

Expanding Renewable Energy for Access and Development



THE ROLE OF DEVELOPMENT FINANCE
INSTITUTIONS IN SOUTHERN AFRICA



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*A REPORT
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ACRONYMS

ACCF	Africa Climate Change Fund	NDC	National Determined Contributions
ABM	Adaptation Benefit Mechanism	NEPAD	AU's New Partnership for Africa's Development
AFD	French Development Agency	NEPAD IPPF	NEPAD-Infrastructure Project Preparation Fund
AfDB	African Development Bank Group	PIDA	Program for Infrastructure Development in Africa
AREI	Africa Renewable Energy Initiative	PPA	Power Purchase Agreement
ATI-ACA	African Trade Insurance Agency	PPD	Public Private Dialogue
AU	African Union	PPDF	SADC Project Preparation and Development Facility
CFF	Climate Finance Facility	PPSEEP	Public and Private Sector Energy Efficiency Programme
CHEXIM	Export Import Bank of China, China EximBank	PV	Photo Voltaic (Solar Power cells)
CSP	Concentrated Solar Power	REA	Rural Electrification Agencies
DBSA	Development Bank of Southern Africa	RERA	Regional Electricity Regulators Association of Southern Africa
DFI	Development Finance Institutions	REESAP	Renewable Energy and Energy Efficiency Strategy and Action Plan
DFID	UK Department for International Development	REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
DRC	Democratic Republic of Congo	RIDMP	Regional Infrastructure Development Master Plan
EGIP	Embedded Generation Investment Programme	SACREEE	SADC Centre for Renewable Energy and Energy Efficiency
EGRE	European Guarantee for Renewable Energy	SADC	Southern African Development Community
EIB	European Investment Bank	SAPP	Southern African Power Pool
ETG	SADC Energy Thematic Group	SDG	Sustainable Development Goals
GCF	Green Climate Fund	SEforALL	Sustainable Energy for All
GEF	Global Environment Facility	TDB	Eastern and Southern African Trade and Development Bank
GDP	Gross Domestic Product	UNFCCC	United Nations Framework Convention on Climate Change
ICT	Information and communications technology	WBG	World Bank Group
IPP	Independent Power Producer		
KFW	German Development Bank		
LCOE	Levelized Cost of Electricity		
MDB	Multilateral Development Bank		
MRI	Mutual Reliance Initiative		
MW	Megawatt		
NAMAS	Nationally Appropriate Mitigation Actions		



EXECUTIVE SUMMARY

The COVID-19 crisis has revealed many of the inherent fragilities in our societies. As countries in Southern Africa recover from the crisis and mobilize to ensure resilience and sustainability are built into their economies, reinvigorating development finance to invest in renewable energy and energy access will be essential for the people and countries of the Southern African Development Community (SADC). SADC countries face enormous opportunities and challenges in developing their energy infrastructure over the next decades to power development and provide access to all. Currently, the region does not have sufficient reliable supply of energy and electricity, and what energy is available is not easily accessible by large swaths of the SADC region's population; 8 out of the 16 SADC countries have less than 50 percent electricity access, and some countries such as Malawi and the Democratic Republic of the Congo have less than 20 percent access.

In order for SADC to meet the needs and aspirations of its people, there is a need for a significant increase in investments into the energy sector in general, and renewable energy in particular. Energy and electricity underpin the economic development process: investing in renewable energy harnesses some of the region's strongest comparative advantages in a manner that will ensure greater growth, opportunity, and well-being. Development Finance Institutions (DFIs) such as development banks, granting agencies, and export credit agencies have a seminal role to play in financing the expansion and structural transformation that SADC's energy sector requires.

The old business as usual *modus operandi* is no longer sustainable. Investments in conventional energy sources do not generate enough employment and direct socio-economic opportunity in the region and do not meet the energy needs at the pace that is required. Furthermore, they come with significant health and environmental costs. Perhaps most important is the fact that, as the energy transition gains momentum, conventional energy sources such as coal-fired power plants are increasingly becoming financially uncompetitive due both to the rapid decline in the prices of renewable energy and to the reluctance of international financiers to invest in coal. Fossil fuels are increasingly at risk of becoming stranded assets – even liabilities – before their full lifetimes are realized, depending on how the international community resolves to address climate change. Despite increasing concerns from funders regarding fossil fuels, SADC has abundant coal resources, and coal baseload plants are still being commissioned.

This report shows that if SADC countries align the newly-proposed SADC Regional Development Fund (RDF) with ambitious renewable energy targets, and that if local, regional, and global DFIs follow suit, the SADC region could reach full energy access and 53 percent renewable energy capacity by 2040, and be well on its way for zero carbon growth into the future. Based on the work of the Southern African Power Pool (SAPP), we estimate that the SADC region would need to add an additional 60.7 gigawatts (GW) of renewable energy installed capacity in order to achieve the 53 percent target, or 2.8 GW per year to 2040. Since 2015, the SADC region has been deploying renewable energy at a rate above 1.5 GW annually on average. This leaves a gap of only 1.3 GW, requiring an estimated investment of USD 2.4 billion per year to 2040 or USD 52.8 billion in total. For just 0.3 percent of its Gross Domestic Product (GDP) annually, the SADC region can meet the energy needs of its people in a manner that will bring higher economic growth, employment, and well-being.

At its best, development finance is designed to overcome the barriers to renewable energy investment that are faced by the commercial sector in SADC countries. As such, it will be seminal to putting the region on a cleaner energy pathway. As we discuss in this report, the commercial sector is

often reluctant to invest in renewable energy in SADC, especially where there is no policy certainty or clear regulatory framework and where there is significant off-taker and other credit risks, high upfront capital costs, and technological challenges. This report shows how DFIs are playing a key role in the region's clean-energy transformation because of their longer time horizons, business models that allow them to access grant and other sources of concessional financing, and policy goals. It should be noted that regional DFIs have different capabilities and only about seven in SADC finance infrastructure and renewable energy.

According to our estimates for this report, over the past decade, DFIs have provided over USD 10 billion toward renewable energy, or approximately USD 1 billion per year. This report finds that just three DFIs represent sixty-one percent of the renewable energy DFI financing in SADC – led by the China Export-Import Bank, then the Brazilian National Development Bank (BNDES), and the Development Bank of Southern Africa (DBSA). The World Bank, the European Investment Bank, Germany's KfW, African Development Bank (AfDB), and a host of other multilateral and national development banks operating in the region supply the remainder of that financing.

In addition to providing estimates of the renewable energy needs and potential for SADC over the next decades, this report identifies the barriers to investment in renewable energy and shows how DFIs are uniquely poised to overcome those barriers. If DFIs coordinate and scale their efforts with respect to renewable energy finance over the next decades, commercial financing will follow and help secure the energy path the region needs for security and prosperity. Based on the analysis in this report, we recommend that:

- SADC countries commit to achieving 53 percent renewable energy capacity by 2040, and to align the newly proposed SADC Regional Development Fund with the 53 percent renewable energy target.
- SADC countries make firm national policy commitments and create enabling environments aligned with the 53 percent target, and likewise align their national development finance institutions with that goal.
- Development finance institutions support efforts in preparing and packaging renewable energy projects for financing and implementation to accelerate the attainment of the 53 percent target.
- Development finance institutions support rural and off-grid energisation efforts to attain universal access.
- Global development finance institutions support these renewed efforts by filling the gaps unfulfilled by SADC and its associated development finance institutions, commercial banks and other financial institutions, including on currency risk.

INTRODUCTION

The last decade has seen a significant increase in the use of renewable energy,¹ which now accounts for one third of global power capacity.² In Africa, which has some of the lowest rates of energy access and electrification worldwide, renewable energy can be one of the quickest and most cost-effective ways to improve access, and a means of contributing to economic development, greener energy consumption, and achieving the Sustainable Development Goals (SDGs).

Within the Southern African Development Community (SADC),³ there has been a rapid growth in the use of renewable energy. Renewables now account for approximately 28.7 percent of power generation as of 2018,⁴ and the region has currently 21 760 MW of installed renewable energy capacity. Another 17 361 MW of renewable capacity has either reached financial closure or is awaiting commissioning.⁵

The region remains highly uneven in terms of energy access, installed generation capacity, and in its plans for renewable energy expansion. As the commercial competitiveness of renewables has improved, interest in renewable energy technology has grown, due in part to the cost reductions in such technologies as wind and solar. The relative economic appeal of renewables with respect to fossil fuels has also grown. Renewables are experiencing decreasing capital costs (and resultant lower tariffs) and do not carry the financial risk associated with fuel price volatility and potential stranded assets from fossil fuel infrastructure. Increasing renewable energy generation capacity can also contribute to addressing power shortages and expanding energy access in the region, particularly in rural areas where renewables can be efficiently linked to mini-grids in rural electrification initiatives.

Renewable energy can be a powerful driver for development in the region. In addition to providing the additional electricity needed to power the economies of the SADC region, renewables also have the potential to deliver additional development co-benefits, including job creation, increased industrial activity through the expansion of supply chains and development of local solutions, expansion of regional trade in services, market creation, reduced balance of payments, and revitalization of geographical areas where the renewable energy resource is located. For example, the International Renewable Energy Agency (IRENA) estimates that modern renewable energy provides 293,000 jobs in Sub-Saharan Africa, of which 66,000 are in South Africa.⁶

Current SADC-aggregated quantifiable renewable energy targets found in national policies and the climate change Nationally Determined Contributions (NDCs) amount to **37.5 GW of additional installed capacity**, that is, net of capacity already installed at the end of 2018. The estimated required **investment is USD 66.7 billion**.⁷ Our analysis of current traceable **DFI financing** explained in this paper amounts to only **USD 10.1 billion**, showing a significant gap in current DFI financing trends and future needs.

Aims of the Report

This report articulates how development finance can play a significant role in helping SADC countries shift toward more renewable and accessible energy sources for their countries. The report outlines the need and potential for renewable energy in the region, maps current trends in renewable energy technology uptake and access in the SADC region and trends in energy finance from the perspective of development finance institutions. It also outlines the major challenges and barriers to renewable energy uptake in the region and consolidates current best practice and experience to provide policy

recommendations for DFI and regional actors in fostering renewable energy expansion and supporting a clean-energy transition.

To carry out this report, the authors conducted primary interviews,⁸ a research survey,⁹ and held a workshop on 14–15 October, 2019, in Gaborone, Botswana. Participants in these activities included DFI officers, policy makers, academia, civil society, and other stakeholders. The report draws on data from IRENA, the Energy Finance database at the Global Development Policy (GDP) Center, Boston University, data provided by individual DFIs in the SADC region, and publicly-available data from DFIs, regional and intergovernmental organizations.

The report is structured as follows: section 2 provides a regional background to SADC countries, the current energy context, and the policy landscape around renewable energy targets. Section 3 provides newly-collected data on financing trends from development finance institutions (DFIs) active in the region. Section 4 highlights major challenges to the expansion of renewable energy technology, including regulatory challenges, social challenges and market and financial risk factors that have deterred investment and financing. Section 5 details new innovations and collaborative initiatives in the SADC region from major financing institutions in overcoming these barriers. Finally, section 6 outlines policy recommendations for both the SADC Secretariat and DFIs operating in the region.

REGIONAL CONTEXT

Regional Energy Trends

The Southern African Development Community (SADC) is a region of great social, economic, and geographic diversity. Population levels vary significantly among its 16 member states. The SADC constitutes 33 percent of the total population of sub-Saharan Africa, with over half concentrated in the three largest countries: Democratic Republic of Congo (DRC), Tanzania, and South Africa. The economic landscape is also highly diverse. South Africa is the largest economy by gross domestic product (GDP) in SADC (and the second-largest in Sub-Saharan Africa), followed by Angola. Meanwhile, Seychelles, Mauritius, and Botswana rank highest in the region in terms of per capita GDP. Since 2014, many economies in the region have seen declining GDP levels due to falls in global commodity prices, and other factors such as drought (which has affected hydropower generation). Falling exchange rates against the US dollar have also contributed to these trends.¹⁰

As the largest economy in SADC, South Africa has the highest installed renewable energy capacity, as well as the highest total electricity generation and highest consumption levels. South Africa also has the most diverse electricity generation portfolio, combining fossil fuels, nuclear energy, pumped and conventional hydropower, solar and wind energy projects, and electricity imports. In terms of gigawatt hours (GWh) of electricity generated from renewable energy sources, Mozambique, Zambia, and South Africa lead the region. By percentage of electricity generated from renewable energy sources (for countries with available data), Angola, the DRC, Mozambique, South Africa, and Zambia are the highest (see Table 1: Regional Statistics).

By technology, hydroelectric projects dominate in current renewable energy installed capacity, total generation, and planned developments. The region is also exposed to high levels of climate variability.¹¹ Botswana is the only economy that does not have hydropower projects. In some SADC nations, hydropower is the sole renewable energy technology deployed,¹² although this is rapidly changing.¹³ Power generation from wind and solar remains low, particularly relative to other developing economies and regions. Only South Africa generates substantial power from solar (4 412 GWh) and wind power (4 924 GWh) sources.¹⁴ New solar photovoltaic (PV) projects are being rapidly introduced, including the 40 MW Mocuba project in Mozambique, two 50 MW projects in Zambia, and a 37 MW project in Namibia; concentrated solar projects (CSP) are also being proposed in Namibia (40 MW) in Arandis, and South Africa has approved 7 CSP projects, with 6 currently in operation. New wind projects are also in the pipeline in Namibia and Tanzania.¹⁵

Table 1: Regional Statistics¹⁶

	Renewable Energy Power Mix (MW) (2017-18)	Total Operating Capacity 2018 (MW)	% Renewable Energy Capacity	Total Renewable Energy generation (TWh) (2017)	Total electricity production (TWh) (2017)	% Renewable Energy electricity generation	Population (million) (2019)	GDP per capita (current US\$)	GDP (current US\$ billion)
Angola	1 528	3 129	49%	8	11	74%	31.8	4 100	105.8
Botswana	3	927	0%	0	3	0.2%	2.3	7 596	18.6
Comoros	1	25	4%			N/A	0.9	1 312	1.2
DRC	2 442	2 457	99%	9	10	98%	86.8	463	47.2
Eswatini	61	70	87%	0		N/A	1.1	3 243	4.7
Lesotho	74	74	100%	1		N/A	2.1	1 154	2.8
Madagascar	197	246	80%	1		N/A	27	450	12.1
Malawi	351	352	100%	2		N/A	18.6	339	7.1
Mauritius	192	782	25%	1	3	20%	1.3	10 491	14.2
Mozambique	2 661	2 724	98%	14	17	83%	30.4	426	14.5
Namibia	367	538	68%	2	2	90%	2.5	5 231	14.5
Seychelles	10	106	9%	0		N/A	0.1	15 629	1.6
South Africa	6 973	50 774	14%	10	255	4%	58.6	6 151	366.3
Tanzania	577	1 375	42%	3	8	33%	58	958	57.4
Zambia	2 442	2 734	89%	13	14	89%	17.9	1 513	26.7
Zimbabwe	750	2 048	37%	4	8	56%	14.6	1 333	31.0
SADC	18 629	68 361	27%	67	330	N/A	354	1 792	725.7

Note: Renewable energy generation and total electricity production are from different data sources (IRENA and SAPP).

It is worth noting that renewable energy in SADC in 2018 already constituted 29 percent of installed capacity. These figures are consistent with the SADC Renewable Energy and Energy Efficiency Strategy Action Plan (REEESAP) target of reaching a renewable energy mix in the regional grid of at least 33 percent by 2020 and 39 percent by 2030.¹⁷

The electric power utilities of the 12 continental SADC countries are connected or organized under the Southern African Power Pool (SAPP). This does not include the island countries of Comoros, Madagascar, Mauritius, and Seychelles. According to the SAPP Pool Plan published in December 2017, by 2040, electricity generation in SAPP will increase by at least 70 percent from the 2015 levels of 292 TWh, i.e., an increase to between 495 TWh and 714 TWh.¹⁸ This will result in an average electricity consumption per capita of 1 124 kWh to 1 622 kWh in SAPP countries by 2040, up from 992 kWh in 2015. The world average electricity consumption per capita as of 2014 was 3 132 kWh.¹⁹

To meet these demand forecasts, SAPP estimates that its installed capacity needs to increase by between 72 and 88 GW by 2040, depending on the levels of regional integration (increased integration reduces the need for additional capacity). This would result in a regional capacity (excluding SADC island states) of between 127 and 143 GW.²⁰ This is modelled by SAPP to require a capacity investment of USD 114 billion to USD 154 billion, with an additional USD 1.1 billion to USD 3.6 billion for transmission infrastructure. Although this appears to be a vast undertaking relative to the GDP of SADC countries, it is in fact equivalent to only 0.7 to 0.9 percent of SADC's annual GDP if the investment is spread out over the years. A 2015 World Bank Report estimates that between 2014 and 2020, developing countries need to invest 2.4 percent of their GDP in the electricity sector.²¹

Under the "realistic" scenario of the 2017 SAPP Pool Plan, installed capacity would reach 130 GW requiring an investment of USD 117.7 billion in additional capacity and USD 3.3 billion in transmission. Under this scenario, by 2040, SAPP countries would have a generation mix of about 53 percent coal, 12 percent other thermal, 30 percent hydro, and 5 percent other renewables and nuclear, vis-à-vis 69 percent coal, 4 percent other thermal, 18 percent hydro, and 9 percent other renewables and nuclear as of 2016.²²

The 2017 SAPP Pool Plan also contemplates a "high renewables" scenario, based on potential estimates from IRENA.²³ Under this scenario, 157 GW of installed capacity would be needed by 2040, with 53 percent renewables. SAPP countries would have a generation mix of about 36 percent coal, 27 percent hydro, 26 percent other renewables, 10 percent other thermal, and 1 percent nuclear. This scenario considers an installed capacity of 42.4 GW of hydro and 37.9 GW of other renewable energy capacity by 2040, distributed as follows: wind power 18 287 MW, solar PV 17 976 MW, biomass 727 MW, solar CSP 700 MW, geothermal 200 MW, and biogas 18 MW. SAPP estimates the investment costs for the "high renewables" scenario to be USD 139.9 billion.²⁴

Energy Access

Energy access is highly varied in the SADC region. For example, the islands of Seychelles and Mauritius have close to 100 percent electricity access. Meanwhile, 9 out of the 16 SADC countries have less than 50 percent electricity access, and Malawi and the DRC have less than 20 percent access (see Table 2). Across the SADC region, approximately 36 percent of the total regional population has access to energy. This represents a marked improvement compared to a decade ago, when energy access stood at 28.3 percent. Nonetheless, these are still some of the lowest energy access rates globally and remain below the average 43 percent energy access rate across sub-Saharan Africa.²⁵ Countries are seeking to accelerate energy access through Rural Electrification Agencies (REAs) and dedicated rural electrification master plans.

Table 2: Access to electricity in SADC Countries 2016 (% of population)

	Energy/electricity access (%) 2016			People without access to electricity in 2016 (millions)
	Total	Urban	Rural	
Angola	41	69	16	17
Botswana	61	78	37	1
Comoros	77	93	71	<0.2
DRC	17	78	-	68
Eswatini	66	83	61	<1
Lesotho	34	66	16	1
Madagascar	23	67	17	19
Malawi	11	42	4	16
Mauritius	100	100	100	-
Mozambique	24	65	5	21
Namibia	56	77	29	1
Seychelles	100	100	100	-
South Africa	86	93	68	8
Tanzania	33	65	17	36
Zambia	31.4	67.3	4.4	11
Zimbabwe	38	86	16	11
SADC	48	75	32	49

Source: SACREEE (2018)

National Renewable Energy Targets in Selected SADC Countries²⁶

Many countries establish national targets to indicate policy priorities and promote the development of renewable energy resources. In the SADC region, quantifiable national renewable energy targets have been identified in the policies of at least nine countries. These targets and policies are listed in Table 3 below. These targets represent a cumulative total of **37.5 GW of additional installed capacity**, net of capacity already installed at the end of 2018. The estimated required **investment is USD 66.7 billion**.²⁷ It is important to note that these figures are different from those projected by SAPP because they reflect different things. The target estimates are built bottom-up from the individual national targets found in national policies, whereas SAPP reflects a regional planning to meet projected demand exercise. SAPP's projections only consider large-scale grid interconnected systems, while national targets cover all Renewable Energy technologies regardless of size. As Section 3 below shows, current **traceable DFI financing amounts to only USD 10.1 billion**, constituting a small fraction of the total required to meet these targets.

Table 3: Renewable Energy Targets in SADC Countries (excluding NDCs)

Country	Relevant policy(ies) and summary of national renewable energy target
Angola	2014 Angola Renewable Energy Strategy. ²⁸ Targets include, by 2025: <ul style="list-style-type: none"> • 5 000 MW of large hydropower • 500 MW of biomass • 100 MW of solar • 100 MW of wind • 100 MW of small hydropower
Botswana	2016 National Development Plans (NDP 11), and 2007 NDP 10, published in 2007. ²⁹ Targets include, by 2025: <ul style="list-style-type: none"> • NDP 10: 25% renewable energy by 2030 • NDP 11: 100 MW of solar PV by 2025.
Madagascar	2015 Energy Policy 2015–2030. ³⁰ <ul style="list-style-type: none"> • 85% renewable electricity generation by 2030 (projected 7 900 GWh), of which 75% from hydropower, 5% from wind power and 5% from solar PV.
Mauritius	2014 updated version of the Energy Strategy 2011–2025 Action Plan, ³¹ and the Long-Term Energy Strategy, published in 2009. ³² <ul style="list-style-type: none"> • Long-Term Strategy: 35% renewable electricity generation by 2025. • Energy Strategy 2011–2025 Action Plan. Targets by 2025: <ul style="list-style-type: none"> • 98.4 MW of wind power • 65.3 MW of solar PV • 2.3 MW of biogas • 5 MW of off-grid renewables
Mozambique	2018 Integrated Master Plan of Energy Infrastructures (PDIE) ³³ : <ul style="list-style-type: none"> • 530 MW wind • 150 MW solar PV
Namibia	2016 National Renewable Energy Policy ³⁴ <ul style="list-style-type: none"> • 49% to 70% renewable electricity by 2030. Under 70% scenario: <ul style="list-style-type: none"> • 530 MW of solar PV • 349 MW of wind • 347 MW of hydropower • 150 MW of solar CSP • 40 MW of biomass
Seychelles	2012 Seychelles Sustainable Development Strategy, published in 2012. ³⁵ By 2030: <ul style="list-style-type: none"> • 15% of electricity • 6 MW of wind • 3.2 MW of solar PV • 0.75 MW of micro-hydropower • 5 pilot biogas plants

Country	Relevant policy(ies) and summary of national renewable energy target
South Africa	2019 Integrated Resource Plan for Electricity (IRP). ^{36,37} By 2030: <ul style="list-style-type: none"> • 39.7% of renewable generation capacity • 17 742 MW of wind • 8 288 MW of solar PV • 4 600 MW of hydropower • 600 MW of CSP
Tanzania	2015 SEforALL Action Agenda. ³⁸ Targets by 2030: <ul style="list-style-type: none"> • 2 954 MW of large hydropower • 120 MW of solar • 100 MW of wind • 67 MW of biomass
Zimbabwe	2019 National Renewable Energy Policy. ³⁹ Targets by 2030: <ul style="list-style-type: none"> • 26.5% renewable electricity • 1 575 MW of solar PV • 275 MW of bioenergy • 150 MW of small hydropower • 100 MW of wind • 250 000 solar water heaters • 8 000 domestic bio-digesters and 288 institutional bio-digesters

Table 3 above shows that many SADC countries address goals around renewable energy directly in their national planning policies and strategies. For example, the Integrated Resource Plan (“IRP”) in South Africa addresses the energy mix as part of a comprehensive plan to meet national energy demand and calls for substantial change in South Africa’s energy mix. The IRP sets out a series of capacity targets for specific energy technologies, including coal, gas, wind, solar PV, hydropower, and nuclear. Botswana’s National Development Plan (NDP 10) aims to see an increase of renewable energy usage of 15 percent by 2015 and 25 percent by 2030. Mozambique’s Integrated Master Plan of Energy Infrastructures (PDIE) defines the expansion guidelines of the areas of power generation, transmission, and distribution, as well as the diversification of power generation matrix. PDIE includes targets for 500 MW of wind power and 150 MW of solar PV.

Eight SADC countries have carried out SEforALL gap analyses, and several – including Angola, Eswatini, Malawi, Mozambique, Tanzania and Zimbabwe – have developed action agendas and/or investment prospectuses, outlining funding needs and current programs and investment-ready projects.^{40,41}

NATIONALLY DETERMINED CONTRIBUTIONS (NDCS)

In 2019, the SADC region emitted 567 MtCO₂ (excluding land-use change)⁴² and SADC emissions accounted for approximately 0.86 percent of the world’s energy-related greenhouse gas (GHG) emissions,⁴³ while comprising 4.54 percent of the world’s population.⁴⁴

All 16 SADC countries submitted Nationally Determined Contributions (NDCs) in the context of the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement. Out of the 16 SADC NDCs, all but one country includes renewable energy contributions, of which 11 are quantifiable.⁴⁵ When it comes to NDCs, pledges – referred to as “contributions” – can be either conditional or unconditional. Conditional pledges, as the name implies, are contingent upon additional financial, technical, and capacity building support from developed countries. Unconditional contributions are

those measures that countries intend to implement regardless of external climate change assistance. Of the SADC members with quantifiable renewable energy pledges in their NDCs, six countries include unconditional targets for renewable energy: Angola, Lesotho, Malawi, Seychelles, South Africa, and Zimbabwe; others state only conditional targets. The SADC-aggregated quantifiable NDC renewable energy targets amount to 29.6 GW of renewable energy installed capacity.⁴⁶

Table 4 below outlines all quantifiable renewables targets⁴⁷ contained in SADC member countries' NDCs. These policy targets vary in their scope and ambitions.

Table 4: Explicitly quantified renewable energy (RE) contributions in Nationally Determined Contributions (NDC) from SADC Countries⁴⁸

Country	Explicitly Quantified Renewable Energy Contributions in NDC	
	Unconditional	Conditional
Angola	<ul style="list-style-type: none"> 760 MW hydropower 100 MW wind 	<ul style="list-style-type: none"> USD 11.34 billion of renewable energy capacity by 2030 6 540 MW hydropower 681 MW wind 640 MW biomass 438 MW solar 192 MW small hydropower 100 MW off-grid solar at an estimated cost of USD 150 million
Botswana	<ul style="list-style-type: none"> None 	
Comoros		<ul style="list-style-type: none"> 42% renewable electricity by 2030 14 MW solar PV by 2020 14 MW / 16% geothermal by 2030 Hydropower, 10 300 tCO₂eq by 2030
Democratic Republic of Congo		<ul style="list-style-type: none"> USD 2 billion hydropower USD 240 million biomass
Eswatini (formerly Swaziland)		<ul style="list-style-type: none"> Double the share of renewable energy in the energy mix by 2030 10% bioethanol blend by 2030 200 MW by 2020
Lesotho	<ul style="list-style-type: none"> USD 351 million renewable energy USD 10 million mini-grids 3 MW / USD 3 million small hydropower 	<ul style="list-style-type: none"> USD 600 million small hydropower USD 351 million renewable energy USD 4 million wind 60 000 bio-digesters with a cost of USD 108 million
Madagascar		<ul style="list-style-type: none"> 79% renewable electricity by 2030
Malawi	<ul style="list-style-type: none"> 351 MW hydropower 20 000 solar systems by 2030 2 000 solar water heaters by 2030 18 million liters/year ethanol 2 million liters/year biodiesel 	<ul style="list-style-type: none"> 800 MW hydropower by 2025 95 GWh/year landfill gas methane recovery 18 000 solar water heaters by 2030 22 million liters/year ethanol, 18 million liters/year biodiesel
Mauritius	<ul style="list-style-type: none"> None 	
Mozambique	<ul style="list-style-type: none"> None 	
Namibia		<ul style="list-style-type: none"> increase renewable electricity from 33% to 70% biogas: 10% N₂O emissions reduction by 2030

	Explicitly Quantified Renewable Energy Contributions in NDC	
Country	Unconditional	Conditional
Seychelles	<ul style="list-style-type: none"> 15% renewable electricity by 2030 90 MW / USD 191 million solar PV 	<ul style="list-style-type: none"> 15.8 MW / USD 29 million solar PV 80% household solar water heating by 2035
South Africa	<ul style="list-style-type: none"> 5 243 MW / USD 16 billion renewables 6 300 MW renewables 	
Tanzania	<ul style="list-style-type: none"> None 	
Zambia	<ul style="list-style-type: none"> None 	
Zimbabwe	<ul style="list-style-type: none"> USD 300 million hydropower 27 MW small hydropower 1 250 bio-digesters 50 to 80m3 by 2030 	<ul style="list-style-type: none"> Hydropower: USD 5 billion / 15 316 GgCO₂eq by 2030 USD 3 billion off-grid solar Solar water heating: USD 1.23 billion / 179 GgCO₂eq by 2030 ethanol blending: USD 100 million by 2030

Some NDCs state wider energy policy goals for the composition of renewables in the energy mix, all with a target year of 2030. For example, Comoros plans a conditional target of 42 percent renewable electricity composition; South Africa’s NDC includes unconditional 6 300 MW already procured under REIPPPP; Madagascar’s conditional target is a percentage expansion in renewables from 35 to 79; and Seychelles states an unconditional target of 15 percent renewables by 2030.⁴⁹

Regional Level Initiatives

At the regional level, since its first adoption in 1996, the Protocol on Energy (currently under revision) has served as a framework for cooperation on energy among member states, through which the SADC has continuously set out its objectives for energy development in the region, focusing on issues such as renewable energy, energy efficiency, and conservation.⁵⁰

The SADC Energy Sector Activity Plan of 2000 and the Regional Infrastructure Development Master Plan (RIDMP) of 2012 both outline regional efforts to promote the development of national energy policies and matters of common interest, to promote the balanced and equitable development of energy throughout the region. Similarly, the SADC established the Regional Electricity Regulators Association of Southern Africa (RERA) to harmonize regional regulatory policies on energy and its subsectors.

More recently, the Renewable Energy and Energy Efficiency Strategy and Action Plan (REEESAP), approved in 2017, outlined regional targets for electricity access, renewable energy and energy efficiency, including an overall electricity access target of 71 percent by 2025 and 33 percent renewable energy in the energy mix by 2020.⁵¹

Other existing institutions such as the Southern Africa Power Pool (SAPP), created in 1995, serve as long-standing platforms for energy trading at the regional level. At present, nine Member States have joined in merging their electricity grids, reducing costs and creating a competitive common market for electricity in the region. This may help leverage the synergies from greater renewable energy deployment – grid interconnection provides the infrastructure to alleviate potential system disturbances due to intermittency of non-dispatchable renewable energy resources (solar and wind). With the exceptions of Angola, Malawi, and Tanzania, all of the mainland countries are connected to the SAPP grid.

The SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) was established in 2015 by the SADC Ministers responsible for Energy as a subsidiary organization of SADC, with the mission of contributing toward increased access to modern energy services and improved energy security across the SADC Region through the promotion of market-based uptake of renewable energy, energy efficient technologies, and energy services.

FINANCIAL FLOWS AND DEVELOPMENT FINANCE INSTITUTIONS

As the previous discussion shows, SADC member countries have clear ambitions to expand renewable energy technology, and many have set explicit policy targets to do so, within and beyond the context of national targets and NDCs. The pace of this expansion will be strongly conditioned by the availability of internal and external financing sources.

In this section, we provide our own estimations of development finance institution finance flows for renewable energy projects in SADC, based on bottom-up research. This is followed by a discussion on DFI commitments to clean energy, the role of DFIs in clean energy and energy access financing and a mapping of collaborative instruments for clean-energy finance in the SADC region.

Development Finance Institution Finance Flows For Renewable Energy Projects in SADC

Recognizing that the landscape for finance to potentially support renewable and accessible energy is broad and complex, we find there is a need for greater clarity and transparency in the renewable energy finance space. This would help clarify how financiers can coordinate and complement activities in the renewable energy sector.

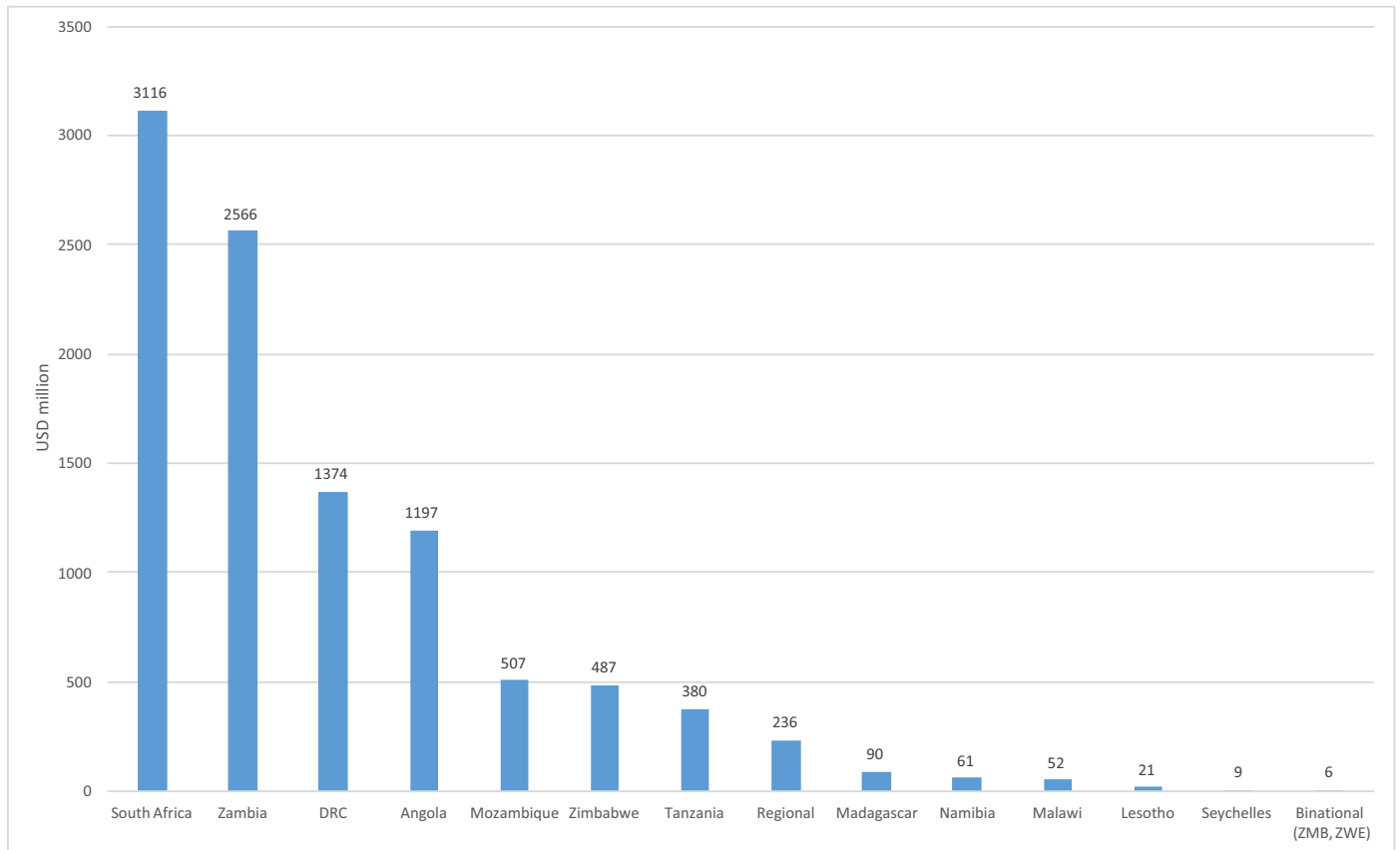
Following a bottom-up approach, we identified **USD 10.1 billion of development finance** from within and beyond the region for renewable energy projects in SADC.

To arrive at this figure, we mapped active DFIs in SADC, comprising the four categories below (for more detail, refer to Table 10 in Annex I):

1. Global multilateral development banks (MDBs)
2. Regional MDBs and institutions active in Africa
3. National development finance institutions from SADC countries
4. Non-SADC national development finance institutions, active in the SADC region.

Data was gathered from information sources published by individual DFIs, where available, as well as public databases of energy finance flows (see Table 11 and Table 12 in Annex I). Our institutional mapping and data gathering show a diverse and highly asymmetric pattern of financial flows from DFIs in the renewable energy sector. Figure 1 below shows the identified renewable energy finance flows by country for the period 2007–2018.

Figure 1: Renewable Energy Finance Flows by Country 2007–2018 (million USD)⁵²



Source: Authors' elaboration, see note on methodology.

Figure 1 shows that of those flows for renewable energy finance in the region for which data is available, South African projects have received the largest amount, followed by Zambia and the DRC. The top three countries – South Africa, Zambia,⁵³ and DRC – captured over 80 percent of the finance flows.

Table 5 below disaggregates the information by originating DFI and recipient country, showing financial flows for renewable energy technology projects from DFIs where information was available. For many institutions, particularly but not limited to national DFIs from SADC, information was not available (see Table 12 in Annex I). It can be seen that some of the largest flows have come from China Exim Bank (CHEXIM): loans from CHEXIM to Zambia, DRC, and Zimbabwe outstrip sums the countries received from alternative sources. After CHEXIM, the Brazilian Development Bank (BNDES) and the Development Bank of Southern Africa (DBSA) are the second- and third-largest financiers in the renewable energy sector by volume of finance.

Table 5: Renewable Energy Finance Flows by DFI in SADC 2007–2018 (millions of USD)

	CHEXIM	BNDES	DBSA	WBG	EIB	KfW	AFD	IFC	New Development Bank	IDBZ	AfDevFund	AfDB	ADFD	Carbon Fund	EAIF	PIDA	Total (USD million)
South Africa			1156	550	523		306	330	180			71					3116
Zambia	2 015		128	20	80	88	34	13			161	22				5	2566
DRC	1 027			218	84	45											1374
Angola		1127	70														1197
Mozambique		340		16		21	71	42							17		507
Zimbabwe	320									167							487
Tanzania				330	5	22	16	6									380
Regional						236											236
Madagascar				1	74	16											90
Namibia						61											61
Malawi				16									10	26			52
Lesotho													21				21
Seychelles													9				9
Binational (ZMB, ZWE)																6	6
Total (USD million)	3362	1467	1354	1150	766	489	427	391	180	167	161	93	40	26	17	11	10099

Source: Authors' elaboration, see note on methodology.

By technology, the lion's share of DFI finance identified in our research goes to hydro, with over USD 5.7 billion identified. At least USD 1.1 billion finance for solar and USD 200 million for wind have also been identified. For the rest of the data, lack of project detail does not allow for clean renewable technology allocation.

Table 6 displays the same information by number of projects instead of total finance. We tracked 122 projects with some component of renewable energy finance. According to the data in Table 6 below, although the DBSA has funded the highest number of projects, KfW and the WBG are active in more countries in the region by traceable project numbers. This shows a much more diffused pattern of financing by the WBG and European lenders, with a higher number of projects of smaller cost: the average cost for a KfW renewable project is just over USD 27 million; the mean cost of China Exim-bank projects is in the region of USD 1.16 billion. Likewise, BNDES, which is the second largest lender in the region by monetary value funded only seven projects concentrated in two countries.

Table 6: Renewable Energy Financed Projects by DFI in SADC 2007–2018 (number of projects)⁵⁴

	DBSA	KFW	WBG	EIB	AFD	IFC	BNDES	CHEXIM	AFDB	ADFD	PIDA	IDBZ	AfDevFund	NDB	Carbon Fund	EAIIF	Total #
South Africa	33		2	5	4	5			2					1			52
Zambia	2	4	4	2	1	1		2	1		1		1				19
Tanzania		1	3	1	2	1											8
DRC		2	2	1				2									7
Regional		7															7
Angola	1						6										7
Mozambique		1	1		2	1	1									1	7
Madagascar		1	1	2													4
Malawi			1							1					1		3
IDBZ								1				2					3
Namibia		2															2
Lesotho										1							1
Binational (ZMB, ZWE)											1						1
Seychelles										1							1
Total #	36	18	14	11	9	8	7	5	3	3	2	2	1	1	1	1	122

Source: Authors’ elaboration, see note on methodology.

DFI commitments to Clean Energy

DFIs around the world have taken significant steps committing to invest in sustainable infrastructure and address climate challenge. There is abundant literature on pledges by DFIs to align their activities with the Paris Agreement and the Sustainable Development Goals (SDGs). See for example Bhat-tacharya *et al.* 2019, Larsen *et al.* 2018, and Wright *et al.* 2018.

DFI policies have shifted to reflect new green priorities. For example, in November 2019, the EIB announced that the bank will end its financing of oil, gas, and coal projects after 2021.⁵⁵ In 2017, the French Development Agency (AFD) pledged to make its activities “100 percent Paris Agreement” compatible, on top of the existing commitment that 50 percent of annual financing goes to “projects that have a direct and beneficial impact on the climate”.⁵⁶ Many DFIs have also moved to exclude coal financing, or to limit its finance as a back-up to Renewable Energy projects. A key focus area for the DBSA is support for renewables as evidenced by DBSA’s role in the development of the renewable energy programme in South Africa.⁵⁷ Of the non-OECD bilateral creditors, China Eximbank has also emphasized willingness for greater involvement in renewable energy finance, manifested in its 2016 White Paper on Green Finance.⁵⁸ Some larger DFIs have also gained accreditation with the UNFCCC’s Green Climate Fund (GCF),⁵⁹ which enables access to GCF funds. Accreditation also mandates the institution to abide by GCF and international standards for environmental and social safeguards. DBSA is an Accredited Entity of GCF and has two approved facilities, the Embedded Generation Infrastructure Programme (EGIP) and the Climate Finance facility (CFF).

Definitions of ‘clean energy’ vary between different institutions. Most DFIs active in the SADC region include all renewable energy sources (hydro, solar, wind, geothermal, and biomass) but some exclude large hydropower, and some include natural gas sources, as well as biogas, into this definition.⁶⁰

The Role of Development Finance Institutions

One key distinction between DFIs and commercial private lenders is the **difference in attitude to profitability and risk**. While development finance institutions are still expected to be profitable institutions by their shareholders, this does not necessitate a profit-maximizing approach, which is in contrast to commercial banks. DFIs often play pre-financing and capacity building roles in project development in contrast to private lenders. Table 7 below articulates these differences and complementarities.⁶¹

Table 7: Differences and Complementarities Between DFIs and Commercial Finance

DFIS	Commercial Finance
Development mandate	Commercial mandate
Longer-term lending	Shorter-term lending
Profit seeking	Profit maximizing
Economic rates of return	Financial rates of return
PPPs	PPPs
Capacity building	
Project preparation	

This flexibility allows DFIs to take on projects that would be considered too risky for commercial banks acting alone. DFIs can thus play a key complementary role in mitigating these risks by **crowding-in commercial banks**, often directly through partnership. Such collaborations can allow the private sector's returns expectations to be offset by the DFIs providing debt financing on more favorable debt terms.

Cooperation with commercial banks helps to address some of the barriers to infrastructure finance, but can also give credibility to projects, in turn attracting more investment in renewable energy projects, as well as risk sharing, ensuring a single entity does not take huge exposure.

There are also other substantial roles to play for DFIs, not simply in financing projects, but at earlier stages of project planning and inception. Some international DFIs already play a role in **technical assistance** for borrowing recipient institutions. There is a more direct need in many developing countries for greater capacity building, where limited institutional capacity is an endemic problem in many governments.

This is the case in the earlier stages of projects, particularly in **pre-feasibility and feasibility studies**, where both project owners and small project developers lack both capacity and resources. Lack of capacity also affects parallel areas such as social and environmental challenges. DFIs can also play a key role beyond finance through providing technical assistance and capacity building, which in many developing countries is sorely lacking, from integrated planning, policy implementation to conducting feasibility studies. Co-financing with external and international DFIs can remedy deficiencies in local expertise and capacity, but also necessitates DFIs playing a greater role in building necessary capacity within local institutions. The DBSA has a programme planning department which manages DBSA project preparation funds and third-party funds that assist both national and local governments in developing frameworks for infrastructure delivery.

Another area where DFIs can serve a crucial role is in **providing guarantee facilities for projects**. Large-scale infrastructure projects usually require sovereign guarantees to access financial capital. However, this might not be feasible in all emerging market countries. In such cases, guarantees or risk-sharing facilities provided by DFIs alongside capacity building projects could be another potential

alternative. For small Independent Power Producers (IPPs) involved in renewable energy generation, this could also be a powerful tool for unlocking financial resources.

Blended finance is becoming more acceptable in the region as private finance is sourced along with DFI funding, grant funding, and some state funding, significantly reducing the cost of borrowing and making the project more affordable. It should be noted that since state funding to DFI has been minimal, DFIs are making commercial lending decisions more often.

Collaborative Instruments for Clean-Energy Finance in SADC

The challenges and barriers described above require a combination of a variety of instruments and approaches to address them. In that regard, DFIs are constantly innovating, collaborating with other institutions and trying novel tools to scale and accelerate the deployment of clean-energy sources. It is important to note, however, that there is no shortage of already existing instruments. Table 8 below lists a series of innovative collaborative funding products that DFIs, governments, MDBs, and other actors have put in place and are accessible for countries in the SADC region. These products are aimed, among others, at: (1) reducing funding costs; (2) mitigating credit and currency risks; (3) removing barriers to participation in order to crowd in small/medium enterprises and local communities into the renewable energy market (i.e., financial inclusion); (4) freeing up balance sheets of DFIs and MDBs in order to create room for more lending activities; (5) crowding in pension funds and infrastructure funds (green bonds); (6) shortening the time to bring projects to bankability; (7) lengthening the funding tenor; and (8) reducing the tariffs and making energy affordable and accessible for the majority of the African population. For a longer description of each of the products described in Table 8, refer to Annex 2.

Many of the instruments listed in Table 8 are multipurpose, and include one or more of the following functions:

- Grants
- Debt (Senior & Subordinated)
- Concessionary funding
- Technical assistance
- Equity
- Guarantees/ Insurance
- Green Bonds

Table 8: Funds and Instruments for Renewable Energy Finance in SADC

Fund / Financial Product	Grants	Debt (Senior & Subordinated)	Concessionary funding	Technical assistance	Equity	Guarantees/Insurance	Green Bonds
DBSA Project Preparation Fund	✓			✓			
Green Climate Fund (GCF)	✓	✓	✓	✓	✓	✓	✓
Global Environment Facility (GEF)	✓	✓	✓	✓	✓	✓	✓
The Green Fund	✓	✓	✓	✓			
Climate Finance Facility (CFF)		✓				✓	
Embedded Generation Investment Programme (EGIP)		✓			✓	✓	
SADC Project Preparation and Development Facility (SADC/DBSA)	✓		✓	✓			
NDB-DBSA Credit Line for renewable energy		✓					
EIB – TDB Credit Line for renewable energy		✓					
AFDB Room-to-Run Securitization Vehicle						✓	
Africa50 Fund	✓	✓		✓			
NEPAD Climate Change Fund				✓			
Africa GreenCo						✓	
AFD Green Energy Fund		✓					
Sustainable Energy Fund for Africa				✓	✓		
Africa Climate Change Fund (ACCF)			✓	✓			
Adaptation Benefit Mechanism (ABM)				✓			
African Carbon Support Program			✓	✓			
NEPAD-Infrastructure Project Preparation Fund	✓			✓			
Public and Private Sector Energy Efficiency Programme (PPSEEP)	✓			✓			
Fund for African Private Sector Assistance (FAPA) – Japanese special fund for private sector	✓			✓			
Climate Investment Platform (CIP)				✓			
Sustainable Energy for All (SEforALL) – Africa Hub				✓			
SADC Regional Development Fund		✓					
Africa Renewable Energy Initiative (AREI)				✓			
African Trade Insurance Agency (ATI/ACA)						✓	
UNLOCK (Proparco's guarantees)		✓		✓		✓	
European Guarantee for Renewable Energy (EGRE)				✓		✓	
EU-Africa Infrastructure Trust Fund (EU-AITF)	✓	✓	✓	✓	✓	✓	
Access Co-Development Facility (ACF)		✓		✓			
EU Energy Initiative Partnership Dialogue Facility (EUEI PDF)	✓	✓	✓	✓	✓	✓	✓
Strategic Energy Advisory and Dialogue Services (SEADS)							
Africa-European Union Energy Partnership (AEEP)				✓			
Africa-EU Renewable Energy Programme (RECP)				✓			
Africa Climate Resilient Investment Facility (AFRI-RES)				✓			

Fund / Financial Product	Grants	Debt (Senior & Subordinated)	Concessionary funding	Technical assistance	Equity	Guarantees/Insurance	Green Bonds
AIIB Project Preparation Special Fund	✓			✓			
Canada IFC Renewable Energy Program for Africa		✓	✓	✓			
IFC-Canada Climate Change Program	✓	✓	✓	✓			
Climate Investment Funds		✓	✓				
COMESA Project Preparation and Implementation Unit (PPIU)				✓			
The Electrification Financing Initiative (ElectriFI/EDFI)		✓		✓	✓	✓	
Energy and Environment Partnership Trust Fund (EEP Africa)	✓	✓	✓				
Global Energy Efficiency and Renewable Energy (GEEREF)					✓		
Global Infrastructure Facility		✓		✓			
Private Infrastructure Development Group (PIDG)	✓			✓			
GuarantCo (part of the Private Infrastructure Development Group (PIDG))						✓	
InfraCo Africa	✓			✓			
Emerging Africa Infrastructure Fund (EAIF)	✓	✓		✓			
International Development Association (IDA) Private Sector Window	✓		✓	✓			
IDC SUNREF II		✓		✓		✓	
IFC Global Infrastructure Project development Fund (IFC InfraVentures)	✓	✓		✓	✓		
Infrastructure Investment Programme for South Africa (IIPSA)	✓	✓	✓	✓			
IRENA Abu Dhabi Fund for Development (ADFD) Project facility			✓				
Japan fund for Joint Crediting Mechanism	✓			✓		✓	
Program for Infrastructure Development in Africa (PIDA) Service Delivery Mechanism				✓			
Infrastructure Development Collaboration Partnership Fund (DevCo)				✓			
Multilateral Investment Guarantee Agency (MIGA) - political Risk Guarantees						✓	
Private Financing Network (PFAN)				✓			
The Investment Fund for Developing Countries Project development Facility				✓			
Seed Capital Assistance Facility (SCAF)	✓			✓			
Sustainable Energy Fund for Africa (SEFA)	✓	✓			✓		
The Africa Enterprise Challenge Fund (AECF)		✓					
The Finland IFC Climate Change Program		✓					
UK Cross Government Prosperity Fund				✓			
UK Climate Investment (UKCI)					✓		
Power Africa Off-grid Project (PAOP)	✓						

Source: own elaboration

BARRIERS TO RENEWABLE ENERGY FINANCE AND UPTAKE

This section outlines the key challenges in the SADC region in financing and expanding renewable energy. We cover five overlapping challenges: 1) the coal paradigm and entrenched interests; 2) risk and financial challenges; 3) Governance and Regulatory issues; 4) Coordination, Capacity Building, and Technical Challenges; and 5) Social Impacts, Access, and Co-benefits. Each of these overarching challenges encompasses several dimensions, summarized in Table 9 below and described in more detail in this section.*

Table 9: Barriers to Renewable Energy Finance

Coal Legacy	<ul style="list-style-type: none"> ▪ Abundance of coal ▪ Historical legacy ▪ Coal-focused policy trajectory ▪ Entrenched interests ▪ Impact of potential mining job losses
Risk and Financing challenges	<ul style="list-style-type: none"> ▪ Off-taker risk and creditworthiness ▪ Underdeveloped domestic financial markets and access to cheap finance ▪ Currency Risks ▪ Project preparation and bankability of projects ▪ AAA Credit Ratings and international banking regulations (Basel III) ▪ Unmet expectations from international mechanisms and initiatives ▪ Rural access and economies of scale ▪ Public Private Partnerships (PPPs)
Governance and Regulatory issues	<ul style="list-style-type: none"> ▪ Corruption perceptions ▪ Policy and tariff uncertainty ▪ Procurement framework for Unsolicited Bids ▪ Bureaucracy and delays ▪ Political will to undertake projects
Coordination, Capacity Building, and Technical Challenges	<ul style="list-style-type: none"> ▪ Lack of local capacity and technical expertise ▪ Data and information ▪ Coordination and Cooperation between DFIs ▪ Transmission infrastructure and market access
Social Impacts, Access, and Co-benefits	<ul style="list-style-type: none"> ▪ Jobs and labor uncertainty ▪ Poverty and access ▪ Community-level benefit-sharing ▪ Local opposition and Stakeholder consultation ▪ Localisation vs. imports

* For a discussion of additional barriers to energy efficiency and energy access, see for example RESAAP 2016–2030, pages 31–34

Coal Legacy

ABUNDANCE OF COAL

While there has been significant growth in renewable energy in the region, there is still a strong reliance on traditional, fossil-fuel-based energy sources. The **abundance of coal resources** in some SADC countries makes it a seemingly obvious choice for power generation and energy access in the short term. As one respondent notes, “Coal remains a base load resource, and its abundance will mean governments will default to its use.”⁶²

According to BP Statistical Review of World Energy, the SADC region has proven resources of at least 10 395 million tonnes of anthracite and bituminous coal, representing about 1.5 percent of the world’s reserves.⁶³ The large majority are in South Africa, with Mozambique and Zimbabwe a distant second.

HISTORICAL LEGACY

The fact that developed countries industrialized on the back of coal and other fossil fuels – and therefore this is the default path to development – carries significant weight, adding to the inertia preventing a transition away from coal. As industrialization requires heavy electricity consumption, many do not perceive renewable energy sources to be sufficient to power the industrialization agenda within the SADC.

“Renewable energy is still viewed with suspicion as a hidden agenda of the West. The West developed on coal and damaged [the] environment considerably. [They] still remain [the] largest contributors to global emissions, yet they continue to insist on renewable energy from cheap-coal-endowed developing countries.” —Interviewee

SADC countries embarked on an industrialization policy largely fueled by coal and hydro. This is particularly the case for South Africa. While development of new coal power plants is losing steam in most regions in the world, and has outright stopped in most developed countries, where installed electricity capacity from coal is diminishing, coal power plants continue to be commissioned and built in SADC, such as the Morupule B Power Station in Botswana, the Medupi and Kusile power stations in South Africa, and Hwange Thermal Power Station units 7 & 8 expansion in Zimbabwe. It must also be noted that many

OECD countries are no-longer seeing growth in energy demand, compared to many developing countries that are expecting exponential growth in energy consumption with more electrification and industrialisation.

COAL-FOCUSED POLICY AND FINANCE ENVIRONMENT

Several interviewees believed that the region is not in a position to abandon coal, and some institutions **continue to support and fund coal projects**. However, this is beginning to change. In South Africa, three major commercial banks – Nedbank, Standard Bank and FirstRand – have indicated they will no longer fund coal projects, although they remain invested in such projects.⁶⁴ The DBSA supports adopting a balanced energy mix and a just transition towards a low carbon economy. Through the Renewable Energy Independent Power Producers Programme, Climate Finance Facility (CFF) and the Embedded Generation Investment Programme, the DBSA is able to support eight of the SDGs and in the process, support the South African Government in terms of their proposed Nationally Determined Contributions emanating from the Paris agreement.

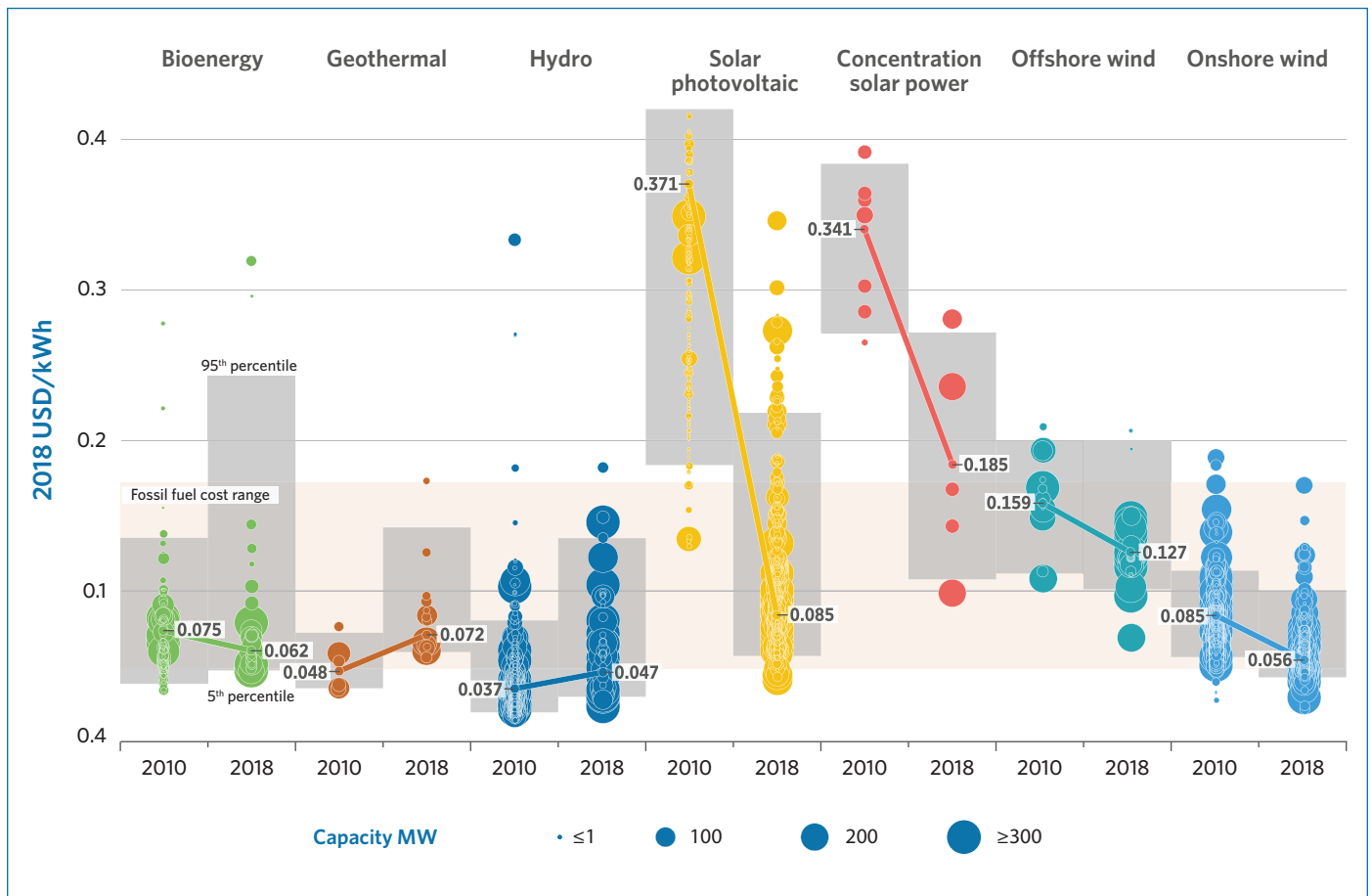
The novelty of some renewable energy technologies in the region still elicits caution from financiers in committing funds. Building **confidence** in the viability of renewables may take years. Some DFIs are combating this reluctance by leading the way. For example, the Industrial Development Corporation (IDC) actively seeks to build confidence in financiers by taking direct equity in such projects, including CSP projects and a few wind projects.

Figure 2 below shows the levelized cost of electricity (LCOE) for different renewable energy technologies and compares it to fossil fuel prices. The data shows that renewable energy technologies such as solar and wind have experienced rapidly declining costs over the last decade and are now competitive with fossil fuels in many regions. This trend appears to continue, and IRENA estimates that over three-quarters of the onshore wind and four-fifths of the utility-scale solar PV project capacity due to be commissioned in 2020 should provide lower-priced electricity than the cheapest new coal-fired, oil, or natural gas option.⁶⁵

“ We have [an] appetite for high-risk projects based on new technology in order to create credence and financier confidence on new technologies.” —Interviewee

Figure 2 below shows the levelized cost of electricity (LCOE) for different renewable energy technologies and compares it to fossil fuel prices. The data shows that renewable energy technologies such as solar and wind have experienced rapidly declining costs over the last decade and are now competitive with fossil fuels in many regions. This trend appears to continue, and IRENA estimates that over three-quarters of the onshore wind and four-fifths of the utility-scale solar PV project capacity due to be commissioned in 2020 should provide lower-priced electricity than the cheapest new coal-fired, oil, or natural gas option.⁶⁵

Figure 2: Global LCOE of utility-scale renewable power generation technologies, 2010–2018



Source: IRENA 2019, Renewable Energy Generation Costs in 2018, Figure S1

Note: This data is for the year of commissioning. The diameter of the circle represents the size of the project, with its center the value for the cost of each project on the Y-axis. The thick lines are the global weighted-average LCOE value for plants commissioned in each year. Real weighted average cost of capital (WACC) is 7.5 percent for OECD countries and China and 10 percent for the rest of the world. The single band represents the fossil fuel-fired power generation cost range, while the bands for each technology and year represent the 5th and 95th percentile bands for renewable projects.

ENTRENCHED INTERESTS

The abundance and history of coal in the SADC region have created a set of **entrenched perceptions, interests, and inertia around fossil fuels** that are a barrier to transitioning toward a cleaner renewable-based energy matrix. Major investors, politicians, banks and other financiers, and even the state-owned utility companies, often have vested interests in the fossil fuel industry, which may slow the promotion of renewable energy sources that run counter to these interests. This entrenchment is also reflected in the institutional, regulatory, financing, supply chain, and expertise frameworks in the region, each of them taking time and effort to adjust to the new possibilities afforded by renewables.

Rather than abandoning fossil fuels, some believe that efforts to address climate change should instead be put into **incorporating adaptation strategies** and increasing efficiency of coal plants. This approach would include the adoption of new and safer technologies that reduce greenhouse gas and pollutant emissions, making coal plants more efficient and environmentally friendlier. Many DFI representatives acknowledge, however, that climate mitigation policies and NDC mandates are also putting increasing pressure on continued coal dependence.

A broader societal problem in SADC is **low awareness and support** for renewable energy technology. Awareness of potential co-benefits of renewable energy, such as employment and wealth creation, and its ecological advantages is still limited, as is knowledge of the destructive effects and hidden costs of fossil fuels and impact on climate change, both globally and at the SADC level, for instance in terms of public health and the healthcare costs associated with air pollution. This low awareness has contributed to limited private sector interest in investment opportunities to be found in renewable energy in some countries. It should be noted that the Environmental Impact Assessment (EIA) process can be used as a tool to better understand the potential climate and other environmental impacts of proposed projects.

Moreover, coal and fossil fuel industries enjoy the support of entrenched interests and also labor groups, at least in South Africa (the latter is discussed further in the section on social impacts). Interviewees point out that strong advocacy advancing the benefits, viability, and poverty eradication potential of renewable energy is key in this regard, but efforts in this area by governments, business sectors, and civil society groups have been limited so far.

Risk and Financing Challenges

OFF-TAKER RISK AND CREDITWORTHINESS

Off-taker risks are cited as one of the most pressing risks and deterrents to clean-energy investment in the SADC region. Surveyed respondents cited **off-taker default** as the most important risk for investors, followed by unclear tariffs and corruption.⁶⁶ The **creditworthiness of the off-taker** is one of the most significant factors in strengthening the viability of Renewable Energy projects. Some off-taker clients, such as in mining, can afford hard currency PPAs and have collateral, while most nationally-owned utility off-takers are not credit-worthy, requiring sovereign guarantees from already fiscally strained governments. State-owned utility companies in SADC are vertically integrated (i.e., they control all stages of the energy supply chain: generation, transmission, and distribution). Many are also perennially broke, necessitating government bailouts and other exceptional measures. This is not helped by generally poor sovereign financial standing – the economies are simply not liquid enough to be able to fund energy infrastructure projects.

UNDERDEVELOPED DOMESTIC FINANCIAL MARKETS AND ACCESS TO CHEAP FINANCE

Renewable energy projects are capital intensive, requiring large initial capital outlays. Combined with the fact that investments in renewable energy projects are inherently long-term in nature and deliver slow returns, low **cost of capital** is a key determinant for their economic sustainability.

A major barrier to mobilizing finance for renewable energy is the **underdeveloped capital markets** in most SADC countries, with South Africa being the exception. As a key source for cheap capital, well-developed capital markets play a significant role in financing renewable energy projects in developed countries and – if available – would address some of the challenges of private sector investments in the SADC. However, with the exception of South Africa, capital markets and the financial sector remain underdeveloped in most SADC countries, making access to private capital difficult and often too costly for project viability. This only reinforces the need for DFIs and public financing institutions.

CURRENCY RISKS

Most renewable energy technology deployed in the SADC countries is imported. As such, borrowing to acquire the technology to develop renewable energy projects is done in international currencies – generally USD. On the other hand, revenue streams for renewable energy projects from the sale of electricity are ultimately denominated in local currency. This creates a significant **currency risk**, where future revenues may not be sufficient to repay debt should devaluation occur. A common approach to address currency risk in renewable energy projects in developing countries is for the state utility – and ultimately the government – to assume the risk by denominating PPAs in USD. However, this risk is often unmitigated or not properly accounted for, leaving state-owned utilities or governments exposed in the case of large defaults. Currency risk may also be mitigated through currency hedging instruments provided by commercial banks, but this often comes at a cost that makes the project not financially viable.

PROJECT PREPARATION AND BANKABILITY OF PROJECTS

In some cases, a key financial challenge is the bankability of projects themselves, rather than availability of finance. Despite the rhetoric in many quarters about the lack of financing availability, some funding institutions experience the opposite. For instance, South Africa’s Industrial Development Corporation (IDC) indicated that the problem was absence of interest for the available funds, rather than a lack of funds that they (and other DFIs) have at their disposal. Survey respondents also note that for major DFIs such as the DBSA and EIB, who have plenty of finance available, the problem is **lack of “good” projects**.

“ There has been a low uptake of funds. Some facilities we advanced in conjunction with other DFIs had zero uptake by players in the market.” —Interviewee

DFI representatives note a disconnect between banks and developers, pointing to a **“lack of groundwork”** by developers before approaching financiers, partially attributed to different understandings of what a ‘feasible’ or ‘bankable’ project entails. This problem is due to lack of a common understanding over expectations between banks and developers.

Financing gaps in the **pre-feasibility and pre-investment phase** are also a key barrier in helping projects build bankability. Pre-feasibility planning is a crucial necessity for potential financiers, but an area where small developers lack the skills and capacity, as well as capital.

Some organizations are now taking steps to address both investor confidence and capacity challenges for developers. The SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) recently partnered with the International Renewable Energy Agency (IRENA) to establish the *SADC Renewable*

Energy Entrepreneurship Support Facility.⁶⁷ This technical support facility offers no financial assistance, but rather focuses on enhancing and strengthening the capacity of SADC-based renewable energy entrepreneurs to assess the business potential of sustainable energy, develop viable business plans, and create linkages between entrepreneurs and financial institutions.

In order to address this issue, and to facilitate the successful development of bankable projects for market presentation, SADC has created the Project Preparation and Development Facility (PPDF). This instrument will provide technical assistance in infrastructure project identification, preparation and feasibility studies with a view to presenting bankable projects to investors and lenders, concentrating on those projects that will be considered as enablers of regional integration.⁶⁸

Project preparation also entails programme development to ensure alignment with the country infrastructure objectives. This is important in that it signals to the market government's commitment to renewable energy. DFI funding can be applied towards programme development.

AAA CREDIT RATINGS AND INTERNATIONAL BANKING REGULATIONS (BASEL III)

One constraint on international DFIs – particularly the major MDBs – in raising finance is the importance of maintaining a AAA credit rating. The onus on retaining AAA status contributes to a higher threshold of risk aversion, making DFIs inherently conservative institutions, as expanding lending operations comes at the risk of a credit rating downgrade.

Conversely, relaxing the AAA rating could open up huge potential in volumes of financing. According to some estimates, a small relaxation in the credit rating could raise 1.9 bn USD in the region to contribute toward expanding renewable energy financing.⁶⁹ Munir and Gallagher (2018) calculate that for 8 major MDBs, allowing the credit rating to fall by one “notch” to AA+ opens up a total lending headroom of USD 918.5 billion – an additional USD 320 billion to a collective AAA rating.⁷⁰ While the latter option would entail increased borrowing costs to institutions, for many institutions, profitability would still be maintained, with potential benefits for expanding finance and achieving the sustainable development goals far outweighing the costs.

Another constraint for international lenders are the restrictions imposed by international banking regulations (such as Basel III) on project finance. Meeting the requirements on liquidity coverage ratio and the net stable funding requirement of Basel III can increase the cost and limit the amount of long-term project finance available for renewable energy projects.

UNMET EXPECTATIONS FROM INTERNATIONAL MECHANISMS AND INITIATIVES

International mechanisms and initiatives such as the recently-established Green Climate Fund (GCF) have generated over the years reasonable expectations that they would attract finance flows into the region, including those for renewable energy projects. While many developing countries have expended significant capacity to develop and implement assessment analyses and action agendas, the expectation that international financing would follow these plans has not borne fruit, and the **financing has largely failed to materialize**. Examples include, but are not limited to, Sustainable Energy for All (SEforALL); Nationally Appropriate Mitigation Actions (NAMAs); the Clean Development Mechanism (CDM); the Adaptation Fund; the UNFCCC Technology Needs Assessments (TNAs); and National Adaptation Programs of Action (NAPAs).

Accessing some of these instruments has been highly demanding, and many countries in the region (and elsewhere) expended significant effort and costs in undergoing accreditation and producing the mandated reports. Additionally, many of these instruments have stringent reporting requirements, including those on monitoring and evaluation (M&E) and social and environmental reporting. For the

GCF, for example, projects are required to be co-financed, while the **accreditation process** is highly laborious and time-intensive for host institutions. Accreditation takes anything from 6 to 12 months, a comparatively far more demanding process for smaller national DFIs with less capacity. For each instance of unmet expectations, overall confidence in the system and future initiatives is decreased. The DBSA has, however, had two new facilities, the EGIP facility and CFF, approved by GCF.

RURAL ACCESS AND ECONOMIES OF SCALE

Another barrier is that of geography: many renewable energy projects are well suited for rural areas, providing power to rural communities through off-grid and micro-grid solutions. The nature of rural demographics means that populations are not naturally clustered around hubs that would generate density of electricity demand. The **small scale** and **dispersed** nature of such **markets** entails comparatively higher transaction costs for smaller projects, and, due to the low-level of economic activity (largely household and private consumption) that it would service, there is often not enough demand-side pull to make the projects financially justifiable. All of the above is exacerbated by the poverty prevalent in many SADC rural areas.

“ We have a long pipeline of micro grid renewable energy solutions awaiting consideration for funding, which due to their size may not attract private sector funding” —Interviewee

This reduces the commercial appeal and often makes such projects either non-viable or financially unappealing to investors, which hinders the potential for renewable energy projects to contribute to inclusive growth.

The relatively small size of the market in other countries in the region, apart from South Africa, also hinders investor interest. For example, Danish Energy Management notes:

The relatively small size of the market in other countries in the region, apart from South Africa, also hinders investor interest. For example, Danish Energy Management notes:

“ The greatest challenge for private sector engagement in Namibia is the absence of economies of scale, particularly in rural areas. The sparse population and distances between homesteads does negate the commercial viability of on- and off-grid solutions... There is currently no obvious business model to provide off-grid, small-scale solutions for the rural poor.”

This calls for new and practical business models if we are to address access challenges. For example, it is important to highlight the role played by Rural Electrification Agencies (REA) and other national bodies in addressing energy access. Angola, Malawi, Madagascar, Mozambique, Tanzania, Zambia, and Zimbabwe have established REAs to address access, seemingly with significant progress. In some countries, the mandate for rural electrification resides with the state utility. Where the framework for rural electrification exists, DFIs should also consider supporting REAs instead of focusing on national utilities alone.⁷¹

PUBLIC PRIVATE PARTNERSHIPS (PPPS)

Public private partnerships (PPPs) have been hailed as a **means to de-risk projects** and join the advantages of both public and private sector funding, combining the private sector's innovation and ability to manage risk with the support of the public sector. However, problems of **coordination and cooperation** between public and private sector actors are a barrier to the uptake of renewable energy in the SADC region. There are often ideological as well as material challenges to developing strong PPPs: the role of the private sector is often not well defined in such initiatives, especially in rural energy access such as electrification, and there still remains resistance and debate toward the involvement of the private (profit-seeking) sector in the provision of public infrastructure and services. Although the SADC Ministers of Finance and Investment approved a regional framework for PPPs in 2013, member

states have been slow to adopt it at the national level, although some countries such as South Africa have developed their own PPP Standards and others have drafted PPP procurement frameworks.

Mobilizing finance from the private sector can be difficult due to **differing incentives** and **time horizons**: energy is often too long term in nature to deliver the short-term returns that profit-seeking private finance requires. The global economic recession hit many companies hard and dampened interest for investment in 'non-core' energy efficiency or renewable energy projects. Commercial banks increasingly demand high returns for high-risk projects, which places an onerous burden on project proponents who need to turn a profit.

For rural access, the PPP model can be adapted for Rural Electrification Agencies or other public bodies (on distribution and metering) to work with the private sector on generation and service provision. Such a model would make it easier for DFIs to come on board, especially with bundling of projects.

Governance and Regulatory Issues

CORRUPTION PERCEPTIONS

One of the major risks that hinders the financing and uptake of renewable energy in SADC is the **problem of corruption**. Corruption was, on average, the third most important 'risk' for investors, according to survey respondents. Corruption affects all infrastructure projects, and as such it is not a problem specific to renewables. However, combined with the **entrenched material interests** that support fossil fuels as discussed above, as well as political interference, corruption compounds the barriers faced by renewables in the SADC (and other) regions. One example are the allegations of impropriety in procurement processes in the case of South Africa, where several interviewees referred to alleged corrupt dealings between state utility company Eskom and the influential Gupta family through preferential agreements:⁷²

“ ... [T]he coal sector...is the most corrupt corporate sector e.g. Guptas are alleged to have used coal to extort money from ESKOM through preferential agreements.”
—Interviewee

It is worth noting that corruption is not a uniform issue across the SADC region. Several countries have relatively low levels of perceived corruption in the public sector. Botswana, for example, is ranked 34 *least corrupt* nation out of 180 countries and Seychelles ranks 28 *least corrupt* nation out of 175 countries, according to the 2018 Corruption Perceptions Index.⁷³ In the region's largest economies, South Africa and Angola - which have some of the largest generation capacity (see Table 1) - the perception of corruption remains a barrier for potential renewable energy investment, and for partnerships with the private sector.

POLICY AND TARIFF UNCERTAINTY

The lack of clear-cut long-term policies and/or shifts in policies of support for renewable energy creates a **climate of uncertainty and risk for investors**. Support for renewable energy is often tenuous, with limited budgetary support from governments, especially when compared to the continued subsidies and political support enjoyed by the fossil fuel sector.

Changes in policy priority may shift with changing administrations, who place less emphasis on renewable energy than their predecessors. This may translate into tariff uncertainty. Despite established

“ There has been debate about unbundling of ESKOM. However, government is blowing hot and cold on the issue creating uncertainty on clear policy direction. Many MDBs and DFIs are not keen on taking a common position on this matter due to their own vested interests” —Interviewee

tariffs or signed power purchase agreements (PPAs), governments in the SADC region (but also in other regions of the world) frequently try to renegotiate already agreed power purchase agreements (PPAs), reducing investor confidence (i.e., bankability) in governments and their ability to honor electricity uptake agreements. For instance, the South African Department of Energy was stopped from signing 27 renewable energy PPAs following court action by unions in the coal industry. The agreements would have seen the national utility company, Eskom, conclude renewable energy Independent Power Producer (IPP) purchase agreements with several investors. This contributed to uncertainty in the energy sector for potential investors, particularly in relation to whether or not the national utility would be unbundled into smaller, more efficient entities.

A global trend in the last decade has been the increase of **auctions** as the main procurement mechanism for renewable energy, moving away from **feed-in-tariffs**. Also referred to as tenders, auctions are especially attractive to governments and utilities because they benefit from declining technology prices – as opposed to feed-in tariffs – where that benefit was a windfall to developers. Auctions have been key in leading rapid reductions in renewable energy PPA prices, particularly for solar and wind power.

For developers, however, auctions are **comparatively higher in risk** compared to feed-in-tariffs that guarantee a stream of returns, particularly in the tariff uncertainty context mentioned above. In addition, the use of auctions creates an inherent tendency for bidders to underbid, particularly when renewable energy technology costs are expected to continue to decline. This raises the risks for developers in not recouping costs, and makes financing of new projects more difficult. This problem particularly affects small developers, as well as municipalities and cooperatives, who cannot absorb the costs of a failed bid and are thus disadvantaged by auctions.

UNSOLICITED BIDS

One recurrent issue that illustrates many of the regulatory weaknesses and barriers highlighted above, including **corruption** and **tariff uncertainty**, is the prevalence of unsolicited bids for infrastructure. In contexts where unsolicited bids are permitted, and procurement processes are not subject to adequate regulatory scrutiny or strategic programmatic approaches, unsolicited bids can become a major conduit of corruption and systemic inefficiency. Unsolicited bidding is a commonly-found practice for large infrastructure construction projects in the SADC region and many other sub-Saharan African nations, and are particularly relevant for hydropower, which has been one of the largest sources of renewable energy generation in the region.

BUREAUCRACY AND DELAYS

While the policy agenda in SADC countries has generally been supportive, and governments are often quick to commit to renewable energy projects, the implementation of commitments has often been problematic. Pledging large projects, including renewable energy, is traditionally seen as a way to gain political capital in a region where energy poverty is a real issue for large portions of the population. Yet, implementation is a real challenge. Even when the political will is there, **government bureaucracy** plays a significant role in slowing down implementation of commitments. Since many multilateral DFIs mandate that project funding must flow through or be guaranteed by sovereign governments, layers of state bureaucracy become unavoidable in project approval and implementation. One example is the off-grid taskforce in Zambia, which involved multiple sub-committees working on different areas,

including issues such as local land rights. The coordination of multiple parties, departments, and private sector players can slow down implementation and lead to project delays.⁷⁴

Coordination, Capacity Building, and Technical Challenges

LACK OF LOCAL CAPACITY AND TECHNICAL EXPERTISE

One of the biggest challenges to the increased deployment of renewable energy in the SADC region relates not to cost, but to technical capacity. Renewable energy technologies require significant **technical capacity** often not available at the required scale in SADC countries. Projects often depend on the import of human capital, in the form of foreign experts, who may not be familiar with the local context of conditions, thus operating sub-optimally.

The expense of foreign expertise adds to time and cost commitments for projects. It also has implications for the future sustainability of projects after completion, as it requires significant training and technology transfer efforts to ensure **localization of expertise** for the future operation and maintenance of technology and equipment.⁷⁵ These problems are often exacerbated by the fact that systems need to be built and operated in remote locations, where it can be harder to attract and retain talented staff.

DATA AND INFORMATION

For investors interested in renewable energy projects in the SADC region, there is, in general, an **absence of clear, reliable information**. Many countries lack statistical data, dynamic modelling, grid integration studies, and energy forecasting at the appropriate level of detail to drive investment decisions. Likewise, much of the available data on renewable energy potential is not sufficiently detailed or up to date.

Poor data negatively affects investment decisions. The private sector requires reliable information from the public sector. This requires good quality data, which is usually to be collected by the public sector at national, regional, and municipal levels. Lack of transparency of available data only compounds this problem.

COORDINATION AND COLLABORATION BETWEEN DFIS

As our mapping shows, there is a need to **improve clean-energy reporting** from and between DFIs – particularly national development banks from SADC. Many DFIs do not make data on their financing activities publicly available or transparent. This hinders the potential for coordination and potential complementarities between DFIs that may be funding the same sectors. DFIs providing technical assistance and other non-financial services can also benefit from coordination to better allocate these resources and avoid potential overlaps. Coordination and information sharing is key between financial actors, as well as with governments. Mechanisms and platforms already exist for collaboration between DFIs, such as the International Development Finance Club (IDFC), which focuses on climate change and the sustainable development goals, or, at the SADC level, the SADC Development Finance Resource Centre (DFRC) and the SADC DFI Forum. The SADC Energy Thematic Group (ETG) meets twice a year to discuss and share information on energy projects. The ETG, which is co-chaired by SADC Secretariat and a representative of the donor community/implementing partners is comprised of implementing partners (WBG, AfDB, AFD, EU, DBSA), SACREEE, SAPP and RERA, as well as NGOs, etc.

A broader issue is that in higher-risk countries, the small number of bankable projects means that MDBs and other DFIs are often competing for the same projects. Diverging norms around risk and bankability between DFIs also leads to a certain **risk aversion in institutional collaboration**, particularly

in some institutions of working with national DFIs. By and large, international DFIs have regularized patterns of collaboration with the same institutions in the same configurations. For example, the EIB, AFD, and the KfW have long-established patterns and experience when it comes to collaboration and co-financing, with common standards and expectations under the Mutual Reliance Initiative (MRI). The MRI allows one financier to take the lead, with the understanding that all partners adhere to the same standards and guidelines regarding project implementation and safeguards, mitigating the duplication of operations. The DBSA has a similar arrangement with the New Development Bank (the BRICS Bank).

The appetite of DFIs to collaborate with new partners or other national DFIs is low, mainly due to the high transaction costs of establishing new collaborations, building up mutual trust and common practice.⁷⁶ Moreover, **issues of accountability also present risks** for collaborating institutions. Even instruments such as the Mutual Reliance Initiative do not entirely eliminate problems of accountability for secondary DFIs: even if a DFI is not the lead financier, any problems arising in the project will still be associated with them, bringing reputational as well as other costs. This makes it difficult for a major DFI to fully delegate responsibility toward another partner, negating the original purpose of the initiative.

TRANSMISSION INFRASTRUCTURE AND MARKET ACCESS

The SADC region transmission infrastructure, both at the regional level and that of its member countries, is generally underdeveloped. Furthermore, existing transmission infrastructure in SADC is designed and built for conventional centralized dispatchable sources, mostly coal and hydro, and is not always suitable for use with non-dispatchable renewable energy sources such as solar and wind. Existing transmission lines are often located far away from wind and solar farms, and the system is not designed to accommodate intermittency, which is an innate feature of many renewable energy technologies.⁷⁷ The **need for enhanced market access** is a key barrier to the development of renewables in the region. This requires new and enhanced **transmission infrastructure**, involving regulatory, social, and political issues.

Currently, **regional electric integration** between SADC countries could improve through inter-governmental coordination and planning to leverage the potential synergies at a regional level. For example, the competitive SAPP Day-Ahead and the Intra-Day Markets work well for renewable dispatch and are open for IPPs to trade power. The outstanding barriers are on access by IPPs to cross border markets and transmission infrastructure. As one interviewee put it:

“ There is poor ownership of regional energy agenda – regional plans on energy like the Southern African Power Pool exist on paper but their implementation is wanting. Governments are not investing on regional transmission lines and other regional infrastructure that can make things happen.” —Interviewee

Strategic siting of regional interconnections of renewable technologies could allow the exploitation of wind and solar power resources across borders, moving power to countries where supply variability is an issue and leveraging spatial diversification.⁷⁸ Some considerations hindering further integration include perceptions about energy sovereignty, as well as who benefits from the co-benefits (such as employment and local development) of building infrastructure.



Given the vulnerability of energy infrastructure to extreme weather events (as evidenced by the 2019 Cyclone Idai in Mozambique), it is crucial to consider climate resilience when designing new transmission and generation infrastructure. Moreover, solar, wind, hydro and biomass all are dependent on either short term weather or longer climatic variables, which affect output and operation. It is worth noting that non-coastal thermal power plants are also affected by water availability, as large amounts are required for cooling.

Social Impacts, Access and Co-benefits

JOBS AND LABOR OPPOSITION

In developed countries, the shift from fossil fuels to renewable energy sources has been a net positive in terms of generating employment—indeed, in the US, ‘green jobs’ in the sustainable energy sector now outnumber coal jobs. The **socio-economic impacts of such transitions**, however, must be considered, particularly in the context of the SADC region.⁷⁹ There is a deep social and geographic asymmetry in the distribution of where new jobs will be created and others lost. In countries such as South Africa, the coal sector is a huge source of employment providing 85 000 quality jobs by local standards.⁸⁰ Jobs in this sector are majority black, which adds an important racial dimension to the issue. There is a high dependency ratio for coal workers and indirect job creation, meaning the transition away from fossil fuels has the potential for large socio-economic impacts in mining communities.

This perception of job losses due to renewable energy trends has led to labor unions and special interest groups playing a particular obstructionist role and to resistance to renewable energy in some communities. There is a **need for a “just transition” strategy** to compensate potential ‘losers’ in communities that depend on fossil fuel industries and **“transition finance”** to assist in this regard. Despite the potential for ‘green jobs’ and overall increase in welfare at the macro level, the new employment created offers limited opportunities for displaced fossil fuel workers who may not have transferable skills and may be altogether out of reach for non-skilled workers.⁸¹ Workers are also limited in mobility to relocate to where new jobs are generated.

POVERTY AND ACCESS

Many barriers and challenges to the expansion of renewable energy are also innately tied to questions of social and economic development. **Access to energy** is still an acute problem in SADC countries, particularly in these rural areas, and there is a question over what impacts a transition to renewable energy – and a ‘just transition’ – means for such communities. For most communities, the first priority is the availability of electricity, regardless of its origin in green or fossil fuel sources.

Household renewable energy technologies still require a relatively costly upfront investment and are out of reach for many in off-grid rural communities that need them most. Despite the gradual reduction in the cost of micro-energy generation options such as solar PV systems, renewable energy technologies and equipment such as wind turbines remain a costly alternative, particularly given the upfront investment required. There is **limited investment from the private sector** in distributed energy systems, due to atomized nature of the market and the perceived limited returns. For communities already connected to the grid, the high initial household costs of renewables cannot compete with the marginal costs of (often subsidized) fossil fuel-based electricity.

COMMUNITY-LEVEL BENEFIT-SHARING

Challenges over **land ownership and benefit sharing** with local communities may become a source of tension in planning new projects and how the economic benefits of such projects will be distributed.⁸²

Auctions can also be designed with other secondary objectives, including economic, environmental and social goals, such as requirements for local content, as part of the tender requirement.⁸³ Some countries, such as South Africa, have instituted targets for localization; these are often not properly communicated and difficult to quantify, however. For example, the *Preferential Procurement Policy Framework Act 05 of 2000* and the *Broad-Based Black Economic Empowerment Act 53 of 2003* recommend that IPPs be awarded tenders to develop renewable energy based on a 70:30 ratio allocation of points to *price factors* and *non-price factors*, respectively. The latter requires project developers to identify the socio-economic needs of communities within a 50-kilometre radius of the area in which an IPP operates. While this is a positive step, there is little clarity as to **how economic empowerment targets should be evaluated** and met with the IPPs only meeting the minimum levels required to avoid being penalised.

The South African government has made a deliberate effort to include communities as mandatory beneficiaries and shareholders in the REIPPPP design and the market has embraced Local Communities' participation at shareholding level in the projects. Although the procurement program requires projects to share revenue and ownership with local communities, there is no specific focus on maximizing the communities' ownership in the projects *per se*.

LOCAL OPPOSITION AND STAKEHOLDER CONSULTATION:

Opposition to renewable energy projects from local communities often stems from lack of consultation as well as valid concerns around localization strategies. There is a current lack of communication and coordination between public and private actors. It is important to support **public-private dialogues (PPD)** and **multi-stakeholder consultations**, both for full consideration of environmental and social impacts and to minimize any potential local backlash. This requires transparency between partners and collecting and sharing of high-quality information.

While there is potential to bring social welfare, and developmental benefits to local communities, the projects must take into account the local impacts and how to bring in local stakeholders to support the project: these social factors also have implications for projects' long-term social sustainability, beyond the "bankability" of the project financials itself.

LOCAL VALUE VS. IMPORTS

Since much of the research, development, and production of renewable energy infrastructure often occurs outside the SADC region, there is limited opportunity for **local economic integration into technology value chains**. Labor localization is limited due to lack of domestic capacity, as are opportunities for local procurement when competing with international contractors. Even when local supply chains are promoted, these chains may not be economically sustainable due to lack of capacity, long-term policy planning, and project pipelines.

“ Though REIPPPP has been largely successful, it has not contributed to industrialization. For example, IDC supported factories for assembly [of] PV Panels, making towers, etc. and all these are now closed. Lack of capacity, not capital, led to their closure.” —Interviewee

Expanding training initiatives in the renewable energy sector can be one way to not only build necessary local capacity, but also to build constituency of support among local stakeholders. Technology transfer objectives should be integrated into potential renewable energy projects. Initiatives such as the Barefoot College represent examples of small-scale solutions that target local village-level communities, and contribute to poverty reduction and sustainable development through renewable energy projects.⁸⁴

POLICY RECOMMENDATIONS

Although there is progress in developing clean energy and energy access in SADC, there is still a large gap in terms of ambition, action, and finance. This section offers five actionable recommendations to address those gaps and help SADC countries leverage their large renewable energy potentials to power development for all.

I. Establish and Adopt a SADC Target of at Least 53 Percent Renewable Energy by 2040

SADC should agree to a high-level political commitment toward clean energy, expressed through a more ambitious region-wide renewable energy source.

The SAPP Pool Plan 2017 includes a “high renewables” scenario with 53 percent renewables in the generation mix (27 percent hydro and 26 percent other renewables). This scenario is feasible and SADC should adopt that figure as a minimum high-level policy target for the region. Such a target could be adopted at the Ordinary Summit of Heads of State and Government of the Southern African Development Community (SADC).

A declaration establishing the target would also afford an opportunity to define the social contract around renewable energy, articulating how renewable energy can contribute toward and mutually sustain regional development goals, including industrialization, energy access, rural development, and economic transformation. Most importantly, the political ambition should also include achieving universal energy access in the SADC region. The health benefits of ambitious renewable energy targets should be explicitly noted.

From the Agenda 2030 perspective, the political ambition reflected in this target would help deliver SDG 7 (clean energy), SDG 9 (infrastructure, inclusive, and sustainable industrialization), and SDG 3 (health).

II. Align SADC Regional Development Fund to Support SADC’s 53 Percent Renewable Energy Target

Once operational, the SADC Regional Development Fund (RDF) will provide a key instrument to promote SADC infrastructure priorities. The RDF should have a specific mandate to support the development of renewable energy sources in the SADC region. This could take the form of a committed percentage of finance devoted to clean energy and energy access.

The RDF could also help strengthen the SADC Project Preparation and Development Facility (PPDF) and provide other **project preparation** and **capacity-building** support.

The RDF should not only support renewable energy projects but, importantly, it should also support renewables integration into the SAPP and regional-level interconnection and transmission infrastructure, with a priority for renewable energy resource-rich areas. It is estimated that renewable energy interconnections can reduce demand and lead to 6–20 percent cost savings, depending on the avoided conventional energy.⁸⁵

The RDF could also create a platform for co-financing projects with global and regional DFIs, building upon and taking advantage of existing instruments as defined in section 2.4 of this paper. The RDF could also play a role as a platform or clearing-house for information and resource sharing, and in addressing some of the capacity barriers in the region. SADC can host an information platform for technical assistance facilities, create a common knowledge pool for project implementation practices and experience. This platform could also establish a centralised database for renewable energy projects developed and under-development in the SADC region.

III. Align National Policies in SADC Countries to Meet the 53 Percent Renewable Energy Goal

SADC countries should align their national energy strategies and policies with regional aspirations to meet or exceed the regional 53 percent renewable energy goal.

All SADC countries should establish a national renewable energy target. A potential model to follow could be the EU National Renewable Energy Action Plans (NREAPs), prompted by region-wide renewable energy targets, where countries reported their targets following a homogenized format, which allows for clarity, transparency, and comparability.

In addition to national renewable energy targets, countries should also translate the increased level of ambition into their second NDCs.

Countries should invest in proper planning for renewable energy, including integrated resource planning, rural/off-grid energy master plans, energy resource mapping, as well as grid integration studies.

SADC countries should strengthen their regulatory approaches, including procurement frameworks and addressing unsolicited bids. Procurement frameworks for clean energy could be based on programmatic approaches. Many governments now appreciate the fact that the fastest way of putting megawatts on the grid and providing policy certainty is through adopting a programmatic approach. In line with procurement, governments should also seek to strengthen the financial status of public utilities to increase their creditworthiness as off-takers and, as appropriate, enact reforms to facilitate participation of IPPs in the market. This will help do away with the need for sovereign guarantees on renewable energy projects.

Regarding energy access, governments should undertake national bottom-up assessments on what are the financial and technology needs to provide Tier 3 energy access to all remaining underserved communities with state-of-the-art technologies, such as renewable energy mini-grids. This assessment should emphasize not only the material needs but also practicalities of deployment.

Policies should also maximize the use of local resources and capacities in local universities and technical colleges. Utilizing local technical and social expertise in the course of project implementation and impact management can provide valuable opportunities for local employment, training, and technology transfer.

IV. Align National DFIs with Renewable Energy Targets

SADC countries should align the finance from their national DFIs with the national and SADC renewable energy targets. Already, many international DFIs have espoused clear commitments regarding energy finance, such as the withdrawal from coal financing, and for 'climate-compliant' finance. Given the unique challenges in the SADC region, such as the role of coal and fossil fuels and institutional risks, DFIs should take a common approach in assessing the bankability of projects that will

standardize feasibility studies and procurement processes *across the region*, bringing countries with higher risks in line with a region-wide benchmark. The IDFC can serve as a platform to establish a set of common principles for member DFIs, and to push procurement practices toward greater uptake of renewables in the energy portfolio of DFIs. The ETG already serves as an SADC energy information platform.

DFIs should support efforts in preparing and packaging renewable energy projects for financing and implementation to accelerate the attainment of the 53 percent target. DFIs should also support rural and off-grid energisation efforts to attain universal access.

At an internal level, DFIs also need to establish and reinforce the institutional **incentives for personnel** within each organization to raise the priority of renewable energy technologies. This requires a shift away from the endemic ‘pressure-to-lend’ in many institutions that biases personnel toward larger-scale, high-capital volume projects that characterize traditional energy projects (and also large-scale hydropower), rather than smaller-scale wind and solar projects. A shift from project to **programmatic lending** is another positive development that can help to overcome some of these barriers, and allows a more holistic strategy to tackle energy demand challenges in the region. DFIs could also mitigate problems around project bankability by establishing **Public Private Dialogues** and a platform for better communication of project expectations, responsibilities around pre-feasibility, and feasibility stages.

V. Call on international DFIs to commit to fill the gap

Significant investment will be needed to meet the required investment in clean energy in the SADC region. While domestic resources will play an important role in countries where capital markets are not well developed, international DFIs should commit to fill the finance gap. This includes direct finance by international DFIs and leveraging the capacity of local partners. International DFIs should aim to increase the finance flows through devoted partnerships and collaborations with local partners, leveraging diverse resources for co-financing and **project preparation**. This could include greater collaboration between multilateral and national DFIs and local partners, increasing on-lending initiatives toward more small-scale projects, technical assistance, and capacity building between institutions and mutual learning.

Those international DFIs and MDBs with strong credit ratings should step in to increase significantly and expand their existing efforts to provide guarantees for renewable energy projects in the region.

International DFIs should contribute to the financing of region-wide sustainable infrastructure, particularly transmission and interconnection infrastructure already identified and prioritized by SADC such as, for example, the ZIZABONA transmission line linking Zimbabwe, Zambia, Botswana, and Namibia.

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ANNEX 1: NOTE ON METHODOLOGY

Project and financing data were tracked from 20 DFIs, listed in Table 11 below. Our data is limited to institutions where information is publicly available. Some data was gathered through information published by the DFIs themselves and made publicly accessible. In other cases – notably on Chinese lending – we relied on collated datasets that have been gathered by academic and research initiatives that trace project lending to African economies.⁸⁶ Additionally, our data is limited to only development finance in forms of debt, and does not include grants and other flows, for example equity investments.⁸⁷ It also does not include flows from non-DFI private actors, including commercial banks. As such, our focus is limited to a fraction of the renewable finance landscape.

Further complicating this picture is the issue of transparency, as many national development banks do not publish information on lending levels or projects to public access. Table 11 in Annex 1 lists our data sources and transparency levels of data. These challenges of information, both in terms of accessibility and transparency, means that even within concessional finance, the data collected does not capture accurately the entire playing field of actors or financiers.

Some listed projects will have multiple sources of finance, which reflects existing close collaborations between DFIs in the region. Often these are long-established partnerships with MDBs and other DFIs from outside the region, such as the African Development Bank Group (AfDB), Agence Française de Développement (AFD), European Investment Bank (EIB) and the World Bank. Within the SADC region, ten national DFIs fund infrastructure projects. Some DFIs involved in infrastructure projects include Banque de Sol Angola; Development Bank of Southern Africa (DBSA); Industrial Development Corporation, South Africa (IDC); Botswana Housing Corporation; Botswana’s Citizen Entrepreneurial Development Agency (CEDA); IDC Zimbabwe (limited capital); Development Bank of Zambia (limited capital); Botswana Development Corporation (BDC).⁸⁸ Only three DFIs in the SADC region lend across borders: Development Bank of Southern Africa (DBSA), IDC-South Africa, and Botswana Development Corporation (BDC).

Categories of DFIs

Table 10: DFI Categories

Category	Description	List
Global Multilateral Development Banks (MDBs)	Development banks that operate globally or in multiple regions	<ul style="list-style-type: none"> World Bank Group (WBG) International Finance Cooperation (IFC) New Development Bank (NDB) Islamic Development Bank (IsDB) European Investment Bank (EIB)
Regional Multilateral Development Bank	Multilateral Development banks that focus in the Africa region	<ul style="list-style-type: none"> African Development Bank (AfDB) AfDB African Development Fund Programme for Infrastructure Development in Africa (PIDA)
National Development Finance Institutions	Publicly-owned financial institutions from SADC countries that provide development finance in one or more SADC countries.	See table 5 below

Category	Description	List
Non-SADC National Development Finance Institutions	Publicly-owned financial institutions from outside SADC that provide development finance in one or more SADC countries on a bilateral or multilateral basis	<ul style="list-style-type: none"> Development Bank of Japan Japan International Cooperation Agency (JICA) China Development Bank Export-Import Bank of China China-Africa Development Fund China-Africa Industrial Cooperation Fund KfW Agence Française de Développement (AfD) Abu Dhabi Fund for Development (ADFD)

National DFIs in SADC and Project Data Availability

Table 11: National DFIs in SADC and project data availability

Country	Institution	Notes
Angola	Banco de Poupanca e Credito (BPC)	Project information related to energy investment could not be found from BCA's official website, link: http://www.bpc.ao/bpc/en/
	Banco de Desenvolvimento de Angola (BDA)	Project information related to energy investment could not be found from BDA's official website, link: http://bda.ao/pt-pt/
Botswana ⁸⁹	Botswana Development Corporation (BDC)	In BDC's website, under "our investments" section, energy sector is not included it only includes manufacturing/industry, service, agriculture and property development, link: http://www.bdc.bw/
	Botswana Savings Bank (BSB)	We could not find project information from BSB's official website, link: https://www.bsb.bw/
Comoros	The Comorian Development Bank (French name: Banque de Développement des Comores, BDC)	The Comorian Development Bank is not in the list of SADC DFI network members. We could not find project information from the Comorian Development Bank's official website, link: https://www.bdevcom.net/#
DRC	Societe Financiere de Development (SOFIDE)	Project information could not be found from SOFIDE's official website, link: http://www.sofide-cd.com/
Eswatini	The Industrial Development Company of Eswatini (IDCE)	IDCE(https://www.idce.co.sz/port/)
	The Swaziland Development Finance Corporation (FINCORP)	FINCORP (http://www.fincorp.co.sz/)
	Eswatini National Industrial Development Cooperation (NIDCS)	NIDCS (http://www.nidcs.org.sz/index.html)

Country	Institution	Notes
Lesotho	The Basotho Enterprises Development Corporation (BEDCO)	Project information could not be found from BEDCO (Link: http://www.bedco.org.ls/)
	The Lesotho National Development Corporation (LNDC)	http://www.lndc.org.ls/ There are some information regarding to renewable energy on the website of LNDC (link: http://www.lndc.org.ls/renewable-energy/), but the information is very limited, which is not accessible for portfolio research and analysis.
Madagascar	Société Nationale de Participations (SONAPAR)	No energy project could be found from SONAPAR's official website, see link: https://www.sonapar.mg/index.php/en/
Malawi	Export Development Fund (EDF)	The fund's focus areas include Agriculture, Agro-processing, Manufacturing, Mining, Tourism and Transportation Service, energy sector is not included. Link: https://edf.MW/index.php/focus-areas
Mauritius	Development Bank of Mauritius (DBM)	Project information could not be found from DBM, link: http://www.dbm.mu/
Mozambique ⁹⁰	Banco Nacional de Investimento (BNI)	No project information could be found from BNI, link: http://www.bni.co.mz/areas-de-negocio/banco-de-investimento/
Namibia ⁹¹	Environmental Investment Fund of Namibia (EIF)	No project information were found from EIF's website, link: https://www.eif.org.na/
	Development Bank of Namibia (DBN)	DBN's website mentions that the bank views the electricity sector as a priority driver of economic activity and social wellbeing for Namibia. It goes on to point out that the Bank has a sound track record of finance for distribution and generation, including renewable sources. However, the bank has not revealed any energy project information on its website, Link: http://www.dbn.com.na/index.php/products-services/electricity
Seychelles	Development Bank of Seychelles (DBS)	Project information could not be found from DBS, link: http://www.dbs.sc/
South Africa ⁹²	Development Bank of Southern Africa (DBSA)	DBSA has provided some energy projects financial information on its official website: https://www.dbsa.org/EN/About-Us/Projects-2018/Pages/Ithezi-Thezi.asp
	Industrial Development Corporation (IDC)	Some project news related to energy investment could be found from IDC's official website (link: https://www.idc.co.za/2015/10/26/preferred-small-renewable-energy-producers-announced/), however, it is not accessible for portfolio research and analysis
	Land and Agricultural Development Bank of South Africa (Land Bank)	No project level information. Bank mainly funds agricultural investments and lends to private farmers. https://landbank.co.za/Pages/Home.aspx

Country	Institution	Notes
Tanzania ⁹³	National Development Corporation (NDC)	Three short energy project descriptions are found from NDC's official website: http://ndc.go.tz/power-production/
	TIB Development Bank (TIB)	No energy project was found from TIB's official website, link: http://www.tib.co.tz/
Zambia	Development Bank of Zambia (DBZ)	No project information could be found from the official website of DBZ, link: http://www.dbz.co.zm/
Zimbabwe ⁹⁴	Infrastructure Development Bank of Zimbabwe (IDBZ) (formerly Zimbabwe Development Bank)	Some hydro projects were found from IDBZ (link: https://www.idbz.co.zw/project-operations/government-projects/current-projects/), however, the data are not accessible for portfolio research and analysis.

Source: based on DFI Network members, Link: www.sadc-dfrc.org

Transparency and Accessibility of Project Data by DFIs Active in SADC

Table 12: Transparency and accessibility of project data by DFIs active in SADC⁹⁵

	Name	Basic Project Information	Detailed Project Information	Portfolio Data for Download	Data organized by Sub-Sectors, Project Descriptions
	MDBs	Transparency		Data Accessibility	
AfDB	African Development Bank	✓	✓	✓	✓
EIB	European Investment bank	✓	✓	✓	
EBRD	European Bank for Reconstruction and Development	✓	✓	✓	
IFC	International Finance Corporation	✓	✓	✓	✓
IsDB	Islamic Development Bank	✓	✓		
WB	World Bank	✓	✓	✓	✓
NDB	New Development Bank	✓	✓		
	International National Development Finance Institutions	Transparency		Data Accessibility	
AFD	Agence Française de Développement	✓	✓	✓	✓
CDB	China Development Bank	0	0	0	0
CHEXIM	Export-Import bank of China	0	0	0	0
CADF	China-Africa Development Fund	0	0	0	0
JICA	Japan International Cooperation Agency	✓	✓	✓	✓
EIB	European Investment Bank	✓	✓	0	✓
KfW	KfW Development Bank (Germany)	✓	✓	✓	✓
EAIF	Emerging Africa Infrastructure Fund	✓	✓	0	✓
PIDA	Programme for Infrastructure Development in Africa	✓	0.5	0	✓
SFD	Saudi Fund for Development	✓			

	Name	Basic Project Information	Detailed Project Information	Portfolio Data for Download	Data organized by Sub-Sectors, Project Descriptions
	National Development Finance Institutions	Transparency		Data Accessibility	
BPC	Banco de Poupanca e Credito (BPC)	0	0	0	0
BDA	Banco de Desenvolvimento de Angola	0	0	0	0
BDC	Botswana Development Corporation	0	0	0	0
CDB	The Comorian Development Bank	0	0	0	0
SOFIDE	Societe Financiere de Development	0	0	0	0
IDCE	The Industrial Development Company of Eswatini	0	0	0	0
FINCORP	The Swaziland Development Finance Corporation	0	0	0	0
NIDCS	Eswatini National Industrial Development Cooperation	0	0	0	0
BEDCO	The Basotho Enterprises Development Corporation	0	0	0	0
LNDC	The Lesotho National Development Corporation	0	0	0	0
SONAPAR	Societe Nationale de Participations	0	0	0	0
EDF	Export Development Fund	0	0	0	0
DBM	Development Bank of Mauritius	0	0	0	0
BNI	Banco Nacional de Investimento	0	0	0	0
EIF	Environmental Investment Fund of Namibia	0	0	0	0
DBN	Development Bank of Namibia	0	0	0	0
DBS	Development Bank of Seychelles	0	0	0	0
DBSA	Development Bank of Southern Africa	√	√	0	0
IDC	Industrial Development Corporation, South Africa	√	0	0	0
NDC	National Development Corporation (NDC), Tanzania	0	0	0	0
TIB	TIB Development Bank, Tanzania	√	0	0	0
DBZ	Development Bank of Zambia	0	0	0	0
IDBZ	Infrastructure Development Bank of Zimbabwe	√	0	0	0

ANNEX 2: FUNDS AND FINANCIAL INSTRUMENTS

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
DBSA Project Preparation Fund	The Fund provides financial support to create capacity and provide guidance to prepare both public and private sector projects for investment. The Fund uses funding from strategic partners and/or 3rd party funds it manages for the more risky, early stage preparation activities and its own funding for late stage projects. This catalytic role enables the DBSA to crowd-in third party capital. Funding is available for projects in the 16 Southern Africa Development Community (SADC) member countries.	√			√			
Green Climate Fund (GCF)	<p>The GCF is a global platform which invests in low-emission and climate-resilient development in developing countries and helps vulnerable societies adapt to the unavoidable impacts of climate change. The Fund seeks to address barriers to private sector investment in clean energy due to market failures, insufficient capacity, and lack of awareness, by crowding in private capital and expertise at scale. GCF also promotes the participation of private sector, local actors, including small and medium-sized enterprises and local financial intermediaries. Funding is available for both public and private sector mitigation and adaptation initiatives.</p> <p>GCF was set up under the United Nations Framework Convention on Climate Change (UNFCCC) in 2010 and the current global pledge to GCF is USD 10.2 billion for next 3 years, with an aspirational budget of USD 100 billion per year by 2020.</p> <p>Funding is channeled through GEF Implementing Agencies, including:</p> <ul style="list-style-type: none"> • Development Bank of Southern Africa (DBSA) • African Development Bank (AfDB)'s <p>Available for Sub-Saharan African countries. Maturity up to 20 years</p> <p>Challenge: Approval process takes up to minimum of 12 weeks.</p>	√	√	√	√	√	√	√
Global Environment Facility (GEF)	<p>Established in October 1991 to provide new and additional grants and concessional funding to cover additional costs associated with transforming projects with national benefits into projects with global environmental benefits. GEF has provided close to USD 20 billion in grants and mobilized an additional USD 107 billion in co-financing. It is focused on catalyzing funding from other DFIs and private sector with special focus on local communities and gender equality. Funding is channeled through GEF Implementing Agencies, including:</p> <ul style="list-style-type: none"> • Development Bank of Southern Africa (DBSA) • African Development Bank (AfDB)'s • West African Development Bank (BOAD) <p>Challenge: Approval process takes a minimum of 12 weeks.</p>	√	√	√	√	√	√	√

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
The Green Fund	<p>The Green Fund is managed by the Development of Bank of South Africa (DBSA) on behalf of the South African Government's Department of Environmental Affairs. Initial seed money of ZAR 800 million was provided by the South African government. The Fund supports project development, capacity building, and research, and is meant to address a gap in the market for funding innovative green initiatives, which fail to gain financing through traditional mechanisms. It plays a catalytic role in that it seeks to break down barriers and bridge gaps.</p> <p>The Fund provides financial and other types of support to projects at any stage, ranging from the early research stage right through to project expansion.</p>	√	√	√	√			
Climate Finance Facility (CFF)	<p>A DBSA-GCF joint initiative aimed at increasing climate-related investment in Southern Africa. CFF is a Rand denominated facility, targeted and available to co-fund private sector projects in countries in the Common Monetary Union, i.e., South Africa, eSwatini, Lesotho, and Namibia.</p> <p>CFF addresses market constraints and plays a catalytic role through blended financing by crowding in private sector funding. The CFF is targeting utility size projects that are failing to attract market-rate capital without "credit enhancement", such as tenor extension. CFF offers a first loss or subordinated funding and tenor extension of up to 15 years. The CFF can offer long-term funding competitively priced.</p> <p>Initial commitment is USD 2-billion funded jointly by DBSA and GCF.</p> <p>Advantage: Funding has already been approved upfront by GCF (a good example of a programmatic approach). The CFF will fast-track development of clean-energy projects without having to wait for up to 12 weeks for the standard GCF funding approval process.</p>		√				√	
Embedded Generation Investment Programme (EGIP)	<p>A USD 200-million DBSA-GCF joint initiative aimed at increasing climate-related investment in South Africa. It is a credit support mechanism that will develop a model for funding embedded generation renewable energy projects in South Africa being implemented by Independent power producers (IPPs), off-takers and local municipalities without a Government Guarantee. EGIP will help South Africa achieve its climate targets. USD 84-million will be utilized to provide BBEE funding to local communities' SMMEs in renewable energy.</p>		√			√	√	

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
SADC Project Preparation and Development Facility (SADC/DBSA)	<p>The SADC PPDF facility was created in order to address the shortage in project preparation funding for infrastructure projects in the region. It is funded by the European Union and KfW Investment Bank and is administered by DBSA on behalf of the SADC Secretariat. The objective of the facility is to finance the preparation of infrastructure projects that are considered as enablers of regional integration and to provide technical assistance for feasibility studies with a view to making the projects bankable and attractive to investors.</p> <p>The funds are limited to transport, Energy, ICT, water and sanitation, and tourism projects within the SADC region. The projects should span over two or more SADC countries or – if located in one country – should facilitate and promote regional integration.</p>	√		√	√			
NDB-DBSA Credit Line for renewable energy	New Development Bank (NDB/BRICS Bank) to the Development Bank of Southern Africa – USD 300 million at low interest rate for Greenhouse Gas Emissions Reduction and Energy Sector Development.		√					
EIB – TDB Credit Line for renewable energy	European Investment Bank (EIB) to Eastern and Southern African Trade and Development Bank (TDB) – USD 120 million for small and medium-sized enterprises (SMEs)		√					
AFDB Room-to-Run Securitization Vehicle	<p>An African Development Bank Group (AfDB) and African Trade Insurance Agency (ATI) USD 500 million (R7.1 billion) credit insurance deal structured to cover a portion of the AfDB's portfolio of non-sovereign operations in Africa. The product frees up the AfDB's balance sheet for new projects. This vehicle involves the participation of a number of Lloyd's & Company private reinsurers who will share the risk on African financial institutions. This vehicle will enable many insurance companies operating outside Africa to participate in the financing of development in Africa for the first time.</p> <p>The deal is the second Balance Sheet Optimization transaction under the "Room to Run" initiative following the successful signing of the Synthetic Securitization transaction in September.</p> <p>The insurance will cover approximately 22 percent of the Bank's outstanding non-sovereign financial sector portfolio. Specifically, it will protect the Bank against the non-payment of loans made to about 30 African financial institutions. The vehicle is expected to release sufficient capital to create almost USD 500 million of headroom for new lending.</p>						√	

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
Africa50 Fund	<p>A project preparation and project development fund established by the AfDB as part of African Heads of States Program for Infrastructure Development in Africa (PIDA) Declaration in 2012. Fund provides specialized financial tools to address specific market challenges.</p> <p>Africa50 is an Investment Bank for Infrastructure in Africa that focuses on high-impact national and regional projects in the energy, transport, ICT, and water sectors.</p> <p>Challenges: Access</p>	√	√		√			
NEPAD Climate Change Fund	<p>The NEPAD Climate Change Fund was established by the NEPAD Planning and Coordinating Agency in 2014 with support from the German Government. Objective is to provide technical and financial assistance to AU member states, Regional Economic Communities (RECs) and institutions. Funding is used for the implementation of projects targeting adaptation of agriculture to climate change. The Fund supports activities in two focus areas, namely, training, capacity development, awareness creation, and policy advice and technical support.</p>				√			
Africa GreenCo	<p>Africa GreenCo aims to increase private sector investment in energy generation in sub-Saharan Africa by mitigating the credit risks associated with off-takers by acting as an intermediary aggregator between buyers and sellers of sustainable investments in the power sector. Most African governments cannot continue to add contingent liabilities against the power utilities as they have reached their guarantee limits.</p>						√	
AFD Green Energy Fund	<p>AFD Green Energy Fund provides finance to renewable energy and energy efficiency projects of smaller scale and manufacturing of Green products in South Africa. The Fund is managed by the Industrial Development Corporation of South Africa.</p> <p>Maximum project funding 25% of the Facility (ca R250 million).</p> <p>Minimum investment period of 3 years and maximum payback based on energy savings of 8 years.</p> <p>Size: Zar1billion fund.</p>		√					
Sustainable Energy Fund for Africa	<p>A multi-donor trust fund of USD 95 million provided by the Governments of Denmark, United States of America, and Norway and administered by the AfDB. Fund provides support to medium-scale renewable energy and energy efficiency projects in Africa. Funding covers project preparation, equity Investments, and technical assistance in creating an enabling environment.</p>				√	√		
Africa Climate Change Fund (ACCF)	<p>Set up in 2014 by African countries to meet commitments toward climate adaptation and mitigation in their Nationally Determined Contributions (NDCs) and managed by AfDB. The ACCF supports African countries in strengthening their capacities to access international climate funds and to pilot innovative, small-scale climate adaptation projects.</p>			√	√			

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
Adaptation Benefit Mechanism (ABM)	The ABM is an innovative mechanism for mobilizing new and additional public and private sector finance for enhanced climate change adaptation action, being developed by the AfDB in collaboration with governments from several African countries. It has the potential to accelerate the transformation to low-carbon, resilient, and sustainable development of the host countries by giving value to resilience. ABM will de-risk and incentivize investments by facilitating payment upon delivery of project and/or program-specific adaptation benefits.				√			
African Carbon Support Program	A two-year technical assistance program which is being implemented by the AfDB and aimed at providing assistance to AfDB clients in regional member countries to access carbon finance in order to ensure the commercial viability of their investments.			√	√			
NEPAD-Infrastructure Project Preparation Fund	The NEPAD Infrastructure Project Preparation Facility (NEPAD-IPPF) Special Fund was established to assist African countries, Regional Economic Communities (RECs), specialized agencies, and related institutions by providing grant resources for: (i) preparing high-quality and viable regional/continental infrastructure projects with a view to requesting financing from public and private sources; (ii) developing a consensus and partnership for project implementation; and (iii) promoting infrastructure projects and programs aimed at enhancing regional integration and trade. It is a key contributor to regional integration by interconnecting the infrastructure of countries and regions of Africa. Sector focus includes transport, energy, ICT, and water resources management. Activities eligible for financing under the Fund are: (i) prefeasibility studies; (ii) feasibility studies; (iii) project structuring; (iv) capacity building for infrastructure development; and (v) facilitation and creation of an enabling environment for regional infrastructure development.	√			√			
Public and Private Sector Energy Efficiency Programme (PPSEEP)	An RSA countrywide programme to support energy efficiency improvement in the private sector (small, medium and large businesses). Funded by the UK Department of International Development (DFID) and supported by RSA Department of Minerals and Energy and operated for 2 years from 2013-2015. Technical assistance provided for developing energy savings strategies and conducting energy audits. Technical energy efficiency support and energy assessments fully subsidized by the PSEE.	√			√			

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
Fund for African Private Sector Assistance (FAPA) Japanese special fund for private sector	<p>A multi-donor thematic trust fund funded by Japan, African Development Bank, the Austrian Development Bank, and Austria that provides grant funding for technical assistance and capacity building. It is managed by the AfDB.</p> <p>The Fund was established to provide untied grants for technical assistance and capacity building to African governments, regional economic communities and similar intergovernmental organizations, to non-governmental organizations such as business associations, market regulatory institutions, business development services providers, business training and research institutions, and to public and private enterprises. The resources may also be used to promote innovative programs that specifically support small and medium-sized enterprises.</p> <p>Portfolio includes regional and national projects in sectors such as Business Enabling Environment, Financial Institutions Support, Infrastructure, Trade and Micro-, Small and Medium Enterprises.</p>	√			√			
Climate Investment Platform (CIP)	<p>The Climate Investment Platform is an inclusive partnership harnessing the power of collaboration and knowledge sharing for climate action. Partnership ranges from intergovernmental organizations and developing agencies to international financial institutions and trusted country partners and includes:</p> <ul style="list-style-type: none"> • The Green Climate Fund • United Nations Development Programme (UNDP) • Sustainable Energy for All (SEforAll) • The International Renewable Energy Agency (IRENA) • Organisation for Economic Co-operation and Development (OECD) • United Nations Industrial Development Organization (UNIDO) • European Investment Bank (EIB) • European Bank for Reconstruction and Development (EBRD) • REN21 • The Global Infrastructure Facility • The World Bank – ESMAP • The World Resources Institute (WRI) 				√			
Sustainable Energy for All (SEforALL) – Africa Hub	<p>SEforALL initiative is a multi-stakeholder partnership between governments, the private sector, and civil society. Aimed at ensuring universal access to modern energy services, doubling the global rate of improvement in energy efficiency, and doubling the share of renewable energy in the global energy mix.</p> <p>The Africa Hub’s main activities include provision of guidance for the SEforALL country action processes globally and in Africa, delivering of technical assistance to partner countries, networking and communication, and mobilization of financing.</p>				√			

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
SADC Regional Development Fund	<p>Still in the process of being set up, the Fund will accelerate the regional integration agenda. The Fund is a financial mechanism intended to mobilize resources from Member States, the private sector, and development partners to finance programmes and projects to deepen regional integration.</p> <p>The Fund will have seed capital of USD 1.2 billion, with member states expected to contribute USD 612 million while the private sector will take up USD 444 million of the share capital and USD 144 million will come from ICPs.</p>		√					
Africa Renewable Energy Initiative (AREI)	<p>AREI is a transformative, Africa-owned and Africa-led inclusive effort to accelerate and scale up the harnessing of the continent's huge renewable energy potential. Under the mandate of the African Union and endorsed by African Heads of State and Government on Climate Change (CAHOSCC), the Initiative is set to achieve at least 10 GW of new and additional renewable energy generation capacity by 2020, and mobilize the African potential to generate at least 300 GW by 2030.</p>		√	√	√	√	√	√
ATI/ACA	<p>Africa Trade Insurance (ATI) is a pan-African institution that provides political risk insurance and Credit insurance to companies, investors, and lenders interested in doing business in Africa.</p> <p>Funded by COMESA, World Bank and AfDB, ATI is a market leader for risk mitigation in Africa.</p>						√	
UNLOCK (Proparco's guarantees)	<p>UNLOCK is Proparco's innovative guarantee scheme offered to financial institutions to jointly cover the risk on long-term financing in local currency for key development projects. Under UNLOCK, Proparco will:</p> <ul style="list-style-type: none"> ▪ Issue guarantees for tenor extension ▪ Extend the tenor of the local currency financing ▪ Bring on board regional and international expertise ▪ Enhance creditworthiness using its AA rating (S&P's) <p>Local commercial banks will:</p> <ul style="list-style-type: none"> ▪ Provide project financing ▪ Ensure liquidity throughout the life of the loan ▪ Bring on board local market know-how <p>Project funding criteria:</p> <ul style="list-style-type: none"> ▪ Financing needs of 20-50 M USD (or equivalent) ▪ Multisector development project: infrastructure, energy, agriculture, manufacturing, and services 		√		√		√	

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
European Guarantee for Renewable Energy (EGRE)	<p>A joint initiative of AFD, Cassa Depositi e Prestiti (CDP), EIB, and KfW to promote small-scale renewable energy plants in sub-Saharan Africa. Its two main objectives are (1) Promotion of renewable energy solutions to support sustainable, inclusive and “clean” economic growth (low carbon and climate resilient); and (2) support to poverty eradication by helping households and businesses to climb the energy ladder</p> <p>The AfD / CDP / EIB / KfW partial risk guarantee scheme covers the risk of non-payment for power purchases by the local offtakers along the start-up phase of the renewable energy plants, built by IPPs.</p> <p>EC contribution focuses both on guarantee issue and technical assistance (TA) for project preparation and pipeline development.</p> <p>Target countries: Sub-Saharan Africa</p>				√		√	
EU-Africa Infrastructure Trust Fund (EU-AITF)	<p>Established by European Commission and European Union Member States. The Fund provides:</p> <ul style="list-style-type: none"> • Technical assistance in support of all project phases • Interest rate subsidies to decrease the EU-AITF Financiers’ loan interest rates • Investment Grants to finance project components or part of the investment • Financial Instruments like guarantees, risk mitigation measures, equity or quasi-equity investments or participations <p>Sector focus: Energy (geothermal, hydropower, biomass, solar and wind power plants, transmission lines, sustainable cooking fuels), Transport, Water, and Information and communication technologies (ICT).</p>	√	√	√	√	√	√	
Access Co-Development Facility (ACF)	<p>A financial and technical support mechanism designed to provide local project developers and originators in Africa with the technical expertise and funding required to bring their renewable energy projects to fruition. It is a crowdsourcing origination platform for power projects in Africa. ACF partners include: African Development Bank, FMO, IFC, Proparco, and InfraCo Africa.</p>		√		√			
EU Energy Initiative Partnership Dialogue Facility (EUEI PDF)	<p>The EUEI PDF is a multi-donor facility that contributes to the achievement of the Sustainable Development Goals, specifically, energy. As a flexible instrument of the European Union, the EUEI PDF promotes sustainable energy for equitable development in Africa, Latin America and Asia. The Facility has three main products for Africa:</p> <ul style="list-style-type: none"> • Strategic Energy Advisory and Dialogue Services (SEADS) • Africa-EU Energy Partnership (AEEP) • Africa-EU Renewable Energy Programme (RECP) <p>Refer below for details.</p>	√	√	√	√	√	√	√

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
Strategic Energy Advisory and Dialogue Services (SEADS)	<p>SEADS supports the development and improvement of energy policies, strategies and regulations in order to create an enabling environment for sustainable energy investments in developing countries, for national and municipal governments, as well as regional organisations by offering:</p> <ul style="list-style-type: none"> Advisory services for the drafting and implementation of energy policies, regulations, laws and strategies Support for the establishment and/or strengthening of energy specific institutions e.g., rural electrification agencies, centres for renewable energy and energy efficiency Capacity building to establish the knowledge and skills needed for local development of energy policies and institutions Knowledge sharing of best practices and tools through thematic studies and dialogue events 							
Africa-European Union Energy Partnership (AEEP)	<p>A joint Africa-EU strategy and long-term framework for strategic dialogue between Africa and the EU aimed at sharing knowledge, setting political priorities and developing joint programmes on the key energy issues and challenges in the 21st century.</p> <p>AEEP is a long-term framework for structured co-operation between the two continents on energy issues of mutual strategic importance, allowing Africa and Europe to develop a shared vision, common policy approaches and actions.</p> <p>Overall objective: to improve access to secure, affordable, and sustainable energy with a special focus on increasing investment in energy infrastructure in Africa.</p>				√			
Africa-EU Renewable Energy Programme (RECP)	<p>The RECP is an African-European platform for promoting renewable energy market development and investment in Africa that was initiated in the framework of the Africa-EU Energy Partnership (AEEP).</p> <p>By promoting market development and investment, it spurs growth on both continents and contributes directly to the targets of the Africa-EU Energy Partnership, the Sustainable Energy for All initiative, the Sustainable Development Goals, and the Africa Renewable Energy Initiative.</p> <p>RECP is currently funded by Austria, Finland, the European Commission, Germany, and the Netherlands.</p> <p>Support includes:</p> <ul style="list-style-type: none"> policy advisory; private sector cooperation; access to finance; innovation and skills development. 				√			

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
Africa Climate Resilient Investment Facility (AFRI-RES)	AFRI-RES is an Africa-based network centre of technical competence and excellence with the overall objective to strengthen the capacity of African institutions (including national governments, Regional Economic Communities, power pools, among others) as well as the private sector (project developers and financiers) to plan, design, and implement infrastructure investments that are resilient to climate variability and change in selected sectors. The Facility is managed by the World Bank and UNECA/ACPC.				√			
AIIB Project Preparation Special Fund	The AIIB Project Preparation Special Fund provides grants to support and facilitate the preparation of projects to be financed by AIIB in eligible member countries (International Development Association recipients, including International Development Association Blend countries.) In exceptional circumstances, Fund resources may also be used for preparing innovative/complex projects, regional/cross-border projects that have significant regional impact and benefit other members, or non-sovereign backed transactions where there is a demonstrable need.	√			√			
Canada IFC Renewable Energy Program for Africa	A blended finance partnership between IFC and the government of Canada. Managed by IFC, the Initiative uses public funds to unlock/catalyse larger amounts of private sector investments to expand renewable energy in Sub-Saharan Africa. It will provide concessional financing blended alongside IFC's own account resources to mitigate a variety of risks that can deter private investment in renewable energy. Fund will improve access to affordable and sustainable energy services, reduce the dependency on fossil fuels, and bring African countries a step closer to accomplishing their sustainable development goals.		√	√	√			
IFC-Canada Climate Change Program	First bilateral program to provide IFC with a contribution to support blended finance investments and advisory services in all areas of IFC's climate work around the world. Initial funding from Canada was 276 million Canadian dollars. Blended finance is a promising tool that IFC uses to unlock private capital. Private investors often avoid projects that involve untested approaches – or are in markets perceived as too risky. Blended finance entails using concessional funds to help mitigate specific investment risks, opening the door to greater sums of private capital.	√	√	√	√			
Climate Investment Funds	The \$8 billion Climate Investment Funds (CIF) accelerates climate action by empowering transformations in clean technology, energy access, climate resilience, and sustainable forests in developing and middle-income countries. The CIF's large-scale, low-cost, long-term financing lowers the risk and cost of climate financing. It tests new business models, builds track records in unproven markets, and boosts investor confidence to unlock additional sources of finance.		√	√				

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
COMESA Project Preparation and Implementation Unit (PPIU)	The COMESA-EAC-SADC Tripartite Project Preparation Unit established through COMESA's objective is to prepare projects to a "bankable" stage. The PPIU is funded by EDF, DFID and AfDB. Funding is used for actual project preparation.				√			
The Electrification Financing Initiative (ElectriFI/EDFI)	<p>The Facility is funded by the European Union. Total size of the ElectriFI facility is EUR 215 million. EDFI/ ElectriFI is an EU-funded impact investment facility, providing financing in early stage private companies and projects, focusing on new/ improved electricity connections, as well as on generation capacity from sustainable energy sources in emerging markets. It is managed by the Association of European development Finance Institutions (EDFIMC).</p> <p>Mandate is for on and off-grid renewable energy generation or distribution creating or improving access to electricity by adding new connections and/or increasing renewable generation capacity; energy efficiency in local markets in poorer economies and fragile situations.</p> <p>By combining technical assistance and risk capital, ElectriFI's activities de-risk investments and allow private investors and development finance institutions to deploy capital that they could not have invested otherwise.</p> <p>Funding instruments: Equity, quasi-equity, junior/senior debt, or guarantee, both at corporate and project level. ElectriFI does not provide grants, concessional loans, or other low-cost capital. Currently operates in Benin, Cote d'Ivoire, Nigeria, Zambia, and Pacific region.</p>		√		√	√	√	
Energy and Environment Partnership Trust Fund (EEP Africa)	<p>A clean-energy financing facility managed by the Nordic Development Fund (NDF) with funding from Austria, Finland, and NDF and aims to contribute to the achievement of the Paris Agreement on climate change and Sustainable Development Goals (SDGs).</p> <p>EEP Africa provides early-stage grant and catalytic financing to innovative clean-energy projects, technologies and business models in 15 countries across Southern and East Africa.</p>	√	√	√				
Global Energy Efficiency and Renewable Energy (GEEREF)	GEEREF is a Fund-of-Funds which invests in private equity funds which focus on renewable energy and energy-efficiency projects in emerging markets. It invests in private equity funds which, in turn, invest in private sector projects which concentrate on infrastructure projects that generate clean power deliver with a strong positive environmental and developmental impact and low risk. It is managed by EIB Group.					√		

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
Global Infrastructure Facility	<p>The Global Infrastructure Facility (GIF) is a partnership among governments, multilateral development banks, private sector investors, and financiers. It is designed to provide a new way to collaborate on preparing, structuring, and implementing complex projects that no single institution could handle on its own.</p> <p>The comprehensive project support provided by the GIF draws on the combined expertise of its technical and advisory partners. This group, which includes commercial banks and institutional investors, ensures that well-structured and bankable infrastructure projects are brought to market in a way that sustainably meet the needs of governments and service users. Funding partners provide financial contributions to the GIF. Managed by GIF Management Unit and GIF Technical Partners.</p>		√		√			
Private Infrastructure Development Group (PIDG)	<p>PIDG was established to address a series of market failures. Funded by six governments and the IFC. Focused solely on infrastructure by utilising public-private partnership business models to catalyse private-sector investment in infrastructure where it is needed most. PIDG provides leadership, development capability, funding, and finance solutions in the poorest and most fragile countries. It supports sustainable infrastructure that results in high development impact and develops local capacity and capability and the financing potential of local credit and capital markets.</p> <p>PIDG operates along the project life cycle (from concept to financial close) and across the capital structure, to help projects overcome financial, technical, or environmental challenges – creating investment-ready, bankable infrastructure opportunities by investing in:</p> <ul style="list-style-type: none"> • Technical Assistance Facility (TAF) • Devco (advisory services) • InfracoAfrica • Emerging Africa Infrastructure Fund (EAIF). 	√			√			
GuarantCo (part of the Private Infrastructure Development Group (PIDG))	<p>GuarantCo was established to mobilise local currency investment for infrastructure projects and to support the development of financial markets in lower income countries. GuarantCo is owned by the governments of the United Kingdom, Switzerland, Australia, and Sweden, and the Netherlands.</p> <p>GuarantCo provides local currency contingent credit solutions – primarily guarantees – to support projects and companies in order to raise debt financing for the development of infrastructure in lower income countries in Africa and Asia. GuarantCo can provide a variety of contingent products as may be required for a particular project, including partial credit and partial risk guarantees, first loss guarantees, tenor extension, or liquidity guarantees. It can also provide joint guarantees or counter guarantees.</p>						√	

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
InfraCo Africa	Managed by EleQtra, InfraCo Africa provides responsible leadership in bridging the infrastructure gap in sub-Saharan Africa. Through early stage project development capital and expertise, InfraCo Africa is a catalyst for the private sector to invest in sustainable infrastructure projects in sub-Saharan Africa.	√			√			
Emerging Africa Infrastructure Fund (EAIF)	EAIF is a public private partnership that mobilises capital from public and private sources to lend to businesses creating, improving, or expanding infrastructure in sub-Saharan Africa. EAIF provides long-term debt on commercial terms to infrastructure projects in Africa, particularly in fragile states where conventional lenders are often averse to the risks involved. Projects must have clear potential to improve economies and help reduce poverty. Funding instruments include: <ul style="list-style-type: none"> • Project loans and corporate loans of between USD 10 million and USD 50 million • Subordinated and/or mezzanine debt • Loans in USD or EUR, loan periods of up to 20 years • Local currency loans possible in certain circumstances • Anchor or cornerstone investor in bond issues • Bridging finance • Structuring and arranging • Viability, technical and environmental grant support to qualifying projects Operates in 48 sub-Saharan countries. Lends between USD 10 million to USD 50 million, typically over 15 years, with a possibility on a case-by-case basis to lend up to 20 years.	√	√		√			
International Development Association (IDA) Private Sector Window	IDA is the part of the World Bank that helps the world's poorest countries. It aims to reduce poverty by providing loans (called "credits") and grants for programs that boost economic growth. IDA lends money on concessional terms. This means that IDA credits have a zero or very low interest charge and repayments are stretched over 30 to 38 years, including a 5 to 10-year grace period. Provides concessional loans and grants. Managed by IFC.	√		√	√			
IDC SUNREF II	Comprises: <ul style="list-style-type: none"> • A credit line from the French Development Agency to the IDC focused on Renewable Energy and Energy Efficiency (objective is GHG Reductions) which closes in June 2020, • Technical Assistance Facility to support the IDC appraisal process, provide independent technical advice (e.g., verification of energy savings and GHG reductions), support the IDC in capacity building around specific project types, remove internal barriers at the IDC, and • de-risking and provision of guarantees. Managed by the IDC, South Africa.		√		√		√	

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
IFC Global Infrastructure Project development Fund (IFC InfraVentures)	<p>IFC InfraVentures is a USD 150 million global infrastructure project development fund that has been created as part of the World Bank Group's efforts to increase the pipeline of bankable projects in developing countries, combining early-stage risk capital and project development support. The type of activities and deliverables supported include:</p> <ul style="list-style-type: none"> • Project and prototype feasibility studies, Economic, social, technical, and environmental studies, • Managing relationships with public and private stakeholders • Financial modeling, • Negotiating financial and legal terms of project documents, • Selecting and supervising project participants, and • Sourcing project equity and debt financing. <p>IFC InfraVentures project support is not grant funding. In return for its development funding and assistance, IFC will have the right to a stake in the equity of the project at financial close, in most cases the right to arrange the long-term debt for the project and IFC may provide part of such debt. Managed by the IFC.</p>	√	√		√	√		
Infrastructure Investment Programme for South Africa (IIPSA)	<p>IIPSA aimed at supporting the implementation of the Gov of RSA's infrastructure programme and to address the constraints to infrastructure development in South Africa and in SADC region. IIPSA will support the development of both national and regional infrastructure projects.</p> <p>This funding can take the form of technical assistance or direct investment grants. IIPSA is expected to provide innovative financing, involving the co-funding of EU grants together with loans from participating DFIs – DBSA, the European Investment Bank (EIB), Agence Française de Développement (AFD), and the German Investment Bank, KfW. Regional finance institutions active in South Africa, such as the African Development Bank (AfDB), as well as South African financial institutions, like the Industrial Development Corporation (IDC), can co-finance projects together with one or more participating DFIs.</p> <p>Managed by DBSA.</p>	√	√	√	√			
IRENA Abu Dhabi Fund for Development (ADFD) Project facility	<p>The International Renewable Energy Agency (IRENA) and the Abu Dhabi Fund for Development (ADFD) have collaborated on a joint Project Facility to support replicable, scalable, and potentially transformative renewable energy projects in developing countries. ADFD committed USD 350 million in concessional loans, over seven annual funding cycles, to renewable energy projects recommended by IRENA.</p>			√				

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
Japan fund for Joint Crediting Mechanism	<p>The Japan Fund for the Joint Crediting Mechanism is a single-donor trust fund managed by the African Development Bank. The fund aims to provide financial incentives for the adoption of advanced low carbon technologies in public and private sector projects. The fund provides grants and technical assistance (TA) to AfDB projects utilizing the Joint Crediting Mechanism (JCM). The fund supports projects co-financed with ADB or ADB-administered funds or stand-alone projects which adopt advanced low carbon technology that can reduce GHG emissions, with the priority on long-term carbon dioxide reducing from energy-related activities that contribute to GHG emission reduction.</p>	✓			✓		✓	
Program for Infrastructure Development in Africa (PIDA) Service Delivery Mechanism	<p>PIDA is a strategic continental initiative for mobilizing resources to transform Africa through modern infrastructure. Its focus is 51 cross-border infrastructure projects across four main infrastructure sectors, namely, energy, transport, transboundary water, and ICT.</p> <p>It is a successor to the NEPAD Medium to Long Term Strategic Framework (MLTSF). The overall goal of PIDA is to promote socio-economic development and poverty reduction in Africa through improved access to integrated regional and continental infrastructure networks and services.</p> <p>Key development issues addressed by PIDA include reducing production and transaction costs, improving competitiveness of businesses, and improving foreign direct investment flows to the continent.</p> <p>PIDA will bring together and merge various continental infrastructure initiatives, such as the NEPAD Short Term Action Plan, the NEAD Medium to Long Term Strategic Framework (MLTSF), and the AU Infrastructure Master Plans initiatives into one coherent program for the entire continent. PIDA will develop an infrastructure investment program (short, medium and long term) built around key priorities and shall include an implementation strategy and priority action plan.</p>				✓			
Infrastructure Development Collaboration Partnership Fund (DevCo) (IFC as implementing agency)	<p>DevCo is a multi-donor facility managed by IFC. A part of PIDG, it receives funding from the Ministry of Foreign Affairs of the Netherlands (DGIS), the Swedish International Development Cooperation Agency (Sida), and the UK Department for International Development (DFID).</p> <p>DevCo provides advisory services to governments in the poorer (DAC I and II) countries to help them structure transactions that facilitate private-sector participation in infrastructure projects in the following sectors: agribusiness, power and renewable energy, water and sanitation, telecommunications, transportation, solid waste, and other physical infrastructure services.</p> <p>Managed by the IFC PPP Transaction advisory Unit.</p>				✓			

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
Multilateral Investment Guarantee Agency (MIGA) - political Risk Guarantees	MIGA promotes cross-border investment in developing countries by providing guarantees (political risk insurance and credit enhancement) to investors and lenders. Guarantees protect investments against non-commercial risks and can help investors obtain access to funding sources with improved financial terms and conditions. MIGA is part of the World Bank Group.						√	
Private Financing Network (PFAN)	PFAN is a global network of climate and clean-energy financing experts that aims to bridge the gap between entrepreneurs developing climate and clean-energy projects and private-sector investors by providing free business coaching to projects, increasing the chances of attracting investment and growing its investor outreach. PFAN organises Investment Forums to showcase selected investment-ready projects to groups of investors and provides one-on-one Investment Facilitation services to investment-ready projects, shortening the path to further growth. It is an investment marketplace.				√			
The Investment Fund for Developing Countries Project development Facility	IFU provides risk capital and advice to companies wanting to do business in Africa, Asia, Latin America, and parts of Europe. IFU is a self-governing state fund with the purpose of promoting economic and social development in developing countries. IFU is also fund manager for The Danish Climate Investment Fund (DCIF), The Danish Agribusiness Fund (DAF), The Arab Investment Fund (AIF), and IFU Investment Partners (IIP) Investment Fund for Developing Countries (IFU)				√			
Seed Capital Assistance Facility (SCAF)	SCAF's vision is to increase the availability of investment for early-stage development of low-carbon projects in developing countries, contributing to low-carbon sustainable development, economic growth, poverty reduction and climate change mitigation.	√			√			
Sustainable Energy Fund for Africa (SEFA)	SEFA is a multi-donor trust fund administered by the African Development Bank and funded Governments of Denmark, the United States and Norway - to support small and medium-scale Renewable Energy (RE) and Energy Efficiency (EE) projects in Africa. Support includes Project Preparation, Equity Investments, and creating an Enabling Environment. Managed by the African Development Bank. Provides both Debt and Equity.	√	√			√		
The Africa Enterprise Challenge Fund (AECF)	AECF is a development institution which supports businesses to innovate, create jobs, leverage investments and markets in an effort to create resilience and sustainable incomes in rural and marginalized communities in Africa. Focal sectors of agribusiness and renewable energy.		√					

Product/Fund	Description	Grants	Debt (Senior & Subordinated)	Concessional funding	Technical assistance	Equity	Guarantees/ Insurance	Green Bonds
The Finland IFC Blended Finance for Climate Program	The Finland and IFC joint climate fund, established in October 2017, will support renewable and clean-energy solutions and climate projects in developing countries. The funds will be invested in climate projects. The funding is primarily targeted at the least developed countries, other lower income countries, and lower middle income countries. The funding instruments of the programme comprise loans granted for companies operating in developing countries, capital investments and guarantees, for instance. Accepted sectors include energy efficiency, renewable energy, sustainable forestry and land use, meteorology, and water and wastewater solutions.		√					
UK Cross Government Prosperity Fund	Fund provides expertise and technical assistance in sectors and countries where there is the highest potential for inclusive growth in order to promote economic reforms and remove barriers to trade.				√			
UK CI	UK Government's International Climate Finance initiative. Targets transformational green-energy investments in some of the world's most carbon-intensive economies. UKCI invests on commercial terms, making minority equity investments of typically c. GBP 10-30 million into renewable energy and energy efficiency projects. UKCI is a joint venture between the Green Investment Group (GIG) and the UK Government's Department for Business, Energy and Industrial Strategy (BEIS).					√		
Power Africa Off-grid Project (PAOP)	USAID-funded Power Africa Off-grid Project (PAOP) provides technical assistance and targeted grant funding to support the development of Africa's off-grid solar home system (SHS) and mini-grid sectors. PAOP works with companies, investors, and governments to advance the role of the private sector in extending energy access.	√						

ANNEX 3: NDC AND CLEAN-ENERGY POLICY FRAMEWORKS BY SADC COUNTRY⁹⁶

Angola

According to the International Renewable Energy Agency (IRENA), Angola's installed renewable energy capacity reached 2 763 MW in 2018 and its total renewable electricity generation reached 7 282 GWh.⁹⁷ Total electricity generation reached 10 361 GWh (electricity generation by oil 4 546 GWh, electricity generation by hydro 5 815 GWh).⁹⁸

Angola's access to electricity was 40.5% in 2016.⁹⁹

Angola's NDC renewable energy contributions are both unconditional and conditional. Its unconditional contribution includes 880 MW of renewable energy projects (hydropower and wind) for an estimated cost of USD 1 222 million. Angola's conditional contributions include 70 renewable energy projects amounting to 8 591 MW at an estimated cost of USD 11.496 billion. The 70 projects have the following aggregate capacities by technology: hydropower 6 540 MW, wind 681 MW, biomass 640 MW, solar 438 MW, small hydropower 192 MW, and off-grid solar 100 MW.¹⁰⁰

In addition, the Government of Angola established New Renewable Strategy and Specific Goals of Renewable Energies Strategy by 2025. The main goal of the strategy is to diversify the investment in renewable energies through a growing role of the new renewable energies, including small hydro-power plants. It is expected that by 2025, energy consumption may reach 39 TWh, meaning that it is necessary to increase installed energy capacity to meet the hydrological variability and also to guarantee the safety of energy supply.¹⁰¹

Botswana

According to the International Renewable Energy Agency, Botswana's installed renewable energy capacity only reached 3 MW in 2018 and its total renewable electricity generation reached 4 GWh.¹⁰² The nation's consumed 3.8 TWh electricity power in total, while total electricity generation reached 2 688 GWh (electricity generation by coal 2 680 GWh, electricity generation by solar PV 2 GWh, electricity generation by gas 6 GWh).¹⁰³

Botswana's access to electricity was 60.7% in 2016.¹⁰⁴

Botswana's NDC contains no renewable energy contributions and makes no mention of renewable energy technologies.¹⁰⁵

Although the use of renewable energy is currently minimal in Botswana, the country's National Development Plan (NDP 10) aims to see an increase of renewable energy usage of 15% by 2015 and 25% by 2030.¹⁰⁶

Comoros

According to the International Renewable Energy Agency, Comoro's installed renewable energy capacity reached 1 MW in 2018 and its total renewable electricity generation reached 5 GWh.¹⁰⁷ Data on total electricity generation and total electricity consumption could not be found.

Comoro's access to electricity was 77.8% in 2016.¹⁰⁸

Renewable energy contributions in Comoros's NDC are conditional and include 43% renewable electricity by 2030, of which 16% is geothermal. They include 14 MW of solar PV by 2020, 14 MW of geothermal by 2030, and an estimated 12 MW of hydropower by 2030.¹⁰⁹

DRC

According to the International Renewable Energy Agency, Democratic Republic of Congo's installed renewable energy capacity reached 2 750 MW in 2018 and its total renewable electricity generation reached 9 224 GWh.¹¹⁰ In 2016, the nation's consumed 7.52 TWh electricity power in total, while the total electricity generation reached 9 111 GWh (electricity generation by oil 12 GWh, electricity generation by hydro 9 099 GWh).¹¹¹

DRC's access to electricity was 17.1% in 2016, which ranked the second-lowest among the SADC member states.¹¹²

Renewable energy contributions by Democratic Republic of Congo's NDC are conditional and include USD 2 billion for hydropower and USD 240 million for industrial biomass. It is not specified whether the biomass is for electricity or heat generation.¹¹³

No current energy policy document could be found for the government of the Democratic Republic of Congo.

Eswatini (Swaziland)

According to the International Renewable Energy Agency, Eswatini's installed renewable energy capacity reached 169 MW in 2018 and its total renewable electricity generation reached 464 GWh.¹¹⁴ The data on total electricity generation and total electricity consumption of Eswatini could not be found.

Eswatini's access to electricity was 65.8% in 2016.¹¹⁵

Eswatini's renewable energy contributions are conditional and include doubling the share of renewable energy in the energy mix (from 16% to 32%) by 2030. In addition to this, the NDC sets a 10% ethanol blending target by 2030, which is additional to the 32% contribution above.¹¹⁶

Lesotho

According to the International Renewable Energy Agency, Lesotho's installed renewable energy capacity reached 75 MW in 2018 and its total renewable electricity generation reached 464 GWh. Lesotho's access to electricity was 29.7% in 2016.¹¹⁷

Lesotho's NDC renewable energy contributions are both unconditional and conditional. The contribution includes 200 MW of renewable energy sources by 2020, including 40 MW solar by 2018, 35 MW wind by 2017, and 125 MW hydropower by 2025. This is to be financed with an unconditional contribution of USD 351 million and a conditional contribution of the same figure. In addition, Lesotho's unconditional contribution includes USD 10 million for mini-grids and USD 3 million for 3 MW of small hydropower. Lesotho's conditional contribution includes USD 600 million for hydropower, USD 4 million for wind, and USD 108 million for 60 000 household bio-digesters.¹¹⁸

In regard to solar energy, the Lesotho Energy Master Plan estimates solar energy resource at an annual average of 7,520 MJ/m² per day on horizontal surface. As part of the national sustainable development policy, one of the main objectives of the government in the energy sector is to promote the adoption of solar energy technologies. As for wind power, estimates have ranged that there is the potential to generate over 6,000 MW of wind power in the foreseeable future. Current projects include the 35MW Letseng Wind project, currently in the last stage of financial closure, as well as the Semonkong Wind project, currently in feasibility study.¹¹⁹

Madagascar

According to the International Renewable Energy Agency, Madagascar's installed renewable energy capacity reached 197 MW in 2018 and its total renewable electricity generation reached 906 GWh.¹²⁰

Madagascar's access to electricity was 22.9% in 2016.¹²¹

Madagascar's NDC renewable energy contributions are conditional and include 79% renewable electricity by 2030, up from 35%, through the development of hydropower and solar. Madagascar's NDC also mentions biogas, although it provides no specific detail or quantifiable information.¹²²

Malawi

According to the International Renewable Energy Agency, Malawi's installed renewable energy capacity reached 398 MW in 2018 and its total renewable electricity generation reached 1 472 GWh.¹²³

Malawi's access to electricity was 11.0 % in 2016, which ranked the lowest among SADC member states.¹²⁴

Malawi's NDC renewable energy contributions are both unconditional and conditional. Unconditional contributions include 351 MW of hydropower, 20 000 solar PV systems by 2030, 2 000 solar water heating systems by 2030, 18 million liters/year of ethanol, and 2 million liters/year of biodiesel. Malawi's conditional contributions include 800 MW hydropower by 2025, 95GWH/year from landfill methane recovery, an additional 30 000 solar PV systems, and an additional 18 000 solar water heating systems.¹²⁵

The Government of Malawi has developed a renewable energy strategy and SEforALL action agenda, which will guide investments in renewable energy sub-sector. According to the strategy, the Government of Malawi will (1) strengthen the exploitation of renewable energy resources; (2) promote use of renewable energy technologies and manufacture of renewable energy products such as solar panels; (3) support small-scale renewable energy initiatives by communities or entrepreneurs; (4) promote

capacity building, in all areas of RET programming, supply and services, as well as in entrepreneurship and management, taking into account gender and social issues; and (5) build strong partnerships with the private sector and CSOs (including PPPs) to promote the manufacture, distribution, use, and financing of improved renewable energy technologies.¹²⁶

Mauritius

According to International Renewable Energy Agency, Mauritius' installed renewable energy capacity reached 192 MW in 2018 and its total renewable electricity generation reached 664 GWh.¹²⁷

Mauritius's access to electricity was 99.8% in 2016, which ranked the second highest among SADC member states.¹²⁸

Mauritius' NDC renewable energy contributions are conditional. They include a 30% GHG reduction by 2030, including through an unspecified expansion in solar, wind, biomass, and other renewable energy sources.¹²⁹

The Mauritius government has announced plans to increase use of renewable sources of energy for electricity generation from the current 21 percent to 35 percent by 2025. It aims to reach the target through wind farms, solar energy, biomass and waste-to-energy projects.¹³⁰

Mozambique

According to International Renewable Energy Agency, Mozambique installed renewable energy capacity reached 2 235 MW in 2018 and its total renewable electricity generation reached 15 683 GWh.¹³¹ The nation consumed 11.91 TWh electricity power in total, while the total electricity generation reached 1 8732 GWh (electricity generation by gas 3 104 GWh, electricity generation by oil 19 GWh, electricity generation by hydro 15 609 GWh).¹³²

Mozambique's access to electricity was 24.2% in 2016.¹³³

Mozambique's NDC mentions increased access to renewable energy as a contribution toward mitigation, although it contains no quantifiable information.¹³⁴

In 2018, the Government of Mozambique approved the Integrated Master Plan of Energy Infrastructures (PDIE), which defines the expansion guidelines of the areas of power generation, transmission, and distribution, as well as the diversification of power generation matrix. The PDIE predicts electricity exports to other members of the Southern African Development Community to rise from the current level of 1,500MW to 7,000MW. PDIE foresees the increase of national, domestic, and industrial demand of energy to about 8,000 MW. This demand must be met in terms of the National Electrification Strategy, under which about 70% of access in 2030 will be provided by the systems of the National Power Grid. The instrument includes hydro, coal, solar, wind and gas sources in its generation matrix, and, by 2043, this will represent more than 50 per cent of the total generation. Thus, the power generation projects make a total of 4,300 MW of hydro generation; 1,350 MW of coal; 530 MW of solar, 150 MW of wind and 8,500 MW of gas. In accordance with the forecast, it will be necessary to invest more than 18,000 million USD for the concretization of the generation projects.¹³⁵

Namibia

According to the International Renewable Energy Agency, Namibia installed renewable energy capacity reached 431 MW in 2018 and its total renewable electricity generation reached 1 411 GWh.¹³⁶ The nation consumed 3.91 TWh electricity power in total, while the total electricity generation reached 1 421 GWh (electricity generation by coal 53 GWh, electricity generation by oil 9 GWh, electricity generation by hydro 1 359 GWh).¹³⁷

Namibia's access to electricity was 51.8% in 2016.¹³⁸

Namibia's renewable energy contributions are conditional and include increasing renewable electricity from 33% to 70% by 2030 with hydropower, solar, and wind projects. It also includes biogas from manure to reduce N2O emissions 10% by 2030.¹³⁹

Seychelles

According to the International Renewable Energy Agency, Seychelles' installed renewable energy capacity reached 9 MW in 2018 and its total renewable electricity generation reached 10 GWh.¹⁴⁰

Seychelles' access to electricity was 100% in 2016, which ranked the highest among SADC member states.¹⁴¹

Seychelles' NDC renewable energy contributions are both unconditional and conditional. Unconditional contributions include 15% renewable electricity by 2030, to be met mainly through the development of 90 MW of solar PV at an estimated cost of USD 191 million. Conditional contributions include an additional 15.8 MW of solar – at an estimated cost of USD 30 million – to meet demand from electric vehicles, as well as 80% of household water heating by 2035, estimated at about 20,000 solar water heating units.¹⁴²

In its National Climate Change Strategy, Seychelles plans to reduce its economy-wide absolute GHG emissions by 21.4% in 2025 and 29.0% in 2030 relative to baseline emissions subject to international support. The legislated targets of renewable energy consumption are set at 5% by 2020 and 15% by 2030, as outlined in the 2010 Energy Policy. So far, the "baseline scenario" for energy in Seychelles is of slow, incremental addition of Renewable Energy production that will likely meet the modest 5% Renewable Energy by 2020, but will struggle to meet the 15% by 2030 target without substantial changes to overcome technical, institutional and regulatory, and financial barriers. In addition, further diesel gen-set will be required and installed to meet the increasing demand for electricity. In response to this situation – and the economic dependency on fuel imports – the Government of Seychelles has embarked on a more ambitious pathway that is aiming for 100% renewable power supply as soon as possible.¹⁴³

South Africa

According to the International Renewable Energy Agency, South Africa's installed renewable energy capacity reached 6 065 MW in 2018. South Africa's total renewable electricity generation reached 8 074 GWh.¹⁴⁴ The nation consumed 225.35 TWh electricity power in total.¹⁴⁵

South Africa's access to electricity was 84.2% in 2016, which ranked the third highest among the SADC member states.¹⁴⁶ South Africa's electricity generation capacity is dominated by the state-owned utility Eskom, which holds around 90% of the country's effective/nominal generation capacity.¹⁴⁷

South Africa's NDC renewable energy contributions are unconditional and include 11 543 MW of renewables. Of those, 5 243 MW are approved – at an estimated cost of USD 16 billion – and 6 300 MW are under consideration.¹⁴⁸

South Africa launched the Integrated Resource Plan in 2018 by its energy minister, which calls for substantial change in South Africa's energy mix, including:

- 34000 MW from coal
- 11930 MW from gas
- 11 442 MW from wind
- 7958 MW from solar photovoltaic
- 4696 MW from hydroelectric
- 2912 MW from pumped storage
- 1860 MW from nuclear¹⁴⁹

According to South Africa Integrated Resource Plan for Electricity 2010–2030, South Africa aims to reach 8% share of renewable energy by 2020 and 14% by 2030.¹⁵⁰

Tanzania

According to the International Renewable Energy Agency, Tanzania's installed renewable energy capacity reached 679 MW in 2018, and its total renewable electricity generation reached 2 598 GWh.¹⁵¹ The nation consumed 5.98 TWh electricity power in total.¹⁵²

Tanzania's access to electricity was 32.8% in 2016.¹⁵³

Tanzania's NDC renewable energy contributions include promotion of diverse renewable sources such as geothermal, wind, solar, and renewable biomass. Tanzania's NDC, however, does not include quantified renewable energy contributions.¹⁵⁴

Aiming to greening Tanzanian economies, the government has set up its contribution toward achieving net carbon neutrality and 100% renewable energy by 2050.¹⁵⁵

Zambia

According to the International Renewable Energy Agency, Zambia's installed renewable energy capacity reached 2 446 MW in 2018. Zambia's total renewable electricity generation reached 11 108 GWh, which ranks the second highest among the SADC countries.¹⁵⁶

Zambia's access to electricity was 27.2% in 2016.¹⁵⁷

Zambia's NDC renewable energy contributions are both unconditional and conditional. They include numerous contributions, such as off-grid PV, wind and small hydropower, fuels switch (diesel to bio-diesel and coal to biomass), blending of biofuels, biogas, and rural biomass electricity plants.¹⁵⁸

Zambia's overall unconditional contribution is USD 15 billion, and its conditional contribution is USD 30 billion. The NDC, however, does not contain sufficient information to quantify the renewable energy contributions. A rough estimate indicates that Zambia's unconditional and conditional renewable energy contributions could amount to approximately USD 1.6 billion and USD 3.7 billion, respectively.¹⁵⁹

According to Zambia Seventh National Development Plan 2017–2021, the nation's goal is to ensure universal access to clean, safe, reliable, and affordable energy at the lowest cost, consistent with national development aspirations.¹⁶⁰

Zimbabwe

According to the International Renewable Energy Agency, Zimbabwe's installed renewable energy capacity reached 1192 MW in 2018. Zimbabwe's total renewable electricity generation reached 3 658 GWh.¹⁶¹ The nation consumed 7.37 TWh electricity power in total, while the total electricity generation was 7 055 GWh (electricity generation by coal 3 908 GWh, electricity generation by oil 39 GWh, electricity generation by hydro 2 987 GWh, electricity generation by biofuel 121 GWh).¹⁶²

Zimbabwe's access to electricity was 38.1% in 2016.¹⁶³

Zimbabwe's NDC renewable energy contributions are both unconditional and conditional. Unconditional contributions include 84 MW of hydropower (phase I Kariba) at a cost of USD 300 million, and 27 MW of small hydropower. Zimbabwe's unconditional contribution also includes 1 250 biogas digesters (50 to 80m³ in size) by 2030. Zimbabwe's conditional contribution includes USD 5 billion of hydropower for mitigation of 15 316 GgCO₂e by 2030, as well as USD 3 billion for off-grid solar.¹⁶⁴

Zimbabwe's Ministry of Energy and Power Development is still developing a Renewable Energy Policy, which is being addressed through a number of initiatives.¹⁶⁵

ENDNOTES

1. The term “renewable energy” is interpreted differently in different jurisdictions. For this report, we adopt the IRENA definition that renewable energy means all forms of energy produced from renewable sources in a sustainable manner, which include, inter alia, bioenergy; geothermal energy; hydropower; ocean energy, including inter alia tidal, wave and ocean thermal energy; solar energy; and wind energy.
2. *Renewable Capacity Statistics 2019* (International Renewable Energy Agency (IRENA), March 2019).
3. SADC includes Angola, Botswana, Comoros, Democratic Republic of Congo, Eswatini (formerly Swaziland), Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia, and Zimbabwe.
4. REN21, *SADC Renewable Energy and Energy Efficiency Status Report 2018* ((Paris: SACREEE, 2018).
5. REN21, *SADC Renewable Energy and Energy Efficiency Status Report 2018*.
6. IRENA (2019) *Renewable Energy and Jobs Annual Review 2019*.
7. Estimated with data from IRENA, *Assessment of the Renewable Energy Components in Nationally Determined Contributions: The Methodology* (Abu Dhabi: International Renewable Energy Agency, 2018), and ongoing research at the Boston University GDP Center.
8. A total of ten presentational interviews with key informants in the clean-energy finance arena were conducted in SADC countries in the Spring of 2019.
9. An online survey was circulated to 40 renewable energy and energy access finance stakeholders in the SADC Region in early October 2019. Responses were received from 17 stakeholders.
10. REN21, *SADC Renewable Energy and Energy Efficiency Status Report 2018*.
11. Declan Conway, Carole Dalin, Willem A. Landman & Timothy J. Osborn. In: *Nature Energy* 2, 946-953 (2017). doi:10.1038/s41560-017-0037-4.
12. REN21, *SADC Renewable Energy and Energy Efficiency Status Report 2018*, p. 12.
13. For example, Zambia, which used to be hydropower only, added 2 x 50 MW Solar PV projects to its grid in 2019.
14. Data for 2017, source: IRENA Stats.
15. REN21, *SADC Renewable Energy and Energy Efficiency Status Report 2018*, p. 12.
16. Data total renewable electricity generation are based on IRENA Stats, with data available as of January 2020; data on electric capacity from SADC Energy Monitor 2018 and SADC Annual Report 2018, Population is based on the United Nations Population Division data estimates <https://population.un.org/wpp>; the data on GDP PPP is based on World Bank data, Link : <https://data.worldbank.org/indicator/ny.gdp.pcap.pp.cd>; The data on GDP per capita is based on World Bank data, Link : https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?name_desc=true; The data on electricity generation are based on the International Energy Agency World Energy Statistics 2019 edition.
17. REEESAP 2016-2030, SADC Energy Monitor 2018.
18. Table 4, SAPP, 2017. SAPP Pool Plan 2017. http://www.sapp.co.zw/sites/default/files/SAPP%20Pool%20Plan%202017%20Main%20Volume_0.pdf [accessed 22 January 2020].
19. IEA Statistics © OECD/IEA 2014 (iea.org/stats/index.asp).
20. SAPP 2017.

21. Fernanda Ruiz-Nuñez and Zichao Wei, *Infrastructure Investment Demands in Emerging Markets and Developing Economies*, Policy Research Working Papers (The World Bank, 2015) <<https://doi.org/10.1596/1813-9450-7414>>.
22. SAPP 2017.
23. High renewable scenario in SAPP Pool Plan 2017, according to IRENA, 2013. Southern African Power Pool: Planning and Prospects for Renewable Energy. <https://www.irena.org/documentdownloads/publications/sapp.pdf>.
24. SAPP 2017.
25. Measured as national electrification rate from IEA 2016 Figures. See: Manfred Hafner, Simone Tagliapietra, and Lucia de Strasser, *Energy in Africa: Challenges and Opportunities*, 2018 <<https://doi.org/10.1007/978-3-319-92219-5>> [accessed 8 December 2019].
26. Source: ongoing research by BU GDP Center and IRENA.
27. Both the capacity and investment figures are reached through a methodology described in a forthcoming 2020 IRENA publication. These also include the NDC unconditional contributions for Lesotho and Malawi, which have no other identified national level targets.
28. <http://www.angolaenergia2025.com/en/conteudo/new-renewables-strategy>.
29. https://www.finance.gov.bw/index.php?option=com_content&view=category&id=28&Itemid=126.
30. <http://www.ore.mg/Publication/Rapports/LettreDePolitique.pdf>.
31. <http://publicutilities.govmu.org/English/publications/Documents/Updated%20Action%20Plan%20of%20the%20Energy%20Strategy%202011%20-2025.PDF>.
32. <http://publicutilities.govmu.org/English/publications/Documents/Long%20Term%20Energy%20Strategy.PDF>
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34. <http://www.the-eis.com/data/literature/National%20Renewable%20Energy%20Policy%20for%20the%20Republic%20of%20Namibia.pdf>.
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55. With the exception of abated projects with emissions of less than 250 gCO₂/kWh, such as gas power plants with carbon capture and storage.
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88. Based on interviews with experts.
89. Citizen Entrepreneurial Development Agency (CEDA, link: <http://www.ceda.co.bw/>) and Botswana Housing Corporation (BHC, link: <http://www.bhc.bw/>) are also development finance institutions; their mandate does not include the energy sector, however.
90. *Gapi-Sociedade de Investimentos* (Gapi-SI), a small investment company is also Mozambique's DFI. However, as its mandate does not include the energy sector, we do not consider it here.
91. Agricultural Bank of Namibia (Agribank, link: <http://agribank.com.na/>) and National Housing Enterprise (NHE, link: <http://www.nhe.com.na/>) are also Namibia's national development institutions, however, their institutional mandate and developmental mandate do not include energy sector.
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93. Tanzania Agricultural Development Bank (TADB) is also a development financial institution, however as it only focuses on agriculture development, this project does not consider it when searching for energy project.
94. Agricultural Bank of Zimbabwe (Agribank) is also Zimbabwe's national development financial institution, however as it only focuses on agricultural development, we do not consider it when searching for energy projects. Industrial Development Corporation (IDCZ) is another Zimbabwe's national development financial institution. However, the energy sector is excluded. Link: <http://idc.co.zw/services/>.
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