, South Africa declared \$17.8 billion in diamond exports between 2010 and 2018, while its trading partners declared \$51 billion in diamond imports (Oelofsen, 2021). Between 2000 and 2014, the total value of export mis-invoicing in silver, platinum, iron, and gold was estimated to be \$90.5 billion (Oelofsen, 2021). These minerals accounted for 23.5% of all trade mis-invoicing from South Africa between 2000 and 2014. It is also worth noting that these minerals do not include diamonds, chrome, manganese, or coal, which account for 43% of South Africa's mineral exports (Oelofsen, 2021). This implies that the true proportion of profit-shifting in the mining industry is almost certainly much higher.

Profit-shifting by companies, as seen in the alleged case against Lonmin, can have a significant impact on wage negotiations between companies and trade unions. When companies shift profits to low-tax jurisdictions, they may argue that they have less financial resources available to pay higher wages to their



workers. This portrays a weakened financial position of the company in wage negotiations, and it makes it more difficult for trade unions to secure wage increases or other benefits for their members.

Effects of Profit-Shifting on Wage Negotiations in the Mining Sector

Profit-shifting by mining companies can have several implications on wage negotiations between trade unions and mining companies. These include:

Reduced profits available for wage increases

Reduced profits due to profit-shifting can have a significant impact on wage negotiations between mining companies and trade unions. When mining companies shift profits to other jurisdictions, the profits available for distribution are reduced. This means that there is less money available to increase wages or to provide other benefits to employees.

During wage negotiations, mining companies may argue that they cannot afford to pay higher wages due to reduced profits, yet the declared low profits are just a result of profit-shifting. This can create tension between the two parties and make it difficult to reach a mutually agreeable outcome (Cobham, 2014).

In some cases, reduced profits due to profit-shifting may result in job losses or reduced hours for employees (Cobham, 2014). In these situations, trade unions may be forced to accept lower wage increases or other concessions in order to preserve jobs or to minimize the negative impact on their members.

Reduced bargaining power for trade unions

Profit-shifting can also reduce trade union bargaining power during wage negotiations, as mining companies may use their ability to shift profits

to other jurisdictions as a leverage in negotiations (Forslund, 2014; Forslund, 2015; Ngozo, 2020). Reduced bargaining power of trade unions during wage negotiations due to profit-shifting can make it more difficult for them to secure higher wage increases for their members in the mining sector. This is because, as previously stated, profit-shifting can reduce profits reported in a particular jurisdiction, limiting the amount of money available to mining companies to pay higher wages.

When trade unions have reduced bargaining power, they may be forced to accept lower wage increases or other concessions that they would not have agreed to otherwise (Forslund, 2015; Forslund, 2014; Ngozo, 2020). This can lead to a situation where the wages of mining sector workers are not keeping pace with inflation or with the rising cost of living. It can also contribute to a decline in the standard of living for workers and their families. In the long term this can reduce union membership.

Increased mistrust between mining companies and trade unions

Suspected profit-shifting can erode trust between mining companies and trade unions. Eroded trust between mining companies and trade unions due to suspected profit-shifting can have a negative impact on wage increases during wage negotiations (AIDC, 2020; Ngozo, 2020). When trust is eroded, it can lead to a breakdown in communication and a lack of consensus between the parties involved in the negotiation process. This can make it difficult for the parties to agree on a fair wage increase and other benefits, as each side may be unwilling to compromise or may view the other party's demands with suspicion. The created mistrust between companies and trade unions can affect relationships between workers and employers which may result in reduced

productivity (Oelofsen, 2021; Forslund, 2015; Ngozo, 2020).

Recognition of Potential Profit-shifting During Wage Negotiations and Actions that can be Taken by Trade Unions

Detecting profit-shifting during wage negotiations in the mining industry can be a challenging task for trade unions. Unions can, however, be on the lookout for red flags to potential profit-shifting. In general, there are two red flags to potential profit-shifting that trade unions should be on the lookout for during wage negotiation (Oelofsen, 2021; AIDC, 2015; Ngozo, 2020):

- If a company is declaring losses and yet it has subsidiaries or related companies that are making profits, locally or internationally;
- When a company that has been consistently declaring profits suddenly declares a loss, when the market conditions in which it operates have not changed drastically.

When potential profit-shifting is suspected, there are a few actions that trade unions can take to confirm its occurrence (Forslund, 2015; AIDC, 2020; Oelofsen, 2021). These include:

1. *Analyzing financial statements:*
Trade unions should analyze financial statements of individual mining companies to identify any discrepancies or inconsistencies. This analysis should focus on identifying any patterns that suggest profit-shifting, such as unexplained fluctuations in financial metrics such as revenue, expenses, and profit margins. Unexplained fluctuations may indicate that the company is manipulating its financial statements to shift profits and avoid paying higher wages. It is important to consider other



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factors that may affect financial statements, such as changes in commodity prices, fluctuations in exchange rates, and changes in tax laws or regulations (Forslund, 2015). These factors can also influence profit-shifting practices and should be taken into account when analyzing financial statements.

2. *Comparing financial statements of other mining companies in the same environment:* After analyzing the financial statements of individual mining companies, trade unions can compare the financial statements of different mining companies to identify common patterns or trends. This comparison can be particularly useful in identifying industry-wide profit-shifting practices (Oelofsen, 2021; Forslund, 2015).
3. *Comparing company financial reporting in different countries:* Mining companies often report

their financials in multiple countries (Forslund, 2015; AIDC, 2015; Ngozo, 2020). By comparing their financial reports across different countries, trade unions can identify inconsistencies or discrepancies that may indicate profit-shifting. The first step is to obtain the financial statements of the mining companies that the union is negotiating with. These statements should include information on revenue, expenses, profit margins, and taxes paid. Trade unions should examine the revenue and expenses of the mining company in each country where it operates. If the company reports unusually high expenses in a particular country, it may be shifting profits to lower tax jurisdictions. Trade unions should compare the profit margins of the mining company in each country where it operates. If the company reports low profit margins in countries with high tax rates, but

high profit margins in countries with low tax rates, it may be shifting profits to avoid paying higher wages and taxes.

4. *Monitoring transfer pricing:* Trade unions should also look for discrepancies in the prices that the mining company charges for its products or services in different locations (Guj, Martin, & Readhead, 2017). If the company is charging higher prices in locations with higher taxes, this may be a sign of profit-shifting.
5. *Comparing prices with market rates:* Trade unions can compare the prices charged by the mining company to its subsidiaries with market rates for similar goods or services (Guj, Martin, & Readhead, 2017; Ngozo, 2020). If the prices are significantly different, it could be a sign of transfer pricing manipulation.

6. *Examining the use of intangible assets:* Trade unions should examine the mining company's use of intangible assets such as patents, trademarks, and intellectual property (Wicomb, 2019). These assets can be easily moved between jurisdictions, making them a common tool for profit-shifting.
7. *Identifying subsidiaries or affiliates in tax havens:* Trade unions should identify any subsidiaries or entities owned by the mining company that are located in tax havens (Wicomb, 2019; Forslund, 2015; Oelofsen, 2021). These entities may be used to shift profits and avoid taxes. Trade unions should also monitor the mining company's use of tax havens or low-tax jurisdictions. If the company is reporting high profits in these locations but has little or no economic activity there, this may be a sign of profit-shifting.
8. *Examining debt and interest payments:* Mining companies may use debt to shift profits and reduce their tax and wage bill (Ngozo, 2020). Trade unions should look for any irregularities in the company's debt and interest payments, as well as any evidence that the company is using debt to shift profits.
9. *Investigating related party transactions:* Trade unions should investigate related party

transactions between the mining company and its subsidiaries or affiliates (Ngozo, 2020). Trade unions should look into the prices that the mining company charges for goods and services that are transferred between related entities. If the prices are not consistent with market prices or are significantly different from the prices charged to unrelated parties, this may indicate that the company is engaging in profit-shifting. Trade unions should investigate prices that mining companies charge each other for goods and services to ensure they are set at fair market value and not artificially inflated or deflated to shift profits to low tax jurisdictions.

By looking for these and other indicators, trade unions can better understand the financial performance of mining companies and identify any irregularities that may indicate profit-shifting. This information can then be used during wage negotiations to ensure that the mining company is paying its workers a fair wage based on its true financial performance.

Concluding Remarks

Profit-shifting is a reality and there is anecdotal evidence that it is happening in South Africa's mining sector. Specific to trade unions and workers, profit-shifting reduces

mining companies' ability to pay higher wages and can reduce trade unions' bargaining power during wage negotiations. This has the potential to erode trade unions' credibility and reputation to its current and potential members over time.

For their own sake and for the sake of the country, trade unions can play a role in combating profit-shifting through a number of initiatives that are geared towards transparent business conduct in the mining sector. Trade unions can lobby governments to enact laws and regulations that require mining companies to disclose their financial information in a transparent manner. This can include laws requiring companies to report their profits on a country-by-country basis to the public. This is because the main barrier to trade unions contributing to the fight against profit-shifting is a lack of access to mining companies' information (Forslund, 2015; Forslund, 2014; AIDC, 2020; Oelofsen, 2021). Without access to transaction data, organizational structures, financial statements, etc., trade unions cannot effectively contribute to the fight against profit-shifting.

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An assessment of the feasibility of renewable Independent Power Producers (IPPs) taking over Eskom's energy generation

Michelo Mavu



As South Africa battles with consistent blackouts, renewable Independent Power Producers (IPPs) are being touted in the media as the solution to Eskom's generation problems. Using various industry and academic sources from South Africa and abroad, this article demonstrates that private renewable energy generation is not a sustainable remedy to South Africa's energy woes. The article argues that the irregularity of renewable energy cannot be a comparable substitute for the more reliable baseload energy supplied by Eskom's fossil-fuel powered energy generators. This is particularly evident considering the high cost of renewable energy technologies, along with the battery storage needed to solve its consistency issues. Increased use of renewable energy in the power grid also comes with technical problems such as the Duck Curve phenomenon. Furthermore, the cost to consumers will likely be high, when taking into account lessons learnt from those in the international community who have higher levels of grid-connected renewable energy.



Photo by Ashraf Hendricks, GroundUp

Introduction

South Africa experienced about 3,773 hours of load shedding in 2022. This has been the most number of load shedding hours on record (Hako, 2023). Given how dire the situation is, many South Africans are now questioning whether Eskom's monopoly in electricity generation in South Africa is the best option available if the country is to have a stable and consistent electricity supply.

Renewable IPP's are being touted in the media as the solution to Eskom's generation problems, as the country battles with consistent blackouts. This presents great opportunities for the private sector to generate their own electricity and to profit from selling electricity to the public. Previously they were not able to do so. Allowing IPPs is said to be part of the effort of

alleviating the energy crisis facing South Africa. But how feasible is it for renewable energy to replace Eskom's coal-produced electricity, and what technical factors should be considered when deploying renewable energies at grid scale? The private sector taking over energy generation could have dire consequences for the rest of the country, as the private sector does not share the developmental imperatives of the State (McDonald, 2012). This will especially impact the poor, who are already struggling to afford electricity while having limited access to it (Sarkodie & Adams, 2020). Moreover, the unreliable nature of renewables poses a challenge to energy security in South Africa (Sovacool, 2013). This energy transition will have a direct impact on jobs in energy and related sectors from where the National Union of Mineworkers (NUM) draws its membership.

Against this background, it is important for the NUM to assess whether it is possible for South Africa's baseload power supply to be generated outside of Eskom. This will help the Union in formulating preemptive strategies to protect workers in the future.

This paper first gives a brief definition of what baseload energy supply is. This is followed by an explanation of decentralisation as a prime framework for private renewable energy domination in the South African power grid. Pricing of electricity is then discussed, followed by the social risk factors faced by the South African renewable energy sector.

Baseload supply

A baseload energy supply is the minimum amount of electricity that must be supplied to the grid

at any given time (University of Calgary, 2022). By definition, a baseload electricity source must be able to provide constant and reliable electricity supply. The current technology allows for most baseload electricity production to come from non-renewable sources such as coal and nuclear energy. According to Engineering News, South Africa has no technical system requirements for baseload energy. Instead, what is of greater concern with regards to baseload energy in the country is matching supply and demand as well as an electrical frequency of 50Hz (Creamer, 2022). Building baseload energy generation units for coal and nuclear is an extremely expensive exercise. The power plants for coal and nuclear take a long time to build, in comparison to renewable energy generation plants. Baseload power supply cannot be rapidly ramped up or down, so it is therefore a non-variable energy source with the exception of geothermal and hydroelectric plants (Ren21, 2017). Renewable energy is quite inconsistent so it makes for a good partner to non-renewable baseload energy sources when coupled with sufficient storage.

In the case of South Africa where load shedding is prevalent due to inconsistency of electricity supply caused by sub-optimally performing baseload power plants, there is room for more variable energy sources (Hako, 2023). This will help in offsetting the variability of supply that is responsible for load shedding, provided that there are sufficient storage facilities. This variability in supply is due to a number of factors, including maintenance issues at non-renewable power plants. In the current centralised energy grid that dominates the South African market, the only way for renewable independently-produced energy to achieve baseload capability is through decentralisation of the energy grid. Decentralisation is discussed in the following section.

Decentralisation

Traditionally, most energy generation is done from a centralised generation source. The energy produced is then transmitted over large distances to the locations that will consume this energy via vast transmission and distribution networks (Hive Power, 2022). This is the case for South Africa at present. In order for South Africa to do away with Eskom's services, the power grid must first be decentralised. Decentralisation is essentially when energy generation facilities are located in close proximity to the location where it will be consumed. A decentralised grid may allow for more efficient use of renewable energy generation by reducing transmission and distribution inefficiencies through the shortening of the distance the generated energy must travel (Hive Power, 2022).

There are three infrastructural demands for a decentralised energy grid, namely: distributed generation, storage, and demand response.

- **Distributed generation:** otherwise known as embedded generation, on-site generation, dispersed generation, or decentralised generation. This is initially how electricity generation was conducted, with the generation facility being close to the consumer. This was necessary as grids ran on direct current (DC), which was unable to transport electricity over long distances. Electricity produced by renewables is direct current which cannot be transported over long distances unlike that of modern coal fired power stations which is alternating current (AC) (Hive Power, 2022). For renewable energy to provide power to the country over the enormous distances, the electricity will have to be converted to alternating current. Alternatively, a number of renewable generation facilities will have to be built in and near both

rural and urban areas. In addition to this, renewable IPP's lose out on economies of scale (the ability to produce at lower cost because of more goods being produced) due to the fragmented nature of their business. This may lead to higher costs for consumers.

- **Storage:** electrical energy needs to be stored to meet the needs of high demand periods when renewable energies by their nature cannot supply sufficiently or not at all like peak electricity demand periods in the early evenings or overcast cold days. Storage is also needed to save renewable energy produced in high quantities at times of low demand to prevent or reduce wastage (ESI Africa, 2020). The need for storage is discussed further in the context of the California Duck Curve in the next section. Storage in the form of batteries, pump storage, molten salt, etc., will play a key role in a decentralised South African energy grid. Battery storage is the most popular choice of IPP's for storage of renewable energy as pump storage is not possible for most generation facilities in the water scarce country that South Africa is due to the need for a large water body with considerable height difference between reservoirs (Energy Transition.org, 2023).
- **Demand response:** these technologies are useful in the management of grid stability where decentralised energy generation facilities are connected to the grid. Traditionally, the management of the grid prioritised supply management whereas technologies like smart grids and smart metering allow monitoring and communication between producers and consumers to occur in real time to make grid usage more efficient (Eskom Holdings SOC Ltd, 2023). Demand response technologies will be essential for decentralised energy systems.



Photo by Anaya Katlego, Unsplash

For renewable IPPs to take over electricity generation from Eskom in a decentralised power grid, it is important to acknowledge that the legal and administrative framework governing generation, transmission, and distribution will need to be reworked. This will be a costly exercise as it will have to involve lengthy consultations with actors across the different parts of society, including the State (Sovacool, 2021). The developmental imperatives of the State, such as providing affordable electricity to consumers and electrification of rural areas, may be compromised. This is due to the fact that IPPs are private entities that do not have the same developmental mandate as the State, which could result in electrification bias against rural areas and other low income parts of the country (Sarkodie & Adams, 2020).

Energy pricing

As of March 2022 the price of electricity in South Africa supplied by Eskom was R2,60 per kilowatt hour for households, and R1,21 per kilowatt hour for businesses (Eskom Holdings SOC Ltd, 2022). Pricing is one of the most important factors in determining what form the baseload electricity supply will take. A baseload source must be energy efficient, provide stability, be consistent, and be affordable (University of Calgary, 2022). The affordability of producing electricity is carried over to the consumer in the form of cheaper tariffs for the use of the electricity.

Renewable energy makes up about 6% of the energy supplied in the South African power grid. Although the price of solar energy has fallen by about 75% between 2011 and 2018

(Zinman, 2020), electricity produced by coal fired power stations can still compete with that of solar. This brings attention to the fact that solar energy is still expensive even after a sharp increase in innovation caused a proportional drop in the price of acquiring this technology. This innovation also caused an increase in the efficiency of solar panels. The cost of investment involved in acquiring solar panels also dropped, further contributing to the decrease in the solar power price (Creamer, 2021). The drop in the cost of capital is also as a result of a lower perceived risk from financiers as they observe the survival and growth of the solar energy industry. The government has committed to increasing renewable participation in the energy generation sector (Zinman, 2020).

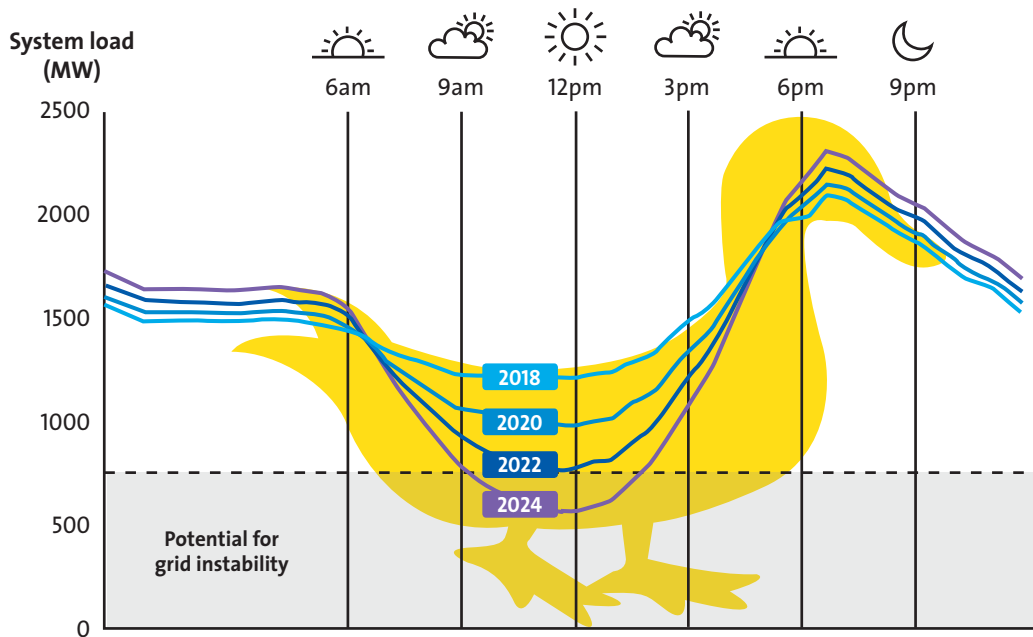


Figure 2: The Duck Curve

Source: Synergy 2021

The drop in renewable energy prices has been recently offset by the effects of the Covid-19 lockdown. Raw material prices have increased sharply, with steel increasing by 50% while aluminium increased by a factor of two, and copper increased by 70%. This increase in the price of input materials that are essential for the production of solar panels and turbines for wind farms and hydroelectricity has resulted in higher production costs for these renewable sources. Solar and wind energy prices are expected to stay higher than in the pre-Covid era for 2022 and 2023 at least. The price of these sources is currently 15% to 20% more in comparison to pre-Covid price levels. In addition to this, freight costs are on the rise along with petrol prices. The rise in transportation costs involved in acquiring wind and solar energy materials has also contributed to the increase in these energy prices (Omarjee, 2022). In October 2021 the price of solar powered electricity was R0,43 per kilowatt hour, while wind was R0,50 for the same period (Creamer, 2021).

Although the cost of building a new renewable energy plant is a

fraction of what it would cost to build a coal fired power station, the cost for the consumer is higher for renewables than it is for coal generated electricity. The reason for this is mainly due to the guarantees that the government must pay to renewable energy producers for a number of years in order for them to produce electricity for the grid (Eskom Holdings SOC Ltd, 2022). The cost of these guarantees is then transferred to the consumer as a percentage of the tariff. The guarantees come in the form of feed-in tariffs that allow for renewable energy companies to make a guaranteed return on their investment in building these renewable plants (International Energy Agency, 2013).

Most renewable energy plants are built and financed by private entities like corporations and require a guaranteed way to pay off the loans taken to build the plants and pay investors. In South Africa, the feed-in tariff mechanism which was approved by the National Energy Regulator (NERSA) in 2009 is the Renewable Energy Feed-In Tariff (REFIT) (International Energy Agency, 2013).

This REFIT is meant to encourage independent power producers to invest more in building new renewable energy plants. Through REFIT, renewable energy companies in South Africa are given a guaranteed return on their investment for a twenty-year period adjusted annually for inflation (International Energy Agency, 2013). The guarantee involves offering the investors assurance that all the energy they produced will be paid a specific pre-determined high price.

The REFIT arrangement results in higher energy costs which are transferred to the consumers. According to Eskom, for example, coal generation costs R440 per megawatt hour. On the other hand, renewable energy produced by IPPs, costs R2,027 per megawatt hour (Eskom Holdings SOC Ltd, 2022). This means that the cost of renewable IPPs is approximately 21,7% higher than that of coal. As a result of this cost difference, renewable energy contributes approximately 6,6% of total electricity to the grid, but takes up 14% of overall energy cost on the grid (Council for Scientific and Industrial Research (CSIR), 2022)

Ultimately renewable energy remains more expensive to the consumers compared to the alternative energy sources in the country, especially coal.

Technical factors to consider for possible renewable energy baseload

The California Duck curve

Although more renewable energy being added to the grid may be seen as a positive development for the environment, there are drawbacks. One of these is a phenomenon that plagues power grids with high solar penetration, known as the California Duck Curve (Denholm, et al., 2015). Power utilities use demand curves to predict the usage patterns of their customers. Solar energy production peaks at midday when the sun is at its brightest. This causes a reduction in the demand for other energies (coal power in the case of South Africa) making the demand curve dip in a way that resembles the belly of a duck at the point where the drop in demand is depicted. An increase in solar energy production simultaneously reduces the demand for other energy sources at its peak. The problem arises when evening comes and solar panels can no longer produce because the sun has set (Denholm, et al., 2015). This coincides with evening peak demand. Other energy sources will then have to accommodate the demand by sharply ramping up capacity in a short space of time. Figure 2 shows the Duck Curve.

Ramping is the ability of a power plant or generation facility to start and stop on command. Similarly, the ramp rate is the time taken for the plant to increase or decrease its output (Energy Transition.org, 2023). To ensure grid stability with the increase of variable power from renewables, dispatchable non-variable plants are essential. These dispatchable plants are able to ramp electricity output up and down quickly. South Africa currently has

10 dispatchable peaking stations to supplement the baseload power stations during times of high demand which use non-renewable sources (Eskom Holdings SOC Ltd, 2023). Even with these dispatchable power sources the grid remains unable to adequately meet South Africa's energy demands, hence the frequent loadshedding. In light of peaking power stations being unable to prevent loadshedding in the current context, another solution to the Duck Curve problem needs to be implemented. A possible solution to the duck curve problem is that of battery storage.

Storage

Battery storage allows for the excess solar energy produced to be saved for use in the evening when demand peaks and solar energy supply drops. A battery that can be used on the scale of the national grid must be able to work within the specificities of the said grid. Battery storage has become an increasingly popular choice for renewable energy storage due to how easy it is to combine single units to make a more complicated structure, how easily manageable they are, as well as their high power density (Park, et al., 2022). Unfortunately, there is no general rule to gauge how much battery storage South Africa will need. This will have to be decided by Eskom and the national regulator NERSA according to the needs and capacity of the national grid as well as grid connections, anticipated demand, as well as planned increases in variable renewable energies (ESI Africa, 2020). Battery storage as an answer to the infrequency of renewables is not, however, without its challenges.

One of these challenges is that it is difficult to judge just how much and what quality of battery technology and capacity is needed. This is because battery energy storage systems have reliability issues stemming from performance and lifespan concerns that make it

difficult to plan just how much is required at grid scale (Stein, 2023). These issues include:

- **Self-discharge:** the phenomenon by which a small amount of the chemical substances in the battery react in the absence of an electrode connection/when it is turned off. This reduces the stored charge of the battery, and eventually leads to a decrease in the capacity of the battery (Panasonic Batteries, 2023);
- **Lifetime** of the battery before failure or significant breakdown/ degradation;
- **Round-trip efficiency:** the ratio of energy charged to the battery versus the energy discharged from the battery measured by way of a percentage.

It is estimated that the average lifespan of a Battery Energy Storage System (BESS) is approximately 6-8 years (Park, et al., 2022). This was achieved using various methods in reference to South Korea's own grid connected BESS.

Socio-economic risks associated with higher renewable penetration in the energy grid

Employment

Eskom employs approximately 42,749 workers across its various divisions as of 31st March 2021 (Eskom Holdings SOC Ltd, 2022). There is scant data about how many people are decently and gainfully employed by renewable IPPs in South Africa. There is, therefore, no guarantee that the current Eskom workforce will be able to transition from Eskom to these renewable IPPs, nor how many will be integrated into other sectors of the economy. Without data on current employment trends in the renewables industry, gauging future trends is challenging. This is especially significant as job security for workers in the energy sector is important for the development of the South



African economy. In a country with an unemployment rate of 32,7% in the last quarter of 2022 (Statistics South Africa, 2023), South Africa cannot afford having more than 42,000 Eskom workers becoming redundant; this will worsen the already dire unemployment situation that plagues the country.

Corporate governance risks

Eskom as South Africa's largest power supplier has been plagued by years of mismanagement and corruption (Cowan, 2022). Much of this has brought the power utility to the state in which it finds itself in today where load shedding has become a norm. Among these instances of corruption and mismanagement is the design flaws at Medupi and Kusile that were commissioned to be some of the largest power stations in the country and meant to help alleviate the energy deficit that culminated in the first bout of load shedding in October of 2007 (Eskom Holdings SOC Ltd, 2023). These design flaws are primarily a result of the deviation from Eskom's standard power station designs among other administrative and corporate governance failures (Ham, 2019). Due to the above reasons, there is a narrative that the liberalisation and so-called 'greening' of the grid will significantly reduce and practically eradicate corruption and mismanagement in the generation sector (Bowman, 2020).

However, there is growing evidence that renewable energy markets are not immune to corruption and mismanagement (Sovacool, 2021). In the current context, grid-connected renewables produced by IPPs are selected through a

'competitive' auctioning process called bid windows. This came into being because high level actors such as global and local renewable companies, government, and investment firms reformed policy incentives to influence the preference of an auction style of awarding generation licences (Sovacool, 2021). In some instances, community trusts were created without the consultation or consent from the very same communities. This allows renewable energy companies to grab assets from communities to build solar plants (Sovacool, 2021). Manipulation of local content requirements, transfer pricing regimes, and strategic partnerships have worked to reduce the involvement of local businesses. This has resulted in higher project costs for South African renewable projects (Sovacool, 2021). In this way, it is clear that merely getting rid of Eskom is not the solution to corruption (Sovacool, 2021). Corruption is present even in the private renewable space.

Conclusion

In conclusion, it can be said that getting rid of load shedding through the liberalisation and greening of the energy market in South Africa is not as simple as it is made out to be. As shown in this study, private renewable energy domination of the grid is a great opportunity for the private sector to reap huge profits from electricity generation. This is likely to have a negative impact on both energy security and the economy. Renewable IPPs are unlikely to reach baseload capacity in the near future due to their variability, although they can be

used to supplement non-variable fossil-fuel derived energy, coupled with sufficient storage. In order for renewable IPPs to dominate South Africa's electricity generation, the grid will have to become decentralised. This will require distributed generation, storage, and demand response which in turn will require administrative and legal adjustments from the State. To add to this, the exercise will be complex and costly in both time and resources.

Due to the private sector being profit-driven, developmental imperatives such as affordable access to electricity for the poor and employment may be cast aside. There will be dire consequences for the country as inequality will worsen. The study has shown that electricity prices are likely to increase with increased private renewable penetration. Currently, private renewable electricity costs South African consumers 21,7% more than coal-produced electricity. Overcoming the Duck Curve will be a challenge as the intermittency of renewable energy will cause grid instability. Even if storage is deployed at a large scale, such storage is expensive, and has a short lifespan. The price for this storage will again be added to consumer tariffs, along with its replacement. Overall, it can be concluded that the side-lining of Eskom in favour of private renewable energy will be to the detriment of the South African economy and society at large. The possibility of the full liberalisation of the energy generation market in a stable grid system is still a long way off due to technical constraints and pricing.

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No 3 Rissik Street, Cnr Albert Street
Alris Building, 2nd Floor, Johannesburg 2000
PO Box 32202, Braamfontein 2017
Tel: 010 593 7238 • Fax: 011 442 0814
Email: Leratom@satri.org.za
Website: www.satri.org.za