



Maximising the impact of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP)

By Vincent Obisie-Orlu

December 2023

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Executive summary

This briefing assesses South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). It acknowledges programme achievements while addressing challenges, including delays to the procurement process and financial issues facing REIPPPP projects. It underscores the necessity for electricity industry reform and more cohesive energy policies. It proposes changes to how investment decisions are made, and collaboration occurs alongside the REIPPPP process to promote private sector investment, develop localisation within the REIPPPP and reduce supply chain vulnerabilities. Lastly, it provides a thorough analysis to inform recommendations that will maximise REIPPPP's role in realising South Africa's energy objectives.

Recommendations

- **Streamline Bid Windows:** To address delays and uncertainties, streamline Bid Window processes to reduce gaps between bidding rounds. This will maintain investor confidence and support local industries. This includes providing clearly defined rules, reducing red tape, and ensuring improved coordination between government departments.
- **Enhance Grid Infrastructure:** Prioritise investments in grid infrastructure optimisation, especially in areas with high renewable energy potential. This will alleviate bottlenecks and facilitate the integration of renewable sources into the grid.
- **Unbundle Eskom and the development of an Independent Systems Market Operator (ISMO):** The unbundling of Eskom and the increased progress towards the development of an ISMO will support improved policy certainty, roles and responsibilities for the various actors and reduce uncertainty.
- **Promote Localisation and Partnerships:** Establish clear localisation objectives, supported by special economic zones, to stimulate economic development and job creation. Promote partnerships between Independent Power Producers and local communities to build microgrids in areas where traditional grid expansion is challenging.
- **Strengthen Regulatory Certainty:** Enhance regulatory transparency and clarity to attract and reassure investors. South Africa should develop a consistent and stable regulatory framework for renewable energy projects.

Introduction

Implemented in 2011, the REIPPPP¹ aims to support ambitions of a diversified electricity system in line with the Integrated Resource Plan (IRP) 2010-2030.² Since its implementation, the programme has been relatively successful, adding 6308.68 MW of electricity to the national grid and supporting the localisation of renewable energy technologies.³ The programme has faced numerous challenges, including policy uncertainty and the six-year delay between Bid Windows 4 and 5 that have limited its capacity to achieve its policy objectives and goals. Before this, the REIPPPP was considered a world-class leading example of public-private partnerships (PPP).⁴

Amid South Africa's challenges, including loadshedding and the push for decarbonisation, independent power producers (IPPs) are gaining attention in the electricity supply industry. However, regulatory uncertainty and infrastructure limitations reduce investors' willingness to invest necessary capital in project development.⁵

This briefing examines the REIPPPP's effectiveness and the IPPs role in diversifying South Africa's energy portfolio. It provides historical context on the country's energy regulations, leading to the establishment of the REIPPPP. The discussion then highlights the program's potential to help achieve the Integrated Resource Plan 2019's goal of a 24% contribution from renewable energy. It further assesses the REIPPPP's successes and failures, offering key insights for future programme implementations.

South Africa's energy regulatory framework

South Africa's energy policy and regulatory frameworks are rooted in the 1998 White Paper on Energy Policy (hereafter referred to as the 1998 White Paper). The 1998 White Paper aimed to develop an energy system that would cater to the needs of post-apartheid South Africa, while moving away from a focus on energy security towards promoting energy demand and maintaining supply.⁶

Proposals present in the 1998 White Paper include the use of integrated resource and energy planning as a guide for developing the country's energy industry and deregulating the electricity supply industry. Furthermore, it proposed unbundling Eskom – the country's national energy utility – and developing a national electrification plan.⁷ In doing so, the 1998 White Paper understood the importance of energy access to South Africa's economic development.

Subsequently, the White Paper on Renewable Energy of 2003⁸ committed South Africa to developing renewable energy targets, creating preconditions for investment in renewable energy to manage government resources to promote renewable energy generation by developing an enabling environment for investments.⁹ According to the White Paper on Renewable Energy, renewable energy sources include "... sun, wind, biomass, water (hydro), waves, tides, ocean current, geothermal, and any other natural phenomena which are cyclical and non-depletable."¹⁰

In addition to these two fundamental energy policies, South Africa's energy regulatory framework includes:

- The National Energy Regulator Act (No. 40 of 2004)¹¹ created the National Energy Regulator of South Africa (NERSA) to regulate electricity, piped gas, and petroleum pipelines under the relevant acts (Electricity Regulation Act (No. 4 of 2006), Gas Act (No. 48 of 2001), and Petroleum Pipelines Act (No. 60 of 2003). Additionally, NERSA is responsible for the determination of electricity tariffs.

1 Republic of South Africa. (2023). Renewable Energy Independent Power Producers Programme. Retrieved from South African Government: <https://www.gov.za/about-government/government-programmes/renewable-independent-power-producer-programme>

2 Department of Mineral Resources and Energy of the Republic of South Africa (2011). Integrated Resource Plan for Electricity 2010 - Final Report. [online] Department of Mineral Resources and Energy. Available at: https://www.energy.gov.za/IRP/irp%20files/IRP2010_2030_Final_Report_20110325.pdf

3 Department of Mineral Resources and Energy of the Republic of South Africa. (2023). Project Database. <https://www.ipp-projects.co.za/ProjectDatabase>

4 Eberhard, A., & Naude, R. (2017). The South African Renewable Energy Independent Power Producers Program - Review, Lessons Learned & Proposals to Reduce Transaction Costs. UCT Graduate School of Business. https://www.gsb.uct.ac.za/files/EberhardNaude_REIPPPPReview_2017_1_1.pdf

5 Theobald, S. (2023, January 9). STUART THEOBALD: Eskom's renewable energy shocker. BusinessLIVE. <https://www.businesslive.co.za/bd/opinion/columnists/2023-01-09-stuart-theobald-eskoms-renewable-energy-shocker/>

6 Department of Mineral Resources and Energy of the Republic of South Africa. (1998). *Energy Policy White Paper*. Pretoria: Government Gazette.

7 Ibid

8 The Department of Mineral Resources and Energy of the Republic of South Africa. (2001). *White Paper on Renewable Energy*. Pretoria: Government Gazette.

9 Ibid

10 Ibid

11 Republic of South Africa. (2004). National Energy Regulator Act No. 40 of 2004. Pretoria: Government Printers

- The National Energy Act (No. 34 of 2008)¹² aims to ensure diverse, sustainable, and affordable energy resources, including renewables, for South Africa's economic growth and establish an institution for efficient energy practices.
- The Electricity Regulation Act (No. 04 of 2006)¹³ establishes a national regulatory framework for the electricity supply industry, with the National Electricity Regulator (later amended to NERSA) as the custodian and enforcer, defines regulations for generation, transmission, distribution, trading, and import/export through licensing and registration procedures.

Additionally, plans have been developed to address emerging challenges and provide guidelines for implementing the policy goals and objectives related to the uptake of renewable energy. These include:

- The Integrated Resource Plan identifies the requisite investments in the electricity sector while maximising the national interest in line with the 1998 White Paper goals.¹⁴
- The REIPPPP seeks to source renewable electrical energy from private sector actors to add to the national grid in line with the IRP.¹⁵
- The South African Renewable Energy Masterplan (SAREM) aims to leverage the rising demand for renewable energy and storage technologies to unlock the industrial and inclusive development of associated value chains.¹⁶ These include local solar manufacturers and installers and the development of lithium-ion and vanadium batteries, to name a few.
- The Energy Action Plan was created as part of the national state of disaster on energy to end loadshedding and fast-track the ability to get more electrons on the grid.¹⁷

South Africa's energy generation landscape

Most of South Africa's electricity (over 80%) is generated by coal power stations owned and operated by Eskom.¹⁸ As the country's dominant vertically integrated power utility, Eskom as a monopoly plays a central role in all areas of the electricity value chain, including generation, transmission and distribution, making it too big to fail and isolated from market pressures.¹⁹

Proposals have been made to unbundle the utility into separate entities focused on distribution, transmission, and generation as part of South Africa's energy supply industry deregulation. However, these have stalled due to politics, as demonstrated by the challenges in bringing the Independent Systems Management Operator Bill (ISMO) into law²⁰ and the current financial position of the national utility. Eskom is over R400bn in debt while trying to navigate its unbundling, with the National Treasury taking on a portion of the utility's debt to restore macroeconomic stability and increase investment in transmission infrastructure.²¹

At the same time, political leaders create uncertainty with their statements on renewable energy technologies in the national energy mix.²² As a result, South Africa operates a hybrid/semi-deregulated energy system – with Eskom as a buyer in power purchase agreements with IPPs, a role expected to change following unbundling.²³

Insufficient investment in generation capacity during the post-1994 mass electrification drive and limited investment in transmission infrastructure, despite increased heavy industry consumption, resulted in the national grid continuously operating at peak capacity. This significantly damaged the national grid, eventually leading

12 Republic of South Africa. (2008). National Energy Act No. 34 of 2008. Pretoria: Government Printers

13 Republic of South Africa. (2006). Electricity Regulation Act No. 04 of 2006. Pretoria: Government Printers

14 Department of Mineral Resources and Energy of the Republic of South Africa. (2019). Integrated Resource Plan 2019. Retrieved from <https://www.energy.gov.za/irp/2019/IRP-2019.pdf>

15 Republic of South Africa. (2023). Renewable Energy Independent Power Producers Programme. Retrieved from South African Government: <https://www.gov.za/about-government/government-programmes/renewable-independent-power-producer-programme>

16 Department of Mineral Resources and Energy of the Republic of South Africa. (2023). South African Renewable Energy Master Plan. Retrieved from [https://www.dmr.gov.za/Portals/0/Resources/Renewable%20Energy%20Masterplan%20\(SAREM\)/South%20African%20Renewable%20Energy%20Masterplan%20\(SAREM\)%20Draft%20III.pdf?ver=2023-07-17-141604-137×tamp=1689596128318](https://www.dmr.gov.za/Portals/0/Resources/Renewable%20Energy%20Masterplan%20(SAREM)/South%20African%20Renewable%20Energy%20Masterplan%20(SAREM)%20Draft%20III.pdf?ver=2023-07-17-141604-137×tamp=1689596128318)

17 Department of Mineral Resources and Energy of the Republic of South Africa. (2019). Integrated Resource Plan 2019. Retrieved from <https://www.energy.gov.za/irp/2019/IRP-2019.pdf>

18 Ibid

19 Khan, M. T., Thopil, G. A., & Lalk, J. (2016). Review of proposals for practical power sector restructuring and reforms in a dynamic electricity supply industry. *Renewable and Sustainable Energy Reviews*, 62, 326–335. <https://doi.org/10.1016/j.rser.2016.04.056>

20 The Independent System and Market Operator Bill (ISMO Bill) was intended to support the unbundling of Eskom. It transfers the buying and selling of electricity from Eskom to an independent body and manages the sale of generated electricity. However, progress in passing the bill into law has been limited, with the bill being [withdrawn in 2014](#). More recently, the Private Members Bill o the 2019 ISMO was [rejected](#).

21 National Treasury of the Republic of South Africa (2023). *Annexure W3 - Eskom Debt Relief*. [online] www.treasury.gov.za. Available at: <https://www.treasury.gov.za/documents/National%20Budget/2023/review/Annexure%20W3.pdf>.

22 Paton, C. (2023). Eskom announces interim results; says unbundling is on track. *News24*. <https://www.news24.com/fin24/economy/eskom-announces-interim-results-says-unbundling-is-on-track-20230331>

23 Department of Mineral Resources and Energy of the Republic of South Africa. (2019). Integrated Resource Plan 2019. Retrieved from <https://www.energy.gov.za/irp/2019/IRP-2019.pdf>

to loadshedding.²⁴ While both White Papers acknowledged the potential risk of generation and supply shortages, not enough was done to address these risks.²⁵

Renewable energy and the Integrated Resource Plan

The IRP is a strategy providing insights into South Africa's electricity demand and how that demand is satisfied, enabling predictability related to costs associated with required infrastructure investments.

Renewable energy generation in the form of solar photovoltaic (PV) and wind power has increased over the last decade, supported by the implementation of the REIPPPP. According to the IRP 2019, under the REIPPPP, 6,422 MW (6.4GW) have been produced, of which 3,878 MW are operational and available to the national grid.²⁶ This corroborates the earlier statement that investment in grid infrastructure, especially to improve investment efficiency for renewables, has been sub-optimal to nearly 3GW of untapped power potential. The IRP 2019 and the Integrated Resource Plan 2019 goals are to increase solar PV and wind generation to 10.5% (7,985 MW) and 15.1% (11,442 MW) by 2030.²⁷

However, the ongoing delay in developing and publishing the successor to IRP 2019 constrains the vision for expected targets for renewable energy and private sector actors within the country's electricity mix, further adding to the uncertainty.

REIPPPP – What is it? Its successes and shortcomings

The REIPPPP is a programme created by the government to secure electricity from independent power producers through renewable energy sources to add to the national

grid. Additionally, the REIPPPP also sought to enable the development of a local renewable energy manufacturing industry.²⁸

Private-sector power generators submit bids for various technologies during state-organised bid windows, indicating total megawatts (MW). Preferred bidders must sign a non-negotiable 20-year power purchase agreement (PPA) with Eskom as the off-taker. The extended time horizon incentivises producers to bear upfront capital risk. PPAs are adjusted for inflation, and government payment guarantees are in place if Eskom cannot fulfil its payment obligations.²⁹

Since the inception of the REIPPPP, 6,308.68 MW of renewable electricity generation has been added to the national grid.³⁰ Additionally, the program is reported to have created an average of 55,217 jobs since 2011³¹ and supported the development of a local solar PV industry.³² Moreover, REIPPPP has reduced solar PV and wind electricity tariffs³³ and promoted rural development.³⁴

Shortcomings

The multi-year gap between the REIPPPP Bid Windows 4 and 5 (occurring in 2018 and 2021) negatively impacted localisation in the solar PV value chain, leading to several local manufacturers going out of business due to insufficient demand, which created uncertainty among investors.³⁵ Achieving financial closure has been a challenge for several Bid Window 5 projects due to increased interest rates and lower tariffs, resulting in several projects being unable to produce electricity for the national grid.³⁶ Additionally, Bid Window 6's allocation of 860 MW of the planned 5200 MW due to a lack of grid capacity and political uncertainty further highlights some of the challenges facing REIPPPP.³⁷ The lack of transmission

24 Meyer, Edson & Overen, Ochuko. (2021). Towards a sustainable rural electrification scheme in South Africa: Analysis of the Status quo. Energy Reports. 7. 4273-4287. 10.1016/j.egy.2021.07.007.

25 Ibid

26 Ibid

27 Ibid

28 Eberhard, A., & Naude, R. (2016). The South African Renewable Energy Independent Power Producer Procurement Programme: A Review and Lessons Learned. Journal of Energy in Southern Africa, 27(4), 1. <https://doi.org/10.17159/2413-3051/2016/v27i4a1483>

29 Ibid

30 Department of Mineral Resources and Energy of the Republic of South Africa. (2023). Project Database. <https://www.ipp-projects.co.za/ProjectDatabase>

31 Kiepila, B. (2021). Renewable energy gains momentum in Africa. www.cnbcafrica.com. <https://www.cnbcafrica.com/2021/renewable-energy-gains-momentum-in-africa/>

32 USAID Power Africa. (2022). South African Solar PV Value Chain - Analysis and Strategies for Increasing Localization. Retrieved from https://pdf.usaid.gov/pdf_docs/PA00ZHT4.pdf

33 Eberhard, A., & Naude, R. (2017). The South African Renewable Energy Independent Power Producers Program - Review, Lessons Learned & Proposals to Reduce Transaction Costs. UCT Graduate School of Business. https://www.gsb.uct.ac.za/files/EberhardNaude_REIPPPPReview_2017_1_1.pdf

34 Swartz, K. (2019). Addressing community energy challenges with utility scale renewables: A case study of Hopefield Wind Farm. <https://core.ac.uk/download/pdf/196259785.pdf>

35 USAID Power Africa. (2022). South African Solar PV Value Chain - Analysis and Strategies for Increasing Localization. Retrieved from https://pdf.usaid.gov/pdf_docs/PA00ZHT4.pdf

36 Mukherjee, P. (2023). Exclusive: South Africa's green power push falters as projects fail. Reuters. <https://www.reuters.com/business/energy/south-africas-green-power-push-falters-projects-fail-2023-07-18/>

37 Hohm Energy. (2023, August 11). Overcoming Hurdles on the Path to Renewable Energy Progress. Daily Maverick. <https://www.dailymaverick.co.za/article/2023-08-11-overcoming-hurdles-on-the-path-to-renewable-energy-progress/>

infrastructure in areas favourable for wind energy generation projects was a significant bottleneck to the effective implementation of REIPPPP Bid Window 6.³⁸

Restructuring and reforming the electricity supply industry

A crucial element to ensure the success of the REIPPPP is reforming the electricity supply industry (ESI), moving the country away from Eskom's monopoly of the ESI as a vertically integrated utility.

Progress continues towards unbundling Eskom, with NERSA providing the National Transmission Company of South Africa (NTCSA), the unbundled segment of Eskom's transmission business, with a transmission licence.³⁹ Additionally, firm commitments in the form of the Electricity Regulation Amendment Act suggest political will for the reform of the ESI, increasing investor confidence in a level playing field between Eskom and IPPs, and the development of a sustainable ESI in the face of the technological developments that confront the sector.⁴⁰

Research by Khan, Thopil and Lalk argues that the wholesale privatisation of Eskom is unrealistic in the short to medium term.⁴¹ Instead, they suggest the introduction of an independent transmission system and market operator (ITSMO) that owns transmission infrastructure and uses a single buyer model, similar to the current REIPPPP system in which Eskom acts as the single buyer of electricity generated by IPPs, in addition to being responsible for ESI planning.⁴² The essence of this proposal bears similarities to the beleaguered ISMO Bill. However, in practice, it is more aligned with the proposals presented by Eskom in its plans for unbundling and, with minor modifications, could act as a middle ground between the current situation and the future implementation of the ISMO Bill.

The need for greater coherence

South Africa's energy context has changed significantly since 1994, with the changing international geopolitical

environment and growing concerns of the impacts of climate change becoming major driving. A radically new context requires updating existing energy policies, which transposes the vision and ambitions of the 1998 White Paper into the current context and enables cohesion and alignment of plans, programs and regulations developed over the last 25 years.

As the private sector increasingly drives public procurement of renewable energy generation, bottlenecks resulting from the lack of transmission grid infrastructure cannot be overlooked. Optimising the existing transmission grid infrastructure, particularly in areas of high wind energy generation potential, and reviewing how grid capacity is allocated will be critical to addressing and removing bottlenecks to integrating various renewable energy sources into the electricity generation mix.⁴³ Similarly, greater coherence between plans, programmes, and regulations to address incompatibilities will be critical for successfully implementing the REIPPPP.

A positive move in addressing the incompatibilities between plans, programs and regulations is the Amendment of Schedule 2 of the Electricity Regulation Act 04 of 2006. The Amendment focuses on the exemptions from the obligation to apply for and hold a licence. Schedule 2 encompasses a range of activities: those exempt from licensing and registration, those exempt from licensing but still requiring compliance with the code and registration with the regulator, and procedures related to the revocation and deregistration of licenses.⁴⁴

The Amendment of Schedule 2 to remove the licensing requirement for generation projects, regardless of size, was implemented to enable a larger scale of private sector investment in generation projects as part of the government's Energy Action Plan.⁴⁵ Increased private investment will be critical to enabling the financial viability of renewable energy generation projects, given the challenges facing these projects due to high financing

38 Theobald, S. (2023, January 9). *Eskom's renewable energy shocker*. Retrieved from BusinessLive: <https://www.businesslive.co.za/bd/opinion/columnists/2023-01-09-stuart-theobald-eskoms-renewable-energy-shocker/>

39 Eskom Holdings. (2023). Eskom welcomes NERSA's granting of the Transmission licence to NTCSA - Eskom. [www.eskom.co.za. https://www.eskom.co.za/eskom-welcomes-nersa-granting-of-the-transmission-licence-to-ntcsa/](https://www.eskom.co.za/eskom-welcomes-nersa-granting-of-the-transmission-licence-to-ntcsa/)

40 Creamer, T. (2023). Eskom unbundling, ERA promulgation will demonstrate electricity reform "political will." Engineering News. <https://www.engineeringnews.co.za/article/eskom-unbundling-era-promulgation-will-demonstrate-electricity-reform-political-will-2023-08-11>

41 Khan, M. T., Thopil, G. A., & Lalk, J. (2016). Review of proposals for practical power sector restructuring and reforms in a dynamic electricity supply industry. *Renewable and Sustainable Energy Reviews*, 62, 326-335. <https://doi.org/10.1016/j.rser.2016.04.056>

42 Ibid

43 Bizcommunity. (2023, May 24). Sawa advocates for grid optimisation to avoid another failed REIPPP bid window. Bizcommunity. <https://www.bizcommunity.com/Article/196/704/238700.html>

44 Republic of South Africa. (2006). Electricity Regulation Act No. 04 of 2006. Pretoria: Government Printers

45 Government of the Republic of South Africa. (2023). Energy Action Plan - One Year Progress Report. https://www.stateofthenation.gov.za/assets/downloads/Update_on_energy_action_plan_AUG23.pdf

costs, notably when local financial institutions are excluded from project financing and supply chain challenges.⁴⁶ However, potential challenges should not be ignored. These include the Amendment's silence in addressing administrative issues within Eskom raised by AgriSA,⁴⁷ and terminology uncertainties.⁴⁸

Effective implementation of localisation provisions within the REIPPPP can reduce the vulnerability faced by IPPs in procuring certain components for large-scale renewable energy projects, reducing the impact of global supply chain issues emerging from the COVID-19 pandemic and the war in Ukraine.⁴⁹ This will require policies and regulations targeting the promotion of localisation in the most appropriate value chain elements based on the country's resources instead of attempts at complete self-sufficiency.^{50,51}

The South African Renewable Energy Masterplan (SAREM) suggests setting specific goals for local involvement, including both public and private sectors, and creating special economic zones. SAREM offers opportunities to increase local participation, promote economic growth, and support small and medium enterprises through enterprise development programmes.⁵²

Lastly, connecting the REIPPPP to the existing off-grid and rural electrification plans and frameworks holds significant potential for achieving universal energy access. IPPs could support the development of decentralised renewable energy microgrids, which would be significant in areas where the expansion of transmission infrastructure would present considerable challenges and provide affordable electricity to communities in relatively short periods compared to the longer timeframes required for natural gas or nuclear power.⁵³ Moreover, this can enable IPPs to engage with communities better, enabling the capacity building of local communities and strengthening the social license to operate.⁵⁴

Conclusion

South Africa's renewable energy sector is on the cusp of significant growth and transformation. The REIPPPP has already made substantial progress in boosting renewable energy capacity, and it will receive further support from the implementation of SAREM to achieve its objectives. Simultaneously, restructuring the electricity supply industry, including unbundling Eskom, promises a more competitive and sustainable energy sector. With increasing global and national pressures for decarbonisation, REIPPPP is poised to advance South Africa's renewable energy goals and support the Just Energy Transition Partnership, which will be a key feature of South Africa's engagement at the upcoming Climate Conference of the Parties (28) in Dubai.

However, as South Africa's renewable energy landscape expands, potential risks emerge, such as grid instability from intermittent renewable sources, socioeconomic disparities in accessing benefits, and regulatory challenges. Balancing rapid expansion and ensuring grid reliability while addressing these risks is crucial to transitioning to renewable energy.

46 Theobald, S. (2023). STUART THEOBALD: SA institutions risk being crowded out of green financing. [online] BusinessLIVE. Available at: <https://www.businesslive.co.za/bd/opinion/columnists/2023-11-13-stuart-theobald-sa-institutions-risk-being-crowded-out-of-green-financing/>

47 AgriSA (2023). Amendment of Schedule 2 of the Electricity Regulation Act: A big step in the right direction to reforming the energy sector. [online] Agri SA. Available at: <https://agrisa.co.za/media/amendment-of-schedule-2-of-the-electricity-regulation-act-a-big-step-in-the-right-direction-to-reforming-the-energy-sector>

48 van der Poel, J., Felekis, A. and Kota, M. (2021). New issues with amended Schedule 2 of the ERA for private generation. [online] ESI-Africa.com. Available at: <https://www.esi-africa.com/industry-sectors/generation/new-issues-with-amended-schedule-2-of-the-era-for-private-generation/>

49 USAID Power Africa. (2022). South African Solar PV Value Chain - Analysis and Strategies for Increasing Localization. Retrieved from https://pdf.usaid.gov/pdf_docs/PA00ZHT4.pdf

50 Ibid

51 Altbeker, A. (2021, November 21). Why 'localisation' is the siren song of the South African economy. Retrieved from Daily Maverick: <https://www.dailymaverick.co.za/opinionista/2021-11-22-why-localisation-is-the-siren-song-of-the-south-african-economy/>

52 Department of Mineral Resources and Energy of the Republic of South Africa. (2023). South African Renewable Energy Master Plan. Retrieved from [https://www.dmr.gov.za/Portals/0/Resources/Renewable%20Energy%20Masterplan%20\(SAREM\)/South%20African%20Renewable%20Energy%20Masterplan%20\(SAREM\)%20Draft%20III.pdf?ver=2023-07-17-141604-137×tamp=1689596128318](https://www.dmr.gov.za/Portals/0/Resources/Renewable%20Energy%20Masterplan%20(SAREM)/South%20African%20Renewable%20Energy%20Masterplan%20(SAREM)%20Draft%20III.pdf?ver=2023-07-17-141604-137×tamp=1689596128318)

53 Swartz, K. (2019). Addressing community energy challenges with utility scale renewables: A case study of Hopefield Wind Farm. <https://core.ac.uk/download/pdf/196259785.pdf>

54 Wlokas, H. L., Boyd, A., & Andolfi, M. (2012). Challenges for local community development in private sector-led renewable energy projects in South Africa: an evolving approach. *Journal of Energy in Southern Africa*, 23(4), 46-51. <https://doi.org/10.17159/2413-3051/2012/v23i4a3177>



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