

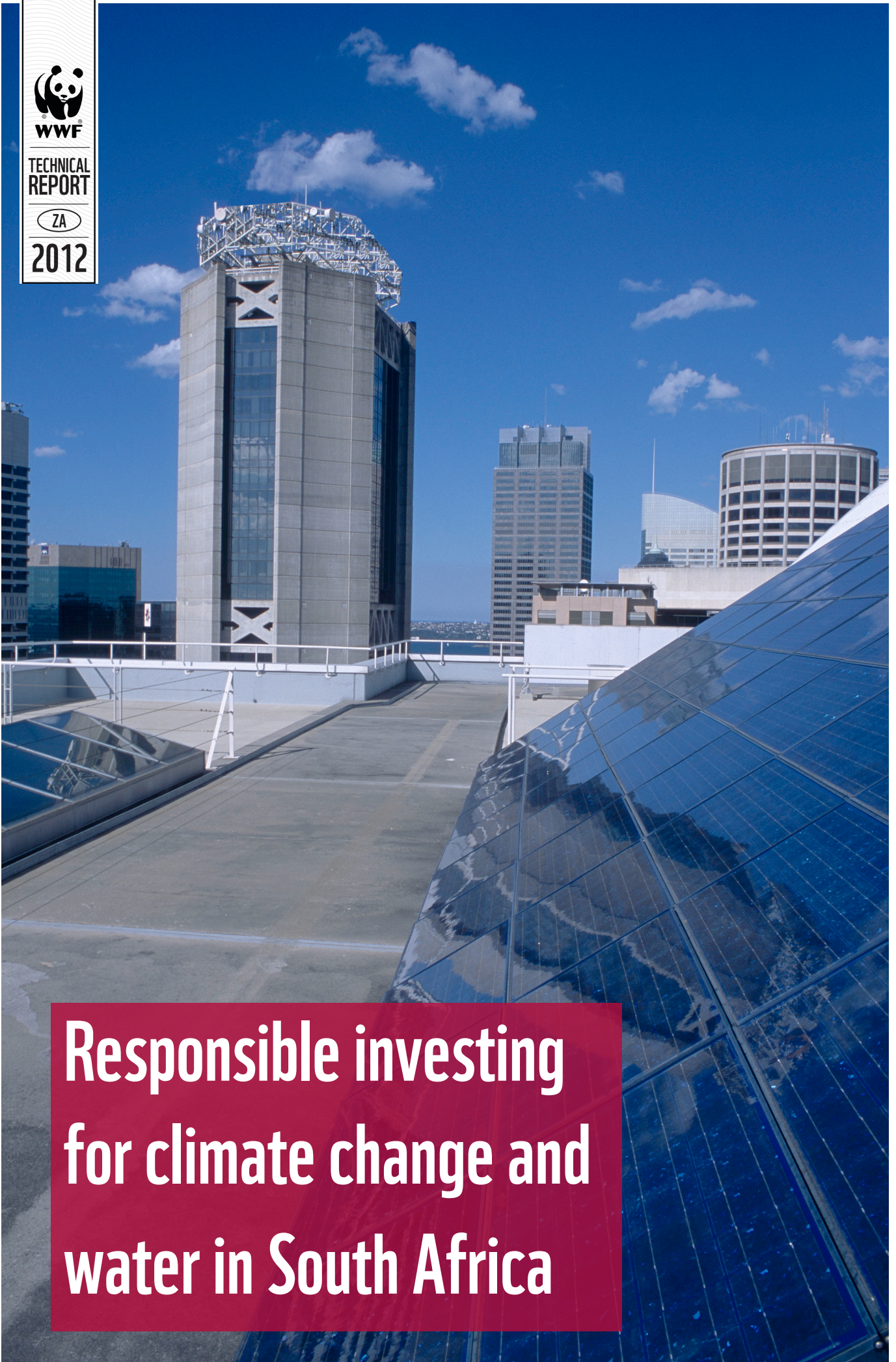


WWF

TECHNICAL  
REPORT

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2012



# Responsible investing for climate change and water in South Africa

## ABOUT WWF

WWF is one of the world's largest and most respected independent conservation organisations, with almost 5 million supporters and a global network active in over 100 countries. WWF's mission is to stop the degradation of the earth's natural environment and to build a future in which humans live in harmony with nature, by conserving the world's biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

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# ABOUT THIS REPORT

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This report forms the fourth in a five-part report series, *Navigating Muddy Waters: securing investment returns under carbon and water constraints*. The collaboration between WWF, Carbon Tracker, SinCo and Trucost aims to assess carbon and water risks for South African investors, and sustainable investment opportunities.

Climate change and water scarcity are two of the main drivers that governments, civil society and business need to seriously address in the transformation of the global economy into one that is resource efficient, low carbon, resilient and equitable. As a significant provider of financial capital, institutional investors play an important role in our ability to shape this transformation. On the other hand, these same investors face material financial risks if they are exposed to companies that are unprepared for this socio-economic transition.

The aim of the series is to provide empirical research to investors in and regulators of the securities markets that can guide policy and investment strategies to support the transition to a resource-efficient, low carbon, resilient and equitable global economy.

## *Part 1: Carbon and water risks for South Africa's top companies, bonds and equity funds*

This report by Trucost provides evidence of the investment case for understanding the potential exposure to carbon and water scarcity through equity and bond investments in high-carbon, water-intensive companies. It includes an analysis of related financial risks for institutional investors, including the Government Employees' Pension Fund (GEPF), demonstrates the availability of low-carbon capital market investment opportunities, and illustrates the need for the financial system to manage financial risk from carbon-intensive assets during the shift to a low-carbon economy.

## *Part 2: Unburnable carbon: budgeting carbon in South Africa*

A report by Carbon Tracker that analyses what the planned South African carbon budget might mean for investors in coal mining companies in South Africa. The report contains analysis of this risk to the Government Employees' Pension Fund (GEPF).

## *Part 3: Institutional Investor attitudes to addressing climate change risks in portfolios*

A report by SinCo which, through interviews with both asset owners and managers representing institutional investors managing assets of close to ZAR 4 trillion (about US\$ 470 billion), assesses the extent to which institutional investors are addressing the climate change risk in their portfolios.

*Part 4: Responsible investing for climate change and water in South Africa*, by WWF, uses a case study approach and empirical research from Trucost to investigate some of the investment mechanisms that are currently and potentially available to help decarbonise institutional investment portfolios, and demonstrates water stewardship from an investment perspective.

*Part 5: Navigating Muddy Waters: securing investment returns under carbon and water constraints*

A report by SinCo and WWF, which connects the findings of Parts 1 to 4 of the report series. The report synthesises key findings and provides recommendations on how to address the risks from investments in assets dependent on free, uncapped carbon emissions and unsustainable water use, and opportunities to investors that arise from the shift towards supporting a resource-efficient, low carbon, resilient and equitable economy from a carbon and water perspective.

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# EXECUTIVE SUMMARY

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Scientific research into ecosystem health and climate-related events such as droughts and floods has enabled policy makers and the business community to engage in these issues at unprecedented levels in an attempt to better understand and address the problems that they cause. South Africa is a water-stressed country especially vulnerable to the impacts of climate change, which is already a measurable reality.<sup>1</sup>

These issues will impact companies' operations, revenues and costs. Investors in these companies will also, necessarily, be affected. As pointed out by Adam Seitchik, James Hawley, Andy Williams and others, because of the portfolio approach to investing and their longer term holding strategies, many institutional investors are universal owners, owning a share of the highly diversified economies in which they invest. As a result, "Their returns and consequently their ability to meet their fiduciary obligations depend to a critically large extent on the performance of the economy as a whole."<sup>2</sup> Therefore, "investors have a strong vested interest in public policy and private activity that lowers the global risk of climate-related economic disruption."<sup>3</sup>

A significant shift in the structure of South Africa's water-scarce, high emissions and inequitable economy is required to address these issues effectively in a manner that minimises the overall risks to the economy and protects its most vulnerable citizens whilst ensuring that these changes are made as fast as climate science indicates is needed to slow catastrophic impacts.

Many institutional investors that actively invest in South Africa's securities markets can be defined as universal owners. This is particularly the case for large pension funds and insurance companies. Managing water scarcity and making progress to mitigate and adapt to climate change are of particular relevance to the success of the South African economy and therefore the investment returns of the portfolios held by such institutional investors.

The sooner policymakers, investors and companies in South Africa take action, the less they will lock in investments in carbon-intensive technology, processes and outputs. Mitigation in the near term would help limit the costs of reducing emissions in the long term and increase opportunities from investments in low-carbon, energy-efficient technologies, processes, infrastructure and industries.

Investment in non-fossil fuel energy consumption and energy efficiency are common among mitigation actions that are being put in place by several developing countries and emerging markets, including China, India and Brazil. From a policy perspective, the government is instituting measures to deliver against strategic priorities set out in a National Climate Change Response paper, developing the Long Term Mitigation Scenarios for climate change and implementing the National Water and National Environmental Management Acts. It is in the process of applying a carbon tax to disincentivise investments in high-carbon assets, to encourage the uptake of low-carbon and energy-efficient technologies, buildings, fuels and processes, and to correct market failures so that economic conditions incentivise low-carbon businesses and resource choices. Within business, certain listed companies are voluntarily taking part in initiatives such as the Carbon Disclosure Project, developing independent

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1 National Climate Change Response White Paper, The Government of the Republic of South Africa, October 2011

2 Hawley, J. and Andy Williams, April 2006, Universal Owners: Challenges and Opportunities, Introductory remarks at the Universal Ownership Conference, Saint Mary's College, Moraga, CA

3 Adam Seitchik, 2007, Climate change from the investor's perspective, Civil Society Institute, Growing the economy through global warming solutions – series

power producers (IPPs) that generate electricity from renewable sources, and adopting practices that increase water and energy efficiency and that promote water stewardship.

The success or failure of these initiatives creates both risks and opportunities for institutional investors, giving rise to several questions: How are investors responding to these risks? How can these risks be managed in the short term, within existing policy, technology and investment options? What is the impact of these risks on valuation? Given that the Stern review estimates that one per cent of global GDP would be required annually to address climate change,<sup>4</sup> what are the short and long-term opportunities for institutional investors that arise as a result of the mitigation measures put in place to address these risks?

The Navigating Muddy Waters series of reports attempts to address these questions. This paper focuses on the long and short-term opportunities for institutional investors created by measures to address climate risk.

**Empirical research and case studies developed for this paper arrive at the following conclusions and recommendations:**

## LOW CARBON INVESTING

- Investors who better understand and effectively manage the investment risks arising from climate change and water stress are likely to earn robust risk-adjusted long term returns and avoid shocks from mispriced and stranded assets – those whose market value is less than balance sheet value as a result of the asset becoming obsolete before the obsolescence date used for balance sheet purposes.
- The South African government has recognised the need to implement significant mitigation strategies to lessen the impacts of climate change on livelihoods and the economy. Policies to mitigate greenhouse gas emissions will have a material impact on certain companies' earnings, affecting their listed equity and bond values.
- Since a significant portion of carbon risk arises from South Africa's carbon intensive electricity sector,<sup>5</sup> responsible investors should lobby for an increase in opportunities to invest in the production of electricity from renewable sources, the provision of greater energy efficiency and fuel switching.
- There are currently limited opportunities for South African institutional investors to invest in renewable energy as a result of:
  - The limited supply of products that have the necessary scale and investment grade
  - The relatively low level of renewable energy – a target of 9% of total new electricity generation by 2030 – included in the government's 2010 Integrated Resource Plan<sup>6</sup>
  - The current regulatory environment, which makes it difficult for the creation of IPPs outside of the government's renewable energy procurement process
- Institutional investors can reduce carbon risk in their equity and bond portfolios:
  - The carbon intensity of firms within the same sector can differ considerably so it is possible to reduce carbon risk whilst maintaining portfolio exposure to the sector
  - Lower carbon equity funds can be created

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4 Stern Review on the Economics of Climate change, 2006

5 South Africa's Second National Communication to the UNFCCC, Department of Environmental Affairs of the Republic of South Africa, November 2011

6 Electricity Regulation Act No. 4 of 2006, Electricity Regulations on the Integrated Resource Plan 2010 – 2030

- In line with the government's National Climate Change Response White Paper, some degree of regulatory intervention in the domestic finance sector is required to enhance the financial sector's capacity to mainstream climate change in risk management and investment decisions.
- Further research is needed to assess the potential for institutional investors to support energy efficiency and fuel switching initiatives.

## **WATER RESPONSIBLE INVESTING**

Whilst water risk can be identified at a portfolio and individual firm level, the reporting and disclosure of water-related risks faced by companies in South Africa is inadequate and there are currently limited opportunities for institutional investors to diversify away from high water risk.

There are significant opportunities for responsible investors to use engagement strategies to promote water stewardship strategies in investee companies.

## **RESPONSIBLE INVESTING**

Current options for responsible investing are insufficient to address the fundamental problem of short-termism in financial markets which results in the misalignment of capital in relation to the longer terms need for low carbon, water responsible investments.

The demand for low-carbon and water-responsible investment choices is increasing, as a result of increasing awareness of the risks; as a result of legislation governing pension funds; and as a result of increased advocacy by groups of asset owners:

There are US\$174 billion in climate bonds at a global level

The two green bonds issued in the South African market in 2012 both focus on renewable energy<sup>78</sup>

Increasing the supply of liquid, investment-grade options for institutional investors is a critical success factor in financing the transition to a low-carbon, water- and resource-efficient economy.

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<sup>7</sup> The green industry's driving force, Special report, Mail & Guardian, 22 Aug 2012

<sup>8</sup> Nedbank website, accessed October 2012: [http://www.nedbank.co.za/website/content/products/product\\_detail.asp?Subcatid=502&SubSubcatid=1869&ProductID=639](http://www.nedbank.co.za/website/content/products/product_detail.asp?Subcatid=502&SubSubcatid=1869&ProductID=639)



**Table: Suggestions to scale up low carbon and water responsible investments – general**

	Short-term	Long-term
<b>Financial</b>	<ul style="list-style-type: none"> <li>• Include the risks from environmental externalities such as water and climate change in interest and discount rates</li> <li>• Include green bonds in existing benchmarks</li> <li>• Adopt a standard for bonds that supports climate change mitigation and adaptation</li> <li>• Include climate-related criteria in bond covenants</li> <li>• Include criteria for climate-resilience in investment mandates for asset classes including equities, fixed income, property and infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• Create a taskforce to investigate the alignment of short-term investment strategies with the longer-term investment horizons needed for lowcarbon and water responsible investment. Specific issues include the creation of benchmarks that support long term, sustainable investment. This may require regulatory intervention to correct market failures and ensure first mover advantage</li> <li>• Investigate policy support to RE covered bond market</li> </ul>
<b>Economic and regulatory</b>	<ul style="list-style-type: none"> <li>• At government level, complete an empirical study to understand the cost of environmental externalities at an ecosystems level that are caused by all forms of electricity generation</li> <li>• Create a classification system for utilities using energy and water management criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Further research into investment vehicles that support key mitigation opportunities including fuel switching and energy efficiency</li> <li>• Create a commonly understood and applied measure of water stewardship at a sector and geographical level</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>• Require standardised reporting by listed companies of climate change and water risks, to allow investors to adequately assess investment risks and opportunities</li> <li>• Include carbon and water performance in analysts' awards and ratings systems</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct research into mechanisms that promote reporting based on longer time horizons</li> </ul>

**Table: Suggestions to scale up low carbon and water responsible investments – South Africa specific**

	Short-term	Long-term
<b>Financial</b>	<ul style="list-style-type: none"> <li>• Adopt a standard for bond market investments that support climate change mitigation and adaptation</li> <li>• Explore aggregated financing of the government's renewable energy IPP programme (REIPPP), to facilitate the scale required by institutional investors</li> <li>• Provide additional budgetary support to climate change mitigation in the energy sector</li> </ul>	<ul style="list-style-type: none"> <li>• Create a taskforce to investigate the alignment of short-term investment strategies with the longer-term investment horizons needed for low carbon and water responsible investment. Specific issues include the creation of benchmarks that support long term, sustainable investment. This may require regulatory intervention to correct market failures and ensure first mover advantage</li> <li>• Investigate policy support to RE covered bond market</li> </ul>
<b>Economic and regulatory</b>	<ul style="list-style-type: none"> <li>• Facilitate implementation of IPPs outside of REIPPP: <ul style="list-style-type: none"> <li>○ Clearly define the preconditions for gaining a Ministerial determination, or exemption, ahead of licensing of an IPP by the National Energy Regulator of South Africa (Nersa)</li> <li>○ Take into account WWF's comments regarding the Independent system market operator (ISMO) bill that will allow certainty over the ability to wheel power over Eskom's transmission infrastructure</li> </ul> </li> <li>• Aim towards 50% electricity generated from renewable energy by 2030 in the IRP</li> <li>• At government level, complete an empirical study to understand the cost of environmental externalities caused by power generation based on different energy sources.</li> </ul>	<ul style="list-style-type: none"> <li>• Further research into investment vehicles that support fuel switching and energy efficiency</li> <li>• Policy certainty, particularly with respect to electricity, carbon and water pricing</li> <li>• Create RE at scale by ensuring that the 'Solar Park' model is successful and can be replicated for IPPs that are primarily financed by the private sector</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>• Require standardised reporting by pension funds on climate change and water risks, to allow investors to adequately assess investment risks and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Research mechanisms that promote forward-looking reporting based on longer time horizons</li> </ul>

# 1. INTRODUCTION

There is unquestionable scientific evidence of anthropogenic climate change, climate change that is initiated or worsened by human activities.<sup>9</sup> We are also living in a time of ecological deficit. WWF's 2012 Living Planet Report, produced every two years by leading scientists, shows that humanity's demands now far exceed our planet's true capacity to sustain us, damaging its ability to properly renew vital natural functions such as carbon absorption, fresh water replenishment and many others.<sup>10</sup> This situation might be compared to a car factory using its own facilities as a source of materials for production. There has been a multi-faceted response to these findings, with leading businesses researching and adopting climate resilient strategies;<sup>11</sup> the development and deployment of technologies such as wind turbines; the adoption of full cost accounting and the payment for ecosystem services; and governments across the world implementing policies targeted at addressing climate change and biodiversity loss.

Because of South Africa's geographic position and topology that make it particularly vulnerable to climate change impacts, its socio-economic dynamics, and the fact that it is the 13<sup>th</sup> highest carbon emitting country in the world by fossil fuel emissions,<sup>12</sup> the South African government is implementing policies targeted at both climate change mitigation and climate change adaptation. The South African government published its National Climate Change Response White Paper in October 2011 with two main objectives. The first objective is to, "effectively manage inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity". The second objective is to, "make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe that enables economic, social and environmental development to proceed in a

## GREENHOUSE GASES AND CLIMATE CHANGE

Scientific evidence from several sources, including the Intergovernmental Panel on Climate Change (IPCC)<sup>1</sup> shows that human activity has released increasing amounts of greenhouse gases into the atmosphere. These are the gases that trap heat, leading to global warming, which is causing climate change. The gases accumulate in the air over time, and get more and more concentrated in the atmosphere, trapping more and more heat.

The most common greenhouse gas released by human activity is carbon dioxide (CO<sub>2</sub>), which is emitted when we make cement, burn wood and use fossil fuels such as gas, coal or oil. Another major greenhouse gas is methane (CH<sub>4</sub>) from livestock, waste landfills and rotting vegetation. Different greenhouse gases have different global warming and hence climate change impacts.

To be able to compare the emissions of these gases, they are converted to a common basis called carbon dioxide equivalent (written CO<sub>2</sub>e). Shorthand we talk of "carbon emissions".

The oceans, soil and vegetation act as "carbon sinks", absorbing or storing more carbon than they emit. So, changing the way we use land contributes to emissions, both by destroying the sinks so that they can no longer absorb carbon and by releasing the carbon they stored.

The net emissions caused by humans are the emissions we emit plus the carbon sinks we destroy. If we maintain and restore the carbon sinks, the carbon that gets reabsorbed reduces our net emissions.

*Source: Naude, L., 2012, Understanding carbon budget, WWF-SA*

<sup>9</sup> IPCC 2007 Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA

<sup>10</sup> [http://wwf.panda.org/about\\_our\\_earth/all\\_publications/living\\_planet\\_report/](http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/)

<sup>11</sup> For examples, research by GlaxoSmithKline and the Scottish Crop Research Institute to develop more resilient and adaptable varieties of blackcurrant <http://unfccc.int/files/adaptation/application/pdf/gsk.pdf>

<sup>12</sup> Top 20 Emitting Countries by Total Fossil-Fuel CO<sub>2</sub> Emissions for 2008, Carbon Dioxide Information Analysis Center

sustainable manner”. The white paper was developed in recognition of the fact that “climate change is already a measurable reality and along with other developing countries, South Africa is especially vulnerable to its impacts”.<sup>13</sup>

In addition to being especially vulnerable to the impacts of climate change, with annual freshwater availability of less than 1700m<sup>3</sup> per capita, limited average rainfall of about 450 mm per year and unevenly distributed water resources, South Africa can be described as a water-scarce country. According to South Africa’s Second National Communication under the United Nations Framework Convention on Climate Change (the “Communication”), “Official estimates suggest that South Africa faces shortages of between 2% and 13% of total water requirements by 2025, but some estimates that include climate change projections and other uncertainties suggest that these could run to as high as 19% to 33% by 2025”.<sup>14</sup> Whilst the exact impacts of climate change cannot be determined precisely, the Communication details a multitude of possible negative impacts related to human livelihood, water resources, rainfall patterns, average temperatures and biodiversity. These impacts may adversely affect companies’ revenues, operational costs, margins, and ultimately, investment returns.

The risks posed by the twin issues of climate change and water give rise to several pertinent questions for prudent and responsible institutional investors, who are the target audience for the Navigating Muddy Waters series of reports. Responsible investors are defined as investors which have adopted the UN Principles for Responsible Investment and are implementing its six principles.<sup>15</sup>

Some of these questions include: How are investors responding to these risks? How can these risks be managed in the short term, within existing policy, technology and investment options? And given that the Stern review estimates that one per cent of global GDP would be required annually to address climate change,<sup>16</sup> what are the short and long-term opportunities for institutional investors that arise as a result of the mitigation measures put in place to address these risks?

The types of material risk to investors emanating from the impacts of physical climate change and water ecosystems and the policy developments designed to manage and lessen future impacts have been demonstrated through the Navigating Muddy Waters series of reports, with examples of corporate exposure to carbon and water stress.

This paper in the series uses the results from primary empirical research into the potential impact on valuations of water risks in South Africa and into government policies designed to mitigate climate change, and the wide body of existing research in the field of responsible investment to showcase viable low-carbon and water responsible investments for institutional investors. Alternative indices are discussed, since these are relevant to institutional investors whose funds are indexed or passively managed. A selection of investment vehicles in the South African and international markets that support energy sector mitigation is provided since this sector offers the highest level of potential emission reductions. The opportunities for water-responsible investment are briefly discussed,

## THE ECONOMICS OF CLIMATE CHANGE

The Stern review recommends that 1% of global GDP is required to be invested annually to avoid the worst effects of climate change<sup>16</sup>. One per cent of South Africa’s 2011 GDP amounts to ZAR 18,957 million (USD\$ 307 million). According to research commissioned by the IFC<sup>15</sup>, total institutional assets in South Africa at December 2010 amounted to ZAR3,366 billion (US\$ 449 billion). Institutional investors are therefore an important group of investors in terms of sourcing the capital required to address climate change, as well as being exposed to the valuation impacts of climate change.

13 National Climate Change Response White Paper, The Government of the Republic of South Africa, October 2011

14 South Africa’s Second National Communication to the UNFCCC, Department of Environmental Affairs of the Republic of South Africa, November 2011

15 UN Principles for Responsible Investment, an investor initiative in partnership with UNEP Finance Initiative and the UN Global Compact, <http://www.unpri.org/>

16 Stern, N. , Stern Review: The Economics of Climate Change, HM Treasury, UK, 2006

concluding with a list of recommendations for South African institutional investors and regulators to consider in supporting the transition to a low-carbon, water-responsible economy.

## 2. LOW CARBON INVESTMENT OPPORTUNITIES – SUPPLY SIDE DYNAMICS

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### 2.1 WHAT DOES SUPPLY SIDE MEAN?

Institutional investment management and financing may be understood as the supply side answer to the demand from the end client. What finance does an organisation need? What kinds of investment capital, debt financing, or both are demanded from the professional financing and investment industry? In the market place, the supply of available capital will typically respond to the established and understood demand. In recent years, the response of the investment supply to the increased sophistication of many investors and the increasing complexity of investment management function has been a proliferation of investment products. According to the Financial Services Board, the number of local collective investment scheme portfolios in South Africa increased from 434 in 2002 to 969 in 2011, with a commensurate increase in the assets under management from R176 billion to R962 billion over the same period.<sup>17</sup>

The fiduciary managers of these assets, known as asset managers, typically perform three main functions: the duty of governance, the investment function and the operational function. Viewed collectively, these functions comprise the investment management value chain.<sup>18</sup>

The supply side of the investment management value chain relates not only to the investment products sold, but the distribution channels through which they are sold. As investment is mostly a service that is sold, it is fundamental to understand how investment services attract assets, and from whom, to understand the supply of low-carbon or water responsible investments. Competition typically rewards firms that supply what end-clients demand and that demand is driven in part by a mixture of changing investor appetites, the regulation of investments, and the underlying investee company's business context. There are then, necessarily, implications for an asset managers' three core functions if there is misalignment between what is supplied to the market and what the market demands.

### 2.2 LOWER CARBON PORTFOLIOS, EQUITY INDICES AND EXCHANGE TRADED FUNDS

Actively managed portfolios do not seek to mirror the performance of an index, but aim to generate out-performance (“alpha”) against the return of the market (“beta”) by making bets on sectors, particular companies, themes and other ways of generating performance different to the market benchmarks. Indices are a constructed mathematically to measure the value of a particular section of the stock market and to track and replicate the market capitalisation over time. Some indices are investable, others act only as benchmarks that cannot be invested in directly but act as an important tool used by investors to understand changes in the value of the section of the market as a performance benchmark. Derivative instruments may be designed and built by investment management firms to track index performance as a passive asset management investment. Often these instruments charge relatively

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<sup>17</sup> Financial Services Board Annual Report, 2011

<sup>18</sup> PricewaterhouseCoopers: Investment Management and Real Estate News; Section A: Managing through a downturn, Jamie Burstall et al, March 2009

lower fees and mirror the performance of the market, not being designed to out- or under-perform it.

**Table 1: Carbon footprint ranking of indices**

Index	Number of companies	Carbon footprint (tonnes of CO <sub>2</sub> e per R mn)	Carbon footprint comparison: FTSE JSE top 100 is 0 (%)	Carbon footprint rank
UK FTSE All-Share	429	43	-45%	1
ASX 200	178	43	-45%	2
MSCI Europe	423	48	-39%	3
MSCI World	2355	51	-35%	4
S&P/IFCI Carbon efficient	868	55	-30%	5
FTSE JSE top 100 companies	100	78	0	6
S&P IFCI LargeMidCap	893	80	3%	7

Research from Trucost that was commissioned by WWF<sup>19</sup> shows that “the only index analysed that has a larger carbon footprint than the JSE FTSE top 100 companies is the S&P/IFCI LargeMidCap Index; which is often used as a benchmark for emerging markets portfolios. The absence of the Utilities sector in the JSE top 100 companies drives its carbon efficiency relative to the emerging markets index. The relatively overweight position of Basic Resources stocks in the JSE top 100 (29.79% vs. 9.72% in the S&P/IFCI LargeMidCap Index) has a negative effect on the carbon footprint of the South African Index. Passive equity portfolios that are benchmarked against the JSE top 100 are therefore also likely to be overweight in the sector.”

South Africa is not unique in this regard. As a resource-based economy, it faces challenges similar to those of countries such as Australia, Canada and India in terms of highly carbon intensive securities markets. WWF Canada commissioned research from Trucost and Mercer that found that, “The S&P/TSX is the third largest market in terms of carbon footprint, measured in CO<sub>2</sub>e per US\$1 million sales. Canada is only preceded by India and Emerging Markets, and is followed by Australia. As expected, these findings are consistent with resource-based economies.”<sup>20</sup> This points to the need for South African companies and policy makers to continue to look to and collaborate with progressive stakeholders in these economies to find viable solutions that support the transition to a low carbon economy.

## 2.3 LOWER CARBON PORTFOLIOS AND EXCHANGE TRADED FUNDS

The last decade has seen the emergence of indices related to sustainability such as the Dow Jones Sustainability Index (DJSI) and the JSE Socially Responsible Investment Index (JSE SRI). These indices typically look at sustainability from a traditional social, environmental and governance perspective. Environmental sustainability is therefore not specifically singled out. However, in 2010, the JSE SRI introduced a requirement that companies included in the

<sup>19</sup> Carbon and water risks for South Africa's top companies, bonds and equity funds, Trucost, 2012

<sup>20</sup> Carbon Counts: Assessing the Carbon Exposure of Canadian Institutional Investment Portfolios, Mercer/Trucost, commissioned by WWF-Canada, 2010

index be assessed on the “extent to which companies consider what risks they face from climate change”.<sup>21</sup>

Funds that aim to address investors’ concerns regarding carbon emissions and climate change have also been developed. One such example is the Mergence Investment Managers Low Carbon Fund that was launched in June 2010.<sup>22</sup> The fund was designed to promote “best in class” by assessing the carbon emissions per revenue/profit per company within each sector separately and then minimising the tracking error within and across sectors against the Shareholder Weighted All Share Index (SWIX).

Another example of an exchange traded fund that focuses on carbon as the selection criteria, is the Nedbank Green Index, which selects equities from the FTSE/JSE top 100 based on their environmental credentials that are primarily sourced from the results of the Carbon Disclosure Project. Research from Trucost that was commissioned by WWF<sup>23</sup> shows that the Nedbank Green Index has a carbon footprint that is 15% smaller than that of the FTSE/JSE top 100 companies:

**Table 2: Carbon footprint of Trucost JSE Top 100 Carbon Optimised Index vs. Nedbank Green Index and FTSE/JSE top 100 companies<sup>24</sup>**

Index	Number of companies	Carbon footprint (tonnes of CO <sub>2</sub> e/R mn)	Comparison to FTSE/JSE top 100 companies (%)
S&P/IFCI Carbon Efficient Index	868	55	-30%
Nedbank Green Index	42	67	-15%
Trucost FTSE/JSE Top 100 Carbon Optimised Index	100	68	-13%
FTSE/JSE top 100 companies	100	78	0.0%
S&P/IFCI LargeMidCap Index	893	80	3%

Figures are rounded up

The Nedbank Green Index was only launched in 2011 so it is still too early to assess its impact on driving lower carbon investments. What is clear, is that there are limited sources of credible, publicly available data for passive investors to use in developing sophisticated investment strategies.

However, financial data providers including FactSet and Bloomberg now provide environmental information, alongside financial information, that investment professionals can incorporate into decision-making and product development. To demonstrate, carbon data was used to rebalance company weightings within sectors based on carbon intensity to create the Trucost FTSE/JSE Top 100 Carbon Optimised Index. This is 13% less carbon intensive than the FTSE/JSE top 100 companies, and therefore less exposed to the costs of emissions under carbon pricing or constraints.

Large institutional investors that have a fiduciary duty to diversify to hedge risks can use information on corporate carbon performance to manage exposure to high-carbon equities and increase asset allocations to carbon-efficient stocks, encouraging companies to compete for capital on carbon efficiency. This in turn can encourage growth in the market for low-carbon energy, goods and services, and support risk-adjusted returns from investments in the “green” economy, such as clean technology. These conclusions points to the need for

<sup>21</sup> 2010 annual review: briefing information for eligible companies, Johannesburg Stock Exchange Socially Responsible Index

<sup>22</sup> <http://www.mergence.co.za/fund-fact-sheets>

<sup>23</sup> Carbon and water risks for South Africa’s top companies, bonds and equity funds, Trucost, 2012

<sup>24</sup> As above

standardised, mandatory reporting on carbon and other environmental risks by companies that will afford investors the necessary accuracy and comparability to make carbon credible investment decisions. Reporting frameworks that elicit better information can make it easier for investors to differentiate between companies on climate-related criteria, and understand how they are positioned for future carbon and resource-constrained operating conditions.

## 2.4 A CAUTIONARY TALE ON THE USE OF BENCHMARKS

The use of indices to provide benchmarks for performance is common in the investment industry. Benchmarking is typically done at annual intervals, with investment managers rewarded and recognised on their ability to “beat” the benchmark, contributing to what is commonly referred to as the short-termism of the securities markets. However, annual assessment cycles rarely match the much longer-term capital investment horizons of companies. This is particularly the case with the majority of low carbon technologies that have investment horizons of at least several years. Whilst this report commends the development of investment instruments such as lower carbon exchange traded funds, it strongly recommends the development of benchmarks with longer term benchmarking cycles.

This position is in line with the UK’s Kay review of UK equity markets and long-term decision making that was published in July 2012. The review was called by the UK government to investigate how well equity markets are achieving their core purpose which is to “enhance the performance of UK companies and to enable savers to benefit from the activity of these businesses through returns to direct and indirect ownership of shares in UK companies”.<sup>25</sup> The findings of the Kay Review advocate for the principle that “risk in the equity investment chain is the failure of companies to meet the reasonable expectations of their stakeholders or the failure of investments to meet the reasonable expectations of savers. Risk is not short-term volatility of return, or the tracking error relative to an index benchmark, and the use of measures and models which rely on such metrics should be discouraged.”<sup>26</sup>

### FACTORING CLIMATE CHANGE ISSUES INTO COMPANY VALUATIONS

“In general, companies that factor climate change issues into their long-term decision making – altering their business models and implementing measures to reduce their exposure to increased emissions, water, energy and water costs – will be more resilient and will typically present a better longer-term investment proposition. The fact that climate mitigation measures generally require capital expenditure in the short-term and often do not offer investors immediate returns, may act as a disincentive for management and undermine short-term shareholder support. This presents a challenge for the investment industry, which has comparatively short-term performance requirements, determined in many cases by clients whose investment objectives should be fundamentally long-term.”

*Source: Climate change and shareholder value, Investec Asset Management, November 2011*

<sup>25</sup> Kay review of UK equity markets and long-term decision making, Final report, Jul 2012

<sup>26</sup> As above



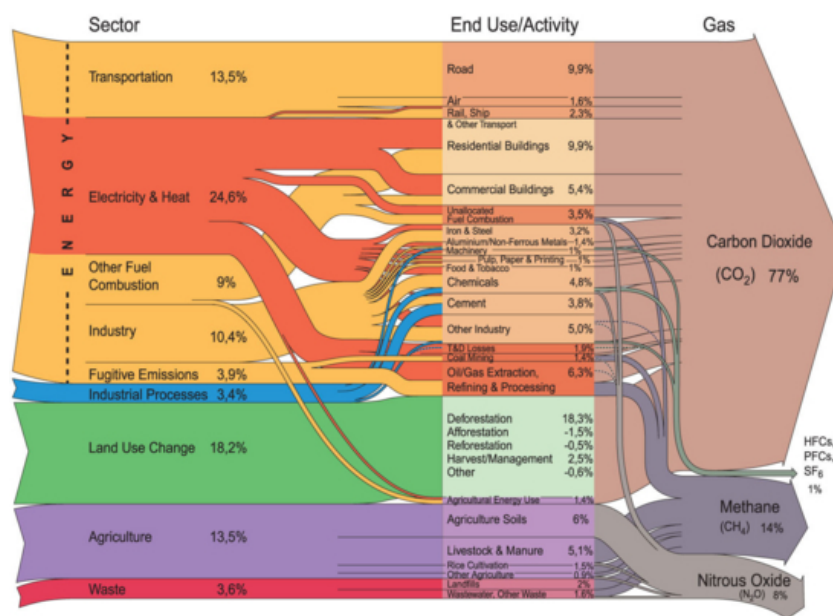
## 2.5 INVESTMENT VEHICLES THAT SUPPORT ENERGY SECTOR MITIGATION - AN OVERVIEW

Energy consumption is a major driver of greenhouse gases, and of business operations. This section showcases investment vehicles that support energy sector mitigation strategies. The energy sector was chosen as a focus area for this report since the sector has the highest emissions reduction potential from both a direct and an indirect perspective. In 2000, the energy sector represented 61.4% of total global greenhouse gas emissions<sup>27</sup> and 86% of total South African greenhouse gas emissions.<sup>28</sup> Furthermore, 71% of this 86% of total greenhouse gas emissions comes from energy industry emissions, predominantly from fuel combustion for public electricity production and refineries.

### ENERGY OPPORTUNITIES TO BRIDGE THE EMISSIONS GAP

According to the United Nations Environment Programme, “There is abundant evidence that emission reductions of between 14Gt to 20Gt of CO<sub>2</sub> equivalent are possible by 2020 and without any significant technical or financial breakthroughs needed...by making realistic changes in the energy system, in particular, by further increasing its efficiency and accelerating the introduction of renewable energies.”

Figure 1: World greenhouse gas emissions by sector<sup>29</sup>:



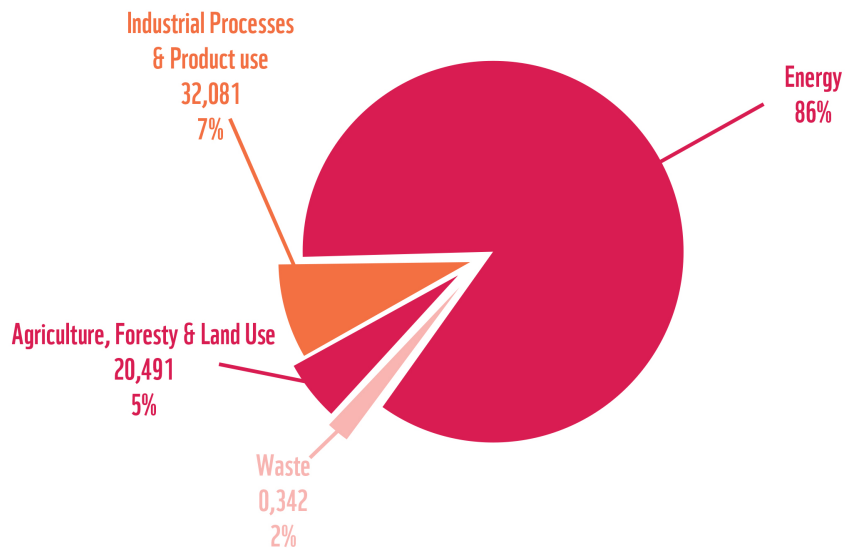
27 [http://www.grida.no/graphicslib/detail/world-greenhouse-gas-emissions-by-sector\\_6658](http://www.grida.no/graphicslib/detail/world-greenhouse-gas-emissions-by-sector_6658), downloaded 13 September 2012

28 South Africa's second National Communication under the United Nations Framework Convention on climate change

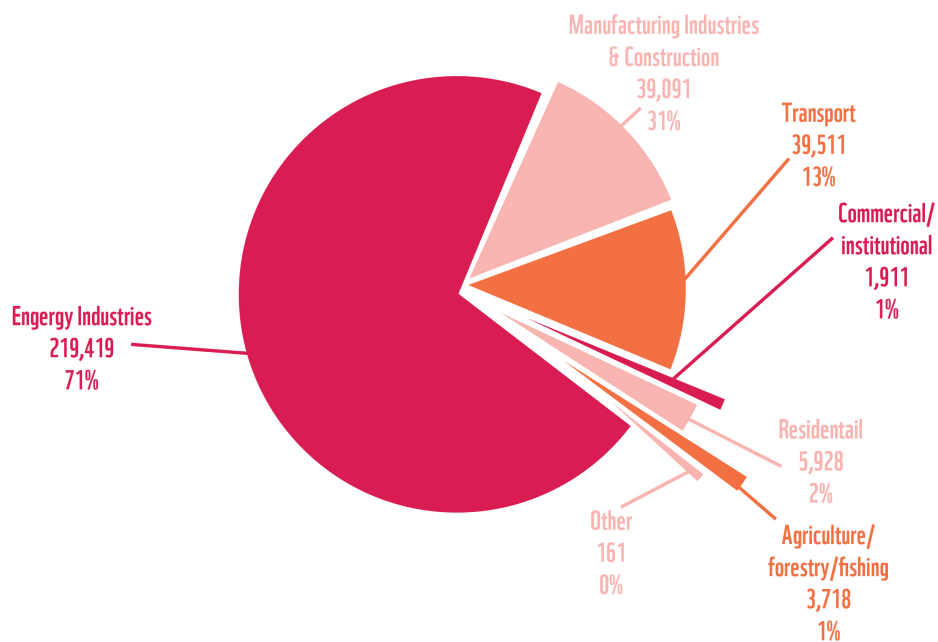
29 All data is for 2000. All calculations are based on CO<sub>2</sub> equivalents, using 100-year global warming potentials from the IPCC (1996), based on a total global estimate of 41 755 MtCO<sub>2</sub> equivalent. Land use change includes both emissions and absorptions. Dotted lines represent flows of less than 0.1% percent of total GHG emissions.

Source: World Resources Institute, Climate Analysis Indicator Tool (CAIT), Navigating the Numbers: Greenhouse Gas Data and International Climate Policy, December 2005; Intergovernmental Panel on Climate Change, 1996 (data for 2000).

**Figure 2: Total greenhouse gas emissions by sector in South Africa, including land use, land use change and forestry (LULUCF) (GgCO<sub>2</sub>e), 2000<sup>30</sup>**



**Figure 3: Energy sector emissions (Gg CO<sub>2</sub>e) from fuel combustion in South Africa in 2000<sup>31</sup>**



Mitigation options for low carbon energy investment can be broadly split into three categories: investments that support energy efficiency, those that support renewable energy and those that support fuel switching. Similar to all low carbon technology investments, energy sector mitigation investments require both development capital and procurement capital. Development capital is defined as capital to a company whose products or services are

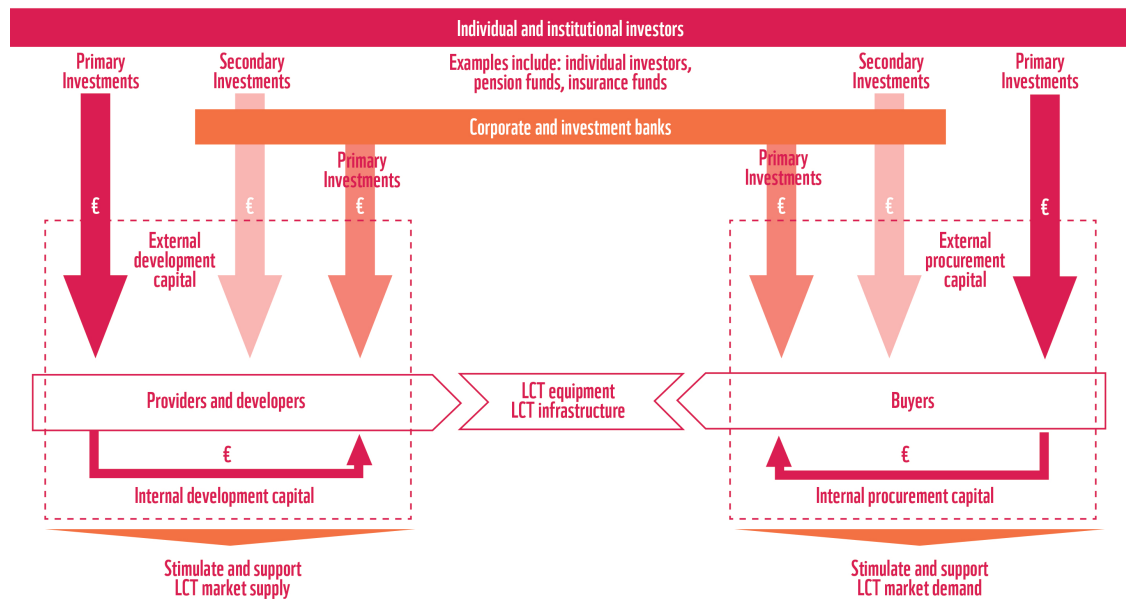
<sup>30</sup> South Africa's second National Communication under the United Nations Framework Convention on climate change

<sup>31</sup> As above

core to the low carbon technology value chain. An example of development capital in the energy sector would be the purchasing of the corporate bonds of a wind turbine manufacturer. Procurement capital is the financing of the purchase and installation of low carbon technology assets such as a smart grid.

The diagram below demonstrates that institutional investors such as pension funds and insurance companies can play a role as a source of investment funds along this financing spectrum.

**Figure 4: Sources of development and procurement capital<sup>32</sup>**



Examples of development and procurement capital in South Africa and other countries are discussed in the following section.

### 2.5.1 Energy sector mitigation case study – energy related climate bonds

There is a wide selection of different financial instruments available that allow institutional investors to provide either development or procurement capital for climate change mitigation in the energy sector. This selection includes debt and equity products with varying levels of security, and structured finance products such as project finance. Research by Accenture shows the following supply dynamics for low carbon technology investment in the electricity sector: Table 3: Sources of cumulative capital for electricity distribution and production, 2011–2020<sup>33</sup>

<sup>32</sup> Carbon capital: financing the low carbon economy, Barclays and Accenture, February 2011

<sup>33</sup> Carbon capital: financing the low carbon economy, Barclays and Accenture, February 2011 and WWF analysis

**Table 3: Sources of cumulative capital for electricity distribution and production, 2011–2020**<sup>34</sup>

Low carbon technology	Development capital (Top 4 in order of significance)	Procurement capital (Top 3 in order of significance)	South African market structure
<b>Electricity distribution</b> E.g., smart grid infrastructure and advanced metering systems	<ul style="list-style-type: none"> <li>Private equity</li> <li>Initial public offerings and secondaries</li> <li>Private placement and PIPE</li> <li>Mezzanine debt</li> </ul>	<ul style="list-style-type: none"> <li>Project finance – debt</li> <li>Bonds primary issuance</li> <li>Internal financing (procuring entity)</li> </ul>	<ul style="list-style-type: none"> <li>Eskom monopoly</li> <li>Independent system market operator (ISMO) to be created. • The proposed ISMO Bill contains flaws that need to be addressed to stimulate distribution by independent operators<sup>35</sup></li> </ul>
<b>Electricity production</b> E.g., PV solar power and geothermal power	<ul style="list-style-type: none"> <li>Junior and senior corporate debt</li> <li>Initial public offerings and secondaries</li> <li>Private equity (expansion capital)</li> <li>Private placement and Private Investment in Public Equity (PIPE)</li> </ul>	<ul style="list-style-type: none"> <li>Internal financing (procuring entity)</li> <li>Project finance – debt</li> <li>Asset finance – term loan</li> </ul>	<ul style="list-style-type: none"> <li>IPPs allowed but state-owned</li> <li>Eskom remains the dominant player</li> <li>Government IPP renewable energy procurement plan (REIPPP) launched at end of 2011 but at the end of Oct 2012, financial close had not been reached for rounds 1 and 2 of REIPP</li> <li>The country has a low renewable energy target of 9% of electricity generation by 2030</li> </ul>

The manufacture of electricity distribution equipment in South Africa is dominated by multinational companies such as ABB, Siemens and General Electric which raise their capital outside South Africa, so there is limited scope for institutional investors to invest directly in development capital related to electricity distribution. In addition, electricity transmission and distribution in South Africa is largely controlled by Eskom, the state-owned electricity company, although the government has gazetted an Independent System and Market Operator (ISMO) Bill that will see the creation of an ISMO. From a procurement capital perspective, investment in electricity distribution is mainly available to institutional investors through direct investments in Eskom’s corporate bonds and loans. Whilst Eskom is developing renewable energy generation capacity, it has not, to date, issued ring-fenced bonds that are low carbon related, so investors in Eskom will still be exposed to significant carbon related risks as a result of Eskom’s coal based generation.

According to Accenture, at a global level, procurement capital for electricity production is mainly sourced from junior and senior corporate debt; initial public offerings and secondary offerings; and private placements and Private Investment in Public Equity (PIPE). The regulatory environment in South Africa accommodates Independent Power Producers (IPP) with a target in the country’s Integrated Resource Plan (IRP) for electricity for 30%

### RENEWABLE ENERGY INVESTMENTS CONTINUE TO GROW GLOBALLY

By the end of 2011, total renewable power capacity worldwide exceeded 1,360 GW, up 8% over 2010; renewables comprised more than 25% of total global power-generating capacity (estimated at 5,360 GW in 2011) and supplied an estimated 20.3% of global electricity  
 Source: *Global Trends in Renewable Energy Investment, UNEP, 2012*

During 2011 renewables continued to grow strongly in all end-use sectors - power, heating and cooling and transport. Renewable sources have grown to supply 16.7 % of global energy consumption  
 Source: *The REN21 Renewables 2012 Global Status Report*

<sup>34</sup> Carbon capital: financing the low carbon economy, Barclays and Accenture, February 2011 and WWF analysis

<sup>35</sup> WWF comment on Independent System and Market Operator Bill, submitted to 26 April 2012

generation by IPPs.<sup>36</sup> In terms of renewable energy, the IRP2010 also includes a target of 9% of total power generation from renewable sources by 2030, and the Department of Energy launched its own IPP procurement process known as the Renewable Energy Independent Power Producers Programme (REIPPP) in 2011 that will see it procuring 6,750MW from new generation.

Table 3 summarises the corporate investment options available to South African investors in electricity and distribution, demonstrating that there are limited options for responsible institutional investors seeking low carbon investments.

The government's primary support to REIPPP is through the implementation of a renewable energy bid tariff (REBID) that will be encapsulated in power purchase agreements with Eskom that are further secured by a government guarantee of Eskom's payment obligation. Interviews with investors involved in REBID projects indicate that the majority of financing for rounds one and two of REBID will be sourced through project finance debt and equity. Since financial close had not yet been reached for either round at the time of writing this report, it is not yet clear to what extent institutional investors participated in this financing. However, it is likely that, given the predominance of project finance that results in highly geared structures, investment grade investment options were limited, resulting in only limited participation from institutional investors, probably through private equity vehicles.

Interestingly, bonds have emerged as a source of secondary market financing, with two corporations issuing bonds to support investments in REBID: the Industrial Development Corporation (the IDC, the state-owned development finance institution) and Nedbank, one of South Africa's four largest retail, corporate and investment banks. The Nedbank Green Savings Bond, as it is called, was targeted at retail investors rather than institutional investors and is therefore not discussed further in this paper.<sup>37</sup> The IDC bond was privately placed and was targeted at one institutional investor. Details of the bond are contained in Table 4.

The use of bond financing for REBID procurement finance is not surprising since bonds are well-suited to long-term infrastructure investments required for a low-carbon, climate resilient economy, for the following reasons:

- Bonds can be structured according to the high capital expenditure and low running costs that are typical of infrastructure projects, particularly electricity generation from renewable energy
- The falling costs of renewable energy technologies indicate the development of a more stable and mature market: wind is expected to achieve grid parity in South Africa within the next few years

The demand for climate bonds, defined as "asset-backed or ring-fence bonds issued to raise finance for climate change solutions" by the Climate Bonds Initiative (CBI)<sup>38</sup> is increasing. According to the CBI, there is US\$174 billion in climate bonds in existence with an estimated value of bonds aligned to climate themes being more than 24 times the current supply of "green bonds" from development banks. Transport and energy account for 85% of the total, comprising largely rail and renewables.<sup>39</sup> The table below offers a description of a small selection of climate bonds:

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36 Electricity Regulation Act No. 4 of 2006, Electricity Regulations on the Integrated Resource Plan 2010 – 2030

37 Nedbank website, accessed October 2012: [http://www.nedbank.co.za/website/content/products/product\\_detail.asp?Subcatid=502&SubSubcatid=1869&ProductID=639](http://www.nedbank.co.za/website/content/products/product_detail.asp?Subcatid=502&SubSubcatid=1869&ProductID=639)

38 [http://climatebonds.net/wp-content/uploads/2009/12/ClimateBonds\\_4pp\\_Sept2012.pdf](http://climatebonds.net/wp-content/uploads/2009/12/ClimateBonds_4pp_Sept2012.pdf), downloaded 13 September 2012

39 Bonds and climate change: the state of the market in 2012, Climate Bonds Initiative and HSBC, June 2012

**Table 4: A selection of recent bond issues that support development or procurement capital for energy sector mitigation**

	Topaz <sup>40</sup>	IDC <sup>41</sup>	IFC <sup>42</sup>	Goldwind <sup>43</sup>
<b>Investment theme</b>	Renewable energy (solar)	Green economy	Energy efficiency and renewable energy (developing countries)	Renewable energy (wind)
<b>Investment vehicle</b>	Project bond	Corporate bond	Corporate bond	Corporate bond
<b>Type of capital</b>	Procurement	Procurement	Procurement and development	Development
<b>Issuer</b>	Topaz Solar Farms LLC	Industrial Development Corporation (IDC)	International Finance Corporation (IFC)	Xinjiang Goldwind Science and Technology
<b>Issuer country</b>	USA	South Africa	Multilateral	People's Republic of China
<b>Year of issue</b>	2012	2012	2012	2012
<b>Currency and Amount</b>	US\$ 850 mn	ZAR 5.2 bn (US\$ 636 mn)	US\$ 500 mn	CNY 3.0 bn (US\$ 476 mn)
<b>Rating</b>	BBB- (Fitch) BBB- (S&P) Baa3 (Moody's)	AA (Fitch)  (long-term national scale)	Aaa (Moody's) AAA (S&P)	AA+
<b>Coupon</b>	5.75%	9%	0.5%	6.63%
<b>Maturity</b>	2039	2026	2015	2015
<b>Main Investors</b>	North American Insurers	Sole investor is the Government Employees Pension Fund (GEPF), via the Public Investment Corporation (PIC)	Include: TIAA-CREF, UN Pension Fund	Domestic institutional investors
<b>Highlights</b>	<ul style="list-style-type: none"> <li>Unsecured</li> <li>No US government guarantee</li> <li>The first to be rated by all the top three rating agencies</li> <li>Oversubscribed by US\$400m</li> <li>Proceeds will be used to finance 550MW Topaz Solar PV farm in California, USA</li> </ul>	<ul style="list-style-type: none"> <li>Unlisted</li> <li>Secondary financing of IDCs investment in renewable energy generation and energy efficiency projects in South Africa</li> </ul>	<ul style="list-style-type: none"> <li>Third party verification</li> <li>Some transparency of the type of assets</li> <li>Good deal size which enables inclusion into indexes like the Barclays aggregate</li> </ul>	<ul style="list-style-type: none"> <li>Offline issue</li> <li>Proceeds will be used to refinance existing debt and to provide working capital</li> </ul>

Whilst the authors of this paper did not conduct an exhaustive search of examples of climate bonds related to energy sector mitigation, there appears to be a predominance of bonds issued that support renewable energy rather than energy efficiency or fuel switching. The reason why this is the case in South Africa can be inferred from research from DNA Economics. It found that, “Many additional energy interventions are integrated into the firm’s day-to-day operational expenditure and are not reported as investments” and that relatively few fuel switching options [relative to energy efficiency and renewable energy] were implemented for the period from 2005 to 2015.<sup>44</sup> The authors of this paper acknowledge that further research is needed to confirm if these are indeed the reasons why bond investments in energy efficiency and fuel switching do not match those made in renewable energy, particularly since research by WWF, Ecofys and OMA-AMO shows that increased energy efficiency is a critical success

<sup>40</sup> Bloomberg, 1 March 2012

<sup>41</sup> The green industry's driving force, Special report, Mail & Guardian, 22 August 2012

<sup>42</sup> IFC news, accessed September 2012, <http://www.ifc.org/IFCExt/Pressroom/IFCPressRoom.nsf/0/E4EF65E3D8876867852579ED0067A550>

<sup>43</sup> Overseas regulatory announcement regarding the coupon rate for domestic bonds, Xinjiang Goldwind Science & Technology Co Ltd company, 22 February 2012

<sup>44</sup> Chisadz, S., Cloete, B., Cohen, B., Mason-Jones, K., Ramkolowan, Y., and C. Ras, 2011, Ability of firms to adjust to higher energy costs, DNA Economics

factor in achieving the lower global energy demands needed to reduce our reliance on fossil fuels.<sup>45</sup> There is the need for a road map to develop energy efficiency finance opportunities, such as credit lines and risk guarantees, and to create price signals to scale up private investment in energy efficiency.<sup>46</sup>

What is clear is the attractiveness of bonds for institutional investors, as summarised by Joseph Salvatore, an energy analyst with Bloomberg New Energy Finance on the announcement of the bond issue by Topaz in 2012: “These types of bonds are attractive because of the yield and because of the long-dated liability, which matches the duration of the portfolios of insurance companies and pension funds.”<sup>47</sup>

From a South African perspective, whilst the development of a bond market that supports mitigation projects in the energy sector is encouraging (just over R5 billion in 2012), this market still represents a small fraction of over R2,000 billion in institutional investors’ assets. Some of the reasons for this are specific to South Africa:

- *South Africa’s current regulatory environment* which, according to the managing director of the South African IPP Association, makes it difficult for the creation of IPPs outside of the government’s renewable energy procurement process or REBID programme.<sup>48</sup> For this reason, amongst others, WWF concludes that, “Unless the current policy and regulatory framework is overhauled, private sector investment [in the electricity sector] will still not be forthcoming”.<sup>49</sup>
- *The lack of renewable energy own equipment manufacturers (OEMs) that manufacture at scale in South Africa*, which significantly reduces the likelihood of them raising development capital in South Africa

Other reasons are common to bond markets generally, including the following:

- *The predominance of project finance structures for the procurement capital needed to support both electricity production and distribution.* Project finance is a financing mechanism that was developed to allow the risks of large infrastructure projects to be allocated to the entity best able to quantify and manage those risks, thereby reducing the quantity of higher priced equity finance needed to finance the project. Project finance structures are typically highly customised and focus on one project rather than several. By its very nature, therefore, project finance does not typically lend itself to investors requiring investment grade returns on a large scale unless there is additional credit enhancement such as sponsor guarantees;
- *Scale is needed to tap the institutional investor market.* There are several reasons for this, the most important of which is that many institutional investors have restrictions on the minimum size of investment that can be made and limits on the maximum shareholding or bondholding in a particular company. According to the Climate Bonds Initiative, there are currently only 103 bonds on a global basis that are larger than the US\$500 million threshold above which many institutional investors invest. There is expected to be increasing inflows into the South African government bond market after October 2012, when the

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45 WWF, The Energy Report, 2011

46 Policy Pathways: Joint Public-Private Approaches for Energy Efficiency Finance, International Energy Agency, 2012

47 Buffet plans more solar bonds after oversubscribed deal, Justin Doom and Noah Buhayar, Bloomberg, 1 March 2012

48 Power developers deeply frustrated by SA’s regulatory obstacles, Engineering News Online, 14 August 2012

49 WWF comment on Independent System and Market Operator Bill, submitted 26 April 2012

bonds were included in the Citigroup Government World Bond Index. One of the criteria for inclusion in the index is size. The IFC green bond described in Table 4 was successful in part because its size ensured its inclusion in the Barclays Aggregate Bond Index. Some may argue that its success was guaranteed because of the IFC's high investment grade rating but this is strongly linked with the success of the IFC's investments so it can be argued that it is only because the IFC is able to find, structure and invest in renewable energy projects that provide an adequate risk adjusted return that the bond was successful.

- *The higher level of security provided by longer-term loans as opposed to traditional bonds.* This problem can be overcome by policy support for the covered bonds market. Covered bonds are obligations of the issuing bank but, in the event of default, bondholders have a preferential claim over the assets and associated cash flows in the cover pool as well as an unsecured claim in the issuer, making them more secure than conventional bonds:
  - The Climate Bond Initiative argues that renewable energy covered bonds (RECBs) offer two benefits for investors: they extend the range of investment grade financial instruments available to investors; and public sector guaranteed RECBs would enable buy-side analysts to gain experience of the financial performance of renewable energy assets without direct exposure to underlying credit risks.<sup>50</sup>
  - Investor education is a key intervention to increase confidence in new financial mechanisms such as renewable energy covered bonds. Nedbank's decision to sell down their exposure to renewable energy projects by creating green bonds targeted at the retail investor is a new approach that may help to increase overall investor confidence in new financial mechanisms.
  - However, not all jurisdictions accept covered bonds: the South African Reserve Bank issued a guidance note in 2011 that does not allow financial institutions that fall under its supervision department to issue covered bonds since they subordinate the interests of depositors to the interests of the covered bond holders, a situation which is inconsistent with the terms of the 1990 Banks Act.<sup>51</sup>

## FINANCING OF GREEN ASSETS

For green bonds to be scaled up to support green growth, it is important for governments to distinguish between the economics of a low carbon project itself and the financing thereof. Selling output, subsidies and tax incentives are about creating real assets (i.e. an economic project) that are then financeable.

The second issue is the financing of those real assets, which is where green bonds come in. What governments could do is compare the present situation where the average cost of capital is higher for renewable projects (because they cannot access lower cost capital from institutional investors at operational refinancing) with a counterfactual where they can.

For instance, a 1% reduction in the Weighted Average Cost of Capital (WACC) for a US\$ 1 trillion investment programme equals savings of US\$10 billion a year. This or higher reductions in the average cost of capital may be possible if one compares current rates for low investment grade infrastructure / utility bonds with project finance / bank lending.

*Source: The role of pension funds in financing green growth initiatives, OECD, September 2011*

<sup>50</sup> How covered bond markets can be adapted for renewable energy finance and how this could catalyse innovation in low-carbon capital markets, Discussion Paper, Climate Bonds Initiative, May 2012

<sup>51</sup> Guidance note 3/2011 issued in terms of section 6(5) of the Banks Act, 1990, South African Reserve Bank, May 2011



Given the suitability of bonds as a financing instrument for infrastructure, WWF encourages policy interventions that support the development of investment grade bonds targeted at low carbon technologies.

### 2.5.2 Energy sector mitigation case study – solar parks

As already mentioned, most institutional investors will only make investments into instruments and projects above a certain size and above a certain credit grade. The lack of such opportunities that support GHG emissions reduction in the energy sector has already been established. However, a promising development in this regard is the South African Department of Energy's photo voltaic (PV) solar park that will be created in the North-East of the country. A solar park can be compared to an industrial park in the sense that the supply of bulk infrastructure, including roads, water supply and electricity transmission systems, and the completion of certain regulatory processes such as environmental impact assessments (EIAs), is arranged on a collective basis, thus reducing the allocation of personnel and costs to the pre-development process by future operators at the park.

Apart from simplifying a critical aspect of the project development process, because of the size of the DOE's solar park – 1,000MW installed capacity by 2017 is being targeted – and the way in which generation opportunities are structured, the park hopes to facilitate significant private investment into the solar generation that will take place at the park. The Development Bank of southern Africa (DBSA) stated at the investors conference for the park that was held in 2010, that the overall intention is to “to embark on a massive mobilisation of funding resources to introduce a sense of efficiency in the funding process, avoid duplication of efforts, and establish a smooth system of interface between those requiring finance and those who have finance to provide. This would make the capital raising process as efficient as possible, with some processes being undertaken on a joint basis.” If the park is successfully developed, it may be an avenue for institutional investors to provide significant funding to energy sector mitigation.

## 3. LOW CARBON INVESTMENT OPPORTUNITIES – DEMAND SIDE DYNAMICS

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The demand side of the supply-demand equation is made up of institutional investors (pension and retirement funds, insurance companies, company balance sheets, medical aid schemes investors and other pooled investment vehicles), and the retail investors who mostly use mutual funds or unit trusts. The retail investor market exceeded ZAR1 trillion in 2012. Pension funds and insurers make up a significant proportion of institutional dynamics in many markets. These asset owners form important drivers of industry groupings that have been formed to address climate change related issues such as the Institutional Investor Group on Climate Change (IIGCC), ClimateWise and the Carbon Disclosure Project (CDP). The OECD's working paper, "The role of pension funds in financing green growth initiatives", provides a comprehensive overview and industry-led demand analysis of green investments, including climate change related investments.<sup>52</sup>

### 3.1 DEMAND FROM THE INSURANCE SECTOR

In countries with an active and well-developed insurance market and an active capital market, invested assets from the insurance industry typically make up a significant portion of total invested assets. In South Africa, insurers had assets of R1,650 billion in 2010.<sup>53</sup>

In 2006, leading insurers set out to work together to respond to the myriad risks and opportunities of climate change, aiming to reduce the overall risks faced by economies and societies. The ClimateWise initiative, which is facilitated by the University of Cambridge Programme for Sustainability Leadership was launched in 2007 to crystallise, and build on, that leadership. Members of ClimateWise commit to action, individually and collectively, against the ClimateWise Principles:

1. Lead in risk analysis
2. Inform public policy making
3. Support climate awareness amongst our customers
4. *Incorporate climate change into our investment strategies* [emphasis added]
5. Reduce the environmental impact of our business
6. Report and be accountable

The fourth principle, incorporating climate change into investment strategies, is particularly relevant to this paper. Most of ClimateWise's members have multinational operations, with several that operate in South Africa, including, Allianz, AON, Legal&General, Santam, Swiss, and Zurich. During the COP17/CMP7 climate change conference held in South Africa in 2011, a group comprising Allianz, Aviva, Legal & General, Swiss Re and AON-Benfield released a statement saying that, "As institutional investors collectively representing assets of more than

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<sup>52</sup> The role of pension funds in financing green growth initiatives, Croce et al, OECD Working Papers on Finance, Insurance and Private Pensions, No. 10, OECD Publishing, 2011

<sup>53</sup> Sustainable Investment in sub-Saharan Africa, IFC, SinCo and Riscura, 2011

US\$3 trillion, and investment advisors, we are seeking investment-grade opportunities to invest in bonds where revenues are specifically allocated to climate change solutions.”

The demand from the insurance industry for investment grade financial products that support climate change mitigation and adaptation is likely to increase as insurers voluntarily adopt the UN Principles for Sustainable Insurance (the UN PSI) which was launched by the UN Environment Programme’s Finance Initiative in 2012. The first principle of the UN PSI requires signatories to “embed in our decision-making environmental, social and governance issues relevant to our insurance businesses”, with specific reference to investment management that requires the integration of ESG decisions into investment decision-making and ownership practices. Santam, the largest short-term insurer in South Africa, is a signatory to the UN PSI.

## **3.2 THE SOUTH AFRICAN GOVERNMENT’S REQUIREMENTS OF THE FINANCIAL SECTOR IN ITS NATIONAL CLIMATE CHANGE RESPONSE**

The South African government sees the financial sector playing an important role in the country’s climate change response, stating in its 2011 National Climate Change Response White Paper that, “South Africa recognises that financial institutions are important intermediaries to allocate and transfer capital between different economic activities ... the different distribution channels in the financial system, such as public finance, banks (including development finance and microfinance institutions), investor and insurers, are important development partners of Government ...” The emerging climate change response finance options include grants for research and development; project development and technical cooperation; and commercial finance through debt and equity, concessionary finance, risk insurance, specialised environmental funds and new capital market innovations, such as green and climate bonds”. The paper further states that, “in pursuit of a long term funding framework for climate finance, Government will ... identify opportunities in the existing financial regulations governing the domestic finance sector to enhance the financial sector’s capacity to mainstream climate change in risk and investment decisions.”

As significant stakeholders in the financial sector, institutional investors are likely to be called upon to implement certain aspects of the white paper, with an overall goal to create and implement processes that support the government’s climate change mitigation and adaptation, including the creation of new investment products.

## **3.3 PENSION FUNDS IN SOUTH AFRICA: THE OPPORTUNITY CASE**

Recent changes to pension fund legislation in South Africa resulted in changes to Regulation 28 of the Pension Funds Act 24/1956. This resulted in a legislative endorsement of the principle that institutional investors must look beyond profit to investing responsibly on behalf of their members and the relevance of environmental, social and governance (ESG) considerations to such responsible and prudent investment decision-making.<sup>54</sup>

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<sup>54</sup> The preamble to the regulation states that, “A fund has a fiduciary duty to act in the best interest of its members whose benefits depend on the responsible management of fund assets. This duty supports the adoption of a responsible investment approach to deploying capital into markets that will earn adequate risk adjusted returns suitable for the fund’s specific member profile, liquidity needs and liabilities. Prudent investing should give appropriate consideration to any factor that may materially affect the sustainable long-term performance of a fund’s assets, including factors of an environmental, social and governance character. This concept applies across all assets and categories of assets and should promote the interests of a fund in a stable and transparent environment.”

Pension funds make up a significant portion of institutional investors in South Africa, with assets of R2,019 billion in 2010.<sup>55</sup> Given this and the fact that climate change is an important ESG consideration that pension fund trustees are now required to consider, pension funds have an important role to play in driving low carbon investment opportunities. Research carried out by SinCo in 2012 that was commissioned by WWF shows that very few asset owners have explicitly invested in low carbon or water responsible investment strategies, or are monitoring these aspects of their strategies.

In addition, changes to Regulation 28 in 2010 also resulted in an increase in the allocations that South African pension funds can make in unlisted investments, with the following allowances now in place: unlisted or unrated debt and equity: maximum of 30%, with a 10% maximum for unlisted equity and a 15% maximum in a combination of hedge funds and private equity. These increased limits should theoretically allow a flow of funds into unlisted bonds and equity investments that form an important part of both development and procurement capital to energy related climate change mitigation projects.

However, several other interventions need to take place before this investment flow begins. The OECD has identified other barriers to investment in green growth by pension funds including “a lack of appropriate investment vehicles and market liquidity, scale issues, regulatory disincentives and lack of knowledge, track record and expertise among pension funds about these investments and their associated risks”.<sup>56</sup> The launch of the Sustainable Returns project in South Africa in 2011 is an encouraging development in this regard. The project is an industry-led initiative to integrate environmental, social, and corporate governance considerations into the mainstream of retirement industry investment practices in Southern Africa led by the IFC and the Principal Officers Association of South Africa (POA) and involves more than a dozen institutions, including the National Treasury of South Africa, the South African Government Employees Pension Fund, the Financial Services Board and the Association for Savings and Investment South Africa. Multi-stakeholder initiatives such as this one are required to create the necessary impetus and market structure for significant investments inflows that support the swift development of a resource efficient, low carbon, resilient and equitable economy.

#### PENSION FUNDS AND GREEN GROWTH:

Green projects – particularly sustainable energy sources and clean technology – include multiple technologies, at different stages of maturity, and require different types of financing vehicle. Most pension funds are more interested in lower risk investments which provide a steady, inflation adjusted income stream – with green bonds consequently gaining interest as an asset class, particularly – though not only – with the SRI universe of institutional investors.

Yet, despite the interest in these instruments, pension funds’ asset allocation to such green investments remains low. This is partly due to a lack of environmental policy support, but other barriers to investment include a lack of appropriate investment vehicles and market liquidity, scale issues, regulatory disincentives and lack of knowledge, track record and expertise among pension funds about these investments and their associated risks. To tap into this source of capital, governments have a role to play in ensuring that attractive opportunities and instruments are available to pension funds and institutional investors.

*Source: Della Croce, RC Kaminker and F Stewart (2011), The role of pension funds in financing green growth, OECD working papers on Finance, Insurance and Private Pensions, No 10, OECD Publishing*

<sup>55</sup> Sustainable Investment in sub-Saharan Africa, IFC SinCo and Riscura, 2011

<sup>56</sup> Della Croce, RC Kaminker and F Stewart (2011), The role of pension funds in financing green growth, OECD working papers on Finance, Insurance and Private Pensions, No 10, OECD Publishing

# 4. INVESTMENT VEHICLES THAT SUPPORT WATER STEWARDSHIP

## 4.1. THE WATER CHALLENGE - A SOUTH AFRICAN PERSPECTIVE

The introductory statement in the WWF-Sanlam partnership review<sup>57</sup> clearly describes the water problem in South Africa:

At present usage rates, demand for freshwater [in South Africa] will exceed supply by 2025, placing severe pressure on our freshwater ecosystems. Our inshore marine resources, which provide food and income to some of the poorest sectors of our society, are under similar levels of pressure. South Africa's new democracy in 1994 allowed for the development of some of the most progressive and innovative freshwater and marine legislation in the world. However, the implementation of this legislation has proved challenging and simply cannot be successfully implemented by government alone. Only a cohesive and concerted effort from government, the private sector and civil society will ensure success.

According to WWF's Coal and Water Futures in South Africa report,<sup>58</sup> Eskom, the state owned electricity company, is the only "strategic" water user under South Africa's National Water Act. Water is required at the highest levels of assurance to provide steam for [Eskom's] turbines, to cool and clean machinery and to scrub pollutants. In the Olifants catchment, coal mining has contaminated rivers and streams to the extent that the water cannot be used in [Eskom's nearby] ... coal-fired power stations. Eskom's water either needs to be treated – costing money and more energy – or it must be supplied from another river system that has not been polluted by mining. Camden Power Station, for example, requires inter-basin transfers from the unpolluted Usutu river system (that originates in Enkangala) to provide water that is clean enough for the power station to use.

This paradox is part of what is known as the "water-energy" nexus – the negative feedbacks between water and energy cycles in our current carbon intensive economy. The report, which was published in 2011, states that, "Energy production that relies on fossil fuels consumes water and has a negative impact on water resources as a result of pollution during the mining process and as well as the burning of fossil fuels. Together this direct consumption and pollution; and indirect consumption and pollution embedded in

### WATER AND CLIMATE CHANGE IN SOUTH AFRICA:

[We] will start facing the consequences of climate change, most directly through water. Our already stressed water resources will come under increasing pressure as temperatures rise and rainfall becomes more volatile. The frequency of floods and droughts will increase and the load of pollutants reaching our rivers will increase with these extreme events. Many of our catchments are already heavily polluted by mining (e.g., Upper Vaal and Olifants catchments), and six out of nineteen of our water management areas will not have enough water to meet demands by 2030.

We need to plan the development of our landscapes to protect the country's most important water, soil and biodiversity resources. Headwater catchments, such as the Enkangala grasslands (the source of the Vaal, Thukela and Pongolo river systems), should not be exposed to new coal mining.

*Source: Coal and Water Futures in South Africa: the case for protecting headwaters in the Enkangala grasslands, WWF South Africa, 2011*

<sup>57</sup> WWF Sanlam Living Waters Partnership, five-year review, 2012

<sup>58</sup> Coal and Water Futures in South Africa: the case for protecting headwaters in the Enkangala Grasslands, WWF, 2011

the supply chain to the energy sector results in a significant water footprint [of electricity generation]. We need to move away from energy production [that has] high carbon and water footprints to break the cycle”.<sup>59</sup>

Payment for ecosystem goods and services, including water, is one of the strategies being considered by the government in response to climate change: the National Climate Change Response White Paper states that, “These [financing] options may be extended by integrating financing for biodiversity and other environmental resources, such as payment for ecosystem goods and services ...”<sup>60</sup>

Research by Trucost that was commissioned by WWF<sup>61</sup> calculated the external price of water scarcity in South Africa, reflecting the impact of water extraction on freshwater replenishment, habitat maintenance, groundwater recharge, water quality maintenance and waste assimilation. The results estimate that the external value of water used by operations and first-tier suppliers of JSE top 100 companies, reflecting levels of scarcity in South Africa, could total more than ZAR56 billion (USD 6.78 billion) per annum. Based on using more than 8.9 billion m<sup>3</sup> in operations and first-tier suppliers at the average approved 2012/13 raw water charge of R0.02b per m<sup>3</sup>, the companies would currently be paying R224 million (USD27 million). This is less than 1% of the true value of water in South Africa. Water scarcity values indicate potential risks to companies from disruption, higher water tariffs and rising input prices due to water stress, all of which are likely to negatively impact companies’ financial results, operations and, ultimately, valuations.<sup>62</sup> WWF advocates that these risks be addressed through the adoption of water stewardship.

## 4.2 WATER STEWARDSHIP

There is no agreed definition for water stewardship, but it is a term that has been increasingly used by companies and NGOs to describe a growing private sector engagement with water issues. WWF describes water stewardship as actions on the part of companies who seek to improve the efficiency and cleanliness of their internal operations and in their supply chain, while also facilitating the sustainable management of shared freshwater resources through collaboration with other businesses, governments, non-governmental organisations (NGOs), communities, and others.<sup>63</sup>

Stewardship implies that there is both an internal and external component to water issues. In turn these issues will require a much broader response, as well as an appreciation of how water is managed as a shared and public resource. Stewardship recognises that business risk is ultimately created when water is poorly managed or over-exploited – creating changes in the physical nature of water that may have impact on society, business, government and the environment. Investors have a role to play in stewardship.<sup>64</sup>

## 4.3 WATER INVESTMENT OPPORTUNITIES

### 4.3.1 Definitional challenges

Given the water challenges already described and the fact that access to water is recognised in many countries as a human right, it is difficult to separate out investment opportunities for institutional investors that specifically support water stewardship. For example, investment in

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59 As above

60 National Climate Change Response White Paper, Government of the Republic of South Africa, October 2011

61 Carbon and water risks for South Africa’s top companies, bonds and equity funds, Trucost, 2012

62 Trucost report: Trucost, 2012, Carbon and water risk for South Africa’s top companies, bonds and equities

63 WWF-DEG water risk filter tool website, Knowledge base, What is stewardship?, accessible at <http://waterriskfilter.panda.org/KnowledgeBase.aspx>

64 WWF-DEG water risk filter tool website, Knowledge base, What is stewardship?, accessible at <http://waterriskfilter.panda.org/KnowledgeBase.aspx>

a water utility company could be viewed as an investment that demonstrates responsible lending and broader water stewardship by increasing the supply of water. However, if that utility does not support upstream and downstream sustainable water management, then this investment cannot be considered responsible.

This difficulty is reflected in the findings of the Climate Bonds Initiative (CBI), which uses seven key themes, including water, to define climate bonds. Water-themed bonds are considered by CBI as those directed at sustainable climate-resilient water management systems technologies and infrastructure. CBI was unable to find any bonds issued during the period of analysis that could be considered either fully or strongly aligned with water in the context of addressing climate change. However, US\$196 billion of bonds were deemed to be conditionally aligned. This led CBI to conclude that, “Issues could link bonds more clearly with water conservation and flood prevention methods”.<sup>65</sup>

### 4.3.2. Water investment opportunities at a company level – stock selection

The Carbon Disclosure Project, which represents 354 investors with more than US\$43 trillion in assets, launched its water disclosure project in 2009 and aims to encourage “meaningful and systematic reporting on water globally so that investors and other stakeholders can understand how companies are building water into their core business strategies and so that leading practices can be shared”.<sup>66</sup> The second CDP water disclosure report for South Africa was released in December 2011 and found that, “Many of South Africa’s most significant corporate water users are not yet able or ready to report on their water related risks.” This lack of disclosure represents a significant risk to institutional investors who rely to a great extent on publically available and audited data from companies to help inform their investment decisions.

#### WATER RISKS OF LISTED COMPANIES:

A further 77% of South African respondents report that water management may also present substantive opportunities to their business, with the vast majority of both risks and opportunities being expected to manifest themselves in the near term (within the next 5 years).

Source: CDP Water Disclosure South Africa Report, Carbon Disclosure Project, 2011

Sasol Limited reports production losses in 2010 of approximately ZAR130 million (US\$15.6 million) due to flooding of a portion of the Sasol Synfuels plant.

Source: CDP Global Water Report, 2012

#### THE WATER-ENERGY NEXUS: FINANCIAL INSTITUTIONS

The growth in coal use by Eskom and Sasol is expected to accelerate over the coming years. In April 2008 Eskom began construction of the new Medupi power station in Limpopo, located next to the Waterberg Coalfield that contains vast resources of coal. In the event that coal-fired power stations are built on the Waterberg coalfields, the Department of Water Affairs stated that Eskom would be obliged to intensify its water efficiency practices. *Power providers and the financial institutions financing their activities should have a great interest in the development of water regulation in South Africa [emphasis added].*

Source: Power Sector Chief Liquidity Series, United Nations Environment Programme, Sep 2010

There are an increasing number of tools available to assess water risk at a facilities level, including the WWF-DEG water risk tool that allows detailed risk analysis at a global level for most countries and catchments. Research from Trucost that was commissioned by WWF<sup>67</sup> found that institutional investors are exposed to risks from water as a result of their operations and their direct, Tier 1 suppliers. Using the tool, Trucost concluded that, “The assessment shows the potential to drill down into water-intensive sectors that drive portfolio-level water risk and focus in-depth analysis on companies that represent the greatest exposure. Investors can use this level of water risk analysis to assess the exposure of companies that contribute most to the water footprint of their portfolios. Investors could engage with companies to encourage disclosure of

<sup>65</sup> Bonds and climate change: the state of the market in 2012, Climate Bonds Initiative and HSBC, June 2012

<sup>66</sup> CDP Water Disclosure South Africa Report, Carbon Disclosure Project, 2011

<sup>67</sup> Carbon and water risks for South Africa’s top companies, bonds and equity funds, Trucost, 2012

more detailed information on issues such as water consumption by location and management of exposure to future water stress”.

## 5. OVERALL SUGGESTIONS TO SCALE UP LOW CARBON AND WATER RESPONSIBLE INVESTMENTS

Based on the findings from primary research that was commissioned by WWF from Trucost, the Carbon Tracker Initiative and SinCo under the Navigating Muddy Waters series of reports, and based on existing research from several sources, WWF makes the following suggestions to scale up low carbon and water responsible investments.

**Table 5: Suggestions to scale up low carbon and water responsible investments – general**

	Short-term	Long-term
<b>Financial</b>	<ul style="list-style-type: none"> <li>• Include the risks from environmental externalities such as water and climate change in interest and discount rates</li> <li>• Include green bonds in existing benchmarks</li> <li>• Adopt a standard for bonds that supports climate change mitigation and adaptation</li> <li>• Include climate-related criteria in bond covenants</li> <li>• Include criteria for climate-resilience in investment mandates for asset classes including equities, fixed income, property and infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• Create a taskforce to investigate the alignment of short-term investment strategies with the longer-term investment horizons needed for low carbon and water responsible investment. Specific issues include the creation of benchmarks that support long term, sustainable investment. This may require regulatory intervention to correct market failures and ensure first mover advantage</li> <li>• Investigate policy support to RE covered bond market</li> </ul>
<b>Economic and Regulatory</b>	<ul style="list-style-type: none"> <li>• At government level, complete an empirical study to understand the cost of environmental externalities at an ecosystems level that are caused by all forms of electricity generation</li> <li>• Create a classification system for utilities using energy and water management criteria</li> </ul>	<ul style="list-style-type: none"> <li>• Further research into investment vehicles that support fuel switching and energy efficiency</li> <li>• Create a commonly understood and applied measure of water stewardship at a sector and geographical level</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>• Require standardised reporting by listed companies of climate change and water risks, to allow investors to adequately assess investment risks and opportunities</li> <li>• Include carbon and water performance in analysts’ awards and ratings systems</li> </ul>	<ul style="list-style-type: none"> <li>• Conduct research into mechanisms that promote forward-looking reporting based on longer time horizons</li> </ul>

**Table 6: Suggestions to scale up low carbon and water responsible investments – South Africa specific**

	Short-term	Long-term
<b>Financial</b>	<ul style="list-style-type: none"> <li>• Adopt a standard for bond market investments that support climate change mitigation and adaptation</li> <li>• Explore aggregated financing of REIPPP, to allow the scale required by institutional investors</li> <li>• Provide additional budgetary support to climate change mitigation in the energy sector</li> </ul>	<ul style="list-style-type: none"> <li>• Create a taskforce to investigate the alignment of short-term investment strategies with the longer-term investment horizons needed for low carbon and water responsible investment. Specific issues include the creation of benchmarks that support long term, sustainable investment. This may require regulatory intervention to correct market failures and ensure first mover advantage</li> <li>• Investigate policy support to RE covered bond market</li> </ul>
<b>Economic and Regulatory</b>	<ul style="list-style-type: none"> <li>• Facilitate implementation of IPPs outside of REIPPP: <ul style="list-style-type: none"> <li>◦ Clearly define the preconditions for gaining a Ministerial determination, or exemption, ahead of licensing of</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Further research into investment vehicles that support fuel switching and energy efficiency</li> <li>• Policy certainty, particularly with respect to electricity and water pricing</li> </ul>



	Short-term	Long-term
	<ul style="list-style-type: none"> <li>○ an IPP by the National Energy Regulator of South Africa (Nersa)</li> <li>○ Take into account WWF's comments regarding the ISMO bill that will allow certainty over the ability to wheel power over Eskom's transmission infrastructure</li> <li>• Aim towards 50% electricity generated from renewable energy by 2030 in the IRP</li> <li>• At government level, complete an empirical study to understand the cost of environmental externalities caused by power generation</li> </ul>	<ul style="list-style-type: none"> <li>• Create RE to scale by ensure that the "Solar Park" model is successful and can be replicated for IPPs that are primarily financed by the private sector.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>• Require standardised reporting by pension funds on climate change and water risks, to allow investors to adequately assess investment risks and opportunities</li> </ul>	<ul style="list-style-type: none"> <li>• Research mechanisms that promote reporting based on longer time horizons</li> </ul>

## CONCLUSION

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As the capacity of our planet to sustain us continues to fall and the impacts of pressures such as climate change and water stress are felt, it is clear that important decisions regarding where financial flows are directed need to be made. Research from the “Navigating Muddy Waters” research series has found that financial flows that do not support a reduction of these pressures will result in mispriced assets that will affect the valuation of certain securities markets investments.<sup>68</sup>

Prudent and responsible investors (being defined as those who have adopted the UN Principles for Responsible Investment) need to understand the impact that these pressures will have on the valuation of their investments. From a risk perspective, these impacts arise on both a physical level through the operations and supply chains of investee companies, and on a regulatory level as the government implements policies to mitigate and adapt to these pressures.

This changing environment also presents significant opportunities to investors, since the development of a resource efficient, low carbon and climate resilient economy requires the creation of new economic opportunities that need to be supported by new investment vehicles. Demand for such investments is increasing, as responsible asset owners seek ways to mitigate risks and participate in the new economy, and as a result of regulatory and policy changes such as Regulation 28 of the Pension Funds Act and the National Climate Change Response White Paper.

As the highest contributor to carbon emissions, the energy sector, particularly electricity generation, offers the largest potential in terms of climate change mitigation. This is reflected by the inclusion of renewable energy in the IRP 2010 and the launch of the government’s REIPPP process. However, because of the relatively low level of renewable energy generation in the IRP at only 9% of total generation by 2030; the finance structures created around IPPs that participated in REIPPP; and regulatory uncertainty around the creation of private IPPs, there are limited opportunities for investors to make low carbon energy investments. More ambitious policy around renewable energy generation targets, regulatory certainty in terms of wheeling in the electricity sector and the creation of financing structures that allow investment at scale are some of the measures required to open up such opportunities. Further research is needed to assess the potential role for institutional investors to support efficiency initiatives at scale and fuel switching, since these important areas for energy sector mitigation.

The development of products such as low carbon equity indices and funds is an encouraging development, albeit limited because of the lack of suitable benchmarks that reflect the long term requirements of a transition to a resource efficient, low carbon, resilient and equitable economy.

The lack of standardised water risk disclosure by many listed companies creates a challenge for water responsible investing. Data collection and analysis using the WWF-DEG water risk filter tool can potentially help to fill this knowledge gap but it is clear that water risk

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68 Trucost, Carbon and water risks for South Africa’s top companies, bonds and equity funds, 2012, commissioned by WWF South Africa and Carbon Tracker, Unburnable carbon: budgeting carbon in South Africa

disclosure needs to be significantly improved at company level. Given South Africa's status as a water-stressed country, water responsible investing necessarily includes the development of an overall water stewardship strategy that would see water responsible investors engaging with investee companies around water risk mitigation.

There are clearly a significant number of changes at a regulatory, company and market level that are required to support low carbon and water responsible investing. These include but are not limited to:

- Accounting for environmental and social costs
- The creation of longer term benchmarks
- A change in policy to support significantly higher levels of energy sector mitigation such as electricity generation from renewable energy

In recognition of the investment risks from business as usual, new investment products that seek to mitigate these risks are being brought to market and groups of institutional investors are beginning to implement responsible investing. However, neither the current scale nor the pace of these developments is sufficient to make serious inroads into addressing these risks. WWF therefore calls on institutional investors, regulators and other market participants to implement techniques that will allow a better understanding of these risks, and to adopt responsible investing that supports water stewardship and addresses climate change mitigation and adaptation.

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# REPORT HIGHLIGHTS



TECHNICAL REPORT

ZA

2012

**13%**

The carbon footprint of Trucost FTSE JSE Top 100 Carbon Optimised Index compared to the carbon footprint of FTSE JSE Top 100

**3**

The number of South African asset owners who have signed up to the UN PRI

**< 1%**

The amount which the current raw water charge of R0.02 per m<sup>3</sup> is as a % of a raw water charge that takes environmental damages into account

**2**

The number of bonds issued as secondary financing to the REIPPP

**USD3 TRILLION**

Assets of the group of insurers calling for investment grade options to invest in bonds where revenues are specifically allocated to climate change solutions



**Why we are here**

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

[www.wwf.org.za](http://www.wwf.org.za)