South African Climate Finance Landscape 2020

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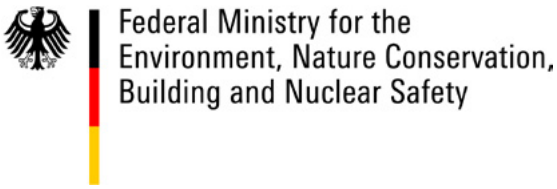

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LIST OF ACRONYMS

CCDI	Cape Craft & Design Institute
CH4	Methane
CO2	Carbon dioxide
CPI	Climate Policy Initiative
CSIR	Council for Scientific and Industrial Research
CSP	Concentrated solar power
DAFF	Department of Agriculture, Forestry and Fisheries
DFIs	Development finance institutions
DRME	Department of Mineral Resources and Energy
ES	Energy services
ESG	environmental, social, and governance
EV	Electric vehicle
GCF	Green Climate Fund
GDP	Gross domestic product
GHGs	Green House Gasses
IFC	International Finance Corporation
IPPO	Independent Power Producers Office IPPO
N2O	Nitrous oxide
NCCRP	South Africa's National Climate Change Response Policy
NCCRWP	The National Climate Change Response White Paper
NDC	National Determined Contribution
NDP	National Development Plan
NGO	Non-governmental Organisations
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme.
SA	South Africa
SD	Sustainable Development
SDGs	Sustainable Development Goals
SDGs	Sustainable Development Goals
SSEG	Small Scale Embedded Generation
UN	United Nations

EXECUTIVE SUMMARY

The United Nations (UN) 2030 Agenda for Sustainable Development (SD) highlights the importance of inclusive and sustainable economic growth, employment and decent work for all (SDG8). Furthermore, sustainable development is considered an important tool to achieve the goals of the Paris Agreement on a global level, as well as the National Determined Contribution (NDC) that South Africa (SA) has committed to, to reach the goal of limiting warming to 1.5°C.

One of the greatest challenges of any developing country is to find the balance between increasing consumption to improve quality of life while ensuring an equitable transition towards a climate-resilient economy. The cognisance of a need for an equitable transition which is aligned with wider social impact has been a priority in South Africa's sustainable development pathway for several years. The ambitious vision for 2030 forecasts that the country's trajectory towards a **low-carbon, resilient economy will be characterised by a reduced dependency on high-carbon energy sources and non-renewable natural resources, whilst delicately balancing developmental imperatives of employment creation and reduction of poverty and inequality.**

It is clear from the vast and complex South African climate policy landscape that a low-carbon or green economy is not a separate economy, but rather a call to action aimed at greening the current economy to remain resilient and globally competitive. This definition is intrinsic to much of South Africa's policy environment, given that South Africa's approach has deliberately been to mainstream sustainable and climate-resilient development rather than develop standalone policy. Five growing sectors are currently leading this mainstreaming of climate-resilient development in South Africa. These are **clean energy, low-carbon transport, smart water (supply and demand), circular economy and smart agriculture.**

South Africa's National Climate Change Response Policy (NCCRP) explicitly calls for the inclusion of the financial services sector in shaping South Africa's climate and green finance architecture alongside project developers and policymakers. In March 2019, *South Africa's 3rd Biennial Update Report to The United Nations Framework Convention on Climate Change* (BUR3) highlighted that **catalysing the financing and investments required to proceed towards the low-carbon and climate-resilient economy remains an important challenge for the country.**

An International Finance Corporation (IFC) study estimated that the total investment needed to achieve South Africa's NDCs is R8.9 trillion over a 15-year timeframe (from 2015 to 2030). This translates to a required **annual investment of R596 billion to achieve South Africans NDCs by 2030.**

The Landscape of Climate Finance in South Africa applies the Climate Policy Initiative (CPI) framework for climate finance mapping to the South African economy (Buchner, B., Falconer, A., Hervé-Mignucci, M., Trabacchi, C. & Brinkman, M., 2011). It aims to inform ongoing efforts by the Government of South Africa to understand how climate finance flows throughout the economy and the areas on which it could focus to improve effectiveness going forward. This is achieved by mapping the lifecycle of flows, from sources through to intermediaries, instruments, disbursement channels, and final uses.

The project team identified several challenges in creating a South African climate finance landscape and although the numbers and trends identified represent the available data, further work is needed to continue to improve the accuracy of the South African climate finance landscape. Some of the main challenges were: a lack of climate finance tagging across sectors and centralised datasets, limited availability of project-level data, limited industry response and willingness to provide data, the availability of data across periods and data duplication. For more information, please refer to Annexure B.

THE SOUTH AFRICA CLIMATE FINANCE LANDSCAPE

This report tracked annual climate finance totalling R62.2 billion for 2017 and 2018. For this report, climate finance is defined as local, national or transnational financing, which may be drawn from public, private and alternative sources of financing. These financial resources are intended to cover the costs of transitioning to a low-carbon global economy and to adapt to, or build resilience against, current and future climate change impact. This assessment that looks at detailed project-level data – understanding in detail the source, disbursement, instrument and use — can support public and private role-players with information to shape sectoral strategies and selected policies and improve coherence and coordination between public and private level spending in the sectors.

This is a baseline of what is possible in catalysing the financing and investments required to proceed towards the low-carbon and climate-resilient economy, which remains a vital challenge for the country.

However, there remains a clear need to move beyond business as usual, increasing annual investments into targeted sectors, if South Africa is going to achieve its agreed climate goals and initiate a genuine systemic transition across the economy.

Please refer to Annexure A - Methodological approach, for more information on how sources, disbursement channels, instruments and uses are defined.

SOURCES OF CLIMATE FINANCE TRACKED FOR THIS REPORT

PUBLIC FINANCE

Public finance actors committed an annual average of ~R22 billion, or 25% of the total climate finance tracked in 2017-2018. Public finance includes funds provided by governments and their agencies, climate funds, and government-funded development finance institutions (DFIs). These players may be both national and international. Public sector investments were tracked in all ten climate-related sectors, with clean energy (generation),

general eco-system support[1], and cross-sector investments accounting for 75% of the tracked public climate finance. **A strong domestic preference continues to exist, with 79% of public finance being raised and spent domestically in 2017-2018.**

The South African Government[2] accounted for the majority of the public finance that was tracked, investing more than R12 billion or 55% of the tracked public investments. As set out in South Africa's National Development Plan (NDP), Government has committed to investing 10% of gross domestic product (GDP)[3] within three key areas, namely, transport, energy and water, until 2030. Although R12 billion is significantly less than 10% of South Africa's GDP, it is expected that the climate finance in these three areas is higher, but is currently not being accurately tracked. It is also important to note that only direct investments into adaptation, mitigation and dual impact projects were tracked. No not recurring administrative, policy development or human resources expenses were included.

PRIVATE FINANCE

Private actors accounted for an average of R35.3 billion of the funds tracked per year during 2017 and 2018. 100% of this investment was tracked in climate mitigation sectors (clean energy, energy efficiency & demand-side management).

Commercial investors[4] are the largest source of private climate investment, accounting for R19.3 billion. Corporates, philanthropists/donors, NGOs and households accounted for the remaining 45% of the tracked private sector investments in this landscape.

BLENDED FINANCE

Blended finance is the strategic use of development finance (i.e. public or philanthropic finance) for the mobilisation of additional finance (i.e. private finance) towards sustainable development in developing countries (The World Bank Group, 2020). **Blended finance provided on average of R4.9 billion of the funds tracked per year during 2017 and 2018.**

Although clean energy remained a dominating sector for blended finance, more than 45% of the tracked investments were made into adaptation, and dual benefit uses. Innovative sectors like low-carbon transport and development sectors like water conservation, supply and demand saw more than R2 billion worth of annual investments.

Of the R4.9 billion per year of blended climate finance that was tracked, 75% was structured using 10% public finance and 90% private finance, demonstrating a high leverage ratio of concessional to market-rate finance. The remaining 25% was structured using 80% public concessional finance and 20% private finance. These leverage ratios supported an increased risk appetite, which allowed investments into new and innovative sectors like low-carbon transport.

1 General eco-system includes projects focused on the reduction of Green House Gasses (GHGs), reduction of climate change linked risk (storm hardening, crop resilience etc.), disaster response post-climate change linked impact and natural resource conservation and management.
2 The whole body politic, or the aggregate of the citizens of a state, nation, or municipality
3 Approximately $355 billion USD per year for 2017-2018
4 Individuals and companies and is not state-controlled (Banks, Institutional investors, Venture Capital)

DISBURSEMENT CHANNELS FOR CLIMATE FINANCE

Finance from all sources is typically channelled through financial intermediaries, using a range of financial instruments. The South African landscape considered 12 different disbursement channels for South African climate finance[5].

Corporates and commercial financial institutions accounted for a combined annual investment of R29.5 billion or 47% of the tracked disbursements in the South African landscape. 100% of the disbursements tracked through these two disbursement channels was in clean energy. Significant profit, reduced technical and project risk, as well as decreasing technology costs, have continued to attract financial players to the South African clean energy sector.

South African government (combined national, provincial and local) accounted for R9.2 billion or 15% of the tracked disbursements in the South African landscape. More than 80% of these direct South African Government disbursements were focused on adaptation and dual benefit sectors. Of the 80% that is focused on adaptation and dual benefits, R6.2 billion was disbursed into two core climate support sectors: general eco-system support and cross-sectoral investments. General eco-system includes projects focused on the reduction of Green House Gasses (GHGs), reduction of climate change linked risk (storm hardening, crop resilience etc.), disaster response post-climate change linked impact and natural resource conservation and management.

FINANCIAL MECHANISMS AND INSTRUMENTS FOR CLIMATE FINANCE

The South African landscape categorises transactions by the instrument used to structure the provision of finance by one actor to another or specific climate projects.

59% or R36.5 billion of the tracked climate finance was raised as debt. Of this total, R28 billion was provided at market rates (some of which may have had other concessional characteristics), while R7.6 billion was marked as concessional debt. Market-related debt accounted for 46% of the total tracked climate finance. The size of the raised debt in the South African landscape indicates the confidence and viability of climate mitigation projects in South Africa with a total of R27.9 billion being invested in clean energy.

23% or R14.2 billion of the tracked climate finance was raised as equity. 95% of this equity was structured as ownership in clean energy projects of which 76% came from private sector investors (commercial entities and corporates) and 24% from public sector DFIs (local and international).

END-USES SUPPORTED BY CLIMATE FINANCE

Mitigation activities tracked in 2017 and 2018 averaged R50 billion per year, accounting for 81% of climate finance tracked during that period. Clean energy generation, at 95% of mitigation finance, accounted for the largest portion of mitigation flows captured in 2017-2018, while an additional 3% went to energy efficiency & demand-side management and 2% to the circular economy sector. No other category accounted for more than 2% of the total.

5 Refer to Table 3: Financial disbursement channels defined

Adaptation activities tracked for this report in 2017 and 2018 averaged R4.3 billion per year, accounting for 7% of climate finance tracked during that period. Approximately 90% of the R4.3 billion per year of adaptation activities tracked in 2017 and 2018 was funded from public sources, with the remaining 10% being supported by blended finance. No private sector investments were tracked in adaptation sectors.

Dual benefit activities tracked in 2017 and 2018 averaged R7.8 billion per year, accounting for 13% of climate finance tracked during that period. There is growing recognition that adaptation and mitigation activities are interdependent and must be addressed holistically. Dual benefit finance aims to support projects that have both mitigation and adaptation outcomes. Much akin to adaptation focused activities, 78% of the R7.82 billion per year of dual benefit activities tracked in 2017 and 2018 was funded from public sources with the remaining 22% being supported by blended finance. No private sector investments were tracked in dual benefit sectors.

RECOMMENDATIONS

Launch a process to develop agreed-upon definitions of climate finance, with guidelines on tagging and tracking investments. In line with the work done on the Green Finance Taxonomy[6], agreed-upon definitions of climate finance, accompanied by an outline of sectors and sub-sectors, should be launched to build credibility, foster investment, and enable effective monitoring and disclosure of performance. This process should be inclusive of the full market, engaging both public and private sector players, to ensure long-term buy-in (the typology and sector breakdown developed in this project will be shared with key stakeholders, i.e. Department of Environment, Forestry and Fisheries, National Treasury, EU Taxonomy working group and the South African Reserve Bank to assist in creating market coordination). Ideally, a central registry of climate finance should be developed to enable the process of long-term tracking.

Improve public-private coordination within South Africa. The Climate Finance Landscape found that climate spending and investment in South Africa, for the most part, remains siloed between the public and private sector. Aside from the intentional efforts of a few development finance players, collaboration is limited. As shown in the Landscape, the R4.9 billion of blended finance – which brings together public and private sources of funding – generally comes from international rather than local sources. With R8.9 trillion of financing needed to achieve its climate targets, South Africa must unite to scale investments towards climate change. There needs to be a coordinated effort to focus resources where there is the most effective and efficient spend on the right sectors meeting social and environmental objectives.

Increase support for blended finance vehicles and develop innovative financial tools. To catalyse the R8.9 trillion required for South Africa, innovative finance tools should be developed, tested and scaled to leverage private sector capital into sectors that are still seen as high risk. Financing instruments deployed by governments should focus on reducing barriers, risks and the potential for market failures with the explicit aim of crowding-in private sector investment. Similarly, more project preparation facilities, which utilise blended finance structures, should be established to increase the number of bankable projects. The DBSA

6 More information available here https://sustainablefinanceinitiative.org.za/

and GCF are making strong strides towards this goal in 2020 onwards, but more support for financial innovation is needed. Such facilities should be focused on the sectors that have been heavily reliant on grants and concessional funding. As an additional bonus, such structures will make great strides in promoting public-private sector coordination.

Increased clarity and consistency around regulation is needed, particularly for smaller climate sectors and subsectors. Regulations and legislation in South Africa need to focus on creating a more enabling environment for climate finance. Discussions with experts in climate finance revealed that there are gaps in certain sector policies, and legislation needs to be adapted to support the shift and diversify the portfolio of climate projects. More incentives should be created for climate finance spending, both by the private sector and households. As highlighted in National Treasury's technical paper on Sustainable Finance (2020), regulators and practitioners should collaborate to provide technical guidance, standards and norms to assist in identifying, monitoring and mitigating environmental (and social) risks.

1. THE SOUTH AFRICAN CLIMATE FINANCE LANDSCAPE 2020

The following flow diagram has been built to detail the climate finance tracked for this report for 2017 and 2018

Figure 1: The South African Climate FInance Landscape 2020

*Acronyms: AFOLU = Agriculture, food production, fisheries and forestry; Build environment = Buildings and the built environment; EE & DSM = Energy Efficiency & Demand Side Management; General eco-system = General eco-system support; PE/VC/Infrastructure/other = PE/VC/Infrastructure/ other fund; Water = Water conservation, supply & demand

** This includes Corporates, philanthropist/donors, non-governmental organisations (NGOs) and households

2. OVERVIEW AND OBJECTIVES

2.1. INTRODUCTION

South Africa has a sophisticated climate governance system, led by the Department of Environment, Forestry and Fisheries and supported by many different stakeholders. In South Africa, a range of challenges remain in achieving its climate goals. Over the past two decades, South Africa has adopted a range of national and sectoral policies, plans and strategies that aim at decarbonising the economy while meeting broad developmental objectives. As the country moves to implement its national climate goals and accelerate initiatives to meet the Paris Agreement, it faces important domestic challenges that need to be addressed. One of these key domestic challenges to implementing South Africa's climate-focused plans and policies is the lack of climate finance data and analysis necessary to support national climate policy, mobilise public and private investment, and promote resilient economic growth.

Effective implementation of the nationally determined contribution (NDC) and the transition to low-carbon and climate-resilient development requires allocation of resources and strategic realignment of budgets in both the public and private sectors. Development of the national climate finance strategy, as mandated by *The National Climate Change Response White Paper* (NCCRWP), approved in 2011, should be among the priority actions. Core to this climate finance strategy will be identifying current climate finance in South Africa, to enhance the understanding of existing investments and identify potential opportunities to facilitate the scaling up of climate finance.

2.2. OBJECTIVES

This South African Climate Finance Landscape report applies the Climate Policy Initiative (CPI) framework for climate finance mapping to the South African economy (Buchner, B., Falconer, A., Hervé-Mignucci, M., Trabacchi, C. & Brinkman, M., 2011). It aims to inform ongoing efforts by the Government of South Africa to understand how climate finance is flowing through the economy and the areas on which it could focus to improve effectiveness going forward. This is achieved by mapping the life cycle of finance flows, from sources through to intermediaries, instruments, disbursement channels, and final uses. While the South African Climate Finance Landscape aims to present a comprehensive snapshot of the South African climate finance landscape, data coverage and data limitations presented significant challenges (refer to section 6: Program level learnings).

The GreenCape Sector Development Agency and The Bertha Centre for Social Innovation and Entrepreneurship conducted this South African Climate Finance Landscape study in partnership with the Climate Policy Initiative (CPI). It draws a comprehensive picture of private, public and blended climate finance flows in South Africa by compiling the best available data on climate finance from a range of national and international sources. The five principal questions explored in this report are:

1. How much climate finance is flowing through the South African economy?

2. Which stakeholders are providing climate finance in South Africa?

3. Which stakeholders are managing the delivery of climate finance in South Africa?

4. What financial instruments and mechanisms are being used in South Africa?

5. What mitigation, adaptation and dual benefit activities are supported?

The South African Landscape establishes a baseline of information that aims to inform future analysis of climate finance in South Africa. It also aims to identify gaps, needs, and potential barriers to climate finance flows. These findings will equip policymakers and industry stakeholders with information to shape sectoral strategies and selected policies and improve coherence and coordination between public and private level spending in the sectors.

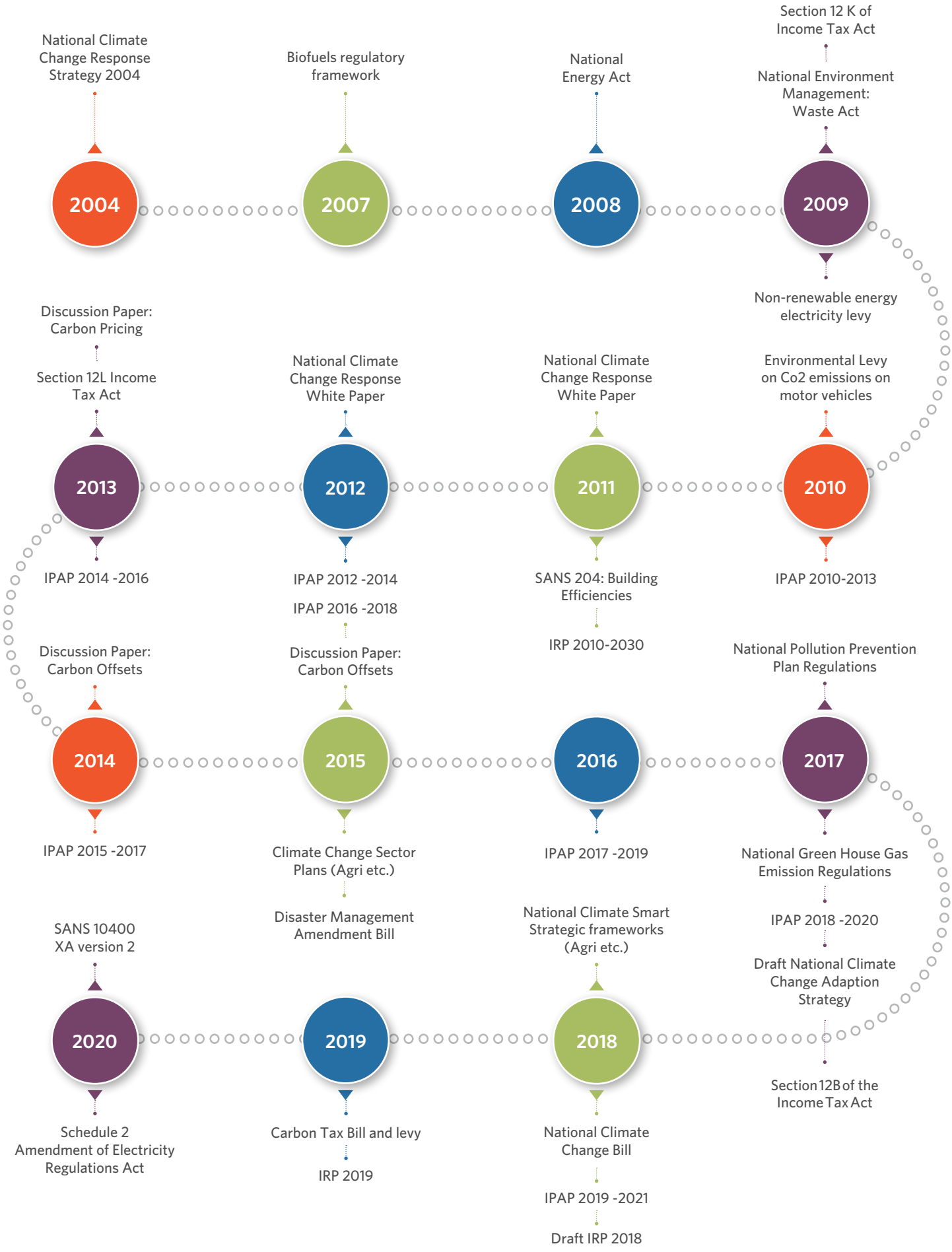
3. CLIMATE CHANGE IN SOUTH AFRICA

The United Nations (UN) 2030 Agenda for Sustainable Development (SD) highlights the importance of inclusive and sustainable economic growth, employment and decent work for all (SDG8). Furthermore, sustainable development is considered an important tool to achieve the goals of the Paris Agreement on a global level, as well as the National Determined Contribution (NDC) that South Africa has committed to, in order reach the goal of limiting warming by 1.5°C.

Addressing the threat of climate change requires the restructuring of energy- and resource-intensive sectors, sharp increases in energy efficiency, shifts of production and consumption and adaptation of all sectors. With about 80% of South Africa's GHG emissions from a fossil fuel-dependent energy sector and the most vulnerable at risk of climate change, South Africa needs strong and durable social agreements between government, labour, business and civil society. It needs to plan for workforce reskilling and job absorption, social protection and livelihood creation incentivising new green sectors, diversifying coal-dependent regional economies, and developing labour and social plans as and when ageing coal-fired power plants are decommissioned.

The national government, provincial entities, municipalities, civil society organisations, private sector and the research community in South Africa are actively working on their contributions to the shift to a low-carbon and climate-resilient society in South Africa. Over the past two decades, South Africa has adopted a range of national and sectoral policies, plans and strategies as detailed in Figure 1 below.

Figure 2: Timeline of National climate-related policy development in South Africa



These national and sectoral policies, plans and strategies are aimed at decarbonising the South African economy whilst meeting the broad developmental objectives recently outlined in the 2019 State of the Nation Address[7]:

- Economic transformation and job creation;
- Improved education, skills and health;
- Consolidating the social wage through reliable and quality basic services;
- Spatial integration, human settlements and local government;
- Social cohesion and safe communities;
- A capable, ethical and developmental state; and
- A better Africa and World.

3.1. THE SOUTH AFRICAN GREEN ECONOMY

The National Climate Change Response White Paper (NCCRWP), the National Development Plan (NDP) and the Industrial Policy Action Plans emphasise the necessity of the development and growth of the green economy to realise an equitable transition to a low-carbon economy. These documents provide a useful harmonised vision highlighting that the green economy is not a separate economy but a call to action aimed at greening the current economy to remain resilient and globally competitive.

This definition is intrinsic to much of South Africa's policy environment, given that South Africa's approach has deliberately been to mainstream sustainable and climate-resilient development rather than develop standalone policy. The ambitious vision for 2030 forecasts that a reduced dependency will characterise the country's trajectory towards a green economy on high-carbon energy sources and natural resources, whilst delicately balancing developmental imperatives of employment creation and reduction of poverty and inequality.

3.2. THE CHALLENGE AND NECESSITY FOR A JUST TRANSITION AND SOCIAL INCLUSIVITY

One of the greatest challenges of any developing country is to find the balance between increasing consumption to improve quality of life while ensuring an equitable transition towards a low-carbon economy. Essentially, the transition towards a low-carbon economy is inevitable. Over the next 20-30 years, there will be a fundamental reorganisation of the South African economy (RES4Africa, 2020). If this reorganisation can be done in a "just" way, an opportunity arises to address many of the existing social ills through increased investment, new jobs and new skills. This is particularly true when investing in long term infrastructure projects that will have lasting economic, environmental and socio-economic impacts. The cognisance of a need for an equitable transition which is aligned with wider social impact has been a priority in South Africa's sustainable development pathway for several years. However, now more than ever, deep partnerships and collaborations are required to build

7 https://www.gov.za/issues/key-issues

resilience in society through inclusivity. Building trust, partnerships and a shared vision of the future are key elements in designing and building South Africa's climate change transition pathway.

3.3. THE ROLE OF CLIMATE FINANCE IN SOUTH AFRICA

South Africa's National Climate Change Response Policy (NCCRP) explicitly calls for the inclusion of the financial services sector in shaping South Africa's climate and green finance architecture alongside project developers and policymakers. In March 2019, *South Africa's 3rd Biennial Update Report to The United Nations Framework Convention on Climate Change* (BUR3) highlighted that catalysing the financing and investments required to proceed towards the low-carbon and climate-resilient economy remains an important challenge for the country. Both of these documents prioritise the development of resource and investment strategies, capacities, mechanisms, or instruments that support and enable implementation of climate change responses. They also clearly recognise the importance of a combined effort across private, public and blended finance in achieving national climate change response actions and identifies the opportunity for the financial sector to mainstream climate change in risk and investment decisions.

4. THE SOUTH AFRICAN CLIMATE FINANCE LANDSCAPE

This section presents the key findings and results, highlighting which type of climate change mitigation, adaptation and dual benefit initiatives and which sector receives South African climate finance. To offer an overview, all flows are mapped in the *South African climate finance landscape Diagram in Section 1*. This SANKEY diagram provides a snapshot of climate finance flows in South Africa, from sources to uses, along their financial life cycle. This snapshot of annual average climate finance over 2017 and 2018 offers the starting point for a much needed, evidence-based discussion and further in-depth assessments of the financial dimension of South Africa's climate mitigation and adaptation strategies. In this section, we will explain the finance landscape from different perspectives, following the SANKEY diagram from left to right.

4.1. KEY SOURCES OF CLIMATE FINANCE TRACKED

The South African climate finance landscape tracks climate investments from source to final sector use. The original climate finance sources can be separated into three broad categories: Public, Private and Blended. Each of these sources has its own goals and ultimate objectives for their climate finance. Figure 2 provides a percentage breakdown of the Public, Private and Blended investments tracked in the South African climate finance landscape.

Figure 3: Key sources of climate finance tracked (private, public and blended)

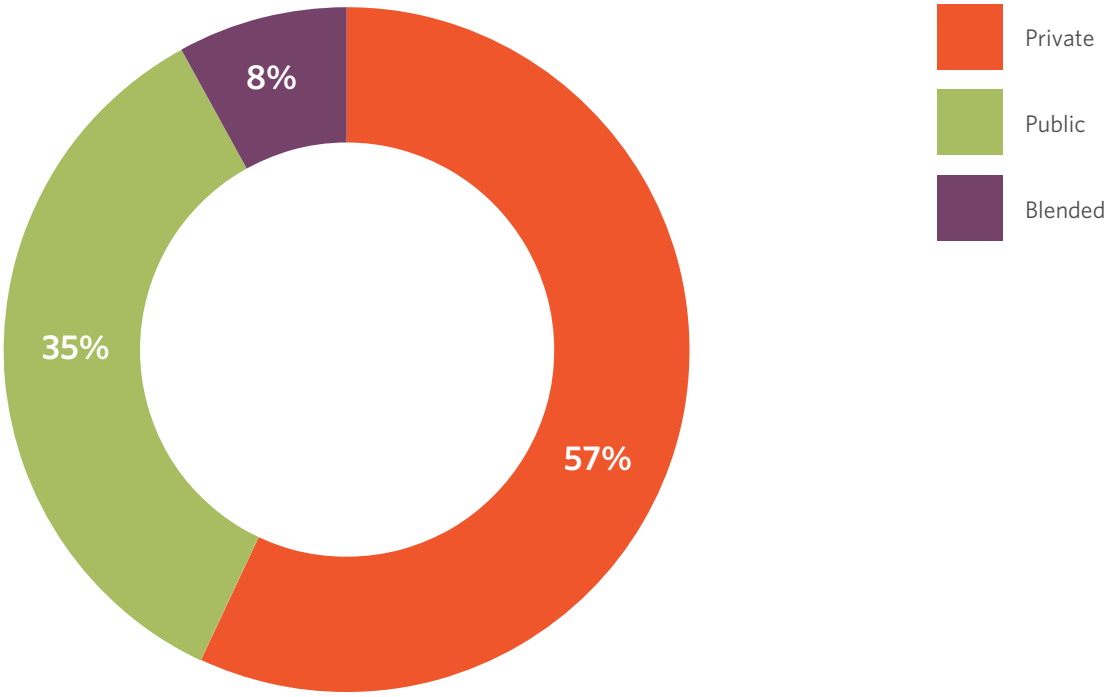
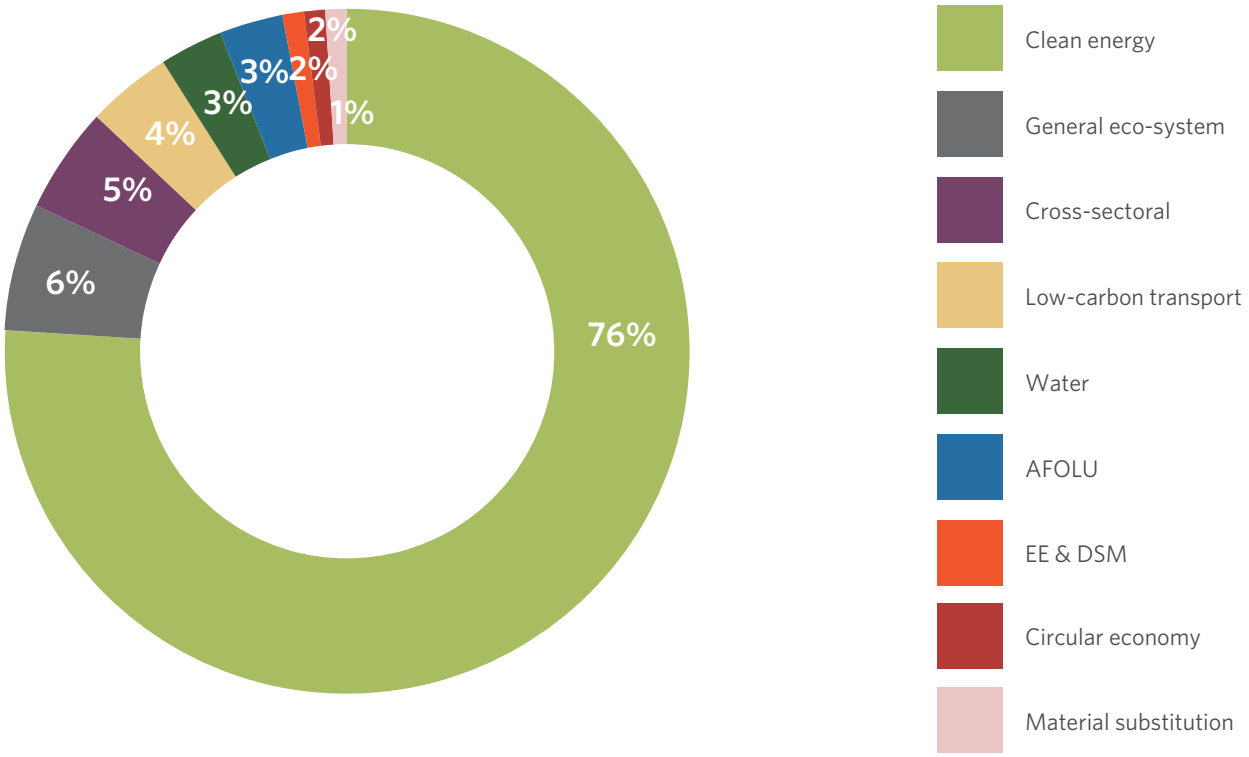


Figure 3 provides a breakdown of the sector objectives on the tracked private, public and blended finance flows in the South African Landscape. **For this report, a total of R62.2 billion was tracked in the South African climate finance landscape.**

Figure 4: Public, private and blended climate finance by sector



4.1.1. PUBLIC SECTOR CLIMATE FINANCE

Public finance actors committed an annual average of R21.9 billion in climate finance in 2017-2018.

Public finance includes funds provided by governments and their agencies, climate funds, and development finance institutions (DFIs). Climate finance provided by public sources accounts for 35% of the total tracked climate investments for 2017-2018. Investments were tracked in all ten climate-related sectors with clean energy (generation), general eco-system support and cross-sector investments accounting for 75% of the tracked public climate finance.
A strong domestic preference continues to exist, with 79% of public finance being raised and spent domestically in 2017-2018.

The South African Government[8] accounted for the majority of the public finance that was tracked, investing more than R12 billion or 55% of the tracked public investments[9]. These investments showed a balanced approach across sectors compared to international financing form DFIs and international governments. As set out in South Africa's NDP, Government has committed to invest 10% of GDP to three key areas, namely, transport, energy and water, over the next ten years. Although R12 billion is significantly less than 10% of South Africa's GDP[10], it is expected that the climate investment is higher, but is currently not being accurately tracked.

The World Bank Group estimates that developing countries will need R500-R750 billion annually through 2050 to adapt to climate change (The World Bank Group. 2011). National governments have a critical role to play in supporting and stimulating private sector investment in the climate adaptation sector. There are certain sectors where private sector investments are unlikely. These typically occur when an investment is seen as a public good that is unprofitable, as is the case with water infrastructure, flood protection, social safety nets, and disaster management. The public sector is the main source of investment for such goods and services. In the tracked climate finance investments, it is apparent that the South African Government is playing this role of "seeding" the adaptation market. More than 60% of the South African government climate investments were tracked in adaptation and dual benefit sectors.

Investments made by the South African government into the renewable energy sector, although significant in Rand value, are small when considering the need for renewable energy in South Africa. This is mainly due to the structure of the REIPPP program, which promotes private sector participation as independent power producers. However, significant investments and support by the government are still being provided for the fossil fuel industry. An analysis by Burton, Lott and Rennkamp, 2018 has shown that fossil fuel production continues to be supported in South Africa in various ways. Between 2008 and 2018, direct transfers have ranged between R6 billion and R30 billion per year.

Development Finance Institutions (DFIs) accounted for a public finance annual investment of R5.5 billion, or 25% of all public finance flows tracked. Development finance institutions are specialised development banks or subsidiaries set up to support private sector development. The tracked DFI investments focused on the clean energy sector and mitigation projects. Still, there is an increasing focus on water conservation, supply & demand, as the South African drought intensified in 2017-2018, and agriculture, food production, fisheries and forestry.

According to GreenCape (2020), South Africa is ranked as the 30th driest country in the world. In 2019, the water crisis ranked as the second-highest risk for doing business in South Africa, behind unemployment, which was at a rate of 30% before the COVID-19 pandemic. South Africa is a water-scarce country characterised by an uneven rainfall distribution and extreme climate and evaporation rates that often exceed precipitation. The country has a reliable yield (i.e. supply from current infrastructure) of around 15 billion kl/year (at 98% assurance of supply – or 2% annual probability of supply failure), of which the majority is from surface water (68%) and return flows that support surface water (13%).

8 The whole body politic, or the aggregate of the citizens of a state, nation, or municipality
9 This excludes investments into internal admin, policy and regulation development and capacity building
10 Approximately 355 billion USD per year for 2017-2018

Figure 5: South African government climate investments

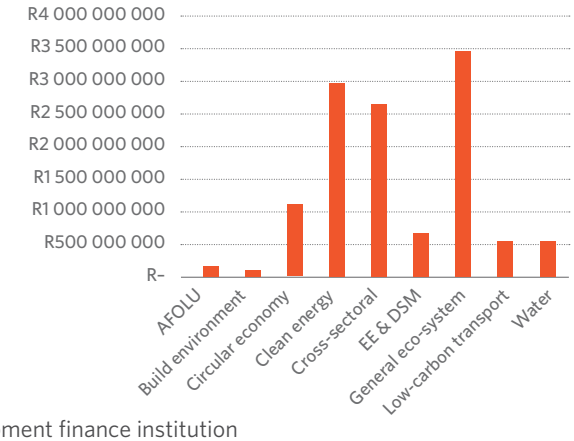


Figure 6: Development finance institution

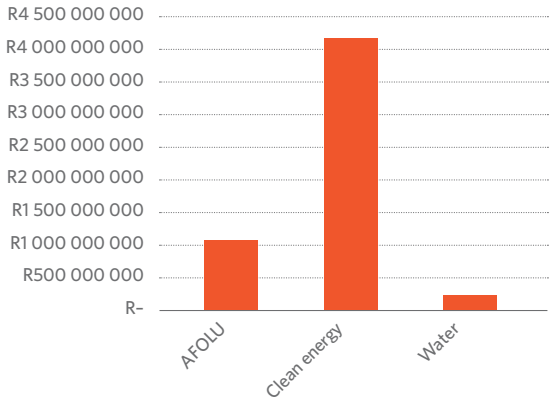
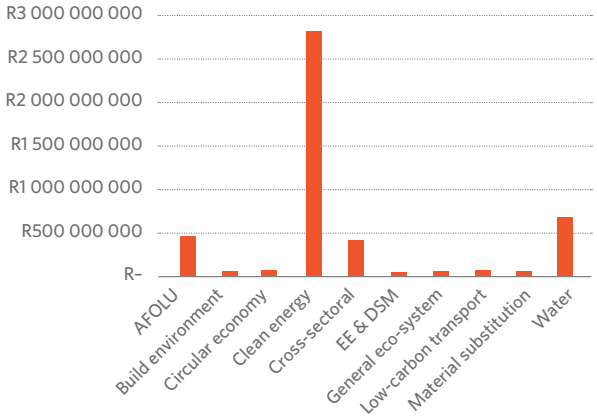


Figure 7: International government climate investments



This combined investment is significantly less than what would have been tracked in 2010-2015. This reduced number is due to the stalling of the South African renewable energy independent power producer procurement programme (REIPPPP) in 2015. Between 2010 and 2015, the Independent Power Producers Office (IPPO), with the support of the Department of Mineral Resources and Energy (DMRE), has procured 6 422 MW of electricity to date (IPPO 2019). Investment (equity and debt) to the value of R209.7 billion, of which R41.8 billion (20%) is foreign investment, was attracted. No large scale investments in utility-scale renewable energy projects would have been tracked in 2017 and 2018.

Despite the slowdown in the utility-scale renewable energy program, significant profit, reduced technical and project risk, as well as falling technology costs, has continued to attract financial players, including banks, institutional investors, fund managers, corporates, and households to invest in the South African renewable energy market on different scales.

Agriculture is the largest water use sector (61%), followed by municipalities (27%), which include residential, commercial and industrial water users supplied by municipalities. The relative proportion of municipal and agricultural use differs between provinces and municipalities, depending on human settlement patterns and the local economy. Revenue from the sale of water and provision of sanitation services in South Africa in 2019/20 totalled R51.6 billion and R20.6 billion respectively. From the municipal sales, about 58% typically comes from domestic residential use and 40% from commercial and industrial use.

The pursuit of water security, resilience and sustainability have become key drivers for investment in the sector, due to the recurrent severe drought conditions and expected longer-term water constraints in the country. The National Water and Sanitation Master Plan (2019) estimates that South Africa could have a 10% gap between supply and demand by 2030, even if the planned additional water supply projects are implemented. It is estimated that there is an infrastructure funding gap of ~R12 billion per annum, higher water consumption and losses (~233 l/c/d and ~41% NRW) than world's averages and is highly dependent on waterborne sanitation (~65% of households) with 20% (~2.8 million households) lacking access to sanitation. According to GreenCape (2020), this represents an exciting opportunity for climate finance that can impact both mitigation and adaptation targets.

Tracked climate finance from the international donor governments and agencies reached R4.4 billion, or 20% of all public finance flows. These investments were tracked from international governments, or the aggregate of the citizens of a state, nation, or municipalities outside of South Africa. Of this total investment, 65% or R2.9 billion was invested from European government budgets and agencies. R1.5 billion (34%) was sourced from entities with a global footprint with the remaining investments coming from the United Kingdom, United States and Canada and Asia with less than 1% respectively.

4.1.2. PRIVATE SECTOR CLIMATE FINANCE

Private actors provided an average of R35.3 billion per year during 2017 and 2018. 100% of this investment was tracked in climate mitigation sectors (clean energy, energy efficiency & demand-side management).

Private sector climate finance includes financial outflow of resources implemented by private individuals and companies and is not state-controlled. In the South African climate finance landscape, we have considered two broad categories of private sector actors:

- Commercial entities: Non-state-controlled financial players, including banks, institutional investors, fund managers and venture capital investors
- Other private entities: Corporates, philanthropist/donors, non-governmental organisations (NGOs) and households

Commercial actors are the largest source of private climate investment, accounting for R19.3 billion. 100% of the tracked commercial investments were made into the clean energy sector. Corporates, philanthropists/donors, NGOs and households accounted for the remaining 45% of the tracked private sector investments in this landscape.

The fact that private sector investment is allocated exclusively to clean energy and energy efficiency & demand-side management demonstrates that South African investors either do not consider other climate sectors economically viable or lack the knowledge and tools to correctly identify and tag climate investments. While sectors such as water conservation and the circular economy are still heavily reliant on public and philanthropic capital, sectors such as agriculture and food production have an established business case. They should be ripe for investment (GreenCape 2020). Once again, this finding demonstrates the need for better tools and capacity building for private sector investors.

4.1.3. BLENDED CLIMATE FINANCE

Blended finance provided an average of R4.9 billion per year during 2017 and 2018. 100% of this blended capital came from international governments and their agencies investing in South Africa.

Blended finance is the strategic use of development finance (i.e. public or philanthropic finance) for the mobilisation of additional finance (i.e. private finance) towards sustainable development in developing countries. In the case of this South African climate finance landscape, the blended investments were mapped against the selected climate-focused sectors. Although clean energy remained a dominating sector for blended investments, more than 45% of the tracked investments were into adaptation and dual benefit sectors. Innovative sectors like low-carbon transport (see callout box B) and development sectors like water conservation, supply and demand saw more than R2 billion worth of annual investments as seen in Figure 4.

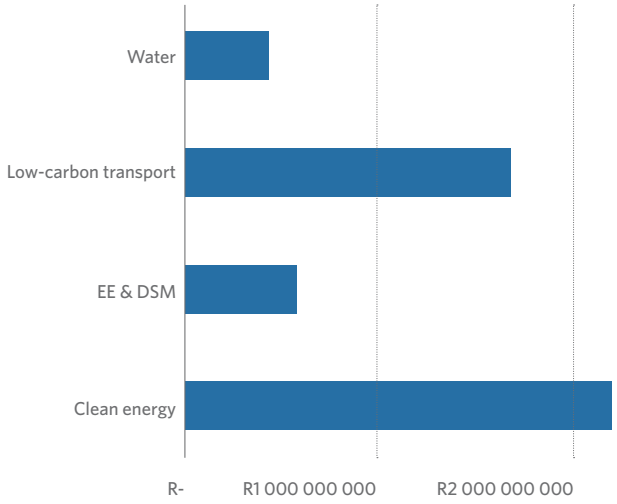
Box A: Low-Carbon Transport

Globally, the momentum for low-carbon transport has increased exponentially over the period between 2013 and 2018. This global shift has been primarily driven by national emission reduction commitments stemming from the Paris Agreement, growing urban air pollution concerns, and continued crude oil price volatility. According to GreenCape (2020), South Africa does not yet have policies, subsidies or incentives in place to accelerate the development of the electric vehicles market. South Africa has thus not yet joined the ranks of those countries experiencing a steep rise in electric vehicles uptake and the development of the ecosystem and value chain around electric vehicles. **This can be seen in the amount and structure of climate finance that has been tracked in this report. A focus on government-led blended finance may be needed to support the establishment of this industry.** As lithium-ion battery prices continue to fall the investment potential of this market will grow (GreenCape, 2020). Decreasing battery prices drive electric vehicles' prices down as well. Therefore, it is expected that once the price of electric vehicles becomes competitive in South Africa, the same rise in uptake in the consumer market can be experienced. For South Africa, a thriving electric vehicles market supported by local manufacturing holds the promise of economic growth and job creation. It will also counteract the inevitable decline in demand for ICE vehicles globally. There are substantial environmental, economic, and social opportunities for South Africa in the transition to a low-carbon trajectory, supported by a green energy transition.

The findings show that this blended finance allocation was predominantly (96%) in the form of concessional debt. Blended finance is often the first step to de-risking investments that are seen as being slightly too risky or costly to be embarked on from a purely commercial perspective. The emphasis on low-carbon transport and water conservation may be an initial indication that these sectors are on their way to being considered investable in the not-to-distant future.

Of the R4.9 billion per year of blended climate finance that was tracked, 75% was structured using 10% public finance and 90% private finance. The remaining 25% was structured using 80% public concessionary finance and 20% private finance. These leverage ratios supported an increased risk appetite, which allowed investments into new and innovative sectors like low-carbon transport.

Figure 8: Blended investments in the South African climate finance landscape



Box B: The Green Outcomes Fund

The Green Outcomes Fund was designed to incentivise and support local catalytic finance partners to invest in green businesses and track verifiable green metrics. Through a partnership officially signed on 31 January 2020 between National Treasury's Jobs Fund and GreenCape, the new Green Outcomes Fund (provides outcomes-based matched grant funding to local investment funds to support investments into local Small, Medium and Micro-sized Enterprises (SMMEs) that make a demonstrable contribution to South Africa's green economy, as well as job and enterprise creation in priority impact areas. This has been made possible by catalytic grant support from the RMB Fund, a division of the FirstRand Foundation.
The Green Outcomes Fund is an innovative blended finance case study demonstrating how grant funding can be used to catalyse private sector finance into investments that otherwise wouldn't have been considered viable. The Fund supports investments into small businesses in the waste, water, sustainable agriculture, and clean energy sectors.

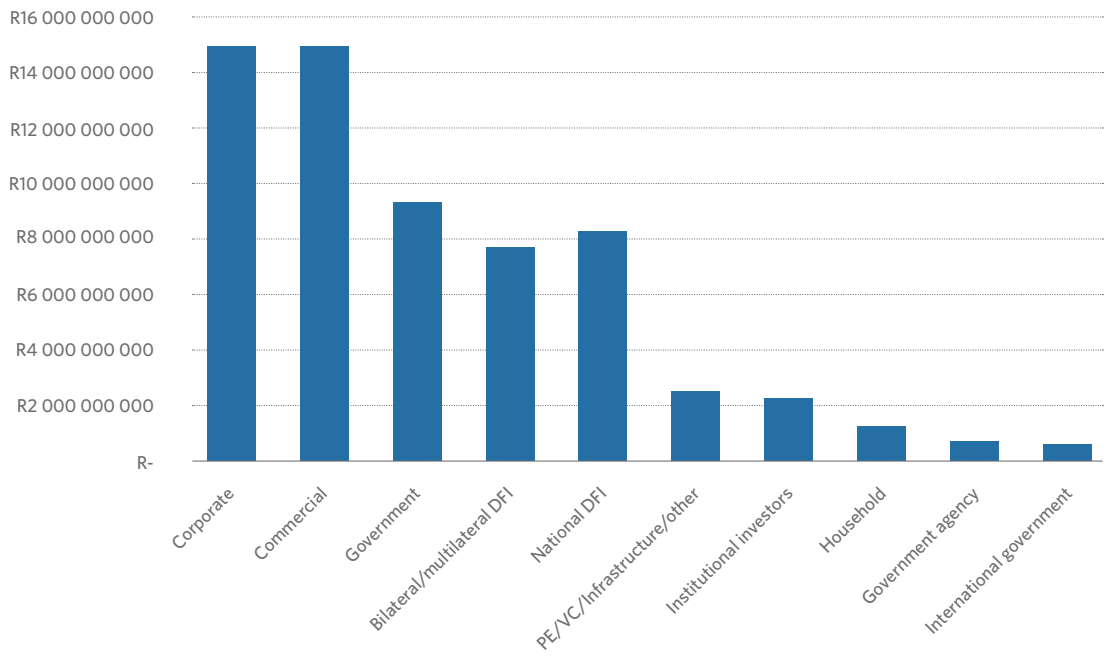
For more information, visit: https://thegreenoutcomesfund.co.za

4.2. FINANCIAL DISBURSEMENT CHANNELS

Finance from all sources is typically channelled through financial intermediaries, which offer or employ different financial instruments to make finance available for different uses. This section will discuss the financial disbursement channels mapped in the South African climate finance landscape as detailed in Figure 5.

The South African landscape mapping considered 12 different disbursement channels for South African climate finance. These disbursement channels are International Governments, the South African Government[11], Government agencies, state-owned entities, national development finance institutions, bilateral/multilateral development finance institutions, institutional investors, commercial, financial institutions, private equity/venture capital/ infrastructure/other funds, corporate, philanthropist/donor and households.

Figure 9: Financial disbursement channels

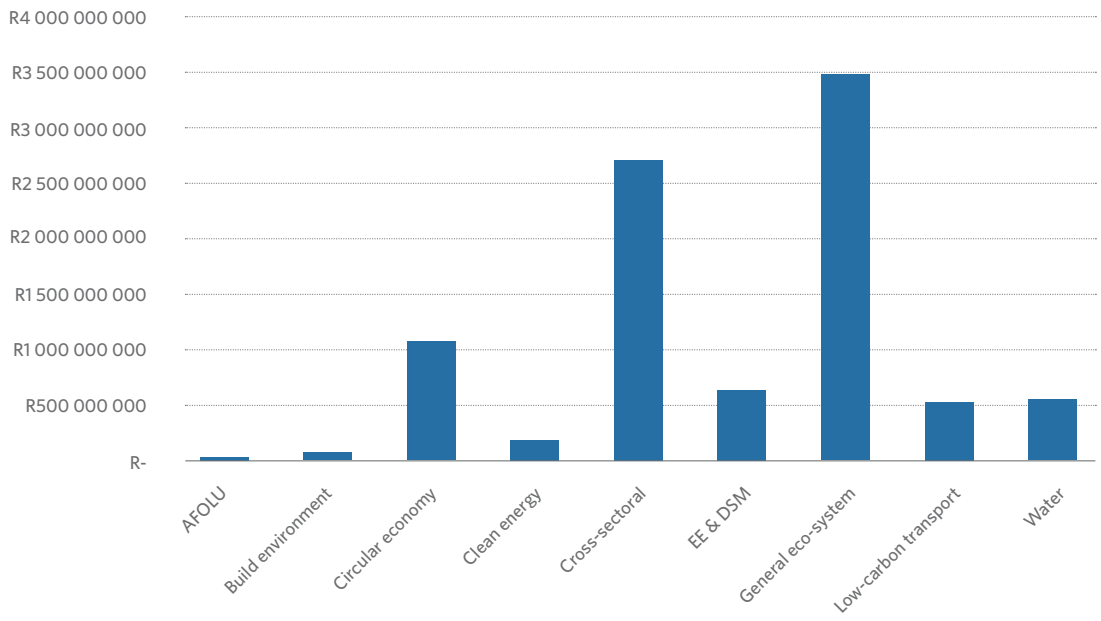


Corporates and commercial financial institutions accounted for a combined annual investment of R29.5 billion or 47% of the tracked disbursements in the South African climate finance landscape. 100% of the disbursements tracked through these two disbursement channels was in clean energy. Significant profit reduced technical and project risk, as well as falling technology costs, has continued to attract financial players to the South African clean energy sector. Despite the attractive business case, there remain some key barriers to the continued growth of this market. Some barriers to increased clean energy investments from these private sector stakeholders are capacity and understanding of the sector and regulatory uncertainty.

11 Due to a lack of data this disbursement channel was not broken into national, provincial and municipal but instead represents all disbursements for the whole body politic, or the aggregate of the citizens of a state, nation, or municipality.

The South African Government accounted for R9.2 billion, or 15% of the tracked investments in the South African climate finance landscape. More than 80% of these direct South African Government disbursements were focused on adaptation and dual benefit sectors. Of this 80% focused on adaptation and dual benefits, R6.2 billion was disbursed into two core climate support sectors: general eco-system support and cross-sectoral investments. General eco-system includes projects focused on the reduction of GHGs[12], reduction of climate change linked risk (storm hardening, crop resilience etc.), disaster response post-climate change linked impact and natural resource conservation and management. A more detailed breakdown is presented in Figure 6.

Figure 10: South African Government investments per sector



Bilateral/multilateral development finance institutions accounted for R8.2 billion or 13% of the tracked disbursements in the South African climate finance landscape. Clean energy remained a focus area for bilateral/multilateral development finance institutions accounting for 58% of the disbursements. In terms of the low-carbon transport sector, bilateral/multilateral development finance institutions were the dominant disbursement channel with more than R1.7 billion worth of investment in this nascent sector.

National development finance institutions accounted for R7.9 billion or 12% of the tracked disbursements in the South African climate finance landscape. The investments tracked through this disbursement channel focused on two main sectors: clean energy (85%) and agriculture, food production, fisheries and forestry (14%).

12 This includes projects that look at Carbon Capture, repurposing coal, carbon dioxide transport and storage stations.

Only ~11% of land in SA is considered arable, of which 3% is truly fertile soil. A mere 1% has the right climate and soil combinations for rain-fed crops. Primary agriculture contributed a relatively small share of the total GDP (2.6% in 2018 or R135 billion) in South Africa but is significant in terms of providing employment and earning foreign exchange. However, when taking into account the whole agricultural value chain, the sector is estimated to contribute about 12% or approximately R625 billion of the national GDP. **This represents an exciting opportunity for climate finance that can impact both mitigation and adaptation targets. There is a gap between what was tracked in this Landscape and what is needed in this sector.**

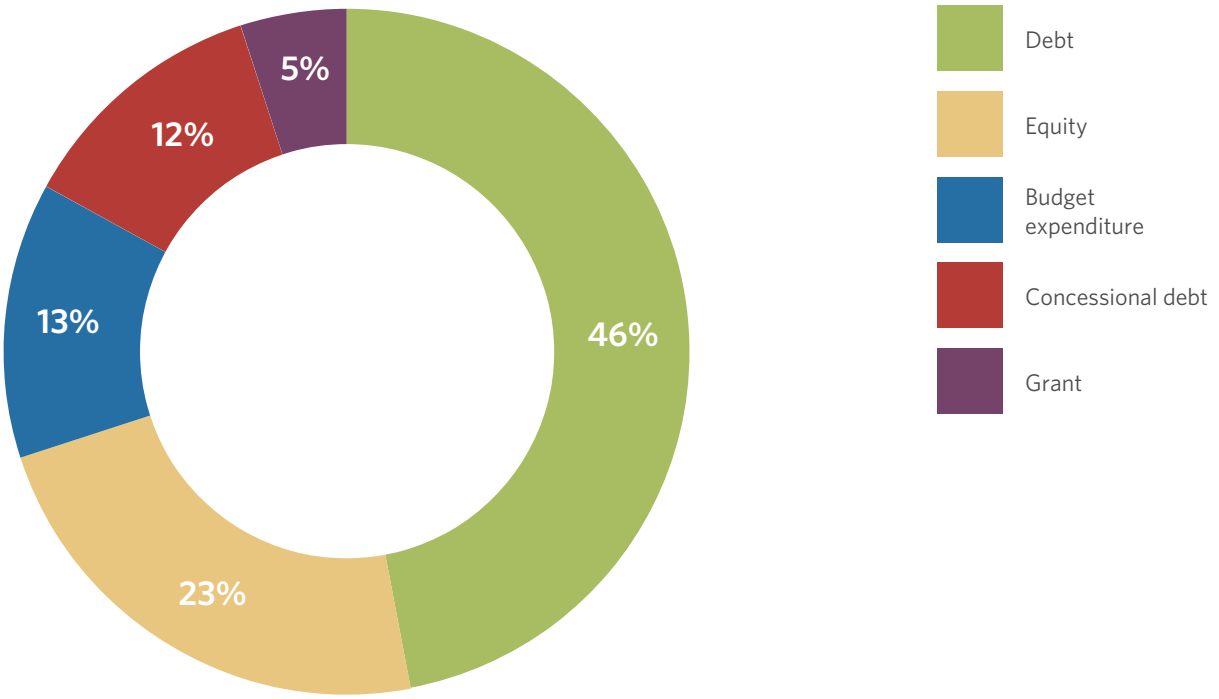
The South African agricultural economy has seen decent growth over the past decade, albeit with some difficult periods that have stifled growth. The declines registered in the agricultural GDP and net farm income between 2015 and 2016 are mainly attributed to the drought in the summer rainfall region. The most recent decline in 2018 is also due to drought conditions experienced in the Western Cape, with the resultant income losses. Animal disease outbreaks have caused several other factors affecting below-average growth in the sector. **For instance, in June 2017, Highly Pathogenic Avian Influenza started spreading in the South African chicken industry, which ultimately led to the compulsory culling of 70% of all layer birds in the Western Cape.**

Institutional investors, private equity, venture capital and infrastructure funds accounted for a combined 8% or R4.8 billion. While direct disbursement by International Governments, Government Agencies, State Owned Entity (SOEs), philanthropist/donor and household accounted for a 4% (R2.7 billion) of the disbursement.

4.3. FINANCIAL MECHANISMS AND INSTRUMENTS

The South African climate finance landscape categorises transactions by the instrument used to structure the provision of finance by one actor to another or specific climate projects. The landscape considered five separate financial instruments: grants, concessional debt, debt, equity and budget expenditure. The breakdown of tracked investments per instrument is detailed in Figure 7.

Figure 11: South African climate finance landscape instrument breakdown



59% or R36.5 billion of the tracked climate finance was raised as debt. Of this total, R28.9 billion was provided at market rates (some of which may have had other concessional characteristics), while R7.6 billion was marked as concessional. Market-related debt accounted for 46% of the total tracked climate finance. The size of the raised debt in the South African climate finance landscape indicates the confidence and viability of climate mitigation projects in South Africa with a total of R27.9 billion being invested in clean energy.

80% of the total market-related debt was sourced from private investors (commercial and corporates) with 17% coming from the South African Government and DFIs (local and international). There was a limited focus on the market-related debt from international government funds, which accounted for only 3% of the tracked debt investments.

Concessional debt accounted for R7.6 billion of the tracked climate finance. In new and challenging markets, concessional debt is increasingly used to mobilise capital and accelerate high impact sector investments. The principal, interest, and any other amounts are paid back to the original provider of the funds but at a reduced rate. This allows the sector to access cheaper capital to explore innovative sectors while also allowing the original provider of the funds to recoup some of their investment.

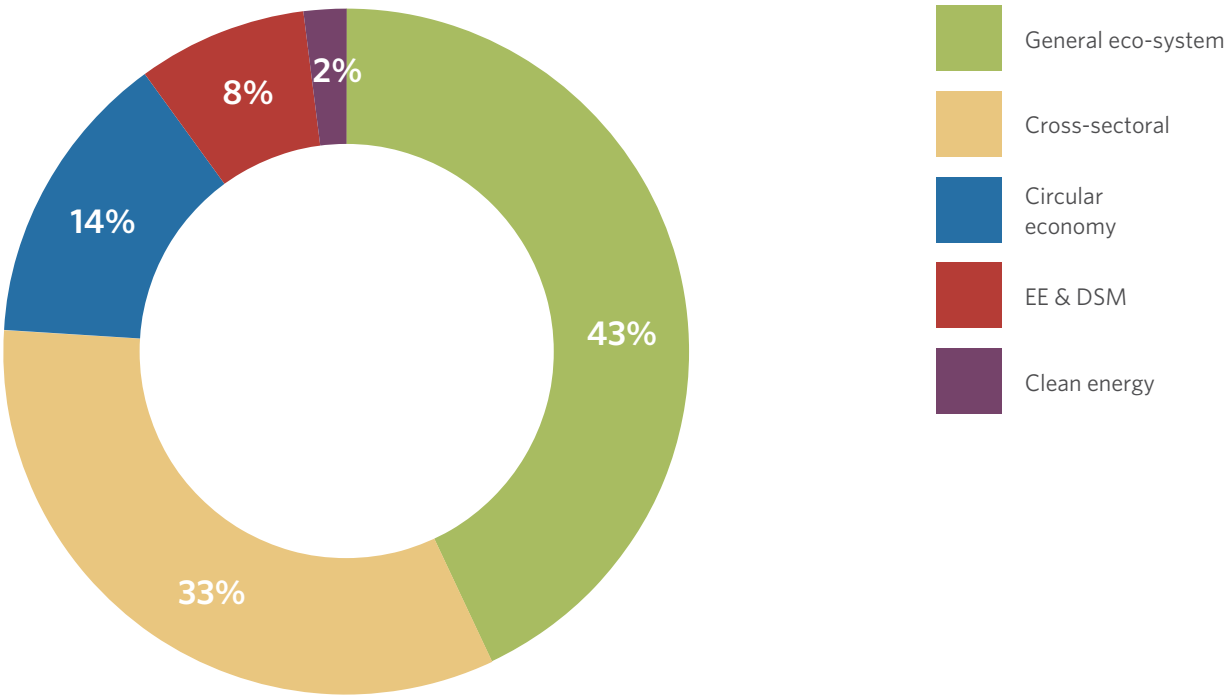
62% of this concessional debt was raised from blended finance sources. Blended finance is the strategic use of development finance (i.e. public finance) for the mobilisation of additional finance (i.e. private finance) towards sustainable development in developing countries. This was achieved mostly by international government and DFI investments in partnership with local commercial entities. The concessional debt was mainly focused on innovation in the clean energy sector, water conservation, supply & demand and low-Carbon transport, which in total received 95% of the tracked concessional debt investments.

23% or R14.2 billion of the tracked climate finance was raised as equity. 95% of this equity was structured as ownership in clean energy projects of which 76% came from private sector investors (commercial entities and corporates) and 24% from public sector DFIs (local and international).

South African government budget expenditure accounted for R8 billion (13%) of the tracked climate finance (Figure 8). National governments have a critical role to play in supporting and stimulating private sector investment in the climate adaptation sector. There are certain sectors where private sector investments are unlikely. These typically occur when an investment is seen as a public good that is unprofitable, as is the case with water infrastructure, flood protection, social safety nets, and disaster management. The public sector is the main source of investment for goods and services like these.

In the tracked climate investments, the South African Government is playing this role of "seeding" the adaptation market. More than 77% of the South African government budget expenditure were tracked in adaptation and dual benefit sectors.

Figure 12: South African government budget expenditure linked to climate finance



One of the significant challenges in tracking government budget expenditure is the lack of "climate tagged" data. This has promoted an exercise led by National Treasury to undertake a National Budget Tagging process. More information is available in Box A: National Government Budget tagging

Box C: National Government Budget tagging

Budget tagging it is a tool that identifies, classifies, weights and marks relevant expenditures in a government's budget system, enabling the estimation, monitoring and tracking of those expenditures by providing data on government's allocations or existing spending. Information gathered via tagging will be used to inform policy discussions. The 2020 Budget Review highlighted the risk of reactionary measures to combat climate change. As extreme weather patterns are becoming more frequent as a result of climate change, climate damage on infrastructure and economic sectors have put basic services and infrastructure under threat, which in turn strain public budgets. While parts of South Africa continue to grapple with years-long drought, severe floods and storms, there is limited data on the investment government is currently making towards climate change. Integrating climate change into the budget process is required to understand and improve resource allocation efficiency, and is a necessary step towards meeting South Africa's long-term climate change goals. The National Treasury will undertake an exercise of tagging climate-related expenditure to identify, classify, weigh and codify ("mark or tag") climate-related expenditure in the government budget system to enable the estimation, monitoring and tracking of that expenditure. Tagging climate-related expenditure lines is a useful starting point for understanding whether spending is aligned with needs, given climate risks and vulnerabilities facing the different sectors and parts of the society. This will be done in a phased approached as some sectors are affected more than others. We are requesting your cooperation in making this process a success. This process seeks to develop climate budget tagging (CBT) guidance materials, and support capacity building through testing and pilot implementation at the national, provincial and local government levels. This process will commence in the 2020/21 financial year.

http://www.treasury.gov.za/publications/guidelines/2021%20MTEF%20guidelines.pdf

Grants represented a small portion of the South African climate finance landscape. **5% or R3.5 billion of the tracked climate finance was raised as grants.** As shown above, non-commercial sectors in the green economy are predominantly supported by government expenditure. However, grant investments can play a very important role in seeding new industries and reducing risk. More work is needed to better understand the future role of grant funding in the South African climate finance landscape.

4.4. END-USES SUPPORTED

Climate finance flows to three primary use categories: mitigation, adaptation and dual benefit finance.

4.4.1. MITIGATION FINANCE

Mitigation activities tracked in 2017 and 2018 averaged R50 billion per year, accounting for 81% of climate finance tracked during that period.

Clean energy generation, at 95% of mitigation finance, accounted for the largest portion of mitigation flows captured in 2017-2018, reaching an annual average of R47.4 billion in 2017-2018. An additional 3% went to energy efficiency & demand-side management and 2% to the circular economy. No other category accounted for more than 2% of the total.

According to GreenCape (2020), the South African climate finance investments into renewable energy can be broadly separated into two main sectors: Utility-scale renewable energy (including distributed energy) and energy services.

Box D: Distributed generation (1-10MW)

The market size for this opportunity is reported to be ~500 MW, announced by the recent IRP 2019 with unlimited provisions between 2019 – 2022, with an investment potential of R48 billion. This opportunity spans across to other technologies (biomass, landfill gas and co-generation) that are under-represented in the broader IRP 2019 provisions.

- Utility-scale - Based on the R/MW overnight capital cost per technology, the approximate South African market value per technology based on 2019 Integrated Resource Plan[13] (IRP 2019) allocations is R99 billion for solar PV, R271 billion for wind, and R48 billion for distributed generation of less than 10 MW. Indications are that prices as low as R0.46/kWh and R0.56/kWh for solar and wind respectively can be expected by 2030. According to GreenCape (2020), The average standard Eskom tariff will increase from 116.72 c/kWh to 128.24 c/kWh in 2021— an increase of 9.8%. This is on top of the 5.22% tariff increase the power utility has already negotiated for the same year and will bring the total hike to about 15%.
- Energy Services: In South Africa, the term energy services (ES) is used to describe three interrelated energy market segments in the South African energy space, namely (1) small-scale embedded generation[14] (SSEG); (2) energy storage; and (3) energy efficiency. These market segments are increasingly bolstered by offerings in the energy finance sector, which in and of themselves also present opportunities to financial investors. The national embedded generation market for installations, operation

13 The integrated resource plan is a national government document that aims to provide a clear indication of South Africa's electricity demand and how this demand will be supplied and at what cost

14 Generation of less than 1MW embedded within the electricity distribution grid.

and maintenance of rooftop solar PV has been identified as an important part of the country's immediate efforts towards energy security. It showed remarkable resilience with full development pipelines holding the expected growth trajectory through 2020 despite the COVID-19 lockdown, close to the saturation point of 500 MWp annual installed capacity. As such, the market is still expected to reach a total capacity of 7.5GW by 2035 at a market value of R75 billion.

- In 2020 the SA energy storage market saw a surge in commercial and agricultural sectors. The flexibility of application use-cases and the increasing relevance of load-shedding-related risk will lead to an increasingly prevalent role of the storage segment in energy service provision. According to GreenCape (2020), the market is expected to rise to ~R31 billion with 6.5GWh installed capacity by 2030. This represents an exciting opportunity for climate finance in South Africa.

South Africa's NDC highlights the government challenges to prioritising poverty reduction and inequality concerns, as per the NDP 2030, while meeting climate change needs. Several measures to promote the deployment of renewable energy were included in the NDC, including R45 billion per year to support the procurement of renewable energy, the decarbonisation of the electricity sector by 2050 at an estimated cost of R5.3 trillion (The South Africa Government, 2016). **With the five-year delay of new utility-scale renewable energy, there remains a significant gap between what is currently being invested in clean energy and what is required to meet South Africa's NDCs.**

Over the last decade, the momentum in the waste sector has been building towards a waste economy increasingly characterised by circularity, with much focus on the outer rungs of waste beneficiation. This focus on landfill diversion, and specifically beneficiation, has accelerated over the last couple of years.

This is slowly translating to increased investments in the circular economy with just over R1 billion being tracked in the South African Climate finance landscape. Given the nature of the waste economy and the mandate of government entities, the majority of this investment was sourced from the public sector as material recovery investments are included in municipal budgets and have broken ground. Positive regulatory reforms continue to be considered, drafted and promulgated; and the scope of industry organisations have expanded into the realm of Extended Producer Responsibility. As a result, the South African waste economy continues to experience positive growth, and there is growing interest in the uptake of alternative waste treatment solutions and associated value chains.

Given the strong business case for renewable energy investments, 71% of the mitigation finance was raised by the private sector. 21% was sourced from public investments (energy, circular economy and agriculture). 6% was raised from blended capital sources with a focus on early-stage innovation in the energy sector.

4.4.2. ADAPTATION FINANCE

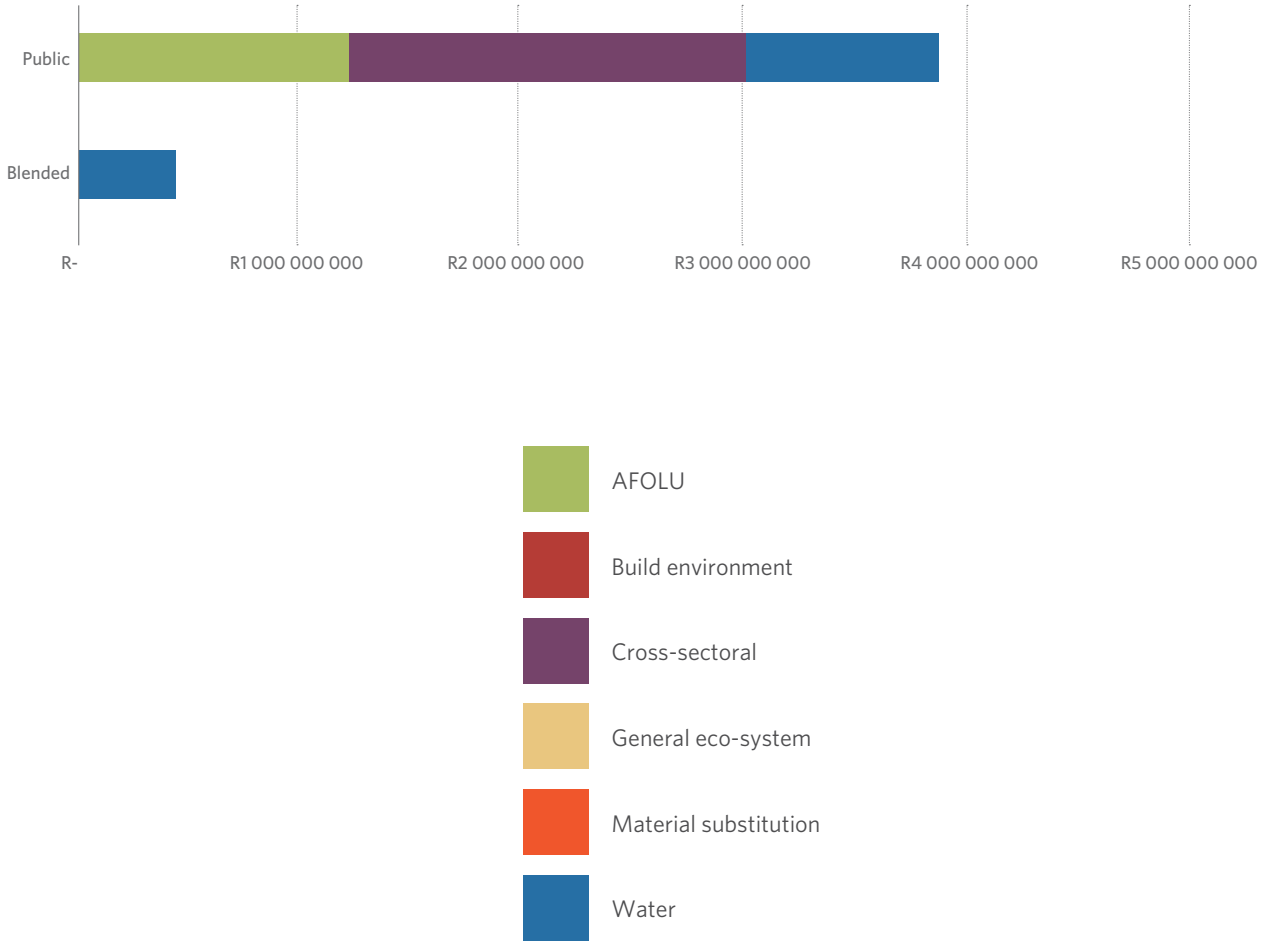
Adaptation activities tracked in 2017 and 2018 averaged R4.3 billion per year, accounting for 7% of climate finance tracked during that period.

90% of the R4.3 billion per year of adaptation activities tracked in 2017 and 2018 were funded from public sources with the remaining 10% being supported by blended finance. **No private sector investments were tracked in adaptation sectors. Figure 9 provides a detailed breakdown of the sector focus of adaption finance investments.**

The cross-sectoral investment was the largest area of adaptation climate finance, reaching an annual average of R1.8 billion in 2017-2018. This represents 41% of the total adaptation focused climate finance that was tracked in the South African climate finance landscape.

During the 2017-2018 period, the water conservation, supply & demand sector was the second-largest recipient for adaptation finance, averaging R1.3 billion annually or 30% of tracked adaption finance.

Figure 13: Public and blended finance for Adaptation activities tracked in 2017 and 2018



4.4.3. DUAL BENEFIT FINANCE

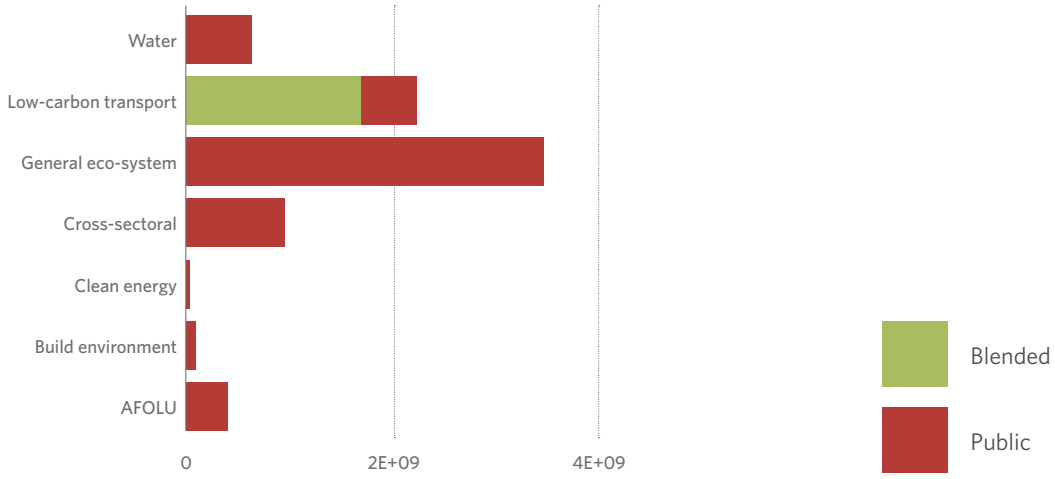
Dual benefit activities tracked in 2017 and 2018 averaged R7.82 billion per year, accounting for 13% of climate finance tracked during that period.

There is growing recognition that adaptation and mitigation activities are interdependent and must be addressed holistically. Dual benefit finance aims to support projects that have both mitigation and adaptation outcomes. Much the same as adaptation focused activities, 78% of the R7.82 billion per year of dual benefit activities tracked in 2017 and 2018 was funded from public sources with the remaining 22% being supported by blended finance. No private sector investments were tracked in dual benefit sectors. Figure 10 provides a detailed breakdown of the sector focus of dual benefits finance investments.

General eco-system support investment was the largest area of mitigation climate finance, reaching an annual average of R3.5 billion in 2017-2018. General eco-system includes projects focused on the reduction of GHGs[15], reduction of climate change linked risk (storm hardening, crop resilience etc.), disaster response post-climate change linked impact and natural resource conservation and management.

During the 2017-2018 period, the low-Carbon transport sector was the second-largest recipient for dual benefit finance, averaging R2.2 billion annually. Globally, the momentum for electric mobility has increased exponentially over the period between 2013 and 2018. This global shift has been primarily driven by national emission reduction commitments stemming from the Paris Agreement, growing urban air pollution concerns, and continued crude oil price volatility. South Africa does not have policies, subsidies or incentives in place to accelerate the development of the electric vehicle (EV) market. It has thus not yet joined the ranks of those countries experiencing a steep rise in EV uptake and the development of the ecosystem and value chain around EVs.

Figure 14: Public and blended finance for dual benefit activities tracked in 2017 and 2018



15 This includes projects that look at Carbon Capture, repurposing coal, carbon dioxide transport and storage stations.

5. FINANCING SOUTH AFRICA'S TRANSITION

As detailed in Section 4, South Africa's projected green economy growth represents a huge economic and development opportunity, as well as a key focal area for global action to adapt to and address climate change in Africa. However, what is unclear is if this investment potential or private sector demand will be sufficient for South Africa to meet its NDCs

South Africa's NDC, 2020 Copenhagen pledge and long-term targets are consistent with its long-term goal to constrain its emissions to follow a peak-plateau-decline trajectory (Climate Action Tracker, 2020). South Africa's mitigation components of its NDCs follow an economy-wide approach, with a focus on all sectors, six greenhouse gases (GHGs), with a material focus on three GHGs: carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O) (South African Government. 2015). The emission sources considered are the ones in the latest GHG inventory linked to the Intergovernmental Panel on Climate Change major categories of energy, IPPU, waste and agriculture, forestry and other land use (South African Government. 2015).

Box E: How has COVID-19 affected GHG emissions?

According to the Climate Action Tracker, the effect of COVID-19 is still yet to be clearly understood. However, estimates suggest a drop in emissions in 2020 by 9% to 11% lower than 2019. Given the economic impact of COVID-19, South Africa's emissions may further decrease towards 2030 by around 8% to 10% below our current policy projections when taking into account the potential impact of COVID-19.

This would mean that South Africa would overachieve on the upper ranges of its NDC targets.

At the same time, it is expected that the #buildbackbetter and the global green economic recovery drive will result in an increase in climate linked finance in 2020/21 and onwards.

Based on South Africa's peak-plateau-decline trajectory, local emissions should peak between 2020 and 2025 as reflected in the National Climate Change Response Policy, and submitted in the country's NDC. Emissions should remain for a period and then decline to an absolute target of between 398–614 MtCO2e (incl. Forestry and other land use) over the period 2025–2030. Including forestry and other land use, South Africa aims to reduce its GHG emissions to 212–428 MtCO2e by 2050 (Climate Action Tracker. 2020).

Various studies have been undertaken by organisations around the world to better understand what it would cost developing countries, specifically South Africa, to hold to these Paris Agreement aim of "holding warming well below 2°C and pursuing efforts to limit warming to 1.5°C. These studies have reported estimates from R60 billion per year to R1.5 trillion per year (The World Bank Group. 2011).

Two studies that are most often quoted were undertaken by the World Bank (2011) and the International Finance Corporation (2016). Both of these studies took two different yet complementary approaches to estimating the relevant country costs and produced results that corroborated each other.

The World Bank study found that the cost between 2010 and 2050 of adapting to approximately 2°C warmer world by 2050 is in the range of R490 billion to R700 billion a year (The World Bank Group. 2011). This study took a bottom-up approach, in which sub-national data were aggregated to generate estimates at economy-wide, sectoral, and local levels. This data was then used to estimate the needed investments to reach country-level targets.

The IFC 2016 study estimated that the total investment potential for the climate-smart needs based on South Africa's NDCs. This report estimated that this investment potential is R8.9 trillion over a 15-year timeframe (from 2015 to 2030).

This translates to a required annual investment of R596 billion to achieve South Africans NDCs by 2030 (IFC 2016).

The IFC study used South Africa's NDCs submitted to the United Nations Framework Convention on Climate Change, analysed key selected sectors mentioned in the countries' NDCs (in South Africa, these are energy, IPPU, waste and agriculture, forestry and other land use) for which reliable, transparent data were publicly available and measurable and then applying country-specific investment costs for technology. Overall, a conservative approach was used to quantify investment potentials across technologies and regions, and only investments expected to materialise as a result of a country's ambitions during the 2030 NDC timeframe were considered.

As South Africa weighs how best to revitalise its economies and craft a sustainable development path to boost living standards, it is going to require climate finance investment of R600 billion per year for South Africa to hold to the Paris Agreement aim of "holding warming well below 2°C, and pursuing efforts to limit warming to 1.5°C.

Using these estimates, the R62.2 billion of climate finance that was tracked in the South African Climate finance landscape represents 10.4% of the total investment needed per year for South Africa to hold to the Paris Agreement aim of "holding warming well below 2°C, and pursuing efforts to limit warming to 1.5°C. That implies that there is currently an annual investment gap of R537.8 billion.

Critical funding gaps exist despite national commitments and private sector innovation. Thus, the state has to play an important catalytic role through clear and trusted policy, public finance and market-based mechanisms to funnel private sector finance into the needed economic sectors. Blended finance will play an extremely important role in catalysing private sector finance to close this gap.

Box F: The Just Transition Transaction

South Africa is the largest carbon emitter in Africa and 14th in the world. At the heart of South Africa's carbon emissions is ageing coal power stations, and a financially-crippled national utility, Eskom. The state-owned utility is in the midst of a financial crisis, struggling to fund general operations and service its debt. The ability of the state utility to participate in the Just Energy Transition is limited both by its current financial state and the structure of the energy landscape. As disinvestment pressure reduces finance for fossil fuel infrastructure, including high-emission electricity generation, while green finance flows into green infrastructure, such as renewable energy and other cleaner energy something needs to change. A partnership of industry players, government and academia, led by Meridian Economics, have proposed a Just Transition Transaction which was presented the presidency by the Eskom Sustainability Task Team. According to Winkler, Keen & Marquard (2020), **this is a blended finance package of local and international commercial and concessionary finance that aims to fund Eskom's accelerated phase-out of coal over the next 20 years. The amount required by this fund is estimated to be R167 billion. With clean energy generation investment was the largest area of mitigation climate finance, reaching an annual average of R47.4 billion in 2017-2018 and with the growth of blended finance in the South African landscape the gap to this fund seems manageable.**

6. TRACKING CLIMATE FINANCE: TRENDS, CHALLENGES, AND RECOMMENDATIONS

6.1. TRENDS IN CLIMATE INVESTMENT AND SPENDING: INSIGHTS INTO THE FUTURE OF FINANCE

Climate finance growth is expected across a more diverse range of sectors. Although climate finance flows are currently dominated by renewable energy, qualitative responses indicate that shifts are starting to occur. Interviews with experts highlighted that there is a gradual shift towards the clean transport, water and waste sectors. Because these sectors are traditionally viewed as being dominated by public or concessional finance, this shift will require new ways of thinking and innovative ways of crowding in capital.

There is a steady, and much-needed shift towards blended finance. Although still considered to be relatively nascent, there are initial signs that blended finance facilities are on the increase. Blended finance remains in its early stages, particularly in South Africa (Tshikululu, 2017), and initial interviews demonstrated low expectations for blended finance as a mainstream source of finance. However, this report revealed that a full 8% of financial flows occurred through blended finance facilities, demonstrating this blend of public and private capital to be a rising trend. This figure is expected to increase substantially in 2021-2022 as the Development Bank of Southern Africa (DBSA) partners with the Green Climate Fund (GCF) in efforts to catalyse private sector capital using public funds[16]. There has also been expressed interest in blended finance models from member states of the Southern African Development Community.

Climate finance is becoming more inclusive of adaption spending. Although the majority of finance still flows towards initiatives focused on mitigation, an increasing amount of investment and spending is expected to be directed towards climate adaptation initiatives. This shift is led by projects focused on general ecosystem support. It is also found in the agriculture, food processing, fisheries and forestry, and water conservation sectors. The use case around dual benefits is often implemented when multiple sectors are integrated into a project.

16 An overview of blended finance deals approved by the Green Climate Fund in South Africa show that $152.6m of GCF funding has been earmarked for blended finance projects in the country. These were not counted towards this mapping as they occurred after 2017-2018. See https://www.greenclimate.fund/countries/south-africa for more details.

6.2. BARRIERS, CHALLENGES, AND INHIBITORS TO GROWTH IN CLIMATE FINANCE IN SA

The lack of an agreed-upon definition for climate finance makes tracking and aggregating climate finance flows particularly challenging. With no established and agreed-upon definition for climate finance in South Africa, or clearly defined sectors and subsectors, there is a gap for systematic and efficient mapping. A Green Finance Taxonomy for South Africa is currently in development and should bring clarity to tagging and reporting on climate finance, as long as it is widely adopted.

Both the public and private sector lack the awareness and expertise to tag climate finance. Primary and secondary research showed that market players – even those intentionally striving to increase climate finance – are not aware of how to systematically track their financial flows (Montmasson-Clair 2013). Several interviewees expressed interest in using the structure created for this study as a basis for developing their climate mapping system.

Climate finance allocation is not tied to meeting climate goals, and there is no attempt to assess whether current investments are on track to achieving these goals. There is a lack of cooperation between funders and receiving entities to ensure that funding is targeted where it is most needed (Montmasson-Clair 2013). This is exacerbated by a lack of knowledge and experience in tracking green finance, which itself is exacerbated by the lack of a common definition.

There is a lack of effective monitoring, evaluation and reporting, or common M&E standards. A common challenge highlighted throughout the research was that there is no established process or framework for monitoring, reporting, or verification of climate-related expenditures. This is not unique to climate finance (Impact Investing South Africa 2020). Ineffective reporting corresponds to the challenge around goal setting since monitoring and evaluation is the first step in tracking progress towards targets. Similarly, if the contributions to climate finance are not yet effectively tagged, the monitoring and reporting process requires disaggregation of financial flows which could lead to inaccuracies.

Limited project preparation funding prevents early-stage climate projects from reaching bankability. As shown above, the clean energy sector dominates the majority of climate finance in the country. This is largely thanks to the fact that the strong business case for clean energy makes it an attractive investment opportunity. Other sectors are less well understood and are instead perceived as risky, costly, or too early-stage to receive investment. Experts highlighted that these sectors require more grant and concessional funding to reach bankability and offset some of the perceived risks by investors. An increase in project preparation funding is necessary to create a greater pipeline of investable projects in non-energy sectors, and shift away from the current "energy-heavy" climate finance space.

High transaction costs mean that small or long-term projects go unfunded (Hafner, James & Jones, 2019). Small projects struggle to access finance because transaction and due diligence costs are often regarded as too high when compared to the deal size. There is a shortage of early-stage funding to assist emergent businesses who are part of the green ecosystem. Similarly, the long deal tenors were highlighted as a barrier inhibiting investment. Banks are

limited to certain tenor lengths as a result of internal and external regulations (Hafner et al., 2019).

Regulation and policy challenges create costly delays for investors and projects. There is no substitute for effective policy and planning framework. Financial instruments will only be effective if there are clear, predictable and coherent domestic policy frameworks. National Treasury's technical paper on Sustainable Finance (2020) outlined several key barriers that remain several years after the National Business Initiative initially mapped them. One of the primary challenges is the need for an all-encompassing national policy for a greener economy, industrial policy and the structure of the financial system. When a policy is enacted, it needs to be consistent and enduring. Investors and projects who sign agreements under draft regulation that is later adjusted suffer major delays and costs. **The financial services sector need to be incorporated into discussions about specific policy and development discussions as soon as possible.**

Household finance for climate remains negligible. Unlike in other countries (CPI 2019), the South African mapping highlighted that retail investment in (and demand for) climate products is very small. This can be attributed to several factors, including a regulatory environment that neither incentivises nor supports investments in climate-friendly home infrastructure. Furthermore, consumers suffer a lack of retail options for investing in climate products. There is limited opportunity to invest in either financial or physical assets as a retail investor.

7. RECOMMENDATIONS AND CONCLUSION

From the process of developing the South African climate finance landscape, the following recommendations are proposed:

Launch a process to develop agreed-upon definitions of climate finance, with guidelines on tagging and tracking investments. In line with the work done on the Green Finance Taxonomy[17], agreed-upon definitions of climate finance, accompanied by an outline of sectors and sub-sectors, should be launched to build credibility, foster investment, and enable effective monitoring and disclosure of performance. This process should be inclusive of the full market, engaging both public and private sector players, to ensure long-term buy-in (the typology and sector breakdown developed in this project will be shared with key stakeholders, i.e. Department of Environment, Forestry and Fisheries, National Treasury, EU Taxonomy working group and the South African Reserve Bank to assist in creating market coordination). Ideally, a central registry of climate finance should be developed to enable the process of long-term tracking.

The sustainability of each investment and the duty to consider all risks (financial, operational, competitive, technology, environmental, social impact, governance) should be included in the assessment of each investment's sustainability. The market failure in climate finance for institutional investors (i.e. pension funds) is the un-reflected externalities that are absorbed by the environment. Once these externalities cross a threshold, the risk is increased (drought, flood, etc.). If South Africa is going to successfully transition, institutional investors should have a mandate that includes long run country stability and sustainability.

Improve public-private coordination within South Africa. The Climate Finance Landscape found that climate spending and investment in South Africa, for the most part, remains siloed between the public and private sector. Aside from the intentional efforts of a few development finance players, collaboration is limited. As shown in the Landscape, the R4.9 billion of blended finance – which brings together public and private sources of funding – generally comes from international rather than local sources. With R8.9 trillion of financing needed to achieve its climate targets, South Africa must unite to scale investments towards climate change.

Increase support for innovative financial tools. To catalyse the R8.9 trillion required for South Africa, innovative finance tools should be developed, tested and scaled to leverage private sector capital into sectors that are still seen as high risk. Financing instruments deployed by governments should focus on reducing barriers, risks and the potential for market failures with the explicit aim of crowding-in private sector investment. Similarly, more project preparation facilities, which utilise blended finance structures, should be established to increase the number of bankable projects. The DBSA and GCF are making strong strides towards this goal in 2020 onwards, but more support for financial innovation is needed. Such facilities should be focused on the sectors that have been heavily reliant on grants and concessional funding.

17 More information available here https://sustainablefinanceinitiative.org.za/

Increased clarity and consistency around regulation is needed, particularly for smaller climate sectors and subsectors. Regulation and legislation in South Africa needs to focus on creating a more enabling environment for climate finance. Legislation needs to be adapted to support a just transition and diversify the portfolio of climate projects. More incentives should be created to increase climate finance spending, both by the private sector and households. As highlighted in National Treasury's technical paper on Sustainable Finance (2020), regulators and practitioners should collaborate to provide technical guidance, standards and norms to assist in identifying, monitoring and mitigating environmental (and social) risks.

Incorporate environmental impact criteria into private sector investment policies, procedures and targets. Although some South African financial institutions are beginning to consider their environmental impact, very few consider emission reductions, environmental impacts, or alignment with the appropriate Sustainable Development Goals (SDGs) as part of their credit approval process and corporate targets. One of the main contributing factors to this is a lack of understanding, awareness and capacity on mainstreaming and institutionalizing climate finance. More capacity building efforts are needed to support banks and institutional investors to incorporate climate considerations into their internal goals and processes.

Develop guidelines and tools to enable reporting, monitoring, and evaluation. In conjunction with the establishment of an agreed definition, a comparable monitoring and reporting toolkit should be developed to help practitioners effectively tag, track and report on their climate finance commitments and disbursements. This data, when aggregated, will assist in better understanding the gaps and opportunities in the space, and understanding progress towards climate goals.

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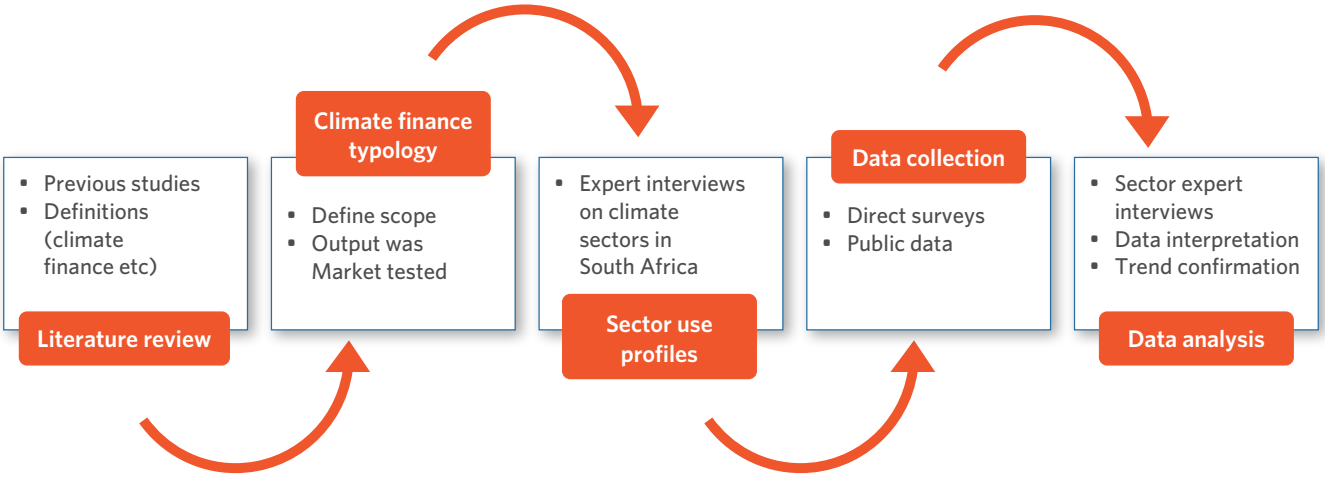
ANNEXURE A - METHODOLOGICAL APPROACH

The mapping of climate aligned finance landscape in South Africa for this report took place between July and December 2020. The approach consisted of five key stages that involved in-depth market research, expert interviews and data collection. The approach is detailed below:

Figure 15: South African landscape methodological approach



This approach resulted in a Sankey diagram detailed in Section 6. This analysis was supplemented by follow-up qualitative interviews with a selection of key market players, culminating in a description of trends, challenges, and recommendations for furthering climate finance in South Africa.

SCOPING AND DEFINING CLIMATE FINANCE

Desktop literature was reviewed to inform the initial scoping and development of a definition and typology. As per the South African National Treasury 2020 report titled 'Financing a Sustainable Economy', the project team maintained the following working definition of climate finance:

"Local, national or transnational financing, which may be drawn from public, private and alternative sources of financing. These financial resources are intended to cover the costs of transitioning to a low-carbon global economy and to adapt to, or build resilience against, current and future climate change impact."

The following sub-definitions are used:

TRANSITION FINANCE

Transition finance aims to start a transition from carbon intensity towards climate mitigation and/or climate adaptation but does not necessarily reach the ultimate goal. This can be seen as a brown to green investment and should mean a significant reduction in GHG emissions relative to current practice and alignment with the Paris Agreement. This broad definition was based off of the definition used in Climate Bonds White Paper 2020 but has been adapted for the South African context. This use sub-sector was not tracked in this Landscape but should be included in the future.

MITIGATION FINANCE

Mitigation finance aims to reduce greenhouse gas emissions, or to remove GHGs already in the atmosphere or ocean, to slow warming and stabilize the climate in the long term.

ADAPTION FINANCE

Adaptation finance aims to respond to climate change by supporting the preparation and reduction of climate-related risk and damage.

DUAL BENEFIT FINANCE

Dual benefit finance aims to support projects that have both mitigation and adaptation outcomes.

Within these sector categories, two distinct types of contributions towards climate change were be mapped per activity:(1) economic activities that make a direct contribution based on their performance and (2) enabling activities.

TYPOLOGY DEFINITIONS

The scoping exercise for this report included reviews of existing mappings and typologies[18] , which were interrogated for their relevance to the South African environment. A series of iterations of a suitable typology was created and refined based on one-on-one interviews with key market experts. The figure below provides the resulting typology.

18 Including the Global Landscape of Climate Finance (2019), the Landscape of Climate Finance in Germany (CPI, 2012), the comparative analysis of Germany and France (IKEM, 2019), the Landscape of Public Climate Finance in Indonesia (CPI, 2014), the Landscape of REDD+ Aligned Finance in Côte d'Ivoire (CPI, 2017), the Climate Finance Landscape of the German Building Sector (IKEM, 2018), the Landscape of Climate Finance in France (I4CE, 2019), and the Landscape of Climate-Relevant Land-Use Finance in Papua New Guinea.

Table 1: A conceptual overview of the South African climate finance landscape typology

Source of finance	Type of source of finance	Financial instrument	Type of disbursement channel	Use	Sector	Sub-sector
• Public • Private • Blended	• International Government • Government • DFI • Commercial • Other	• Grants • Concessional Debt • Concessional Equity • Debt • Equity • Budget expenditure • Other	International Government • Government: • National government • Provincial government • Local government • Public agency • SOE DFI: • National DFI • Bilateral/ multilateral DFI • Commercial, financial institution: • Bank • Institutional investor • PE/VC/ Infrastructure/ other fund Other • Corporate • Philanthropist/ donor • NGO • Household	Direct use: • Transition • Mitigation • Adaptation • Dual benefits	• Clean Energy • Energy Efficiency and DSM • Low-carbon transport • Water conservation, supply & demand • Agriculture, food production, fisheries and forestry • Solid waste management • Buildings and the built environment • Other	

The sections below detail the individual verticals that when structured together, represent the South African climate finance landscape typology.

PUBLIC, PRIVATE AND BLENDED FINANCE

The South African climate finance landscape tracks climate investments from source to end-use. The start of this life cycle focuses on the broadest definition of climate finance source (i.e. where is the money coming from) as detailed in Table 2.

Table 2: Public, private and blended finance defined

Source	Description
Public finance	The outflow of resources in the form of public expenditure towards national and local objectives (public: The whole body politic, or the aggregate of the citizens of a state, nation, or municipality)
Private finance	The outflow of resources implemented by Individuals and companies and is not state-controlled
Blended finance	Strategic use of development finance (i.e. public finance) for the mobilisation of additional finance (i.e. private finance) towards sustainable development in developing countries. Blended finance was included to future proof the mapping. Although blended finance currently makes up a small portion of the financial flows, this is expected to increase over time. (Blended transactions broke down the split between public and private capital to better understand the leverage ratio.)

TYPES OF SOURCES OF CLIMATE FINANCE

During the scoping and stakeholder engagement, the South African climate finance landscape identified five sub-categories of public, private and blended finance sources. These are detailed in Table 3.

Table 3: Key sources of climate finance defined

Sources	Definitions
International Governments	International political bodies, or the aggregate of the citizens of a state, nation, or municipality
Government	The whole body politic, or the aggregate of the citizens of a state, nation, or municipality (South Africa)
Development Finance Institution (DFI)	A development finance institution was also known as a development bank or development finance company is a financial institution that provides risk capital for economic development projects on a non-commercial basis
Commercial	Individuals and companies and is not state-controlled (Banks, Institutional investors, Venture Capital)
Other	Corporate, Philanthropist/donor, NGO and Household

FINANCIAL DISBURSEMENT CHANNELS

Finance from all sources is typically channelled through financial disbursement channels (i.e. the step in the life cycle that takes money from the source and disburses it to the end user), which offer or employ different financial instruments to make finance available for different uses. The South African climate finance landscape considered 12 different disbursement channels for South African climate finance; these are detailed in Table 4.

Table 4: Financial disbursement channels defined

Source	Disbursement channels	Description
International Government	International Government	International political bodies, or the aggregate of the citizens of a state, nation, or municipality
Government	National government	The whole body politic, or the aggregate of the citizens of the nation
	Provincial government	The whole body politic, or the aggregate of the citizens of a province (there are nine provinces in South Africa)
	Local government	The whole body politic, or the aggregate of the citizens of a local municipality
	Public agency	Public agency means any city, city and county, town, county, municipal corporation, public district, or public authority located in whole or in part within Government
	State-owned enterprise (SOE)	A legal entity that is created by a government to partake in commercial activities on the government's behalf
DFI	National development finance institutions	National and international development finance institutions (DFIs) are specialised development banks or subsidiaries set up to support private sector development in developing countries
	Bilateral/multilateral development finance institutions	Bilateral DFIs are either independent institutions, such as the Netherlands Development Finance Company (FMO), or part of larger bilateral development banks, such as the German Investment and Development Company (DEG), which is part of the German development bank KfW. Multilateral DFIs act as private sector arms of International Finance Institutions (IFIs) established by more than one country.
Commercial	Commercial Bank	A bank that offers services to the general public and companies.
	Institutional Investor	An institutional investor is a company or organization that invests money on behalf of others. This includes mutual funds, pensions, and insurance companies.
	Private Equity/ Venture Capital/ Infrastructure/other fund	Other commercial funds and investors, including private equity, venture capital, infrastructure, and other funds.
Other	Corporate	Private companies
	Philanthropist/donor	Provider of donations to social good causes
	NGO	Non-profit or non-governmental organisations
	Household	End-use households

FINANCIAL MECHANISMS AND INSTRUMENTS

The South African climate finance landscape categorized transactions by the instrument used to structure the provision of finance by one actor to another or specific climate projects. The South African climate finance landscape considered six separate financial instruments. The definition of each of these instruments is detailed in Table 5.

Table 5: The South African climate finance landscape: financial mechanisms and instruments

Instrument	Definition
Grants	Subsidies or transfers made in cash, goods or services for which no repayment is required.
Concessional Debt	Debt evidenced by a note which specifies, in particular, the principal amount, interest rate, and date of repayment, at below-market rates. Debt is extended at terms preferable to those prevailing on the market. The concession can be achieved either through interest rates below those prevailing on the market or longer maturity or grace periods, or a combination of those.
Debt	Debt evidenced by a note which specifies, in particular, the principal amount, interest rate, and date of repayment. This debt is extended at regular market conditions.
Equity	A stock or any other security representing an ownership interest.
Budget expenditure	The capital disbursements of various South African ministries and government departments
Other	Unspecified investment instrument

END-USES

The end-use sectors mapped in the South African climate finance landscape are defined in line with the definitions for mitigations, adaptation, transition and dual benefit as detailed above. The methodology used to select and prioritising the climate sectors that were mapped in the South African climate finance landscape included a twofold approach:

- Sectors that are in line with national priorities and policies.
- Sectors that are currently having the most market impact on South Africa's climate emissions. Identifying activities making a substantial contribution to climate change mitigation in these sectors is likely to have a large impact.

Taking this dual approach into account, the team that compiled this report undertook an in-depth literature review of relevant South African policies and also consulted experts. Based on these insights the following sectors were selected: clean energy, energy efficiency and demand side management (DSM), low-carbon transport, water conservation, supply and demand, agriculture, food production, fisheries and forestry, circular economy, buildings and the built environment, material substitution, general eco-system support and other (I.e. energy, industrial processes and product use (IPPU)). Table 6 below details the subsectors or activities within each of these sectors and provides a brief description.

Table 6: Climate change-related sectors and activities

IPCC categories	IPCC Code	Sector	Activity	Description
Energy	1	Clean Energy	Generation facilities and Stationary combustion of fuels	Electricity generation facilities (Solar PV, Wind, Biogas, LPG, LNG etc.).
			Supply chain	Manufacturing facilities wholly dedicated to the relevant sector.
			Transmission and distribution	Dedicated transmission infrastructure for clean energy.
			Storage	Energy storage, distribution, installation and retail.
		Energy Efficiency and DSM	Infrastructure / projects	Energy efficiency and DSM projects and facilities.
			Supply chain	Manufacturing facilities wholly dedicated to the relevant sector.
			Transmission and distribution	Dedicated supporting infrastructure.
		Low-carbon transport	Modal shift (passenger and freight)	Improved integration of transport modes/ system - Electric, hydrogen, gas, hybrid and non-motorised.
			Supply chain (passenger and freight)	Manufacturing facilities wholly dedicated to the relevant sector.
			Infrastructure (passenger and freight)	Dedicated supporting infrastructure (charring, fuel etc.) - Smart logistics and efficient transport systems.
Hydrology and Water Resources	X	Water conservation, supply and demand.	Water efficiency	Smart networks monitoring and leakage detection, water-efficient alien vegetation clearance.
			Water Storage	Dedicated storage (aquifer recharge, dam construction and refurbishment) and harvesting systems.
			Water treatment	Water treatment facilities and systems (surface/ ground/desalination).
			Water/wastewater distribution	More efficient and less polluting distribution systems.
			Resource recovery (circular economy)	Biogas-CHP recovery, nutrient recovery, water reuse, non sewered sanitation systems, water recycling.
			Supply chain	Manufacturing facilities wholly dedicated to the water sector.

Agriculture, Forestry and Other Land Use (AFOLU) Livestock Land Aggregated and non-CO2 source	3	Agriculture, food production, fisheries and forestry	Smart Farming	Improved energy, water, fertilizer, pesticide and herbicide efficiency.
			Sustainable practices	Improved soil health, soil moisture retention (improve water use efficiency). Decreases use of synthetic chemicals (and so also runoff causing pollution) and energy.
			Undercover Farming	Improved water efficiency and decreased synthetic chemical inputs.
			Agriculture, forestry and other land use (AFOLU)	Sustainable land use management practices.
			Aquaculture	Improved water use efficiency and decreased synthetic chemical fertilizer use in aquaponics.
			Supply chain	Manufacturing facilities wholly dedicated to the smart agriculture sector.
Waste	4	Circular economy	Preparation (sorting / separation)	Facilities/methods for collection, sorting and material recovery.
			Storage / Aggregation	Facilities/methods facilitating the material storage and bulking of products/materials for beneficiation/value retention.
			Share	Facilities/services that facilitate the sharing of goods and products.
			Maintain / Prolong	Facilities/services that prolong the life of products/goods through maintenance.
			Reuse / Redistribution	Facilities refurbishing or repairing products or cleaning components or products for reuse.
			Refurbish / Remanufacture	Facilities/services that refurbish and/or remanufacture products.
			Recycling (dry / recyclables)	Facilities that recycling/beneficiation dry recyclable materials (example: plastic, glass, paper, textile, metal, builders rubble).
		Biological treatment of solid waste	Recycling (wet / biological / organics)	Facilities/methods facilitating recycle / beneficiating wet/organic materials (such as biochemical extraction (Bio-refinery), insect protein, composting, biomass palletisation, biodiesel, anaerobic digestion for heat, and anaerobic digestion for electricity).
		Circular economy	Landfill Mitigation	Facilities/methods of extracting value from already landfilled waste products/materials (such as landfill material mining, and landfill gas extraction).
			Supply chain	Manufacturing facilities wholly dedicated to the relevant sector.

Other (I.e. Energy, Industrial Processes and Product Use (IPPU))	X	Buildings and the built environment	New build - Green buildings	New green construction methods and systems (construction focused)
			Supply chain	Manufacturing facilities wholly dedicated to the relevant sector.
		Material substitution	The product uses as substitutes for ozone-depleting substances	Substantial Contribution.
		General eco-system support	GHG reduction projects	Projects focused on the reduction of Green House, Gasses – Carbon Capture, repurposing coal, Carbon dioxide transport and storage stations.
			Disaster risk management (pre-disaster)	Projects focus on the reduction of climate change linked risk (storm hardening, crop resilience etc.).
			Disaster risk management (post-disaster)	Projects focus on the response post-climate change linked impact.
			Natural resource conservation and management	Sustainable management, remediation and clean up (ocean and land).

DATA: COLLECTION AND ANALYSIS

Data sources: Data for this analysis was collected from two primary sources: datasets and direct surveys, complemented by desktop research, including government budgets, reports, and funding lists. Datasets were retrieved from Bloomberg New Energy Finance, as well as from the Organisation for Economic Co-operation and Development database. A total of 30 surveys were sent out to a range of organisations spanning the public and private sector which included all sources and disbursement channels as defined above. In addition, a request for contributions was shared with two prominent networks, cumulatively reaching up to 101 private equity and venture capital providers, and up to 50 financial service providers and investors. Where necessary, surveys were combined with one-on-one interviews to interrogate the data and test assumptions. Datasets were cleaned and cross-referenced to ensure that double entries (particularly across different datasets) were accounted for.

Project-level vs aggregated data: Wherever possible, project-level data was gathered. However, there were distinct challenges in gathering such data through surveys. As a result, the final dataset contained a combination of aggregated and project-level data, with preference given to project-level data where available. Of the total tracked climate finance for this report, approximately 57% was tracked using project-level data. This pragmatic approach ensured that the research provided a wide enough pool of information to adequately map and learn from the climate finance ecosystem. Domestic government data was provided where departments are tagging programs such as clean energy through the Department of Mineral Resources and Energy and the Department of Environment, Forestry and Fisheries. These data sources were analysed and cleaned to ensure that operational budget items were excluded.

Commitments vs disbursements: The figures reported in the South African climate finance landscape represent financial commitments rather than disbursements made during the period under investigation. While disbursement data may provide a better indication of flows of funding, financial commitments demonstrate the decision-making involved, which is critical for assessing trends within the climate finance market. The research team also found that data on commitments of climate finance was more easily accessible in the South African environment. Where possible, the team endeavoured to collect information on disbursement of committed funds to provide some insight into the "success rate" of climate finance commitments. Unfortunately, the available disbursement data was too limited to provide conclusive insights.

Conservative approach: In cases of insufficient details, the project team undertook a conservative approach and preferred to under-report rather than over-report on the tracked climate finance.

Tracking primary investments: In line with the CPI's Global Landscape (2019), the South African mapping focuses on primary investment into productive assets and projects that directly contribute to adaptation, mitigation, or both. However, since the South African Government's plan for the green economy is built on industrialisation, local manufacturing and enabling investments into mitigation and adaptation sectors are vital to the relevance of the sector. As such, climate-specific investments and manufacturing were also included in the scope of the research.

The project excluded secondary transactions that involve money changing hands but no physical impact (either direct or enabled), i.e. risk management instruments (including guarantees), R&D spending, revenue support mechanisms such as feed-in tariffs that payback investment costs, public subsidies, re-selling of stakes, or public trading on financial markets. The project also excluded capacity development investments such as the development of national climate strategies to maintain consistency in only reporting primary investment flows.

Avoiding double counting: One of the most important precautions when using data from various points along the finance flow was to avoid double counting. The project team mitigated this risk by adhering to consistent approaches to tracking and triangulating data using the available unique project ID. Potential duplications were also tested with the relevant source of finance. Since green bonds' use of proceeds are linked to existing or future loans or projects already financed, they were not included in the dataset to avoid double counting.

Timeframe under investigation: As with previous studies, this project aimed to use annual averages of data across multiple years (2017 and 2018) to flatten fluctuations and outliers in investment cycles that would otherwise skew overall trends. The aggregation was calculated according to calendar years.

ANNEXURE B - PROGRAM LEVEL LEARNINGS

KEY CHALLENGES AND LIMITATIONS

The project team identified several challenges in creating a South African climate finance mapping.

1. **A lack of climate finance tagging across sectors and centralised datasets**, exacerbated by a lack of awareness and understanding of climate finance reporting. This was particularly an issue with government departments (for example, agriculture and water are often not tagged as climate finance). As such, those surveyed often had to trace their investments over the period requested and assign tags. This process could lead to inconsistencies. To mitigate against this, the project team had follow-up calls with surveyed organisations where necessary, to clarify any definitions or unclear methodologies.
2. **Limited availability of project-level data**. Many of the surveyed organisations provided aggregate level data across multiple years. The research team encountered two main challenges in acquiring project-level data:

- South Africa's climate finance ecosystem is still relatively nascent. Although the country is working towards a unified taxonomy, many sources and distributors of climate finance do not yet track or tag their climate-related investments in detail.
- Financiers have reservations about sharing project-level details. This is sometimes as a result of confidentiality considerations, and other times a lack of willingness to dedicate the resources necessary to inform this research for each project financed. This was especially found to be the case with commercial investors and was corroborated in several interviews with other market players and fellow researchers.

3. **Low response rate.** The survey was sent out to 30 organisations directly (less than 50% responded), and a call to participate was shared with networks of approximately 150 investors and financial institutions. The project team followed up with the organisations on multiple attempts. The limited response to the surveys showed that:

- The number of private sector players active in the climate finance space remains low, or;
- There is a lack of knowledge and experience in robustly tracking climate finance flows internally, or;
- There is a limited willingness to share internal data. Concerns around confidentiality were highlighted, despite assurances that shared information would be aggregated across all climate finance flows, and highest confidentiality would be maintained.

4. Some of the responses received were not able to be included in the dataset, either because they referenced investments by other organisations (and thus, would have resulted in double-counting) or fell outside of the scope of the mapping exercise (for example, providing technical assistance), or they did not fall between 2017 and 2018. Several large climate finance infrastructure projects (particularly from the Green Climate Fund and the Development Bank of South Africa) were excluded as a result of being signed after the cut-off date of the study.
5. **Identifying duplication across multiple datasets.** Because the data provided were at an aggregate level and were anonymised by the organisations who provided the information, this created challenges when correcting for double counting. Multiple entries revealed identical finance flows.
6. **Availability of data across periods.** Initially, the methodology planned to use data for the period 2017-2019 to smooth out any annual variations. However, there was limited availability of 2019 data. As a result, this mapping only reflects financial flows towards climate projects over 2017 and 2018. However, since this exclusion was only discovered once some of the private sector organisations had completed the surveys for 2017-2019, the project team had to correct for the additional year. This was achieved by annualising the data and correcting for inflation. Private sector data on sectors like agriculture and water was particularly difficult to source.

OPPORTUNITIES FOR FUTURE WORK

Future work could include using the definition provided in Section 5.1 as a base definition across sectors, stakeholders and government departments. This definition has been reviewed and interrogated by some of the leading thinkers and practitioners in the industry. Similarly, the typology created for this study could provide a good platform to assist organisations in defining and tracking their climate finance commitments and disbursements. Furthermore, a framework or toolkit could be designed and developed to assist with tagging, monitoring and reporting on climate finance.

Throughout the mapping done for this report, it became apparent that there is scope for further awareness campaigns to highlight the need to direct more finance towards climate change mitigation, adaptation and the just transition to achieve the country's goals. The lack of tracking, monitoring and reporting makes it difficult to effectively plan and execute at an efficient level. Therefore, further awareness around the necessities to tag, report and manage for sustainable impact is an important first step. Awareness campaigns could be helpful to build a groundswell of private capital committed to making a valuable difference towards climate change.

An apparent opportunity was the need for capacity building. This capacity-building should be targeted at assisting in reporting at the project level. This starts with developing skills and knowledge in best practice around tagging, measuring and managing for impact to take action against climate change.

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