2030 South Africa Roadmap

Multiplying the Transition: Market-based solutions for catalyzing clean energy investment in emerging economies

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October 2021

BloombergNEF

CIF CLIMATE INVESTMENT FUNDS

About

BloombergNEF is working with the Climate Investment Funds to identify how financial intermediaries can mobilize clean energy investment in emerging markets. In the context of post-pandemic sustainable recoveries and the need to meet international climate commitments such as the Nationally Determined Contributions (NDCs), accelerating the global energy transition is now more pressing than ever. BNEF sees electrification through clean power and transport as the basis of decarbonization, and therefore, as the backbone of the energy transition. With investors' appetite for ESG products at an all-time high and capital needs for clean energy investment in many emerging markets often unmet, this project looks at how to better match this supply and demand. This slide deck serves to support the dialog with stakeholders on this topic.

About Climate Investment Funds (CIF)

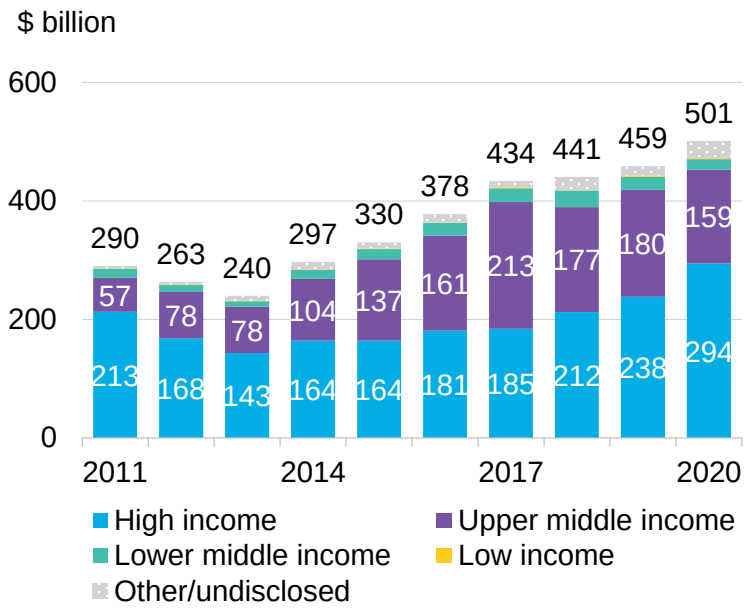
The Climate Investment Funds (CIF) is one of the world's largest and most ambitious climate finance mechanisms. Founded in 2008, it represents one of the first global efforts to invest in a dedicated climate finance vehicle. The CIF emerged from recognition by world leaders that climate change and development are inextricably intertwined. The CIF's creation also recognized a need to fill a gap in the international climate finance architecture—to deliver climate-smart investment at scale. The CIF supports developing and emerging economies in shifting to low carbon and climate resilient development.

About BloombergNEF (BNEF)

BloombergNEF (BNEF) is a strategic research provider covering global commodity markets and the disruptive technologies driving the transition to a low-carbon economy. Our expert coverage assesses pathways for the power, transport, industry, buildings and agriculture sectors to adapt to the energy transition. We help commodity trading, corporate strategy, finance and policy professionals navigate change and generate opportunities.

BNEF Take: Emerging markets and the energy transition

Global energy transition investment



- Despite reaching a record-high in 2020, at $501 billion, global energy transition investment has become even more concentrated in high income countries as a result of the Covid-19 pandemic. Emerging markets are, however, key to achieving the global energy transition, as they will produce the bulk of global emissions until 2050. In the context of delivering sustainable post-pandemic recoveries, accelerating economy-wide decarbonization is therefore more important than ever to keep global temperatures well below 2°C to deliver on the goals set under the Paris Agreement.
- BNEF sees electrification through clean power as the basis of decarbonization, and therefore, as the backbone of the energy transition. The power sector is a major contributor to overall emissions, with coal still the largest source of generation. Clean power generation technologies are the most readily available, scalable decarbonization solutions. To enable zero-carbon electrification of further sectors, renewable energy capacity needs to be expanded through utility-scale projects and distributed assets.
- At $307 billion in 2020, investment volumes in renewable energy and storage are, however, far from the necessary levels to achieve this: BNEF estimates that expanding and decarbonizing the power system to stay on track for warming of as much as 1.75 degrees Celsius would require over $2 trillion globally in power generation assets and batteries per year until 2050. There is therefore an urgent need to mobilize and accelerate clean power investment, particularly in emerging markets.

Source: BloombergNEF. Note: Numbers include renewable energy, electrified transport, electrified heat, energy storage, carbon capture and storage and hydrogen.

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Project overview

- **Focus: Scaling up clean energy investment through financial intermediaries in emerging markets**
  - Global energy transition investment and sustainable debt issuance reached a record high in 2020, but flows continue to be concentrated in the world's wealthiest countries and a select group of trail-blazing emerging markets.
  - The 2020s are the decade where lessons learned need to be replicated and scaled across emerging markets to ensure that their economies can grow sustainably, and help meet the objectives of the Paris Agreement.
  - Through fund-deployment and fund-raising activities, financial intermediation has an important role to play in activating more players in the investment chain, mobilizing more capital and ensuring more liquidity for the energy transition.

- **The "Roadmaps": Exploring country-level clean energy finance to 2030**
  - Focus: The short- to mid-term opportunities for intermediation in mobilizing clean energy investment in emerging markets in order to fulfil the commitments of the Paris Agreement.
  - Countries: India, Indonesia, South Africa, Morocco and Brazil.

- **Final report - structure:**
  - Part 1: "Looking back": The evolution of financial intermediation in delivering clean energy investment.
  - Part 2: "Present situation": Current opportunities and constraints to mobilizing investment through intermediaries.
  - Part 3: "Looking forward": The further potential of leveraging intermediaries to accelerate clean energy investment.

South Africa: Key references and background reading

- Department of Mineral Resources and Energy (2021) Risk Mitigation IPP Procurement Programme
- Department of Mineral Resources and Energy (2019) Roadmap for Eskom in a Reformed Electricity Supply Industry
- Department of Mineral Resources and Energy (2019) Integrated Resource Plan
- Department of Mineral Resources and Energy (2019) The South African Energy Sector Report
- Department of Mineral Resources and Energy (2015) Renewable Energy IPP Procurement Programme
- Department of Mineral Resources and Energy (2006) The Electricity Regulation Act (No. 4 of 2006)

South Africa contents

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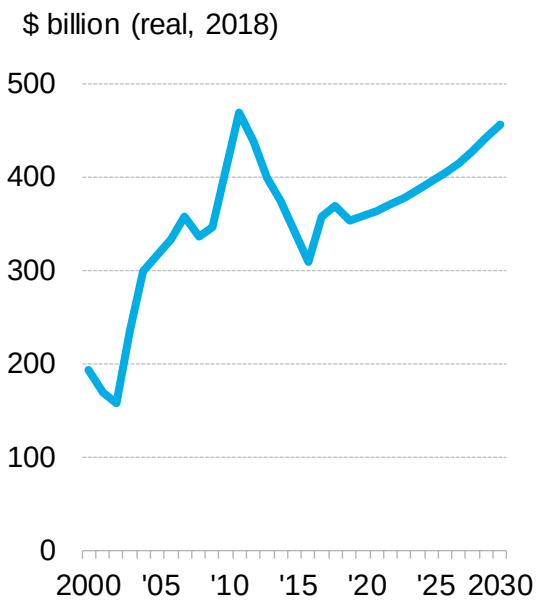
State of the energy transition

South Africa

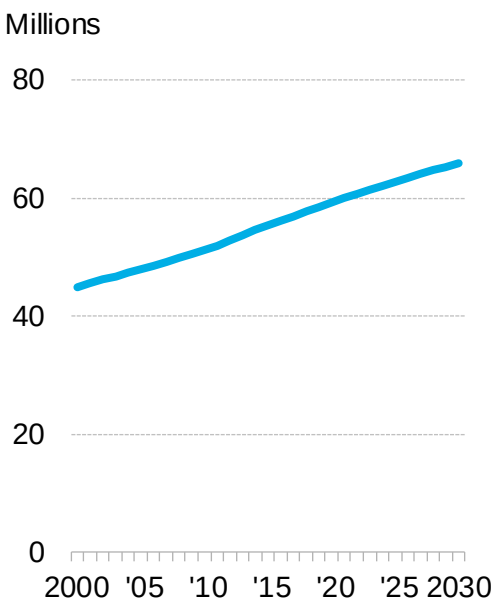
Economic outlook: modest growth in the 2020s

GDP



Source: BloombergNEF, IMF, OECD.

Population



Source: World Bank.

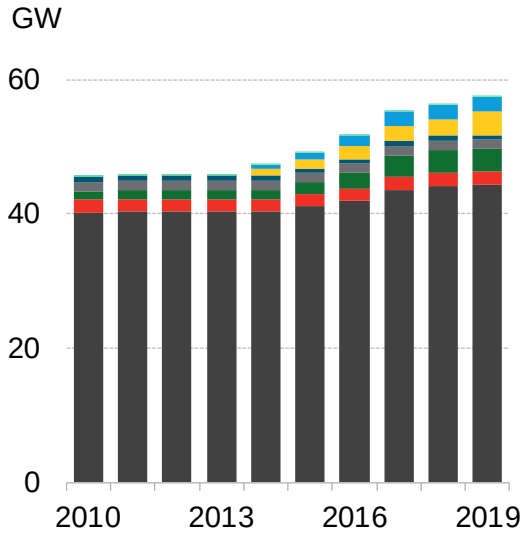
Comments

- South Africa had the 37th-largest national GDP in the world in 2020, and is expected to be 41st-largest by 2030.
- The country had the 25th-largest population in 2020. This is projected to be the same in 2030.
- The country is the 21st-largest power consumer in 2020, and is expected to be the 22nd-largest by 2030.

Source: BNEF New Energy Outlook 2020.

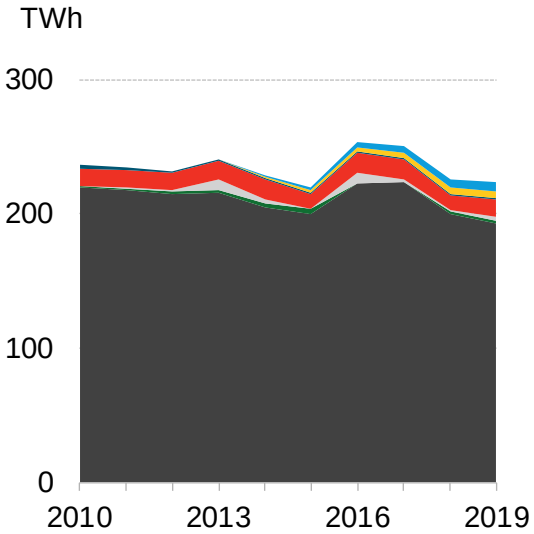
Power demand, mainly met by coal, is set to remain flat in the coming decade due to a weak economic outlook

Installed capacity



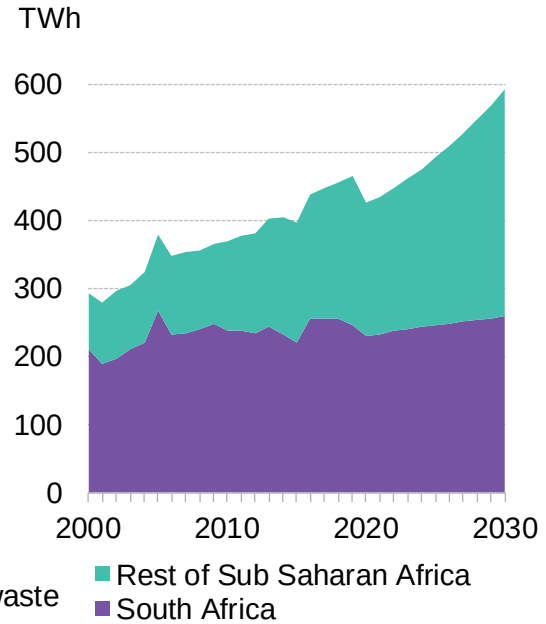
Source: BloombergNEF.

Power generation mix



Source: BloombergNEF.

Power demand trajectory



Source: BloombergNEF.

Coal Nuclear Oil Other fossil fuels Hydro Solar Onshore wind Biomass & waste

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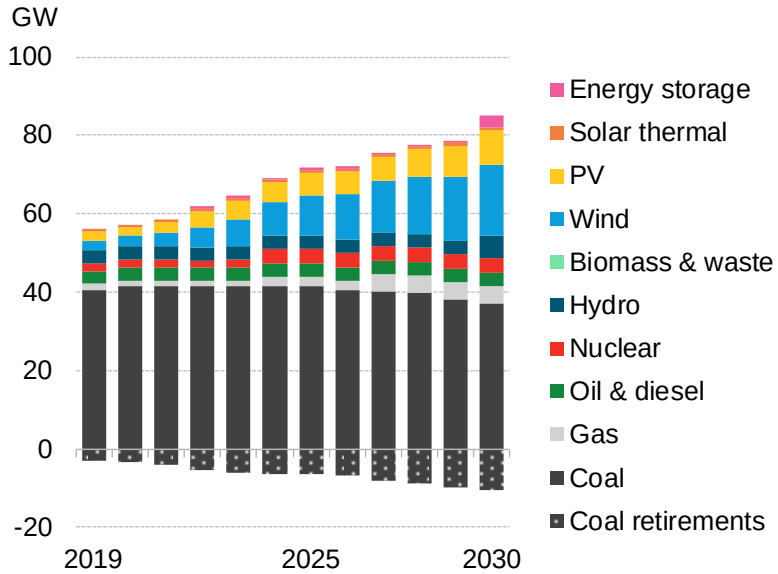
South Africa's targets are ambitious for renewables, but still cling to coal

Renewables targets

Entity	Target	Comments
Integrated Resource Plan 2019 (DMRE)	Target for new capacity procurement by 2030: 14.4GW wind, 6GW PV, 7GW embedded generation, 3GW energy storage – plus 6.5GW new firm capacity, including coal and gas.	The IRP would add 27GW of wind and solar capacity by 2030, and implies over 10GW of coal capacity retirements of the fleet's oldest assets.
Nationally Determined Contribution	Greenhouse gas emissions target to range between 398 and 614 MtCO2e from 2025-30. Likely to change with next NDC.	The current target requires at most a 23% reduction from 2017 emissions.
BNEF outlook	Approximately 30GW of solar and 9GW of wind installed by 2030, producing 59TWh of wind and solar power (compared to an estimated 61TWh in IRP).	This is more solar and less wind than the IRP allocation, but reaches similar generation volumes.

Source: IRP 2019, South Africa NDC, BloombergNEF. Note: BNEF outlook is estimated from our Sub Saharan Africa regional power market modeling.

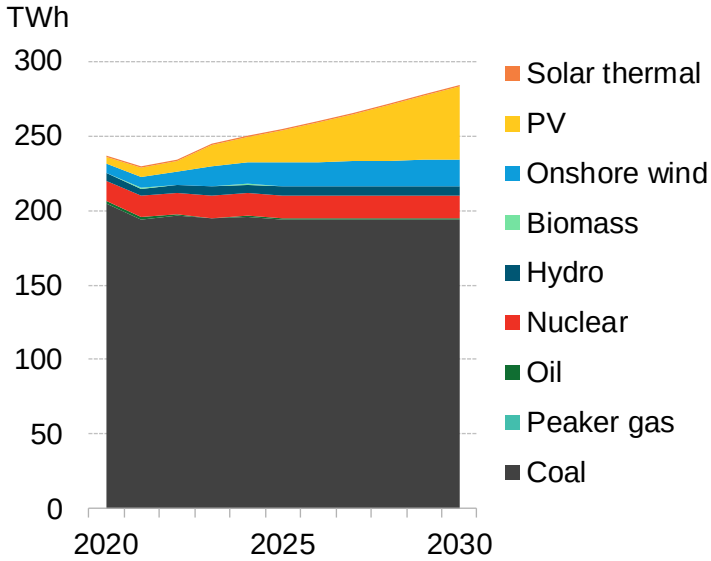
Cumulative installed capacity and coal retirements implied by IRP 2019



Source: IRP 2019, Eskom, BloombergNEF.

Renewables are a $30 billion investment opportunity this decade

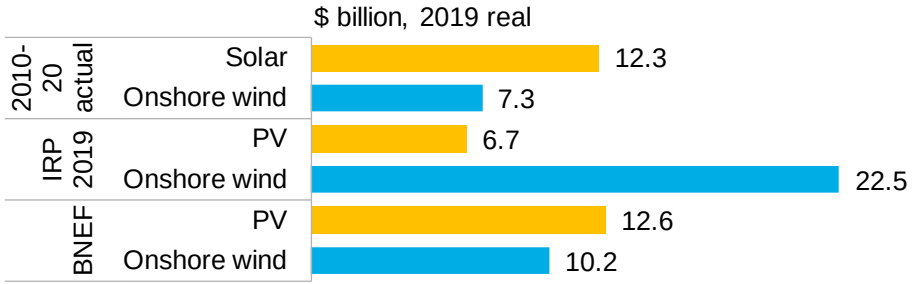
Generation mix outlook: BNEF



Source: BloombergNEF. Note: Generation is derived from BloombergNEF's least-cost modeling of the Sub-Saharan Africa region, under the economic transition scenario of our 2020 New Energy Outlook. This chart derives changes in the regional electricity supply mix, and weights them to South Africa's expected energy demand and technology mix.

- South Africa's 2020-30 allocation of 14.4GW of new wind capacity and 4GW of new PV capacity under the 2019 Integrated Resource Plan (IRP) presents an investment opportunity for $30 billion into new wind and solar assets by 2030. This would represent a 50% increase in investment into wind and solar compared to the previous decade.
- This compares to a total $23 billion of renewables investment that we estimate to be required by 2030. The higher investment requirements of the IRP are due to the government's allocation to higher volumes of more expensive wind generation relative to cheaper PV, compared to our results based on BNEF's least-cost modeling of the region in our 2020 New Energy Outlook (NEO).

Cumulative investment opportunity 2021-30



Source: IRP 2019, BloombergNEF. Note: Historic investment for solar includes solar thermal. Assumes all PV capacity is fixed axis and that all embedded generation allocation in IRP 2019 is PV.

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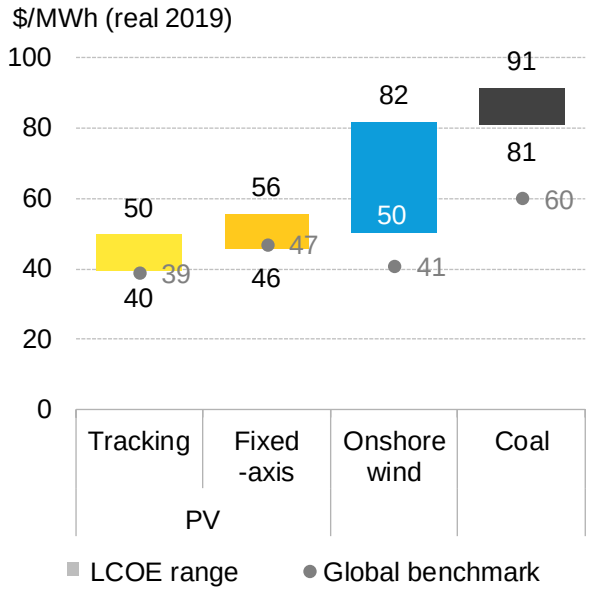
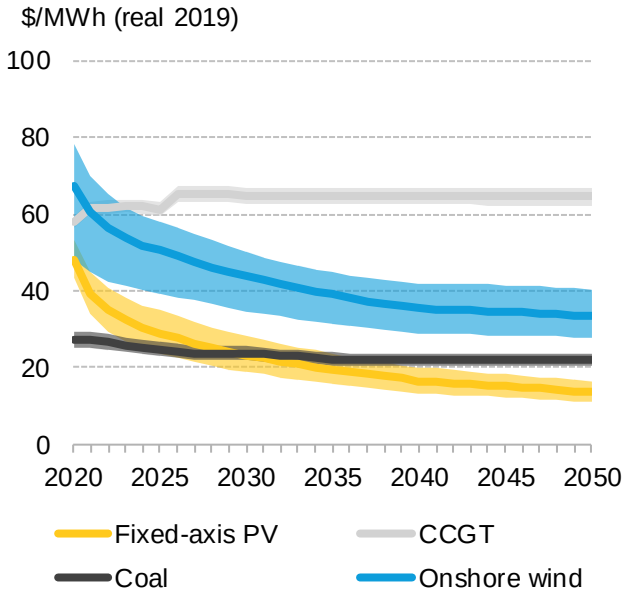
Wind and solar can provide competitive bulk generation

Levelized cost of electricity (LCOE), 2H 2020



Source: CSIR, BloombergNEF.

Forecast LCOEs compared to thermal power plant running costs



Source: BloombergNEF.

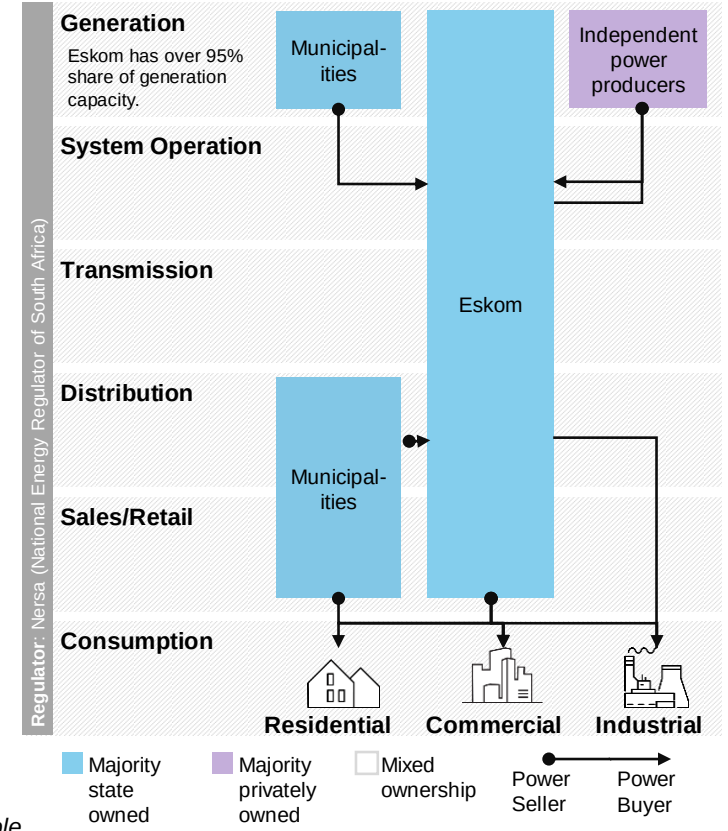
Comments

- The levelized cost of electricity (LCOE) of new-build coal power plants is higher than for onshore wind and PV in South Africa. PV LCOEs in South Africa are on par with BNEF's global benchmark, but onshore wind is notably higher.
- PV remains by far the cheapest renewable energy technology in South Africa until 2050, falling to below $23/MWh within the next decade.
- By 2025, BNEF expects that new best-in-class PV projects would be cheaper to build than running existing coal assets in South Africa.

Single buyer model dominates the South African power sector

Power sector fundamentals	Status	Comments
Utility unbundling	🔴	Single buyer market
Private participation	🟡	Only generation is open
Bilateral contracts	🟢	On- and off-site (off-site PPAs subject to approval)
Off-grid generation	🟡	Residential PV and mini-grids <1MW
Purchase obligation	🟡	No obligation outside REIPPP scheme
Cost-reflective tariffs	🟡	Tariffs need approval from regulator
Wholesale market	🔴	No wholesale market
Standardized PPAs	🟢	PPAs signed in Rand

Source: BloombergNEF. Note: Green = available, yellow = somewhat available, red = not available.



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Renewables build depends on government power sector planning

Clean power policy	Status	Start date	Technologies	Impact to date	Details
Clean power target	In force	2019	Coal, gas, oil, nuclear, wind, solar, energy storage, others.	Strong: South Africa's 2010 IRP drove capacity allocations over 2010-20.	South Africa's target is set via the Integrated Resource Programme (IRP). The 2019 IRP sets the target for 2020-30.
Clean power auctions	In force	2011	Wind, solar, small hydro, biomass.	Mixed: >5GW procured but no rounds held 2015-2021.	Four rounds allocated over 2011-15. Inflation-linked tariffs paid in ZAR. Fifth round announced in March 2021.
Net metering	Somewhat	N/A	Rooftop solar.	-	Only a few municipalities have net metering, such as Cape Town.
Accelerated depreciation	In force	2004/ 2005	Wind, solar, small hydro, biomass <30MW.	Encourages companies to set up renewable projects.	First applicable to biofuels in 2004, then extended to wind, solar and biomass in 2005.
Tax exemptions	In force	2004	Wind, solar	Mixed, due to local content rules also being in place.	Import duty exemptions for large- and small-scale components.
Priority grid access	In force	2017	Wind, solar, small hydro.	-	Take-or-pay.

Auctions are South Africa's key clean energy policy

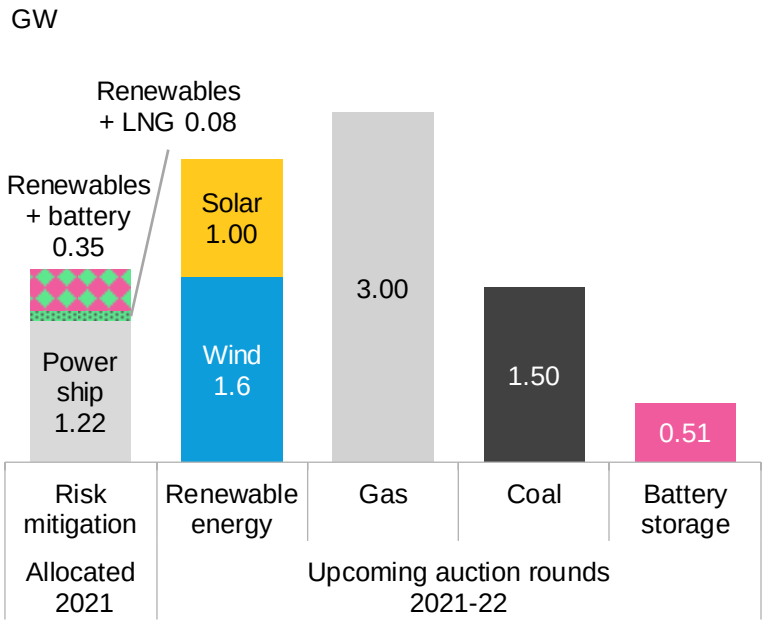
Looking back

- The Integrated Resource Programme (IRP) has been a major driver in allocating capacity in South Africa to date. This document governs the allocation of policies including IPP tenders and generator licensing.
- Four rounds of the Renewable Energy Independent Power Producers Programme (REIPPPP) between 2011 and 2015 spurred over 5GW of new renewables build with 20-year PPAs. For more, see Slide 15.
- The recent risk mitigation tender allocated 26% of PPA contracts to renewable energy projects combined with either battery storage or LNG, demonstrating the growing competitiveness of renewables even in a technology-agnostic tender with strict reliability requirements.

Looking forward

- The upcoming auctions for 4.5GW fossil capacity and 3.1GW of renewables and battery storage by end-2022 will boost investment.
- The planned unbundling of state utility Eskom by the end of 2022 will aid the liberalization of the power market.
- Clearer rules and higher capacity thresholds for onsite self-generation (embedded generation) will help C&I solar projects.

Auctions in South Africa 2021-22



Source: DMRE, BloombergNEF.

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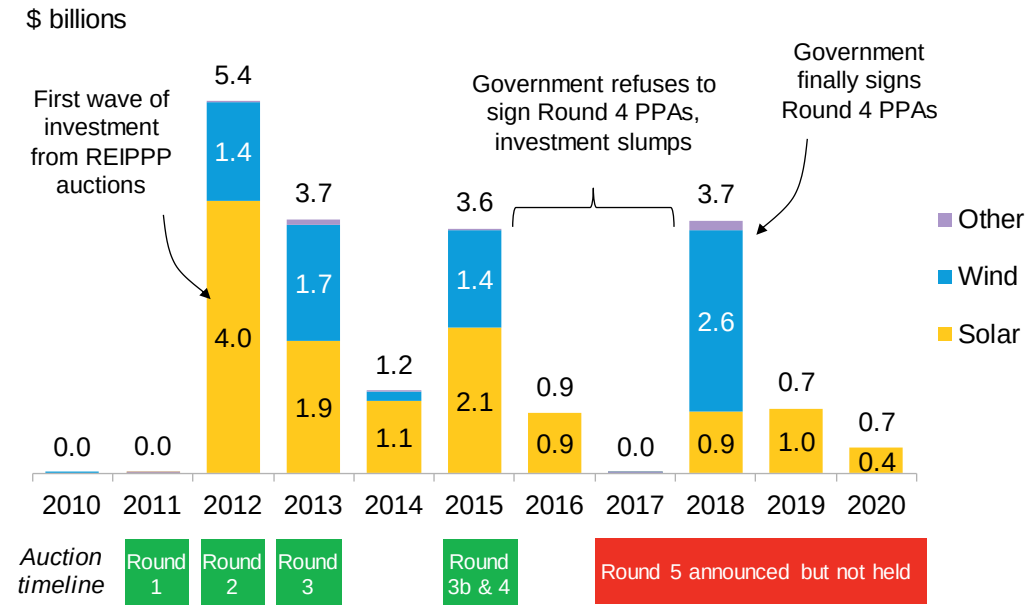
Auctions are responsible for the majority of renewables investment so far

Renewables investment characteristics

- South Africa experienced uneven renewables investment due to a lack of stability in the government's auction program, REIPPP.
- This program is the primary route to market for new renewable energy projects (South Africa's power sector is highly regulated). The lack of auction rounds since 2015 has therefore severely limited the options for developers to build new projects, and has dampened investment. The announcement of the fifth round in March 2021 should help reactivate investment.
- Unstable policy led to large annual fluctuations in wind and solar project financing over 2015-20, dependent on the signing of PPAs. Most investment to date has targeted solar, with $13 billion tracked by BNEF between 2011 and 2020.

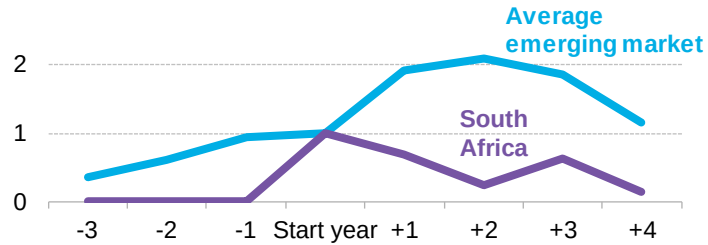
New renewables investment in South Africa



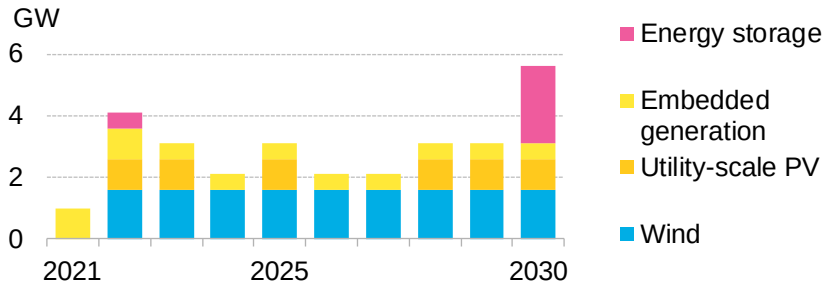
Source: BloombergNEF.

Policy instability has disrupted the auctions pipeline

Clean power auctions and investment growth



IRP clean power allocation 2021-30



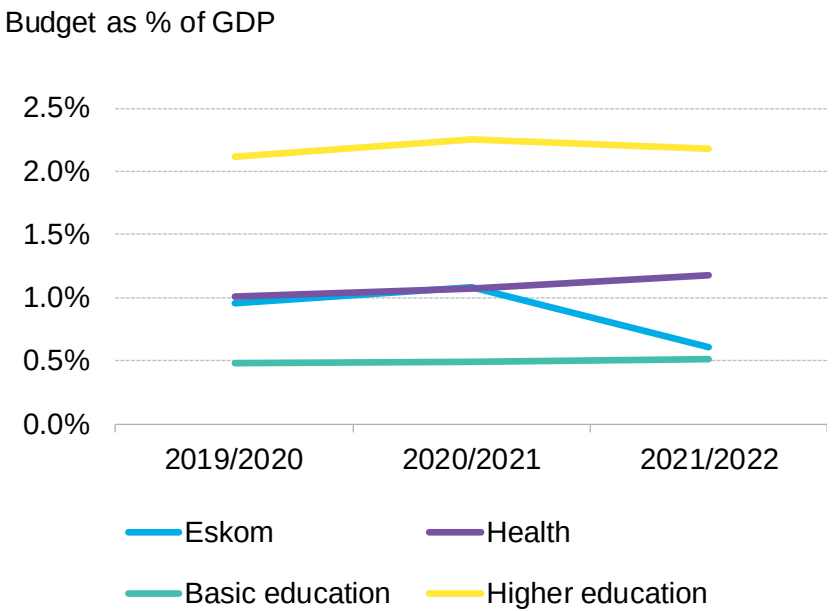
Source: BloombergNEF, CFLI, IRP 2019. Note: Top chart baselined growth to 100. 'Average emerging market' is based on 31 emerging markets that introduced auctions between 2012 and 2018.

Auctions in South Africa: past and present

- Introduced in 2011, the REIPPP auction scheme was initially successful in kick-starting renewables investment in South Africa. It boosted investment rapidly following each successful round as winning IPPs reached financial close on projects.
- Auctions are important in highly regulated markets like South Africa, because they provide a route to market as well as long-term price contracts that can give revenue certainty and attract a low cost of capital to new renewables projects. Competitive auctions also generally result in tariffs that reflect ongoing technology cost trends, which can lower subsidy costs.
- Despite the lack of REIPPP auction rounds since 2015, the fifth round was announced in 2021 to assist with the delivery of the 2019 IRP. The allocation would give a stable pipeline of 20.4GW of utility-scale wind and solar development, with a 3GW allocation for energy storage by 2030.
- If auctions are successfully resumed as planned with the fifth REIPPP round by end-2022, we expect a more stable flow of renewables investment into South African this decade.

Spotlight: Eskom weighs heavily on South Africa‘s budget

South Africa budget allocation by sector

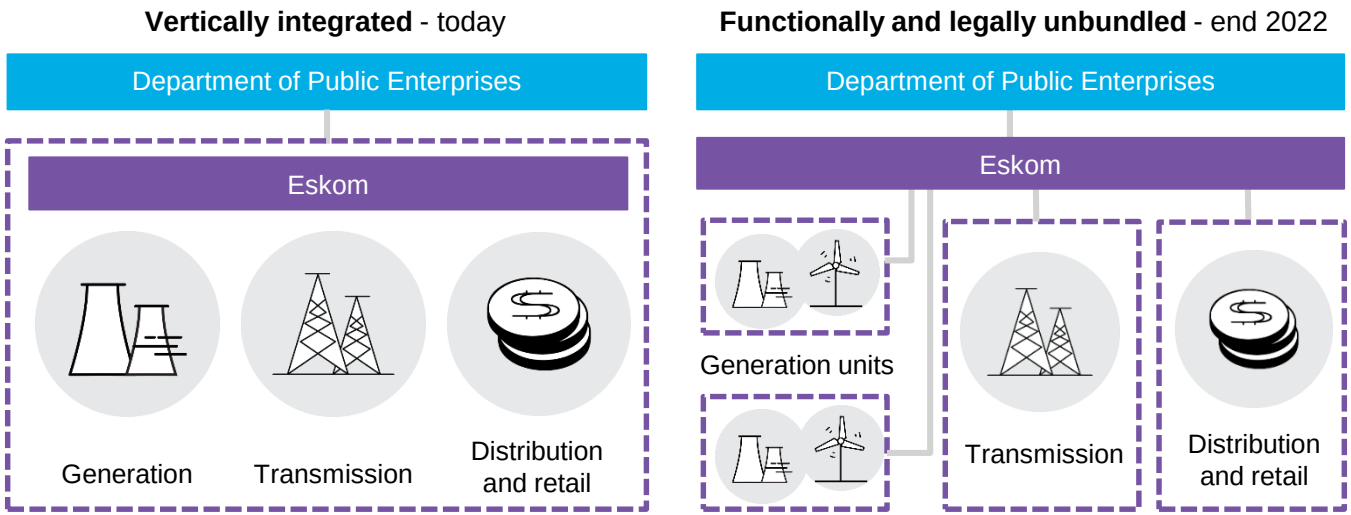


Source: South Africa Treasury, World Bank.

Comments

- Government support for state utility Eskom has been running up deficits, with budget allocations currently comparable with health expenditures at around 1% of GDP.
- Eskom has become unbankable and unable to borrow without government guarantees.
- A combination of factors have caused Eskom‘s financial woes, ranging from poor cost recoup and uneconomical coal assets on its balance sheet to emergency buying of power from IPPs.
- Following the introduction of more stringent Minimum Emission Standards in April 2020, Eskom faces a further risk of emissions penalities, which it estimates could exceed 300 billion Rand ($20 billion).
- A contraction of power demand and electricity sales caused by the Covid-19 pandemic has further exacerbated the utility‘s financial situation.

...but plans to unbundle might help

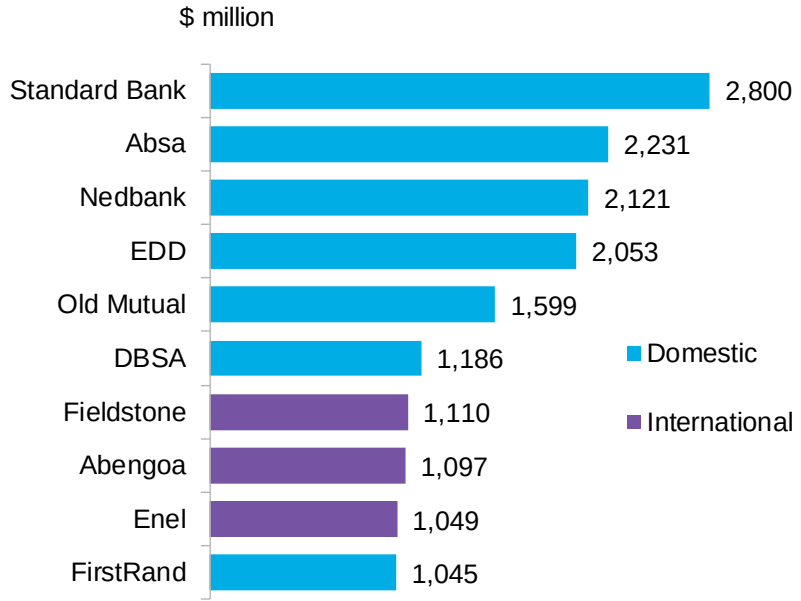


- As a state-owned enterprise, the financial health of Eskom impacts South Africa's credit rating. The government has planned to vertically unbundle Eskom since a 1998 Energy White Paper, but the process stagnated until an unbundling roadmap was released in October 2019.
- In a move to legally and functionally unbundle Eskom by the end of 2022, the government is reducing its budget allocation for Eskom in the hope of reducing its liabilities.

Source: BloombergNEF.

Domestic investors are major players in renewables investment

Key renewables financial players, 2011-2020



Source: BloombergNEF. Note: EDD = Economic Development Department of South Africa; DBSA = Development Bank of South Africa. Only includes disclosed activity.

Renewables investor characteristics

- The top 10 players in South African renewables investment in the past decade mainly comprise of powerful local market actors such as Standard Bank, but also major international investors like Enel. Key domestic actors are commercial banks, but also national governmental entities such as Economic Development Department of South Africa or the Development Bank of South Africa.
- There is a vibrant local market for renewables investors, but the main setback to investment is the regulatory context.
- The largest foreign investors to date in South Africa are project developers and utilities, such as Enel, as a result of participation in auctions. The bankability of the PPAs linked to the auction programs is a key factor in attracting interest from international entities.
- In a bid to stimulate local involvement, past rounds of South Africa's REIPPP scheme stipulated that projects must have 40% domestic participation. It is unclear if this will be upheld in the newly announced REIPPP rounds, which could impact the make-up of investors going forward.

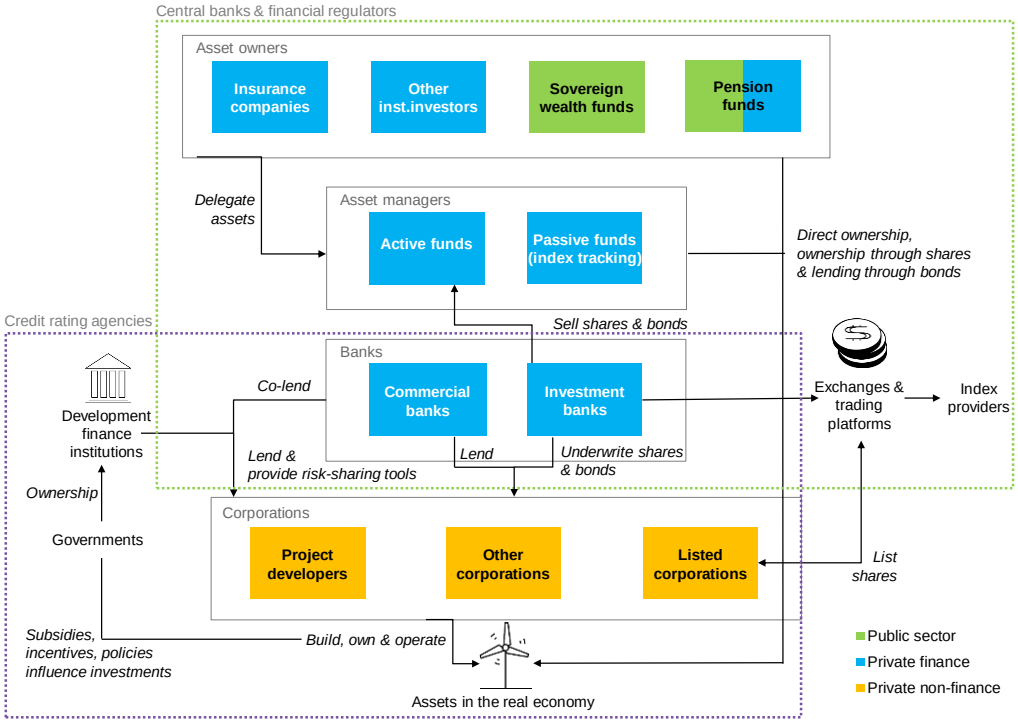
Summary: cheap renewables can resolve supply crisis, but enabling policies are needed

Opportunities	Challenges
Experience in clean power procurement	**Policy instability**
The country has good experience in procuring new capacity through auctions and can leverage this during future rounds.	South Africa has a history of policy instability, such as delays to signing PPAs and retroactive renegotiation of tariffs, which has proved a major market deterrent to investors.
Emergency power needs	**Eskom financial health/subsidized power tariffs**
South Africa‘s electricity supply shortfall and frequent, severe load shedding creates an urgent need for new-build generation assets.	Retail tariffs are set by the regulator and do not allow cost-reflective retail. Aside from being a deterrent to IPPs, this also reduces the incentive for self-generation/net metering by detracting revenue.
Aging fleet needs replacement	**Untransparent regulatory environment**
Many coal assets are over 40 years old and face high costs to meet power plant emissions standards. These will need to be substituted.	Licensing and permitting processes lack transparency, thereby stalling progress for generation license approvals for IPPs.
Loosened rules for self-generation	**Grid issues**
To abate the electricity shortfall issue, rules for self-generation have recently been eased. This offers great potential for large industrials (such as mining houses), corporates or bankable municipalities.	Investment is needed to improve the grid and prepare it for variable resources. In addition, most renewables are currently located in Northern Cape, far from transmission lines.

Financial ecosystem, capacity and financing needs

South Africa

All segments of the investment chain are activated in South Africa



Source: CFLI, BloombergNEF.

A diverse range of domestic and international value chain entities are active in South Africa

Investment chain representation

Entities	National	International
Asset owners	Active	Active
Asset managers	Active	Active
Banks	Active	Active
Corporations	Active	Active

BNEF Take: Intermediation in focus

South African and international markets are generally able to provide most of the clean power investment required, provided that policy, regulatory and offtake risks are properly accounted for. Local DFIs such as the Development Bank of South Africa nonetheless offer support to crowd-in investment, such as through the Climate Finance Facility or Embedded Generation Investment Program.

Source: BloombergNEF.

- The South African financial sector is fairly deep and mature, with all major actors of the investment chain activated and vested to varying degrees in clean power investment.
- While the most active domestic financial participants in renewables investment are banks and corporations, asset owners such as pension funds or life companies and asset managers are also active.
- Ample investment opportunities exist in Rand, so there is little need to borrow hard currency and incur exchange rate risk. Some international investors are impacted by currency hedging issues, but are usually still willing to take on currency risk due to higher expected yields.
- In terms of projects, domestic and international investors are comfortable with established renewables technologies like solar and wind. This includes both greenfield and brownfield projects, provided performance and credit risk are properly accounted for.
- One of the major market deterrents is offtaker risk.

The South African market offers various intermediation examples

Examples of financial intermediation in clean power projects in South Africa

Entity	SUNREF program	Revego Africa Energy Fund	Nedbank
Set-up	Collaboration between bilateral and domestic DFIs (Agence Française de Développement & Industrial Development Corporation)	YieldCo (investment fund)	Domestic commercial bank
Aim	Support public and private banks in financing C&I projects.	Build a growing portfolio of renewables assets in Sub-Saharan Africa.	Funding transactions as part of the government's REIPPP auctions program.
Intermediation	Fund deployment	Fund-raising	Fund-raising
Instruments	Green loans credit line for renewable energy or energy efficiency projects.	Equity stakes in renewables projects.	Green bond: Issuance of a $115 million senior, unsecured green bond, which adheres to ICMA and Climate Bonds standards.
Outcome	One of the major green credit lines in the market, which was extended to provide support during Covid-19.	First yieldco in South Africa to pursue IPO, targeted for early-2021.	The bond was 3x oversubscribed and also marked the first green bond of a South African bank. Nedbank has since then issued further green bonds.

South Africa offers a mature financial sector

Financial sector maturity

Indicator	Value
Domestic credit from financial sector	173.1% of GDP
Domestic credit to private sector by banks	66.7% of GDP
Lending interest rate	10.1%
Stocks traded, total value	81% of GDP
Turnover ratio of domestic shares	33.1%
Depth of credit information index (0=low, 8=high)	7
Strength of legal rights index (0=weak, 12=strong)	5

Source: World Bank. Note: 2019 data.

Key characteristics

Debt:

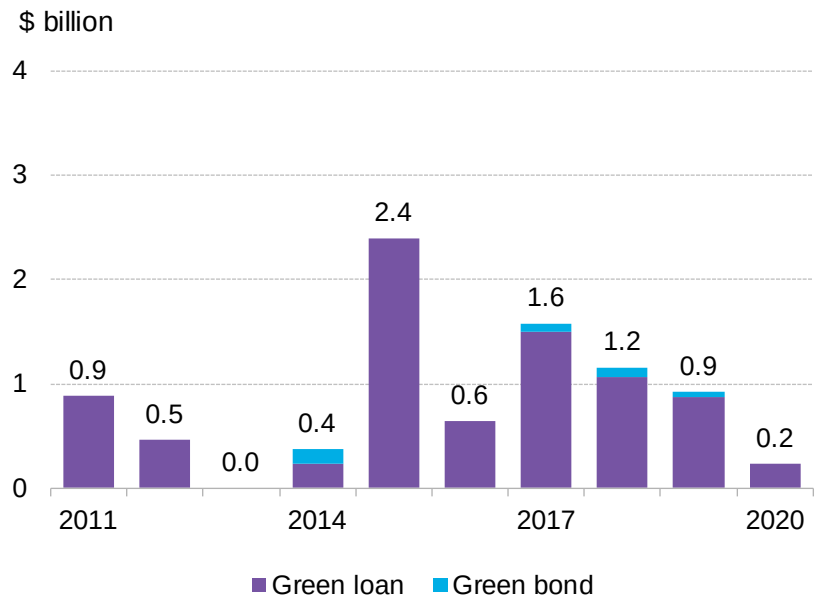
- The South African market offers a variety of debt products, with loans easily available.
- There is easy access to domestic and international bond markets, with green bonds already a feature of the market. Bonds can also be issued via private placements to established investors, such as in the case of the Development Bank of South Africa's $200 million green bond to the Agence Française de Développement.

Equity:

- The South African market has good liquidity in terms of equity investors, ranging from private sector entities to DFIs. Many domestic institutional investors have impact investment funds in clean power.

Despite being an early adopter of sustainable debt, volumes are decreasing

Sustainable debt issuance



Source: BloombergNEF. Note: Data includes all sub-industries.

Comments

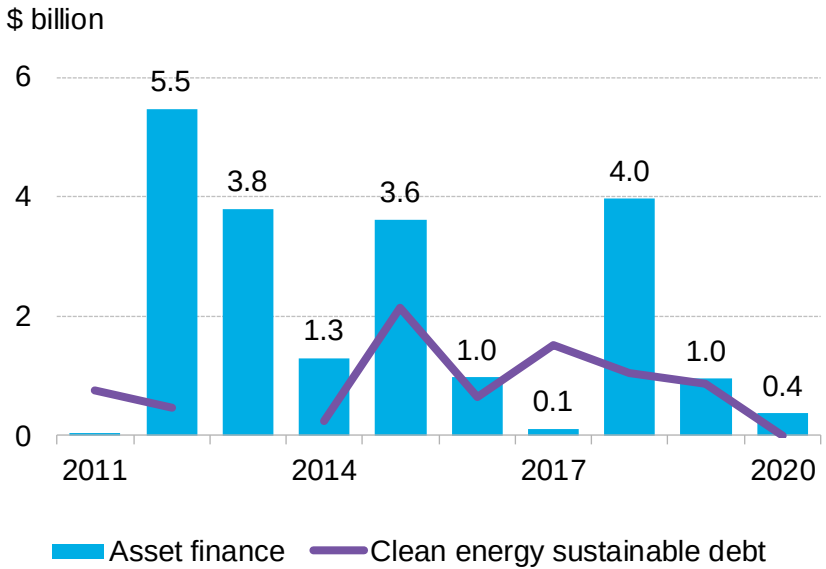
- South Africa is commited to advancing sustainable finance regulation through its membership in the Sustainable Banking Network (Banking Association South Africa, BASA).
- Key policies on sustainable finance include:
  - Green Economy Accord, 2011
  - Principles for managing Environmental and Social risks, 2015
  - King IV Code On Corporate Governance, 2016
  - Debt Listings Requirements for the Green Segment, 2017
  - Guidance Notice: Sustainability of investments and assets in the context of a retirement fund's investment policy statement,

BNEF Take: Green bonds

Green bonds are attractive instruments for IPPs to meet their debt needs, particularly if local lending conditions do not match renewables project development conditions. Following the issuance of sustainable finance regulation, exploring green bonds can also prove interesting to international investors seeking to fulfil ESG mandates. As South Africa is well served in loan instruments and the project pipeline has stalled, there have been few issuances of green bonds from the power sector in recent years.

Sustainable finance offers refinancing opportunities going forward

Clean energy sustainable debt volume compared to asset finance



Source: BloombergNEF. Note: Sustainable debt here only includes issuances from utilities, renewable energy and power generation.

Comments

- Similar to the trend seen in asset finance for new renewables projects, sustainable debt issuance in the power industry in South Africa is volatile and has tapered off in recent years due to the lack of project pipeline.
- Sustainable debt in the power sector is exclusively issued by corporates, which issued $7.7 billion in the past decade.
- Debt instruments have been issued in a variety of currencies in the past decade. While most debt instruments were denominated in South African Rand at $5.1 billion, U.S. dollar-denominated instruments were also popular at $2.3 billion. There were even a number of euro-denominated instruments totaling $0.25 billion.

Capex declines and falling cost of debt and equity benefit PV going forward

LCOE assumptions

	2020		2030	
	PV	Wind	PV	Wind
Capex ($m/MW)	0.67	1.62	0.4	1.49
Debt ratio	80%	80%	80%	80%
Cost of debt (bps)	1200	1100	779	769
Cost of equity	14%	15%	10.3%	10.5%

Comment

- Financing conditions are currently similar for PV and onshore wind in South Africa, excluding the overall differences in system capex. The South African LCOE for PV is on par with the global PV benchmark of $40-50/MWh.
- Financing conditions further improve in particular for PV toward 2030. Despite improved financing conditions, capex for wind remains high until 2030.
- On an LCOE basis, PV is the best suited technology to add or replace power-generating capacity in the next 10 years.

Source: BloombergNEF. Note: Green shading = improvement, yellow = stable, red = deterioration. PV = fixed-axis PV, wind = onshore wind.

Summary: future clean power investment will depend on the regulatory environment

Opportunities

Strength of local and international financial sector

The South African financial ecosystem is well placed to (re-)finance greenfield and brownfield renewables projects through a variety of entities and instruments. In addition, access to international markets opens up further avenues to finance.

Advanced sustainable finance regulation

Dependent on a clear project pipeline and regulatory outlook, the South African market can leverage its bond markets and advanced sustainable debt regulation to (re-)finance renewables projects. This offers investors the possibility to invest in suitable assets that fulfil their ESG mandates.

Leverage C&I/municipalities' financial health

The relaxation of rules for self-generation under the emergency power situation creates investment opportunities for public and private sector entities wishing to stabilize their power supply. This will interest bankable municipalities, well capitalized mines and large industrials.

Challenges

Eskom's financial health

Eskom's financial woes negatively impact the power sector and government finances. In addition to incurring losses, aging coal assets that urgently need upgrades or decommissioning are liabilities on the government's balance sheet, yet Eskom is virtually unbankable.

Deteriorating credit rating

The financial ills of Eskom, in addition to weak GDP growth and the impact of the Covid-19 pandemic, are increasing the liabilities of the South African government. This is negatively impacting the government's credit rating, which makes accessing capital more challenging.

Risk perception

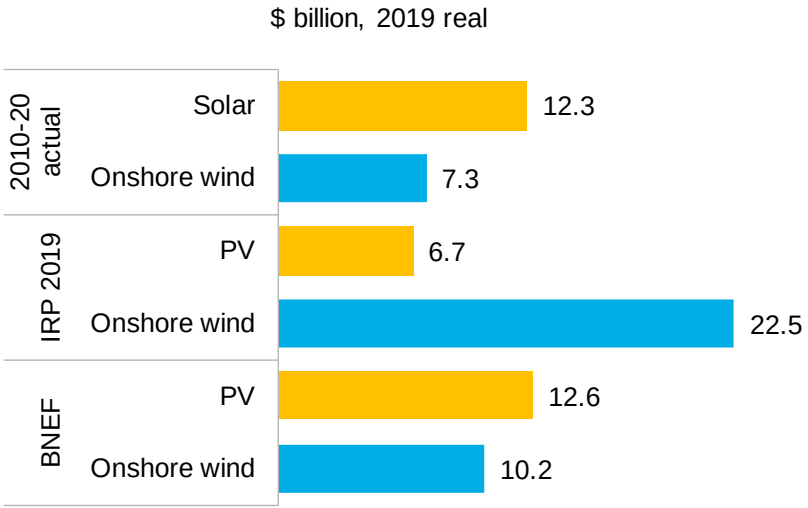
Despite having good access to capital, country, political and currency risks can all deter some investors looking at South Africa.

Leveraging intermediaries to accelerate clean power investment

South Africa

PV provides the largest economical investment opportunity to 2030

Investment opportunity in new wind and solar projects, 2021-30 cumulative



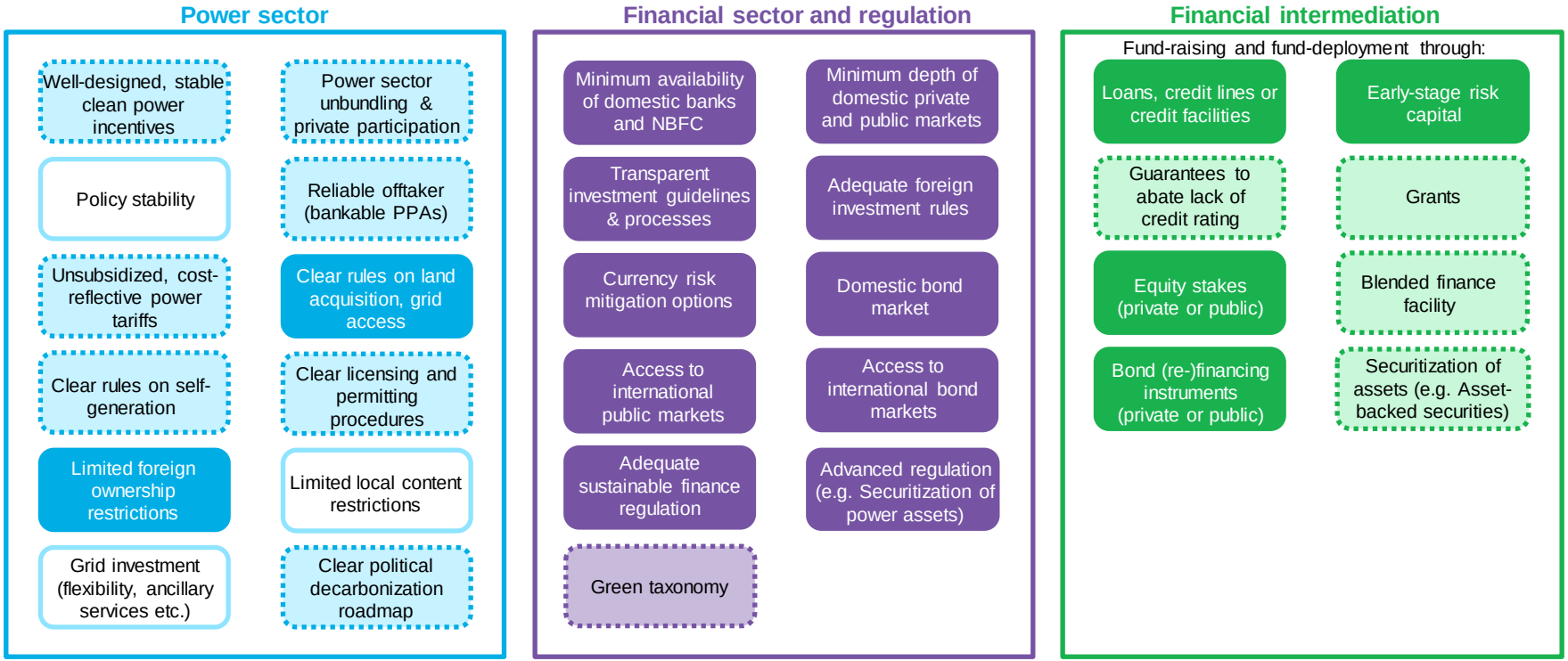
Source: BloombergNEF. Note: Assumes average capex forecast for South Africa from BNEF's 2H 2020 LCOE outlook. PV is assumed to be fixed axis. Includes major renewables technologies only.

Investment outlook to 2030

- The South African government banks on onshore wind additions to meet its 2030 target, while BNEF's New Energy Outlook sees a large role for solar in the next 10 years.
- The technology with the greatest least-cost potential in terms of investment volume and capacity added is PV. To achieve 30GW of solar and 9GW of wind by 2030, investments of $12.7 billion and $10.2 billion are required respectively.
- Given the competitive LCOE of solar and familiarity established through auctions, PV has the most potential to be scaled quickly, also in the context of South Africa's emergency power needs.
- Given the least-cost outlook and context of Eskom's market monopoly, this pipeline suggests leveraging the loosened rules under the emergency power situation for new utility-scale assets as well as self-generation projects for C&I clients and bankable municipalities.

Source: BloombergNEF.

Unstable enabling environment is a key setback to South Africa‘s energy transition



Source: CFLI, BloombergNEF.

Note: Full color = availability; dotted lines = partial availability; blank = remaining opportunity.

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Strengthening the enabling framework is key to attracting future energy transition investment

- Despite being a mature renewables market in terms of procurement experience and financing capacity, the major stumbling block to South Africa's energy transition lies in its policy instability, regulatory tightness and political risk. When enforced properly, its clean power incentives such as auctions have allowed the market to flourish in the past decade, yet retroactive changes and cancelations have negatively impacted investor confidence.
- In the power sector, the stalled pipeline of the REIPPP and tight rules surrounding IPP licensing and self-generation projects negatively impact the market. The staggering debt incurred by Eskom poses a liability to the functioning of the power sector. The successful implementation of the fifth bid window of the REIPPP and the planned unbundling of Eskom are key drivers supporting the energy transition.
  - **Acceleration opportunity**: The government needs to provide a clear direction for the market in order to restore investor confidence shaken by previous instances of policy instability and enforce a suitable enabling environment. The loosened rules under the current emergency power situation should help to activate the market by spurring self-generation uptake and commissioning of new utility-scale assets in the short- to mid-term.
- In the financial sector, all necessary prerequisites and entities are in place to fund the energy transition, yet are very much dependent on a sound enabling environment governing the power sector and a foreseeable project pipeline.
  - **Acceleration opportunity**: Given the age of large segments of the coal fleet and pending emissions fines, further financial instruments could be explored to assist in financing decommissioning and replacement capacity.

Action area 1: Improving Eskom's financial health and supporting its green transition

Improving the financial health of Eskom to not only ensure reliable offtake, but also reduce the burden on the government budget is key to the success of South Africa's energy transition and overall economic situation, particularly in the context of the Covid-19 pandemic. This is inextricably linked with phasing out aging coal assets and will require substantial technical assistance and concessional finance.

Investment opportunities

- Domestic and international financial intermediaries will have a limited role and interest to play in this priority area until there is a clear commitment to resolving Eskom's unbankability. Once addressed, intermediation could prove interesting to raise funds to pay down coal debt and re-invest in clean power.
- Investment opportunities for Eskom include reducing technical and financial losses and inefficiences through improving grid strength. Concessional resources such as loans or credit-enhanced bonds could prove important in funding upgrades to the distribution and transmission networks as well as implementing digitalization measures.
- Once Eskom's bankability has been improved, instruments like a securitized coal portfolio or transition bonds can be considered. This could help fund coal assets off Eskom's balance sheet and free up capital for new investment in clean resources (see Slide 38). Credit enhancement and implementation support will be necessary, as investors will likely require assurance.

Enabling environment opportunities

- Technical assistance will be necessary across a range of issues to help Eskom improve its financial situation. Support in restructuring its significant outstanding debt is vital to stabilize the utility's overall financial health. This will also include revisiting rules surrounding power procurement and electricity tariffs to ensure a more cost-reflective and sustainable business model.
- Capacity building and knowledge sharing will also be required in supporting Eskom on its mission to unbundle by 2022.
- Once the underlying debt issue has been addressed and a clear political commitment to decarbonization has been made, suitable financial instruments such as (securitized) bonds can be investigated. If unaddressed, Eskom will be unable to borrow. Enabling the securitization of coal assets could provide fresh capital off-balance sheet to support paying down existing debt (see Slide 38).

Action area 2: Addressing emergency power needs

In order to end South Africa‘s power sector emergency, the issues of supply shortfall, load shedding and grid strength must be addressed. The emergency bidding program will supply additional generation capacity in the short term, but regulatory changes are required to enable mid- to long-term investment opportunities for new capacity.

Investment opportunities

- While the winners of the RMIPPPP have likely already secured financing due to the tight program timeframe, domestic financial intermediaries can be involved in deploying funds to C&I or municipal projects, for which rules and project thresholds have now been eased under the emergency power situation. The market can likely supply all financial instruments needed to proven renewables technologies, yet concessional support could prove valuable in further reducing the cost of storage.
- For projects with similar profiles, it can be useful to explore securitization of assets, which could be of particular interest for municipalities with multiple community-owned assets.

Enabling environment opportunities

- Technical assistance will be key to allow for a long-term solution of South Africa‘s power supply challenges through opening up a clear and reliable procurement pipeline, enforcing policy stability and revisiting licensing procedures to open up the market. The successful implementation of the recently announced fifth bid window of the REIPPP will be vital to restore investor confidence in the market.
- While temporarily loosened under the emergency power situation, technical assistance can help ensure long-term regulatory changes, which allow for consistent and enforceable rules for self-generation projects of C&I and municipalities. This includes reviewing capacity thresholds, licensing procedures and wheeling agreements.
- Support for policy development can also be useful in terms of revisiting flexibility and balancing requirements, as well as placing a greater focus on utility-scale storage requirements in tenders.

Action area 3: Strengthening and preparing the grid for renewables

South Africa currently lacks the investment to deliver a resilient and flexible grid. In light of the emergency power situation and the growing share of intermittent renewables by 2030, investment in flexibility and grid integration is needed.

Investment opportunities

- Intermediaries will require a more bankable Eskom to deploy or raise funds for large-scale transmission and distribution investments, likely even after the utility's legal unbundling in late 2022.
- Once bankability issues have been addressed, investment opportunities for Eskom include strengthening the grid through flexibility measures such as digitalization (e.g. sensors, automation) and utility-scale battery storage. In the mid-term, support for investment into distribution, but particularly transmission build-out will also be necessary.
- On a smaller scale, domestic intermediaries can support new small-scale projects including storage of C&I or municipalities by deploying funds, e.g. in the forms of loans.

Enabling environment opportunities

- DFI support will be needed to address Eskom's financial situation before investment in transmission, distribution and grid strengthening measures can be undertaken on a large scale. However, support for policy development can also be useful in terms of revisiting flexibility and balancing requirements as well as placing a greater focus on utility-scale storage requirements in tenders.
- On a smaller scale, DFI capital resources can help to further reduce the cost and "prove" storage on the market for new C&I and municipal projects.

Action area 4: Scaling up decentralized energy and self-generation

Power outages are greatly affecting C&I users and municipalities. The loosened rules under the current emergency power situation allow municipalities to develop or procure their own power and have increased the threshold for C&I self-generation projects. This should help to activate the market by promoting self-generation uptake.

Investment opportunities

- Domestic intermediaries are well-placed to deploy funds to solvent entities to finance self-generation projects, with all traditional forms of financing available for proven renewable energy technologies.
- For projects with similar profiles, it can be useful to explore securitization of assets, which could be of particular interest for bankable municipalities with multiple community-owned assets.

Enabling environment opportunities

- While bankable C&I and municipal users will already be able to access the necessary financing, DFI funding can be helpful for smaller customers, such as SMEs or residential users. Blending DFI capital with that of domestic commercial banks or leasing companies has the potential to expand the small-scale market and build expertise. DFI funds can also help to further lower the cost of small-scale storage.
- While temporarily loosened under the emergency power situation, technical assistance can help ensure long-term regulatory changes that allow for consistent and enforceable rules for self-generation projects of C&I and municipalities. This includes reviewing capacity thresholds, licensing procedures and wheeling agreements.

Action area 5: Enabling a just transition away from coal

One of the key challenges to decarbonizing South Africa‘s power sector is to replace its coal fleet with new, clean resources, also due to the age of large segments of the coal fleet and pending emissions fines.

Investment opportunities

- As decommissioning coal assets is inextricably linked to Eskom’s financial health, financial intermediaries will have a limited role to play prior to the resolution of issues pertaining to the enabling environment. DFIs will therefore need to be the primary actors involved in South Africa’s coal transition before further financial intermediaries can be drawn in.
- If provided with satisfactory investment conditions, intermediaries could help to provide the necessary financing mechanisms to support the retirement of coal assets and substitute these with least-cost renewables and storage. However, the prerequisite for any type of financial involvement would necessitate a credible government program to tackle Eskom’s debt, as investors will otherwise be unwilling to purchase instruments such as transition bonds.

Enabling environment opportunities

- The coal transition is a challenge that requires a clear decarbonization commitment from the highest political level and collaboration across the value chain, from mine operators holding long-term coal offtake contracts with Eskom, to mining sector employees. Technical assistance needs to support these dialogues and processes, such as the renegotiation of fuel supply contracts.
- Given the dual challenge of improving Eskom‘s financial health and decommissioning coal assets, technical assistance is needed (see Slide 34). Once bankability issues have been sufficiently addressed, DFI support will be necessary in drawing up the suitable financial mechanisms to decommission coal assets such as transition bonds, securitization of coal assets or decarbonization loans.
- Thinking beyond 2030, DFI funding could explore helping to decrease the cost of green hydrogen, which could have ample use in the context of South Africa’s power, industrial and electrified mobility sectors.

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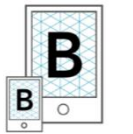

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