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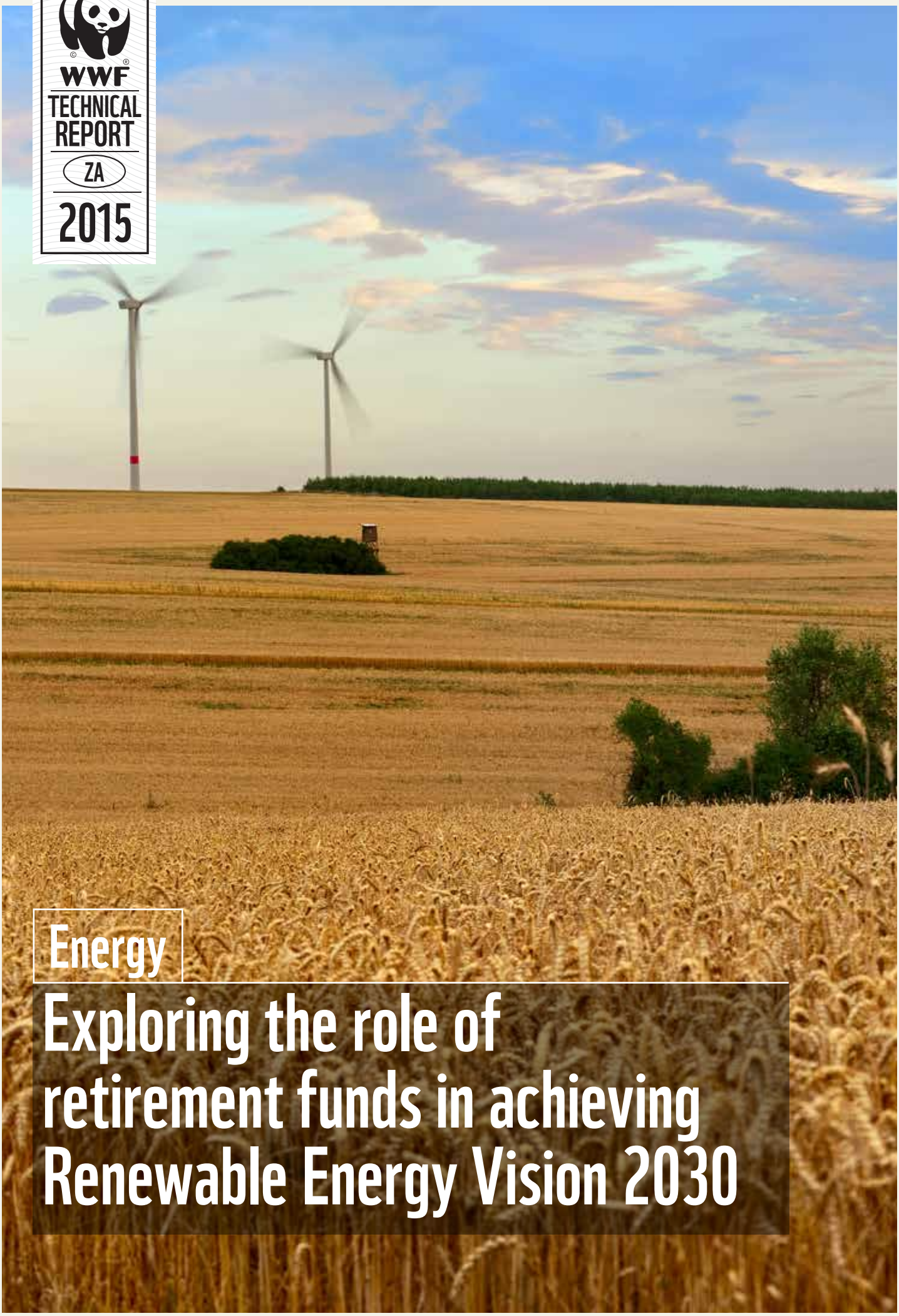

Energy

Exploring the role of retirement funds in achieving Renewable Energy Vision 2030

EXECUTIVE SUMMARY

South African retirement funds, representing R3 trillion in assets, play a critical role in channelling capital flows towards the achievement of a sustainable energy future in this country.

Some R540 billion in private capital will be required to achieve the renewable energy vision for 2030 outlined in a previous study (Sager 2014), of which debt accounts for the lion's share at R405 billon. SA wholesale banks active in financing REIPPPP projects have reached average exposure levels of 4-5% of their portfolios, nearing prudential portfolio limits. For comparison, the additional renewable energy (RE) debt requirement over the next 15 years is equivalent to a third of this group's current net loans and advances.

Retirement funds, with R3 trillion assets and long term liabilities, could supply R150bn of this debt requirement. The most active lenders are likely to be funds with defined benefit structures as well as private retirement funds with more than R10bn of assets. The relatively illiquid nature of the existing unlisted debt investment instruments and funds is less of a challenge for these funds, given their liability structures and portfolio size. Further, there is an opportunity to tap into the asset bases of the broader retirement fund community through the creation of listed debt instruments which exclude construction risk, once sufficient RE power plants are up and running.

Until now, retirement funds have invested a small share of their portfolios into infrastructure generally and RE specifically. Overall it is estimated that R9-18bn, representing 0.3-0.5% aggregate assets, has been invested into RE by SA retirement funds to date, compared with at least R22bn in available, potentially suitable RE investment, vehicles and instruments. First movers have been the Government Employee Pension Fund (being a defined benefit fund incorporating a developmental investment mandate via the Isibaya Fund), state-owned enterprise retirement funds such as Transnet, and the largest private retirement funds, which are often able to access quality RE debt through associated project debt origination or asset management teams. SA ranks in the middle of the field with international retirement funds, based on recent surveys, with similar findings relating to fund type and RE investment barriers emerging.

Retirement funds stand to gain significantly from investment in RE projects. The first benefit arises from contributing towards the matching of an anticipated liability profile with a portfolio of assets of similar duration through high quality, long term investments, minimising duration risk. Secondly, RE project returns are relatively predictable and less correlated with stock market movements. This is particularly the case for RE debt, which is also often attractive from a risk-adjusted perspective when compared with government or vanilla corporate bonds. As a result, portfolio efficiency may improve, enhancing the financial performance of retirement funds in SA. Thirdly, RE offers retirement funds the opportunity to manage climate risks in their portfolios through a strategic asset allocation into a sector which will not be penalised by the imminent carbon tax and the longer term possibility of stranded fossil fuel assets.

To achieve higher levels of investment, however, several demand and supply side obstacles need to be overcome. With respect to the demand side, greater awareness

of the RE investment case is required amongst the asset consultants advising retirement funds, as well as retirement fund trustees responsible for decision making. Furthermore, active implementation of Regulation 28 sustainability requirements and the associated Code for Responsible Investing in South Africa is likely to lead to a shift in strategic asset allocation in favour of RE, to help reduce portfolio risk.

On the supply side, banks and investment managers will need to consider creating more debt instruments which exclude construction risk. Listed bonds represent a particularly attractive channel for this purpose, provided that acceptable credit ratings can be secured and that pricing is carefully considered to ensure adequate return. More generally, unlisted funds will need to offer retirement funds some degree of liquidity and entry opportunities of R200m or more, to justify the expense of due diligence by asset consultants and trustees. To ensure a continued flow of investment into the sector, Government should make firm commitments to continuing to procure RE, while enabling the development of secondary debt markets in the REIPPPP regulatory frameworks. Finally, the RE sector itself will need to demonstrate solid performance to build the necessary investor confidence.

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ACRONYMS

BBBEE	Broad-based Black Economic Empowerment
BEE	Black Economic Empowerment
CLO	Collateralised Loan Obligation
CPI	Consumer Price Index
CRISA	Code for Responsible Investing in South Africa
DB	Defined Benefit
DBSA	Development Bank of Southern Africa
DC	Defined Contribution
DFI	Development Finance Institution
DoE	Department of Energy
ESG	Environmental, Social and Governance
ETF	Exchange Traded Fund
GEPF	Government Employees Pension Fund
FSB	Financial Services Board
IDC	Industrial Development Corporation
IFC	International Finance Corporation
IPP	Independent Power Producer
IRR	Internal Rate of Return
JIBAR	Johannesburg InterBank Agreed Rate
JSE	Johannesburg Stock Exchange
MoI	Multiple of Investment
O&M	Operations and Maintenance
PE	Private Equity
PIC	Public Investment Corporation
PPA	Power Purchase Agreement
RE	Renewable Energy
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SOE	State Owned Enterprise
STeFI	Short Term Fixed Interest Index
WWF	World Wide Fund for Nature

INTRODUCTION

Achieving a substantial renewable energy (RE) sector in SA in the coming years will require creative solutions to several challenges, including unlocking large pools of private capital to fund the construction of necessary RE infrastructure. The WWF believes that RE can contribute 19% of South Africa's electricity generation requirement by 2030, supporting a climate-resilient future for SA in which the food, energy and water sectors are in balance. Projections of the private cost associated with delivery of this vision are in the order of R540 billion (Sager 2014).

Specifically, the availability of competitively priced debt has been identified as a challenge in scaling up the sector. Accounting for three quarters of the project financing requirement, R405 billion debt is equivalent, in current terms, to a substantial 30% share of major RE financing banks' wholesale banking assets. In future, portfolio limits on exposure to the RE sector in SA and the implementation of Basel III will negatively impact the willingness of banks to hold higher levels of RE project debt, although they will likely remain the primary debt originators. As custodians of R3 trillion savings, retirement funds can assist by providing R150 billion of this debt requirement, primarily in listed bonds with some participation in unlisted debt.

Previously, a lack of high quality investment opportunities has been associated with low levels of institutional investor participation (Mughogho et al 2012). Over the past three years and four rounds of public procurement of RE, a rapidly developing RE investment management sector has created a suite of interesting options with varying risk-return profiles, generally performing at or beyond expectation to date. However, the bulk of instruments are unlisted, implying an investor requirement for extensive and expensive due diligence, excluding all but the largest retirement funds. Further, such instruments include exposure to construction risk, partly a consequence of the youth of the RE industry in SA. Participation in RE investment by retirement funds to date has consequently been limited to the larger retirement funds with access to a broader and deeper skills base and the ability to absorb illiquid investments in their portfolios. It is estimated that this allocation is 0.3-0.5% aggregate assets, R9-18bn in value.

Retirement funds stand to gain significantly from investment in RE projects. The first benefit arises from contributing towards the matching of anticipated liability profile with a portfolio of assets of similar duration through high quality, long term investments, minimising duration risk. Secondly, RE project returns are relatively predictable and less correlated with stock market movements. This is particularly the case for RE debt, which is also often attractive from a risk-adjusted perspective when compared with government or vanilla corporate bonds. In combination, these benefits may improve portfolio efficiency and so enhance the financial sustainability of retirement funds in SA. Thirdly, RE offers retirement funds the opportunity to manage climate risks in their portfolios through a strategic asset allocation into a sector which will not be penalised by the imminent carbon tax and the longer term possibility of stranded fossil fuel assets. **Benefits flow in both directions**. Beyond the continued availability of private capital supplied by a wider financier base, RE projects may secure lower debt financing costs as a result of retirement fund participation. In particular, listed bonds tied to mature operating RE

assets offer this possibility. These instruments will be a critical secondary debt market enabler through unlocking greater institutional investor participation, assuming debt refinancing on REIPPPP (Renewable Energy Independent Power Producer Procurement Programme) projects is accepted by the SA Government. Existing generally available debt instruments, namely specialist unlisted debt funds and listed bonds financing the construction phase of RE projects, hold the most appeal for larger funds with a specific preference for infrastructure assets. Even within these funds, limits on the share of portfolios dedicated to such assets are likely to be lower than they would be for high quality listed bonds tied to the operation of post-construction assets.

Three things will need to happen in order to accelerate retirement fund participation. Firstly, **banks and investment managers need to create supply-side alternatives** which offer the investable asset characteristics demanded by the wider retirement fund community. These include scale which facilitates investments of R200m or more, some degree of liquidity, underlying RE projects with a proven commercial track record, and relative simplicity to aid inexpensive investor assessment. Bonds are a particularly suitable option. Critically, any new instruments will need to compete favourably against other investment opportunities in the local market on a risk-adjusted return basis in order to be considered by retirement funds.

Secondly, **medium to large retirement funds** (defined as those holding more than R5bn in assets) **and their asset consultants need to start developing the necessary skills to properly assess new RE investment instruments and funds** where they see merit in the investment case.

Thirdly, **retirement funds should start incorporating climate risks in decision making** as part of their fiduciary duty to fund members, giving expression to Regulation 28 of the Pension Funds Act and the related Code for Responsible Investing in South Africa (CRISA). Diversifying portfolios by shifting allocations towards attractive RE investments provides a practical mechanism for managing the impact of climate risk.

PROJECT CAPITAL REQUIREMENTS

The estimated project cost associated with supplying South Africa with 19% RE by 2030 is R540 billion. This projection is the result of modelling outlined in more detail in Sager (2014), based on global trends in RE technologies as well as locally driven factors such as financing costs.

In SA, project finance has been the most popular approach to financing RE projects thus far. Deals are structured on the view that the anticipated revenues of a project – often agreed upfront through the conclusion of an offtake agreement with a large counterparty, in this case Eskom – are sufficient to service its liabilities and expenses. While a debt-equity ratio of 70/30 is the standard gearing assumption for project finance, more recently banks have been under pressure to increase gearing in support of competitive bids. It is therefore assumed that a 75/25 ratio will be accepted in future.

At this level of gearing, equity is expected to make up R135 billion of the funding requirement, while debt supplies the remaining R405 billion. At least 50% of the equity – R67.5bn – will need to come from local investors under the rules of the REIPPPP. Up to 50% of this shareholding – R34bn – may need to be financed to facilitate local black ownership under the REIPPPP stipulations.

Project debt requirement

The forecast RE project debt requirement is large in relation to the balance sheets of SA's banks. The five local banks most active in financing RE projects under the REIPPPP (Renewable Energy Independent Power Producer Procurement Programme) currently have a combined wholesale banking balance sheet value of R1.238 trillion[1]. The 2030 RE project debt requirement presented in this paper equates to one third of this value. While the comparison is only partially useful[2], it does suggest that the magnitude of debt funding required will likely be too large for these banks to absorb on their own balance sheets. This view broadly represents consensus in the market: that the current estimated average SA RE exposure of 4-5% in local wholesale banking portfolios is substantial, and that further lending appetite will be limited unless co-lenders can be adequately mobilised.

The likelihood of foreign banks stepping in to fill any substantial debt financing gap is rather slim. Long term risk on the volatile Rand implies high transaction costs in the form of foreign exchange hedges, reducing the attractiveness of

1 The banks are Nedbank, ABSA, RMB, Investec and Standard Bank. Wholesale banking incorporates corporate and investment banking. The figure quoted is a sum of net loans and advances of the wholesale banking divisions of these banks, taken from their last published annual reports (Nedbank 2014a; ABSA 2014; Standard Bank 2014; FirstRand 2013; Investec 2014)

2 R405 billion refers to the total debt extended in annual increments over a 15 year period from 2015-2029; each tranche will slowly amortise over a 15-18 year period (post commercial operations date) as projects repay debt. Here the total requirement over the next 15 years is compared to current value of net loans and advances.

cross-border lending. This is borne out in an analysis of past REIPPPP debt providers by Eberhard et al (2014). Just 14% of debt has been supplied by international lenders so far, most of which are development finance institutions with specific development mandates.

We see a substantial opportunity for retirement funds to take up RE debt, mostly in listed instruments. This is explored in more detail later on in this paper.

Project equity requirement

Sources of unlisted equity are diverse and this market is not comprehensively publicly reported on. It comprises direct equity stakes, pooled equity funds, private equity funds and other (e.g. hedge funds which are less relevant in the RE space). For context, one may refer to the SA private equity market, currently with R126bn funds under management (KPMG & SAVCA 2013). Relative to this figure, the R67.5bn local equity requirement looms large at more than 50%.

However, closer examination of shareholding in projects awarded under the REIPPPP reveals that SA private equity funds have played a limited role thus far. Indeed, **a striking feature of past REIPPPP projects is the diversity of project sponsors involved**. More than 100 shareholder entities own the 64 projects awarded in Rounds 1-3, with broad representation by banks and specialist financiers located within big insurers (e.g. Old Mutual, Sanlam, Liberty), development finance institutions (DFIs), pooled and private equity funds, and project developers (Eberhard et al 2014: 19).

Future appetite for RE equity will be determined by a variety of factors, including the perceived attractiveness of risk-adjusted returns relative to other equity opportunities. With project equity returns[3] falling from initial highs in the mid twenties to substantially lower mid teens in the most recent REIPPPP rounds, the appetite from pooled and private equity funds – as channels for retirement fund flows – is likely to be limited for the time being. Investment professionals suggest that a real equity return of 10% over an RE project lifecycle is required to attract private institutional investors, implying a threshold minimum nominal equity return of approximately 15-6% at current inflation rates.

There are four possible solutions to any potential equity shortage. Firstly, it is anticipated that **a secondary equity market will develop in future through the listing of RE infrastructure funds**, approximately five years after the first deals achieved financial close (Rooseboom 2013). These would provide an attractive platform for institutional investors wishing to enter the market. Secondly, **international financial investors such as European retirement funds may still find local RE equity yields sufficiently inviting to participate**, given the comparatively lower infrastructure asset yields available in their home markets. There will be a natural ceiling to this participation, given that foreign ownership of local projects is limited to 50% under REIPPPP regulations. Thirdly, **corporate sponsors[4] are becoming more prevalent in funding REIPPPP projects**; these entities are sometimes willing to accept lower returns for strategic reasons (Sager 2014). Finally, if current equity returns are indeed unattractive to the majority of equity investors, future rounds of the REIPPPP will be less hotly contested and **the**

3 All references to equity returns in this document relate to equity IRR (internal rates of return) on a nominal post-tax basis, unless stipulated otherwise.

4 Until now these have been global utilities or their local subsidiaries.

market will normalise at an equity return level commensurate with risk taken.

Empowerment financing

In terms of the REIPPPP requirements, certain minimum black and community trust shareholding levels are stipulated on the local economic development scorecard. For instance, in Round 3 a minimum of 25% ownership by black-owned entities ('BEE partners') and 5% by local communities ('BBBEE partners') was required[5]. Assuming all empowerment partners require assistance with financing their stakes in future RE projects, this implies an additional debt requirement of up to R30bn to finance the R34bn BEE equity stake, including R7bn to fully finance the BBBEE stake[6].

Mezzanine debt instruments such as subordinated debt or preference shares are typically employed for this purpose, repaid through dividends issued by RE projects. Empowerment shareholders receive a trickle dividend of 10-20% of the portion until the instrument vests, typically occurring in the second decade of operations. Mezzanine debt provided by the SA DFIs is generally raised at interest rates in the region of 12-18 percent[7], with loans to BBBEE partners priced at the lower end of the spectrum and those to BEE partners at the upper end. Private empowerment financing is likely to be more expensive: for example, Vantage Mezzanine – a large specialist mezzanine financier – seeks returns of 15-25% (Vantage Capital 2014). Since debt is fully serviced through dividends, this implies that equity returns in excess of this level are required to make empowerment quasi-equity financing feasible.

In reality, increasing pressure on tariffs has translated into increasing pressure on equity returns, and few recently awarded projects expect to generate equity returns sufficiently high to enable empowerment financing. A case for high pricing may be made on the basis that this is quasi-equity financing and that empowerment partner balance sheets are usually not very strong. However, the lender has claims to the project cash flows and assets which are senior to those of ordinary shareholders[8] suggesting that pricing on empowerment financing should dynamically adjust downwards as market conditions change and project equity returns fall. This does not appear to be happening, resulting in a shortage of fully funded empowerment partners in the SA RE market. Since finance seems to be made more freely available and on better terms to BBBEE entities, the shortage is particularly acute for BEE entities.

The solution to this challenge is not yet clear. It is understood that a packaged approach is being taken by some REIPPPP financing banks which have started to supply empowerment finance to projects based on guarantees provided by the large sponsors with whom they have a primary relationship. This enables bids to come in at desired tariff levels although it may be punitive to the banks in terms of price given loan term[9], with sustainability questioned. In addition, the Public Investment

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5 Interviews with experts

6 BEE partners are funded by up to 90% by local DFIs such as the IDC and DBSA, while the same lenders are willing to finance up to 100% of BBBEE shareholding. For present purposes it is assumed that community trusts are included in the targeted 25% black ownership stake.

7 The IDC issues preference shares based on a targeted real after tax internal rate of return, hence linked to CPI. It is understood that the DBSA issues a JIBAR-linked subordinated loan.

8 The ranking of lenders and shareholders depends on the type of instrument held with its associated rights. Senior debt ranks highest, followed by subordinated debt such as mezzanine, including preference shares.

9 Corporate loans are usually not provided on tenors of more than 7 years, according to banking experts.

Corporation (PIC) has begun supplying BBBEE finance in certain cases in light of the clear social upliftment benefit for indigent rural communities[10].

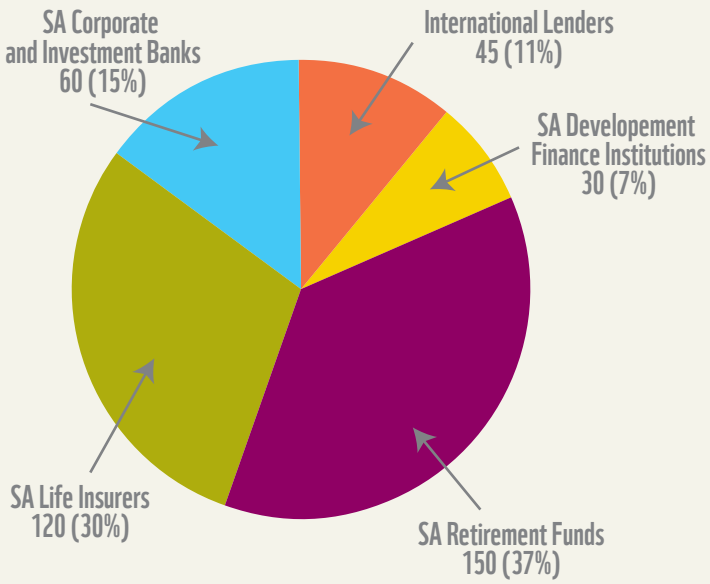
The low prevalence of private funds offering empowerment finance into REIPPPP projects implies that there is currently negligible opportunity for the majority of SA retirement funds to extend financing to empowerment partners through pooled funds or other instruments. It is noted that this remains an interesting avenue for consideration by investment managers and their retirement fund clients in the future.

The critical role of retirement funds in supplying debt for renewable energy projects

This paper makes reference to three local private capital requirements associated with utility scale RE in SA based on the REIPPPP framework: project debt of R405bn, local equity of R67.5bn (including a minimum R34bn empowerment component), and R30bn mezzanine debt financing to enable empowerment entities to take up their shares.

There is limited potential for further retirement fund participation in RE equity and mezzanine financing given the mismatch between retirement fund return expectations and the current market returns to these instruments. Currently, the largest potential for contribution to RE sector scale-up by retirement funds lies in the provision of project debt. **Modelling indicates that a total placement of R150bn debt into SA retirement funds between 2015 and 2030 is feasible, comprising an annual allocation of 0.2% portfolio assets**.

Figure 1: **Projected additional feasible holdings of RE project-level debt, 2015-2030 (Billions, 2014 Rand)**



Source: Own analysis

10 Interview with PIC

The bulk of debt instruments taken up by retirement funds are expected to be linked to post-COD (commercial operations date) RE assets, primarily comprising listed project bonds tied to mature operating assets. The balance is accounted for by project bonds financing construction as well as unlisted debt instruments (pooled debt funds, unlisted bonds and private bank debt syndications).

Highest levels of RE concentration in retirement fund portfolios will be reached in 2030, when an estimated 1% of aggregate assets will be accounted for by RE debt according to projections[11]. Within this allocation, the GEPF (Government Employees Pension Fund) and self-governing SOE (state owned enterprise) funds are anticipated to hold the highest exposure, as a result of factors including developmental mandates, defined benefit or hybrid liability structures and large size. Taking up a two thirds share of all retirement fund RE debt holdings[12] results in exposure of 1.7% aggregate assets for this group by 2030. The balance will be held by the medium and large private funds, classified as those with portfolios in excess of R5bn, represented by 63 funds managing R1.015 trillion assets in 2012 (FSB 2013). Portfolio allocation to RE debt in 2030 accounts for 1.1% the assets of these funds.

These portfolio allocation projections appear to be well within the tolerance bands for the various fund types, based on current information. Holdings of unlisted SA debt only amongst private funds reached 1.1% aggregate assets in 2012[13], whilst the GEPF recently set aside 5% of its portfolio for developmental investment including infrastructure via the Isibaya Fund (GEPF 2014). Growth in listed debt instruments tied to mature operating RE assets should enable more substantial allocations, given the greater demand for assets of this type.

As far as future banking participation goes, it is assumed that the banks are willing to commit a further R60bn to RE projects up to 2030, currently accounting for 5% current wholesale banking portfolios. Previous analysis has shown RE debt commitments account for 4.8% of the wholesale banking portfolios of the four banks most actively engaged in REIPPPP debt financing (Sager 2014). Views on and appetites for risk differ by bank, and some have shown willingness to hold RE exposure in the high single digits. For the majority of banks, however, an active secondary RE debt market would be a prerequisite to arranging further long term debt on RE deals. Anecdotal evidence suggests that several of the REIPPPP financing banks' debt capital markets teams are gauging appetite for related instruments, including private placements of securitised project loans offering attractive diversity.

International lenders are expected to contribute R45bn, being 11% of the total RE project-level debt requirement, declining slightly from the current share of 14% (Eberhard et al 2014) as the industry develops and matures. The bulk of this funding is likely to be made available from DFIs such as the IFC (International Finance Corporation). Similarly, the share of project related debt coming from SA DFIs is expected to fall from current levels of 30% (Eberhard et al 2014) to a much smaller share over the coming 15 years, potentially refocusing towards empowerment

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11 Projections are based on the assumption that all debt is bought at COD, amortising monthly in a straight line over 15 years thereafter, at a real interest rate of 7% (based conservatively on a nominal interest rate of 12-13% and inflation of 5-6%). Retirement fund assets are anticipated to grow at a real rate of 5% per annum: another conservative assumption based on FSB reports of evolving industry size over the past three years.

12 This approximates the anticipated current ratio of holdings in RE.

13 Own analysis based on FSB (2013)

debt financing as the shortage of fully funded empowerment partners becomes more acute. It is anticipated that they might contribute a further R30m, or 7% of the debt requirement, over the period.

Long term insurance offices are expected to contribute the remaining R120bn RE debt. SA life office assets are currently approximately three quarters of the size of the retirement fund book (FSB 2013); it is assumed that their take-up of RE project-level debt is in the same ratio as retirement funds and proportional to portfolio size. Life insurance companies have a natural affinity for assets with stable, predictable returns given long-date relatively predictable liabilities, with a general preference to hold debt instruments with attractive returns. They also have a far less constrained mandate than most retirement funds. International experience suggests that these companies are well suited to and active in infrastructure investment (Nelson & Pierpont 2013: 8). This experience is mirrored locally. Sanlam, Liberty and Old Mutual have all invested in RE (Eberhard et al 2014).

STATUS QUO

Before delving into an analysis of trends in retirement fund participation in RE thus far, it is instructive to explore industry structure and the network of key stakeholder relationships.

Retirement funds invest individual savings and employer contributions on behalf of their members: the asset owners. Decisions are made by a board of trustees, including member representation, which assumes fiduciary duty for the broader membership base. The Pension Funds Act 24 of 1956 summarises these duties succinctly:

> *"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."* (RSA 2011)

Investment decisions are taken by an investment committee, which is also responsible for defining the investment policy statement based on desired returns, the risk profile of the fund and its members, and broader fiduciary considerations. Asset consultants such as Towers Watson, RisCura and Alexander Forbes provide specific asset allocation recommendations to the investment committee based on these investment policy statements and can even help clients to shape them. Investments are typically made through specialist third party investment managers, although some funds may make direct investments through their fund managers (e.g. GEPF through PIC).

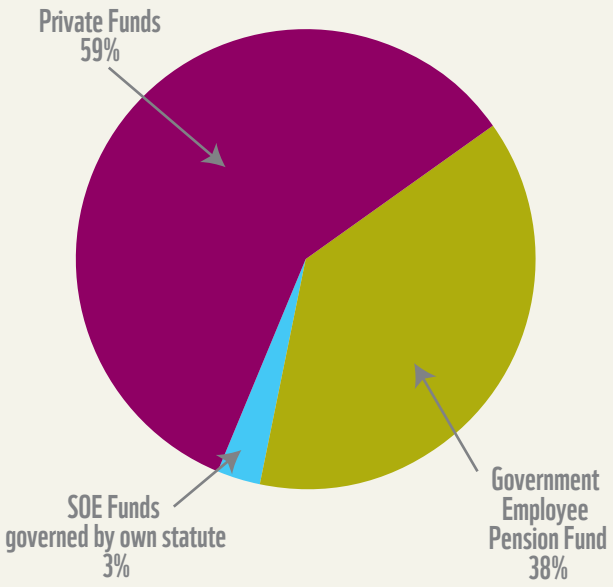
Composition of the sector

Figure 2 (below) shows that the bulk of retirement savings by asset value is accounted for by private funds, comprising privately administered funds, underwritten funds and foreign funds. These would include all of the retirement funds set up by private sector employers, as well as some state owned enterprise (SOE) funds – such as the Eskom Pension and Provident Fund – and union funds. All private funds are governed by the Pension Funds Act 24 of 1956, compliance with which is monitored by the Financial Services Board (FSB). The vast majority are defined contribution (DC) plans, financed through formulae approved by the employer or member (in the case of member contributions) which target specified levels of performance without guaranteeing a specific benefit for the duration of member retirement. Risk thus remains with the fund member to provide adequately for retirement. This has become the most popular type of retirement fund globally as employers seek to limit their liability.

The second largest category is accounted for by the Government Employee Pension Fund (GEPF). This fund is not regulated by the Pension Funds Act, but is governed instead by its own statute. It has a membership of 1.2 million and assets in excess of R1.4 trillion (FSB 2013; PIC 2014). As a defined benefit (DB) plan, the GEPF commits to pay a specified benefit to members upon retirement for the rest of their lifetimes, implying that it takes the risk associated with payment of this benefit for an uncertain period. Consequently, risk of underfunding remains with the fund.

The final and smallest category is the group of SOE funds also governed by own statute, comprising the Transnet Funds, Telkom Pension Fund and Post Office Retirement Fund. Whilst several were initially DB funds, since 2000 they have started converting their DB to DC funds and setting up new DC funds which all new members join. Accordingly, they may now be described as 'hybrid' funds. Transnet, the largest of the three SOE funds by asset value, has three funds, of which DC Transnet Retirement Fund holds more than 75% of total assets.

Figure 2: **Decomposition of retirement fund asset value by plan type, 2012 (%)**



Source: FSB (2013); own analysis

The basis for fund investment philosophy

The distinction between DB and DC funds is vital in the case of RE investment. As will be shown, infrastructure investments are typically less liquid than conventionally preferred financial instruments and funds, such as shares, government and corporate bonds, and listed property funds.

In the case of DB plans, the risk of shortfall remains with the plan sponsor, which accordingly has more freedom in asset allocation to achieve the targeted return. Opportunities for individual members to switch between investments are consequently typically limited or non-existent. Instead, the investment strategy and risk appetite of the sponsor are the most important determinants of where money flows. Critical determinants of the sponsor's liability include the age profile of members (linking to start of retirement), duration of retirement (driving longevity risk for the sponsor) and period of employment (to the extent that this links to the size of the anticipated member retirement benefit).

Taking higher levels of risk implies accepting more uncertainty and volatility which may threaten sponsor financial solvency and have an adverse impact on the reporting of its financial position[14]. Stable investments with predictable returns as infrastructure offers are thus considered attractive, with less importance placed on the liquidity of individual investments. The attractiveness of infrastructure investment to DB funds is concisely summarised by the GEPF (2014):

> *"The GEPF's Board is of the view that large-scale and long term infrastructure and investment opportunities are well-suited to the needs of the Fund – a large investor with long term liabilities.*
>
> *Infrastructure investments can generate impressive returns that are not dependent on volatile market movements. These investments, made through the Public Investment Corporation and its Isibaya Fund, have not typically been correlated with listed assets, and provide an excellent way to diversify the GEPF's portfolio."*

By contrast, members of DC funds are generally given more control of their investment decisions as they remain responsible for accumulating sufficient retirement savings. Switches may take place over a short investment horizon (e.g. annually) and therefore may be disproportionately influenced by recent investment performance. As a result, DC funds tend to have a shorter investment horizon than DB funds, which tends to skew portfolio allocation towards liquid assets. General factors such as age profile also play a role: funds with a predominance of older members will tend to hold more liquid assets, in anticipation of upcoming payouts.

The liquidity requirements of DC funds do not imply that infrastructure investments are not suitable for them. Towers Watson, one of the three large asset consultants to retirement funds in SA, views risk-adjusted returns to infrastructure investments as attractive at present and believes that associated liquidity risk does not present a challenge as long as holdings represent a modest portion of the overall fund[15]. Rather, the implication is that **the potential ceiling on asset allocation towards less liquid infrastructure investments will likely be lower in the case of DC funds than it will be for DB funds**.

Participation in RE investment to date

To the author's best knowledge, there is currently no comprehensive and reliable database covering sectoral asset allocation by SA retirement funds. This means that it is difficult to get an accurate picture of the extent to which these funds have invested into infrastructure generally and RE specifically. For private funds, the most recent FSB Registrar of Pension Funds annual report (FSB 2013) is used as a basis for estimation, while for the GEPF and self-governing SOEs, interviews and news reports provide sources of information.

Prior to evaluating infrastructure generally and RE as a specific subcategory of infrastructure, it is useful to evaluate asset allocation at the retirement fund portfolio level. Granular data for private funds provides us with a representative picture for these predominantly DC funds.

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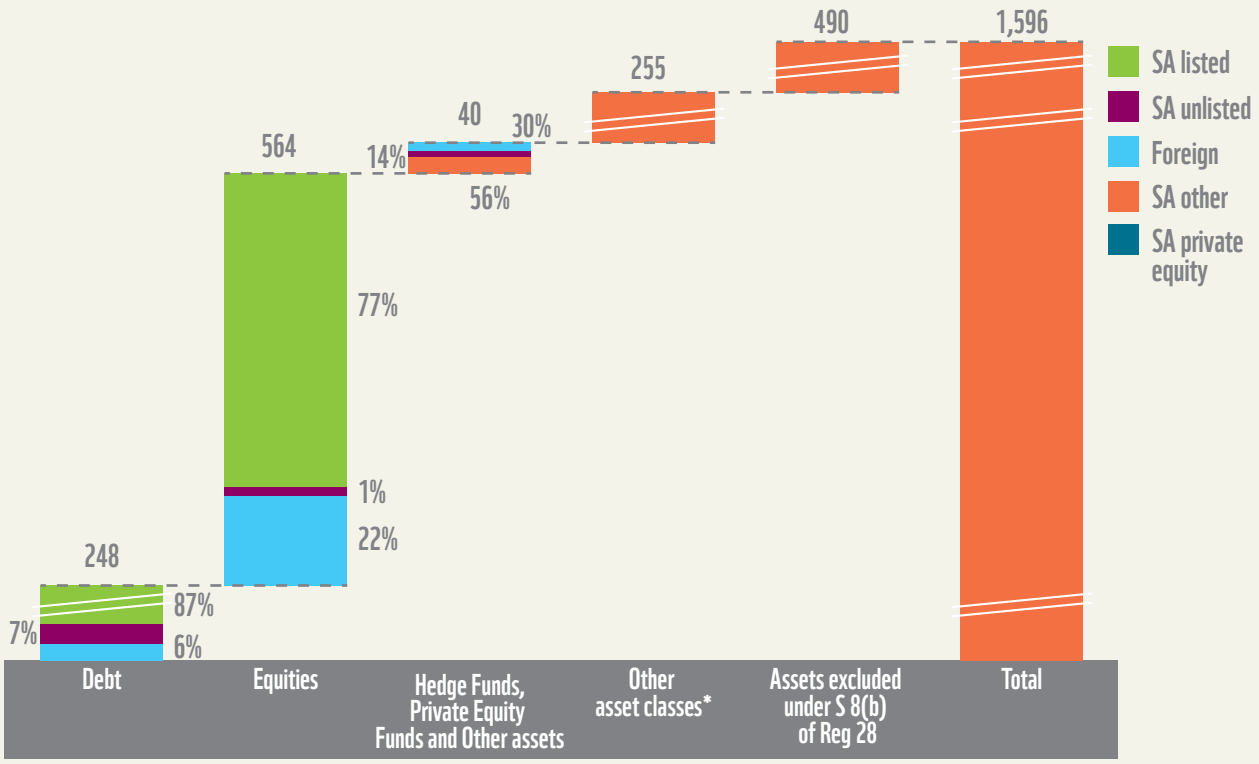
14 Where funds are required to mark shortfalls to market, increased volatility will have a negative impact on the financial position for reporting purposes.

15 Interview with Catherine Jenkins, Towers Watson

Figure 3: **Asset allocation of private funds, 2012 (Billion Rand)**



Source: FSB (2013)
Note: Included are cash, commodities, immovable property, investments in businesses of participating employers and housing loans*

In 2012, debt instruments accounted for 15.5% of aggregate private retirement fund assets, while equities accounted for 35.3%. While the share of debt in the total remains much smaller than the share of equities, it is interesting to note that it grew more quickly between 2011 and 2012. Some local investment professionals believe that excess demand exists for SA listed debt amongst institutional investors.

Private infrastructure investment would typically be contained in five categories as per FSB Schedule IB classifications, under the subcategory of instruments originated in South Africa:

Debt instruments issued or guaranteed by a South African bank against its balance sheet (Schedule IB 2.1(c);

- Other debt instruments listed on an exchange (Schedule IB 2.1(e)(i));
- Other debt instruments not listed on an exchange, being chunks of syndicated bank debt or – more typically – investments into unlisted debt funds (Schedule IB 2.1(e)(ii)))
- Preference and ordinary shares in companies, excluding property companies, not listed on an exchange (including investments into pooled equity funds) (Schedule IB 3.1(b)); and
- Private equity funds (Schedule IB 8.1(b)).
- To estimate potential current exposure of private retirement funds to infrastructure, their last reported holdings (FSB 2013) in private equity, unlisted debt and equity are adjusted upwards by 15%, mirroring the nominal growth rate of aggregate retirement fund assets from end 2012 to the first

quarter of 2014 (SARB 2014). Assuming infrastructure investment accounts for a maximum of 50% of this composite allocation[16], and adding an estimated maximum of R1.75bn for retirement fund holdings of listed infrastructure bonds[17] yields a possible current R11bn allocation to infrastructure by private retirement funds. The GEPF infrastructure allocation is estimated at three times the target for investment in environmental sustainability, at R36bn[18]. Self-governing SOEs are understood to hold up to R2bn of their retirement portfolios in infrastructure[19].

RE holdings for private funds are calculated as one third of the composite described above, combined with the anticipated private retirement fund holding of RE listed bonds. This amounts to R5bn in total. For the GEPF, the target PIC Isibaya Fund allocation of R12bn to environmental sustainability approximates its ceiling RE holdings[20]. Self-governing SOE RE ceiling holdings are estimated at R1bn, based on interviews.

The diagram below reflects estimated maximum potential exposure to infrastructure and RE across the various fund types, based on available information. It is estimated that **retirement funds hold R25-49bn in infrastructure generally, comprising 0.7-1.5% aggregate assets**. **RE, as a subcategory of infrastructure, has attracted R9-18bn, representing a share of 0.3-0.5% of total portfolios**.

16 This share is based on analysis of the portfolios of some large local alternative investment managers. Other investment options within these categories include empowerment financing, social enterprise financing and other private equity.

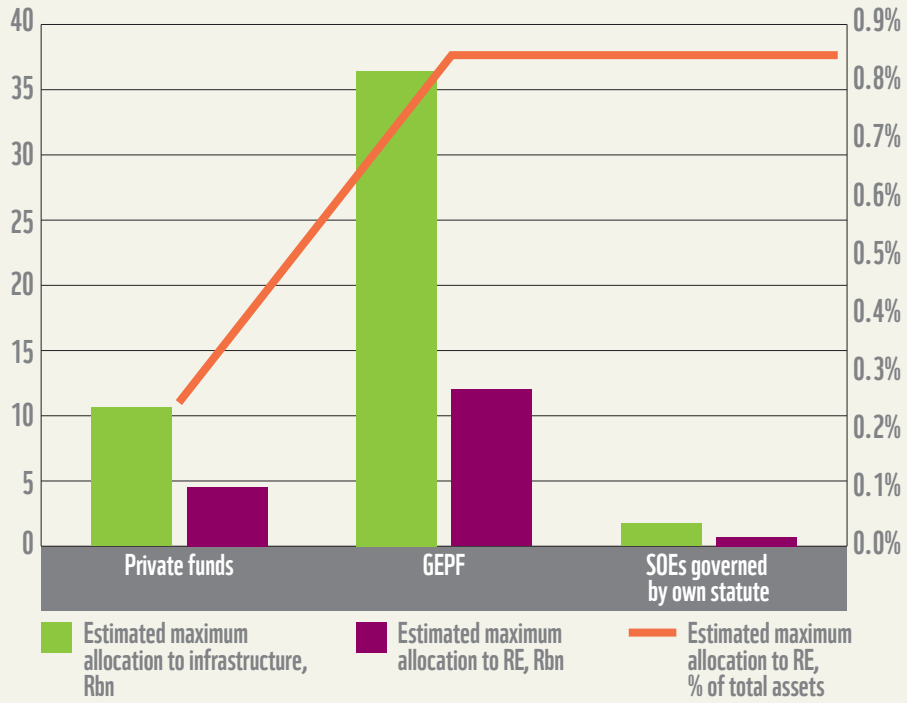
17 These include the Soitec (R1bn in issue) and iNguza (R5bn available for issue) listed instruments. It is understood that not all of the iNguza paper has been issued yet. Consequently, conservative assumptions are made. Take up by private retirement funds is estimated at 50% of the total bonds in issue.

18 The split follows portfolio allocations in private infrastructure funds, where environmental infrastructure assets are typically approximately one third of the total.

19 Interviews

20 Media statements from the PIC indicate that the bulk of the Isibaya allocation to environmental sustainability lies in RE projects (Njobeni 2012).

Figure 4: **Estimated maximum exposure to infrastructure including RE by fund type, early 2014**



Source: Own calculations based on FSB (2013); Ensor (2013); Njobeni (2012); interviews

There is, however, **a great degree of variability amongst retirement funds in terms of their appetite for RE**. In the case of GEPF and self-governing SOEs, up to 0.8% of assets may be invested in RE. This is substantially higher than private funds, which allocate less than half of this share to RE. Consequently, it appears that the distinction between private funds governed by the Pension Funds Act and self-governing public or SOE funds is important for participation in the RE sector. Apart from the obvious variation in governance structures, this distinction is influenced by factors such as liability structure (DB, DC or hybrid), investment policy statement including links to developmental mandates, and preferred investment channel. The next section examines these factors in more detail.

Earlier on, **the specific suitability of DB funds as infrastructure investors was highlighted**. This certainly does appear to be an important factor in SA. The GEPF's investment manager, the PIC, has reportedly allocated 15% of assets to unlisted investments; this is very high considering that private retirement funds allocate less than half this share to unlisted investments[21] (Ensor 2013).

In addition to lower liquidity requirements driven by the liability structure of its DB retirement fund, the GEPF's interest in infrastructure is influenced by a developmental mandate. The PIC targets projects and organisations contributing to the achievement of the National Development Plan, often constituted as unlisted entities. This investment objective covers investment into environmental infrastructure (Njobeni 2012). Interviews with other funds and asset consultants, including self-governing SOEs, reveals that this is an anomaly:

21 Own calculation based on FSB (2013)

generally retirement funds don't incorporate sustainability objectives into their investment policy statement. Where trustees do give consideration to sustainability in investment decision making, social objectives are targeted more often than environmental ones, perhaps linked to the employer's specific social context as well as broader South African challenges like poverty and unemployment. Consequently, **environmental investments such as RE typically need to compete with other opportunities purely on the basis of risk-adjusted return**.

Lastly, **the investment channel matters**. Most of the private funds and self-governing SOE funds invest indirectly, placing money into various instruments through third-party investment managers. By contrast, the PIC has a direct investment team which makes discretionary investments of a developmental nature on behalf of the GEPF, notably through the Isibaya Fund. The bulk of the R120bn capital consumed by successful REIPPPP projects thus far (Eberhard 2014) is both unlisted and falls outside the bounds of existing debt and equity instruments available on the open market to retirement funds with indirect investment strategies. The PIC is thus ideally placed to make a meaningful allocation to RE, directly securing assets through the pipeline of deals it evaluates for participation. Globally, several of the largest retirement funds have started building direct investment teams focused on infrastructure in light of the generally unlisted characteristic of infrastructure instruments. It remains to be seen whether the same trend will follow amongst the broader retirement fund community in SA.

Comparison with global peers

SA's retirement fund industry ranks somewhere in the middle of the global field with regards to infrastructure investment, with the average skewed upwards by the developmentally focused GEPF. In 2012, a survey of global pension funds[22] revealed that they contributed an average of 0.9% of their portfolios to infrastructure debt and unlisted equity (OECD 2013). There was significant variation amongst respondents, however, with a group of more progressive funds investing an average of 3.3% of assets in infrastructure. In general, allocations increased from 2010 to 2012, pointing to the recent emergence of infrastructure as a distinct asset class. Another recent study shows that just 20% of pension funds have any RE investments but that half of these dedicate a meaningful chunk (more than 2% of their portfolio) to the sector (EY 2013). This highlights the importance of trustees and advisors which understand this niche investment category, and likely represents larger funds with the necessary scale to justify the investment in time and effort.

Della Croce (2012) shows that **DB, hybrid and public pension reserve funds are amongst the most likely globally to identify infrastructure as a distinct asset class and set target allocations accordingly**. Funds investing in infrastructure tend to be large enough to develop direct investment teams, building the necessary skills and expertise to take full advantage of the opportunity (OECD 2013). Either these funds play a supplementary role, co-investing alongside other financiers such as infrastructure funds, or they take lead roles in funding consortia, competing with other financiers (e.g. funds, banks, project sponsors) in bidding for deals. Smaller funds invest indirectly, through infrastructure funds.

22 Most pension funds were domiciled in OECD countries; the study was conducted by the OECD organisation.

Whilst there is an increasing interest in green investments, **international retirement funds do not appear to be setting target allocations to clean technology and RE investments, or explicitly addressing these in their investment policies.** Investment decision making is based purely on the risk/return profile of individual investments (OECD 2013). This suggests that a successful performance record will be critical to increasing allocations in future. Currently, restrained interest is driven, to some degree, by the relative infancy of the sector: more than half of survey respondents in a study by Ernst & Young felt that it was 'too soon to tell' whether the performance of their RE investments met expectations (EY 2013).

In terms of investment targets, funds have a preference for underlying large, mature operating assets which have progressed beyond construction into operations (i.e. are generating cash revenues). Greenfields investments are considered on a case by case basis only (Della Croce 2012). The historical dominance of unlisted debt and equity infrastructure instruments globally points to a broader market challenge: low availability of RE instruments which offer institutional investors the risk-return profile they desire (Nelson & Pierpont 2013).

For the most part, retirement funds invest in infrastructure indirectly, through investment managers. The bulk of opportunities are unlisted, aggregated into pooled investment vehicles by investment managers. These offer funds exposure to a diversity of infrastructure projects, reducing single project risk, overcoming liquidity and size constraints and reducing project transaction costs. By contrast, direct investment through purchases of syndicated debt and project equity stakes requires internal sector specialists, project finance or private equity skills, and a substantial budget for legal and due diligence costs. Advantages include the opportunity to structure investment to match the profile of long term institutional liabilities, lowering portfolio risk and so potentially enabling a lower cost of capital at the project level. Only a few larger retirement funds have gone this route, with the associated expense (transaction costs and investment teams), large minimum deal sizes and long time horizon deterring the balance of funds (Nelson & Pierpont 2013).

General barriers to increasing RE investment globally include a lack of specialised investment skills and expertise (especially for smaller retirement funds), insufficient objective data on the quality of infrastructure investments, and the absence of agreed investment benchmarks for these off-exchange investments. **The most important constraint of all to increasing RE investment globally is policy dependence and associated regulatory uncertainty** (Della Croce 2012; OECD 2013; Nelson & Pierpont 2013). Recently, the quantum of RE investment has fallen globally as economic growth has slowed down (Ren 2013). The IEA has just revised its estimate of future RE investment downwards, citing political uncertainty regarding commitment to RE programmes as a major driver (Euractiv 2014). These developments tend to undermine the long term investment case for renewable power plants.

THE INVESTMENT CASE FOR RENEWABLE ENERGY

The main objective of retirement funds is the maximisation of expected portfolio investment returns while minimising the risk of insufficient liquidity to service liabilities at any point in time.

Retirement funds need to maximise growth of asset value to support financially secure retirement, while maintaining sufficient cash reserves to manage member payouts: withdrawals and retirement benefits. This is a delicate balancing act since riskier, longer-term investments are typically associated with higher financial reward than highly liquid investments like money market funds.

RE investments can contribute in various ways to the achievement of retirement fund objectives. Mechanisms include retirement fund asset and liability management, the optimisation of portfolio return and diversification, and the implementation of regulatory sustainability requirements.

Asset and liability matching

As custodians of retirement savings, retirement funds need to ensure that the value of assets is larger than liabilities at all times and that investment and liability time horizons are aligned. The outcomes of asset-liability matching exercises are influenced by a variety of factors, including the following (Nelson & Pierpont 2013):

Defined accepted levels of risk

- Longevity risk[23]
- Limits to the cost of retirement funding
- Entity taking the risk of fund shortfall (members, government, clients)
- Time horizon (driven primarily by age profile of members)
- Reporting requirements and regulation.

The long term nature of RE investments, as a subcategory of infrastructure, can help mitigate duration risk for retirement fund portfolios. Duration risk is incurred when the time horizons of assets and liabilities differ, resulting in differing sensitivity to inflation and interest rates and potentially creating a funding gap where the value assets fall below the value of liabilities at a point in time. In the case of REIPPPP projects, project revenue is indexed – either fully or partially – to CPI in terms of the power purchase agreement (PPA) signed with Eskom. This ensures that project profits are protected against the eroding impacts of inflation.

23 This weighs most heavily on DB funds.

According to Credit Suisse (2010), **the stable value of the underlying asset and relatively predictable returns less correlated with market movements provide a buffer against portfolio fluctuations associated with market volatility**. During the 2008 global financial crisis, rapid declines in listed asset prices opened up funding gaps for many pension plans, leading to a situation where liabilities exceeded assets. In the US, corporate pensions funding ratios fell to just 80% at the end of 2009, placing funds in serious danger of being unable to comprehensively service their financial obligations (Credit Suisse 2010).

Risk-adjusted return optimisation

Infrastructure is increasingly recognised as an important component of institutional investor portfolios worldwide. In particular, it appears that the returns per unit of risk taken are higher than in the case of many traditional investments, leading some institutional investors to start creating allocations to infrastructure as a distinct asset class.

Credit Suisse (2010) recently demonstrated theoretically that **exposure to infrastructure assets such as RE can increase portfolio efficiency**. The explanation for this is an improvement in the Sharpe ratio, which measures risk-adjusted returns for portfolios, measuring excess returns above government bond yields (embodying the risk-free rate of return) and adjusting for the volatility of these returns (measured by the standard deviation of the portfolio). Analysis showing low historical correlations with other asset classes underpins this argument. The USA-based argument should also hold in SA where government has taken a countercyclical approach to investing in infrastructure (PICC 2014). Under this policy, procurement of new generation capacity should accelerate during times of recession and low economic growth when one would also expect returns on equity, bonds and cash to decline.

Table 1: **Modelling the impact of adding infrastructure investment on institutional portfolio risk-adjusted returns**

Metric	Typical portfolio with no infrastructure investment	Typical portfolio with 10% infrastructure investment
Target return	8.80%	9.10%
Target risk	11.70%	11.30%
Return per unit risk (Sharpe ratio)	0.75	0.80

Source: Credit Suisse (2010)
Notes: Infrastructure investment is represented by 5% general infrastructure (Macquarie Global Infrastructure Total Return Index) and 5% customised infrastructure incorporating energy, ports and airports (growth infrastructure).

It was mentioned earlier that equity returns on recently awarded REIPPPP projects have fallen to mid-double digits, well below the average 20% return recently achievable on the JSE[24]. However, investment managers mention still achieving **very good returns on RE debt relative to the benchmark**. Yields on comparable long term government bonds currently fall in the range of 7-9%[25], with vanilla corporate bonds yielding little more[26], compared with the fixed long term 11-13% interest rates that direct lenders into REIPPPP projects have recently locked in.

Whilst it is true that REIPPPP projects involve a range of risks that do not apply in the case of government or typical corporate bonds, the bulk of these are substantially mitigated due to the rigorous REIPPPP requirements and contracting processes. In specific cases, there may also be recourse back to the sponsor's balance sheet where a deal generates inadequate cash flows[27]. In this respect, increasing participation in the REIPPPP by global utilities and other large international sponsors may provide debt financiers with further comfort.

Table 2: **Major risks associated with RE projects**

Risk type	Description of Risk	Risk Mitigant
Construction and completion risk	Relates to the cost, timeliness and completeness of construction works, i.e. plant is fully functional by anticipated COD within budget.	EPC contracts are signed with reputable, large contractors (e.g. Group Five)
Operating risks: cost and performance	Relates to anticipated revenues and costs realising as expected.	Long term equipment guarantees from suppliers and O&M contracts with reputable companies minimise these risks. Some performance risk remains, due to limited predictability of solar and wind resources
Political and regulatory risk	Covers risks associated with unforeseen changes in the regulatory regime as well as the possibility of the DoE or Eskom unilaterally changing the terms of the PPA with the IPP, including no longer honouring it	A sovereign guarantee is provided to enhance Eskom's creditworthiness as offtaker. Levels of this type of risk are thus comparable with standard government debt
Environmental risk	Relates to risks flowing from environmental regulation and compliance	Projects secure environmental impact assessments and obtain the necessary permissions upfront
Social risk	Flows from affected communities	Compulsory Local Economic Development activities ensure that the local communities share in project profits, reducing this risk
Interest rate risk	Results where projects have floating interest rates. Cost of financing can have a significant impact on profitability	Interest rates are generally fixed at financial close for the duration of the project, ensuring a stable repayment profile

Source: World Bank (2014); interviews; own analysis

24 Over the past five years the FTSE/JSE All Share Index has yielded a 19.5% return on an annualised basis (FTSE 2014).
25 The benchmark R186 bond is one such example, yielding 7.4% on 16 January 2015 (RMB 2015).
26 For example, the recently issued FirstRand FRX24 is yielding 9.6% on 16 January 2015 (RMB 2015).
27 This would be the case for project financing with limited recourse, or sponsor balance sheet debt.

The performance of sound due diligence processes to thoroughly assess project risks and ensure commensurate debt pricing is critical to sustainable financing. Local banks with extensive experience in project financing typically fulfil this role, playing lead arranger roles on project finance deals. The majority of institutional investors buy syndicated debt from these banks, while requiring that the originating institution hold a specified minimum exposure to maturity as a co-lender.

Implementation of regulatory sustainability requirements

The Pension Funds Act 24 of 1956 governs all retirement funds in South Africa except for the GEPF, Transnet and the Post Office Pension Fund. Regulation 28 of the Act, as recently amended, states the following:

> *"Prudent investing should give appropriate consideration to any factor which 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****..."* (RSA 2011, own emphasis)

This implies that environmental risks should be fully accounted for and adequately managed within retirement fund portfolios. The Code for Responsible Investing in South Africa (CRISA) was designed to give expression to sustainability principles and regulation pertaining to institutional investors, through a practical set of recommendations for implementation. Whilst it is voluntary, it covers all local institutional investors including retirement funds on an 'apply or explain' basis. Through focusing on incorporating ESG (environmental, social and governance) factors into investment analysis, active engagement with investee companies, and disclosure of ESG principles, CRISA (Code for Responsible Investing in South Africa) targets attainment of superior risk-adjusted returns through ensuring that material sustainability risks are taken into account.

In reality, **the local retirement fund industry has been slow to implement environmental risk management practices** (SinCo 2014). Several factors have been identified as contributors:

1. **In SA, there is a requirement that half of the board of trustees be employees of the plan sponsor** (i.e. employer organisation). These individuals' limited understanding of financial markets may constrain discussion on complex and less easily quantifiable risks28 and indeed on alternative assets including renewable energy investments as instruments to reduce risk exposure;

2. **Local asset consultants appear to have been slow in integrating sustainability considerations into their recommendations on retirement fund asset allocation**. Whilst the major ones29 are signatories to the global benchmark, namely the United Nations Principles of Responsible Investment, there appears to be little evidence of this commitment filtering down to strategic asset allocation. Some of the challenges may include client prioritisation of financial returns over 'softer'

28 This was also the rationale for implementing a rules-based, as opposed to guidance-based, approach via Regulation 28 (National Treasury 2011).

29 Alexander Forbes, Towers Watson and RisCura

ESG (environmental, social and governance) factors, as well as difficulties in accurately quantifying environmental risks, particularly for instruments not issued by major listed companies30;

3. **Current lack of enforcement by the FSB on implementation of the sustainability risk management provisions contained in Regulation 28** weakens the case for accountability at the retirement fund level. Uncertainty over which metrics will be tracked in future further reduces immediate action;

4. **Absence of a comprehensive local evidence base that sustainability leads to enhanced profitability** and thus improved investor returns. The absence of compelling information exists against a strong market performance track record, undermining the case for doing things differently. Instruments such as the Nedbank BettaBeta Green Exchange Traded Fund (ETF) are starting to build this case by demonstrating that listed equity returns can be optimised by shifting allocations towards more environmentally sustainable companies31; and

5. **Use of passive investment strategies32 within some retirement funds is likely to limit their appetite for decision making based on environmental risks**, and thus the need to analyse these. Given the local preference for active investment, this group is expected to be rather small.

In consequence, retirement funds are – possibly unknowingly – exposed to risks in a variety of ways (Mughogho et al 2012):

1. Valuations of companies or other investments are incorrect;

2. Portfolios are underweight on climate-resilient sectors and technologies;

3. Portfolios are highly exposed to investments which will be penalised by coming regulations on greenhouse gas emissions and/or water consumption; and

4 Some investments are vulnerable to climate-related shifts in resource availability, for example water, in the case of mining or food and beverage companies.

Amongst these outcomes it can be argued that the first has the most critical repercussions for retirement funds. If valuations of assets embodying high levels of climate risk are materially lower at a systemic level as a result of not incorporating the impact of climate risks, any potential funding gap would threaten the solvency of the entire industry. From a theoretical perspective, systemically incorrect

30 The Carbon Disclosure Project covers the majority of large JSE listed companies

31 As at July 2014, the ETF had delivered a superior return to the FTSE/JSE All Share Index over a six year horizon (inception in June 2008) (Nedbank 2014b). It based on the Nedbank Green Index which weights constituents on environmental and liquidity criteria. The obvious caveats apply: the outperformance of environmentally sound companies may be a function of superior strategy and risk management practices generally (i.e. causality cannot be inferred); the period over which performance is tracked is relatively short and starts during a time of great upheaval in financial markets; recently better performing industry segments may be weighted more heavily on the Green Index than they are on the All Share Index, and so on.

32 Passive investment strategies channel funds into funds which match or track the components of a market index. Proponents mention their broad market exposure, low turnover and low costs as benefits.

valuations could be driven by market failures arising from externalities (greenhouse gas emissions, for example) associated with economic activity, resulting in asset mispricing. The efficient markets hypothesis, for example, states that perfect information exists in the market: that all market participants receive and act on information relevant to investments immediately as it becomes available. Within this hypothetical ideal market, mispricing would only persist if markets did not function perfectly, for instance due to information asymmetries. This is often the case, particularly within developing markets and smaller stock exchanges.

Internationally, there is growing recognition amongst institutional investors that climate risks to investment strategies are real. It is estimated that 55% of global pension fund assets are exposed to climate risks (Economist 2014b). This understanding and awareness has started leading to different strategic asset allocation decisions.

In late 2013, a group of 75 institutional investors with more than $3 trillion in assets challenged the top 45 fossil fuel companies to assess financial risks linked to stranded assets under the banner of the Carbon Asset Risk Initiative. If global warming is limited to less than two degrees, the bulk of remaining global oil, gas and coal reserves can never be burned, with obvious implications for valuations of carbon-intensive companies (Ceres 2013). Some more progressive institutional investors have started to shift their holdings accordingly, gradually reducing their exposure to carbon-intensive investments and increasing holdings of 'clean' assets such as green bonds. There are also more radical examples. In 2013, Norwegian pension fund and life insurer Storebrand made a decision to divest from 13 coal and 6 oil sands companies due to concerns about stranded assets, citing its commitment to achieving sustainable financial returns for members (Simpson 2013).

Analysis for SA by Mughogho et al (2012) shows that the 'required by science' approach adopted by Government in its Long Term Mitigation Scenario will likely also result in stranded assets locally, in coal and coal-related sectors. If SA utilises the remaining coal reserves allocated to domestic electricity generation and liquid fuel production, the country will exceed its carbon budget. In the shorter term, a price on greenhouse gas emissions in the form of carbon tax will internalise the externalities associated with polluting economic activity, impacting the valuations of carbon-intensive companies locally.

Within this context, **RE offers retirement funds the opportunity to start proactively managing environmental risks by diversifying into climate-resilient investments**. RE investments will not be negatively impacted by carbon tax or any similar regulation targeting a reduction in carbon emissions. Furthermore, the socioeconomic upliftment requirements set by the DoE for REIPPPP projects offer retirement funds the opportunity to combine environmental and social sustainability in their investments. This would particularly be the case if they got involved in financing the equity stakes of BBBEE and BEE project partners.

OVERVIEW OF SA RENEWABLE ENERGY INVESTMENT OPTIONS

Previously, a general shortage of quality sustainable investment opportunities was identified as a barrier to investment in environmentally sustainable sectors such as RE (Mughogho et al 2012).

This section of the paper reviews some of the available RE and RE-related instruments and funds, focusing wherever possible on financial performance given the centrality of risk-adjusted return to investment decision making[33]. In light of the fact that the existing instruments are either unlisted specialist infrastructure funds or new to the South African market (thus requiring more extensive initial investor assessment), it is anticipated that the vast majority of existing investors would be found within the following grouping:

- GEPF, via PIC;
- SOEs governed by own statute;
- Large private retirement funds with more than R10bn assets. These 24 funds, collectively accounting for R750bn in assets, are listed in Table 7 in the Annexure.

It is noted that **existing RE and RE-related investment opportunity of R22bn is small relative to required future participation**. This figure does not include privately concluded transactions such as syndications of bank project debt to large individual institutional investors including life insurance companies and retirement funds, and private placements of unlisted debt instruments such as the 2012 R5bn IDC Green Bond. Combined, these represent another substantial flow.

At a high level in asset allocation decision making, retirement funds will determine whether to hold debt, equity or a range of other instruments. In general, returns on debt instruments are lower, but more stable than those on equity, commensurate with the lower level of risk. Lenders enjoy a prior claim to operating net cash flows and assets than shareholders do; they are paid interest before shareholders receive dividends in the ordinary course of business, while in the case of insolvency, outstanding debt is recovered before shareholders' capital is returned.

Debt instruments account for R14bn of available assets, while equity accounts for the remaining R8bn. In light of the need for additional lender participation and

33 The nature of several vehicles and accompanying industry and regulatory restrictions do, however, limit this disclosure.

currently low equity returns, it is anticipated that debt instruments will continue to dominate the RE investment universe in SA for the foreseeable future.

Debt instruments

An overview of several larger pooled debt fund and bond alternatives currently generally available to retirement fund investors follows below, totalling R14bn.

Less than half of RE debt assets surveyed here are accounted for by listed instruments. In general, the liquidity of listed instruments is considered superior to that of unlisted equivalents, given theoretically higher levels of trading activity on public exchanges compared with private over-the-counter transactions. As discussed, **liquidity is an important consideration for retirement funds** and the lack of liquid debt instruments is likely a limiting factor at present.

Another important feature of the two listed bonds is that their structures limit investor exposure to construction risk, whilst the existing pooled debt funds do not. As discussed earlier, retirement funds typically do not have appetite for investments which expose them to construction risk, so the current shortage of post-construction instruments is likely to be a constraint on their participation. The opportunity to create instruments which exclude construction risk is, however, constrained by the youth of the sector, with few underlying REIPPPP project assets having commenced commercial operations thus far. The market expectation is that additional listed secondary market debt instruments will be issued in the coming 2-3 years.

The youth of the market and the predominance of projects in construction phase also have broad implications for the credit rating of the instrument (whether internally estimated or externally assigned): a key determinant of retirement fund appetite for debt. Credit ratings of A- or better are believed to be possible on post-construction RE projects; for comparison the Soitec solar project bond achieved the Moody's equivalent of a BBB rating on national scale. Retirement funds historically demand debt with A- ratings or better for the bulk of their listed bond investment portfolio. In general there is very little supply of bonds with credit ratings below this level on the JSE: approximately 15bn is currently in issuance.

The first category of debt to be explored is unlisted debt funds, which pool exposure to various REIPPPP projects into a fund. Investors participate via purchases of various debt instruments including structured loans, debentures and credit notes. Term of investment is typically 15-20 years, i.e. investors buy to hold until maturity. Van Wyk (2013) argues that debt funds are particularly suitable for institutional investors due to diversification benefits; correlation with the stock market is lower than for private equity. Similarly, valuation risk is lower. All three funds surveyed are performing at or above benchmark.

Table 3: **RE unlisted debt instruments, 2014**

Fund name	Futuregrowth Power Debt Fund	Mergence Renewable Energy Portfolio	Vantage Green-x Note 1
Regulation 28 classification	Debt instruments, predominantly unlisted instruments of unlisted entities	Debt instruments, predominantly unlisted instruments of unlisted entities	Debt instruments, predominantly unlisted instruments of unlisted entities
Investment Manager	Futuregrowth Asset Management	Mergence Investment Managers	Vantage GreenX Fund Advisors
Mandate	Energy related industries and sectors in SA and SADC	RE projects in SA	Sustainable energy and RE projects in Africa with a minimum of 70% located in South Africa
Description of RE holdings	Syndicated bank senior and mezzanine project debt in >18 REIPPP projects, all technologies	Syndicated bank senior and mezzanine project debt in > 10 REIPPPP projects, comprising PV and wind	Syndicated bank senior and mezzanine project debt in 8 REIPPPP projects, comprising CSP trough, PV and wind
Project lifestage funded	From financial close onwards (i.e. includes construction stage) including secondary market investments post financial close (and post construction)	From financial close onwards (i.e. includes construction stage)	From financial close onwards (i.e. includes construction stage)
Fund size	R5bn	R1.1bn	R2.2bn
Duration of investment	Until debt maturity (currently 15-20 years)	Until debt maturity (15-20 years)	Until debt maturity (15-20 years)
Potential for early exit	Limited	Negligible	None
Reference rate	SteFI	JIBAR	JIBAR
Benchmark (before taxes and fees)	STeFI + 2.25%, with income reinvested	JIBAR + 3.75% portfolio yield (excluding portfolio revaluation)	JIBAR + 3.75%
Actual performance vs benchmark (before taxes and fees)	1 year: 12.29% vs 5.42% (30 June 2014)	The fund is achieving the desired returns	The fund is achieving the desired returns
Internal credit rating	Approximately 75% of holding is investment grade (BBB or better)	Mergence performs comprehensive internal credit ratings for all debt investments	Capital is lent into deals pursuant to a comprehensive, independent credit approval process
Inception date	November 2012	May 2013	November 2013
Reported investors	Several retirement funds	2 pension and provident funds domiciled in SA	13 pension and provident funds, all of which are domiciled in South Africa

Source: Investment manager interviews
Note:Data correct as at August 2014

A coming innovation is CPI-linked RE project debt offered by Vantage Green-x. Retirement funds seek inflation-linked returns, while project revenues and costs are also inflation-driven. Financing costs based on the same reference rate (CPI) reduce interest rate risk for projects, removing the need for expensive interest rate swaps and enabling payment of dividends earlier in the project lifecycle. These factors support a reduction in the cost of capital, enabling more competitive bids. The approach – and indeed institutional investor appetite – remains untested thus far.

Issuance of the first publicly listed debt instruments tied to the REIPPPP programme has been an interesting development. Both of the existing bonds have received investment grade ratings from reputable ratings agencies: an important consideration in terms of attracting investors. The Soitec project bond offers investors long term exposure to a single solar project, while the RMB iNguza conduit instrument offers short to medium term exposure to a variety of RE projects, backed by a FirstRand guarantee. It is understood that take-up of the iNguza bond has been limited, perhaps due to a combination of perceived low risk-adjusted return and the novelty of the instrument.

Table 4: **RE JSE-listed bonds, 2014**

Bond name	Soitec Bond	RMB iNguza
Regulation 28 classification	Other debt instruments listed on an exchange	Debt instruments issued or guaranteed by a South African Bank against its balance sheet listed on an exchange with an issue market capitalisation of R20 billion or more
Bond type	Senior unsecured corporate bond	Senior secured debenture settled through STRATE
Description of underlying project/s	44MWp concentrator PV project in Bokpoort	Variety of REIPPPP projects to which RMB is a lender
Issuing entity	CPV Power Plant No 1 Bond SPV (Soitec Solar GmbH affiliate)	iNguza Investments (RF) Ltd
Purpose of bond	Raise capital at attractive rates, limiting construction risk	Free up liquidity on RMB balance sheet, rolling basis. Provides an instrument for investment by money market funds
Project lifestage funded	From mid-way through construction	From financial close until 1-2 years into operations phase (i.e. including construction)
Duration	16 years, amortizing profile (therefore modified duration of 8 years)	3-36 months
Coupon rate and type	Fixed coupon rate of 11%	Fixed coupon rate dependent on duration (e.g. JIBAR plus 60-70bps on 12 month)
Benchmark	Corresponding maturity government bond (R208)	Corresponding maturity government bond (various)
Yield relative to benchmark	Currently offering a yield of 330bps; issued at 450bps over the swap rate	Margin to be 5-10 bps higher than bank issued paper for same duration
Credit rating	Baa21 (Moodys)	A1+ (Global Credit Rating Co) Underwritten by FirstRand
Value issued (Rand)	R1 billion	R5 billion available for issue

Source: Interviews; Deloitte (2013)
Note:Data correct as at August 2014

Both instruments have enhanced the quality of the underlying credit by limiting exposure to construction risk. The Soitec project bond has achieved this directly through structuring, while the RMB iNguza instrument falls back on a FirstRand payment guarantee in the event that projects are unable to service debt for whatever reason (including events related to construction).

The Soitec bond is an extremely innovative deployment of private capital into the RE industry. At present, it simultaneously holds the records for longest SA corporate bond maturity and largest SA BBB listed bond trade. Concentrating photovoltaic technology is novel and considered especially risky by banks, with the technology used in this project particularly unique since there is only one major supplier: Soitec. Opting for project finance may have resulted in the project being burdened with punitive lending costs or conditions.

The arranger, Standard Bank, together with its advisors cleverly mitigated risk associated with construction of a large power plant utilising a niche technology through sophisticated structuring. Initially, bond proceeds were held in an escrow account until various conditions were met: construction was halfway complete, the plant was grid-connected and generating half of anticipated load, and the bulk of spares were on site. During this period, Soitec funded construction off its own balance sheet, while bondholders were guaranteed return of their capital in case the project did not meet the triggers for the reversion event (the point at which the milestones were met and the funds deployed into the project). Post construction, the bondholders will not have recourse to either Soitec or the project assets; by this stage, risk should have fallen sufficiently to provide adequate comfort and permitted encumbrances do not allow for other debt to come into the structure.

The sourcing of suitable bondholders by Standard Bank was as critical an enabler as bond structuring. Just 4-5 large bondholders took the majority of the bond in a book build, being larger institutional and investment manager investors with a known preference for alternative assets and longer dated assets.

Several unlisted green bonds have also been made available to SA investors but are not currently available to retirement funds. The Nedbank Green Savings Bond is targeted at retail investors, with R3.6bn invested in RE projects offering durations of 18-60 months (Nedbank 2014a). The R5bn IDC Green Bond, which funds clean energy businesses, was wholly taken up by the PIC in a private placement in 2012. Maturity is 14 years with drawdowns taking place in R500m tranches as the project pipeline matures (Webb 2012).

Equity instruments

Assets contained in surveyed RE and RE-related equity funds amount to approximately R8 billion. Of this total, approximately R3.3 billion is accounted for by RE assets.

There are two types of funds from which RE equity investors can currently choose: pooled equity and private equity. Differences between the two include governing regulation, fee structure and timing of entry and exit. Amongst these, the last factor appears to be the most critical for retirement funds. Private equity funds are typically closed-end, with fundraising taking place over 12-18 months and exit after a predetermined period of time based on achieving an anticipated multiple of investment. Given that many retirement fund investment committees only meet

every two or three months, it may be a tall order to secure a commitment within the required time frame. Asset consultants need to conduct their own analysis on the private equity firm, underlying assets and investment strategy, and then propose the investment to trustees for their further consideration. Individual investment decisions relating to niche alternative assets often take more than a year, lessening the chances of participation within the required timeframe.

Table 6: **RE equity funds, 2014**

Fund name	IDEAS Managed Fund	Lereko Metier Sustainable Capital Fund	Evolution One Fund
Regulation 28 classification	Alternative investments (equity)	Private equity funds	Alternative investments (equity)
Investment manager	Old Mutual Investment Group Alternative Investments	Lereko Metier Sustainable Capital Managers	Inspired Evolution
Mandate	Economic and social infrastructure; RE in SA and the broader SADC region	Energy efficiency, RE, water and other infrastructure and waste management in SA and the region	Environment and clean energy growth and infrastructure in SA and the region
Description of RE holdings	Approximately R1.6bn invested into REIPPPP projects (solar and wind)	Exposure to 6 projects (PV, CSP and wind)	RE developers and a range of REIPPPP projects from Rounds 1-4 (PV, CSP and wind)
Fund size	R5.7bn of which R1.6bn is RE	R690m at final close – with co-investment > R1 billion	Approximately $100m
Duration of investment	Minimum lock-in of 5 years	Exit within 10 years	10 year fund life (to 2018); 4-7 year investment holding period
Potential for early exit	1 year written notice required	Possible	Strong, with preferred acquisition instrument during equity lock-in period
Performance target (gross of fees)	CPI + 7% over rolling three year period	Estimated at 25%	25% IRR and MoI of 2.5x for fund
Actual performance vs benchmark (performance stated is gross of fees)	Past 5 years: 14.9% vs 12.3% on an annualised basis (30 June 2014)	Too early to comment: not all projects are yet operational	Actual performance of commissioned plants so far above P50 sponsor case
Note on risk-return profile	Risk is moderate to low compared with balanced funds, thus adjusted return is high	Diverse – can invest early stage to capture development premium, also invests in growth opportunities in mature companies	Invested in early rounds when equity returns were high
Inception date	January 1999	November 2013 (fund close)	2010 (final close)
Reported investors		Transnet Retirement Fund; PIC	

Source: Interviews with investment managers; Old Mutual (2014a; 2014b); Creamer (2013); own analysis
Note:Data correct as at August 2014

Again, returns appear to be attractive relative to benchmark. The extent to which current value will grow will be limited by returns on equity achievable in future rounds of the REIPPPP. Generally speaking, institutional equity investors require a minimum of 15-16% (being CPI plus 10%) in order to participate; across Rounds 3 and 4, it became increasingly difficult to achieve these levels. It may also be linked to the very low levels of participation of retirement funds in unlisted equity investments in general.

Clearly, the risk profile and targeted returns differ substantially amongst the various equity funds. Initially, higher risk opportunities such as the Evolution One fund relied primarily on DFI participation to catalyse the market. In more recent years, retirement funds including the Transnet Retirement Fund have invested in a similar private equity opportunity: the Lereko Metier Sustainable Capital Fund.

As with unlisted debt funds, liquidity in equity funds is typically quite limited. A relative exception is the IDEAS Managed Fund which is open-ended and offers disinvestment with one year's notice. Returns are lower than in the case of the closed-end PE funds, influenced by holding exposure to the underlying assets over a longer period[34], historical holdings of other infrastructure assets which may currently be delivering lower returns and a fund cash component which is lower yielding. The Manager comments that risk is 'moderate to low relative to conventional balanced funds' (Old Mutual 2014b), notably less than a typical equity fund due to the stable performance of the underlying assets.

Untapped potential of the JSE bond market

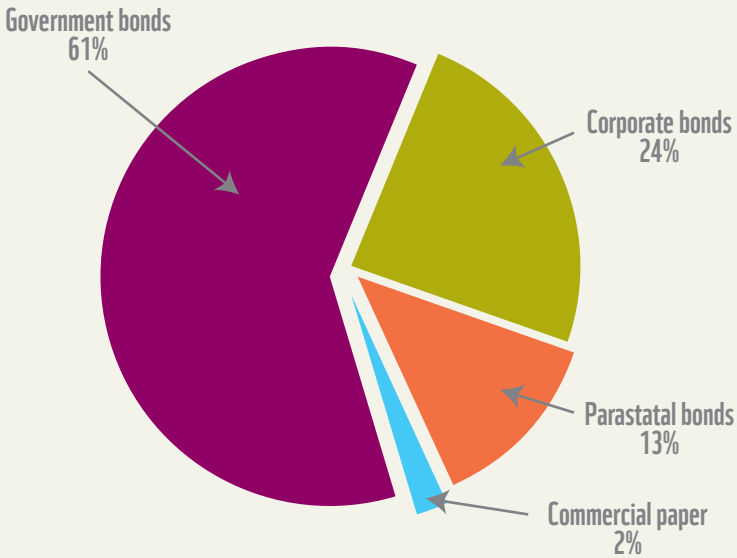
Issuance in the JSE bond market currently stands at R2 trillion, with government and parastatal bonds accounting for three quarters of the total[35]. Corporate bonds, mostly comprising bank bonds, account for the bulk of the balance, representing R482bn in issuance. Existing RE listed debt of up to R6bn accounts for a tiny fraction of this market, well below what local bond experts believe to be its true potential. If the total R150bn RE debt taken up by retirement funds was accounted for by listed debt, issued in equal annual instalments between 2015 and 2030, this would account for 5-10% of the value of anticipated annual corporate bond issuance[36].

34 Private equity funds exit at or near the peak of returns to equity to ensure maximum exit value is realised, while the IDEAS fund holds equity over the lifetime of the asset.

35 Figures are as at August 2014

36 This is based on an assumed average term of corporate bonds of 5 years and continuation of the observed compound annual growth rate in nominal value of corporate bond issuance of 14% over the past 5 years (own analysis based on bond market data supplied by the Johannesburg Stock Exchange).

Figure 5: **Composition of JSE bond market, August 2014 (Total value: R1.972 trillion)**



Source: Johannesburg Stock Exchange: Fixed Income Division; Own analysis

Issued subject to stringent securities market regulation, usually with external validation of the quality of credit provided by an independent ratings agency, bonds offer the possibility of much broader retirement fund participation than unlisted debt funds. Retirement funds which lack the specialist niche skills required to assess the investment opportunity offered by more complex unlisted instruments are likely to be enticed by the simplicity of a listed, rated bond.

Institutional investors, such as retirement funds, demonstrate substantial appetite for listed bonds with the requisite investable asset characteristics, as reflected earlier in existing asset allocation by private funds. Arguably **the two most critical bond characteristics are credit rating and pricing**, which are integrally linked**.** Historically, bonds with credit ratings of A- or better[37] have been preferred by institutional investors and currently comprise the majority of their bond holdings. However, limited purchases of bonds with ratings as low as BBB will be considered if risk-adjusted return is perceived as sufficiently attractive. Quality project-linked bonds financing construction may secure a BBB rating[38], while project-linked or securitised bonds serviced through cash flows from mature operating RE assets may achieve an A- rating. Establishing the pricing and general terms under which risk-adjusted returns are considered sufficiently attractive will typically need to be done through a book build exercise at this early stage of RE bond development.

Increased RE listed bond issuance will benefit projects through bolstering banking project finance appetite and enabling competitive debt pricing. If banks providing project finance into RE projects are confident at the time of arranging debt that they will have the ability to sell off substantial chunks of debt post construction, this should reduce capital requirements associated with

37 According to the national scale applied by international credit ratings agencies

38 Reference points include the local Soitec bond and the majority of global project bonds, according to Climate Bond Initiative (2014).

these illiquid assets and consequently also loan pricing. In cases where projects are willing and able to carry the risk of refinancing, mini perm structures – where listed bonds replace bank loans once the power plant is in full commercial operation – offer the opportunity to achieve better debt pricing a few years into the project on the back of a substantially de-risked asset with a potentially high credit rating. Soft mini perm structures, where loan refinancing is optional once the asset has established a commercial performance track record, provide one potentially feasible option. In this case, the loan is issued with the same term as under standard project debt terms, but with an increase in margin and cash sweep by the lender at a specified point in time should refinancing not occur before then.

Three listed bond types currently dominate the SA RE bond market discourse: standard project bonds, post-construction project bonds (sponsor or bank provides debt during construction, refinanced thereafter via the bond market) and securitised bond structures based on CLOs (collateralised loan obligations). These structures are briefly compared in the table below:

Table 5: **Typical characteristics of mooted SA RE bond structures**

Description	Project bond: Standard	Project bond: Post Construction	Securitised bond
Underlying assets	Single project, from construction phase on	Single project, post-COD	Multiple projects, post-COD
Relationship to bank debt	Bond substitutes / supplements bank debt offering issuers a more diverse funding base	Bond refinances bank debt	Bond refinances bank debt
Duration	Long term: 15-20 years (comparable with project debt)	Medium term: 5-10 years	Medium term: 5-10 years
Credit ratings outlook2	Requires substantial sponsor commitment, sophisticated structuring, credit enhancement to achieve required A- rating	Possibility of achieving required A- rating without covenants or credit enhancement	Diversified portfolio supports achievement of required A- rating without covenants or credit enhancement
Advantages	May slightly reduce cost of funding vis-à-vis bank debt (but highly project, technology and structure dependent)	May secure lower cost of funding dependent on project performance and yield curve vis-à-vis financial close (offset against applicable breakage charges, if any)	Terms of original project loan remain binding
Disadvantages	Depends on structuring; covenants likely to be more restrictive than in case of project debt, at least initially in immature project bond market	Risk of refinancing at higher interest rates if yield curve has moved or project performance is perceived as particularly risky. Hedging strategy less clear.	Terms of original project loan remain binding

Source: Interviews with experts; Own analysis

The most promising bond types from a retirement fund industry perspective are post-construction project bonds and securitised bonds. It has previously been noted that, generally speaking, retirement fund appetite for carrying construction risk is subdued. The necessarily shorter maturity of these bond structures may also result in greater institutional appetite for them. Corporate bonds with maturities of more than 10 years remain highly unusual in SA, potentially resulting in perceptions of lower levels of liquidity and thus deterring investors who do not plan to buy to hold to maturity. Most demand exists for 3-5 year bonds[39]: these consequently make up the bulk of the SA corporate bond market. However, investor preference for simple structures will disadvantage CLOs, with experts of the view that banks will mostly use package CLOs for private placement with specific identified investors. If retirement funds are amongst these investors, they are likely to be the very large funds which have access to specialist skills to evaluate niche investment opportunities.

Whether or not the sponsors of RE projects elect to tap into bond markets depends on at least three factors determining the desirability of going this route. The first, and arguably most important, is **the saving in debt financing costs achievable through entering the bond market**. Generally, the interest rate achieved through bond issuance needs to be at least 15-20 basis points lower than equivalent bank debt to make it desirable as an alternative, with a minimum economic bond size of R1bn[40]. The size of this benefit may, itself, be a function of project technology. Wind plants are believed to demonstrate greater variance between P50 and P90 than solar plants[41]; the impact of this variability on the ability to generate revenues and thus service debt will be priced into bond terms. Associated bond costs include bank structuring and raising fees, legal fees, applicable JSE fees, and ratings agency fees. In the case of bonds used to refinance bank debt, penalties applicable to the early settlement of bank debt ('breakage charges') may also influence the net benefit[42].

The second factor is the capital raising time horizon. Bonds typically take longer to arrange than project debt (Keenan 2012), particularly when the bond type is novel and extensive consultation with potential bondholders is required in order to agree terms. The compact REIPPPP bidding timeframes and requirement for full financing at the time of bid tend to advantage bank loans, at least to enable financial close. Thirdly, **sponsors will need to weigh any difference in applicable covenants**, which may be more restrictive in the case of a standard project bond than project loans, relaxing in the case of bonds issued post-construction.

All of these considerations point to **post-construction RE project and securitised bonds holding the greatest potential in SA**. Whether the market for post-construction project bonds develops will be heavily influenced by the position taken by Government on debt refinancing: under which conditions it will be allowed in future, and how any accruing benefits (lower debt service costs) are shared between RE projects and Government. It remains to be seen whether the current negotiations between IPPs, financiers and DoE proceed swiftly and

39 Interviews with local bond experts
40 Interviews with local bond experts
41 Opinion of local bond expert. P50 and P90 refer to the probability with which an annual energy production level is achieved
42 It is anticipated that project financing banks will waive breakage charges if they arrange refinancing bonds

efficiently to enable financial markets to function with optimum efficiency; few RE projects have reached COD thus far, therefore refinancing restrictions have not been identified as serious impediments yet. Moving forward, it would be preferable to have a standard agreed refinancing framework in place to provide predictability and facilitate restructuring at the project level, enabling a reduction in cost of capital.

Together with Government, local investment banks will be critical facilitators of the development of the listed RE bond market in SA. Their expertise in due diligence, monitoring and managing progress payments during construction, as well as political and economic clout in case of negative events are well respected in the SA market, ensuring ongoing dominance as primary RE debt funders. With extensive bond structuring expertise in their debt capital markets teams, and a wide network of institutional investor relationships, they are also ideally placed to structure place bonds in book builds[43].

If international experience is anything to go by, **SA can expect a rise in green bond listings in future.** Value of new global green bond issuance is more than doubling annually, with bonds increasingly issued by private sector entities (as opposed to development finance institutions) and routinely securing investment grade ratings (Economist 2014b). A Swedish bank, SEB, forecasts that 10-15% of the corporate bond market will be accounted for by green bonds by 2020 (Economist 2014a). However, the potential for standard project bonds financing plant construction is limited, in line with international experience of institutional investor aversion to construction risk (Climate Bonds Initiative 2014). Influenced by this factor, project bonds currently make up less than 2% of the global green bond market (Climate Bonds Initiative 2014).

43 Auction-style bond issuance will follow later, when the market is more mature.

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CALL TO ACTION

If retirement funds are to provide R150 billion debt into the RE sector between 2015 and 2030, several actions will need to be taken in the very near future.

Retirement funds should start acknowledging the implications of climate risks for their portfolios. Strategic asset allocation shifts towards clean assets including RE can assist with mitigating these risks and ensuring long term financial sustainability for members. This can be formalised through incorporating a commitment to sustainable investment decision-making as required by Regulation 28 and CRISA in their investment policy statements. Further, medium and large retirement funds seeing the merit of the RE investment case, should ensure that they have sufficient skill internally (on the investment committee) and externally (via their asset consultants) to properly evaluate the opportunity in both listed and unlisted investments.

Asset consultants, as a critical link in the retirement fund investment chain, will need to support retirement funds in adopting sustainable investment practices and evaluating clean investment opportunities such as RE. This implies engagement with the regulator and applicable regulation and codes to understand the implications for portfolio allocations, and development of in-house capability to properly analyse available sustainable investment instruments and funds including those relating to RE. Most retirement funds lean heavily on asset consultant recommendations to achieve their financial and developmental objectives, and the broader sustainability responsibility under Regulation 28 should consequently not be taken lightly.

Investment managers and financiers will also need to create more appropriate instruments into which retirement funds can invest. Specifically, these should exclude construction risk. They should also be scalable to justify analysis by the asset consultant, with investor exposure of R200m or more per instrument identified broadly as a minimum threshold to justify the required investment analysis. Further, wherever possible, instruments should offer some degree of liquidity, to entice greater DC fund participation and enable investment in Regulation 28 categories with higher prudential investment limits. The JSE bond market provides an important platform for the development of debt instruments which meet the identified asset risk-return characteristics of retirement funds.

More generally, the local RE industry will need to play its own catalytic investment role by demonstrating that it is capable of delivering solid returns. As investor confidence grows, allocations to the sector should follow. To assist with the development of secondary debt markets, Government should work towards a market-friendly standardised approach to debt refinancing, facilitating the recycling of capital by local investment banks. To bolster the enthusiasm of private investors over the longer term, Government should also clearly commit to a future in which the prospects of the RE sector are bright, through continuing centralised RE procurement and putting in place regulation which supports decentralised generation at a local level, relieving fiscal and grid strain.

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ANNEXURE

Table 7: **Large FSB registered retirement funds*, South Africa**

Ranking (total assets)	Fund no.	Fund name	Total assets, Rm (2012)
1	3904	South African Retirement Annuity Fund	86 459
2	564	Eskom Pension and Provident Fund	79 050
3	4038	Central Retirement Annuity Fund	73 518
4	5040	Engineering Industries Pension Fund	59 267
5	6776	Lifestyle Retirement Annuity Fund	56 355
6	1215	Sentinel Retirement Fund	40 039
7	25718	Metal Industries Provident Fund	32 455
8	37434	Momentum Retirement Annuity Fund	30 139
9	31505	Telkom Retirement Fund	29 619
10	404	Professional Provident Society Retirement Annuity Fund	28 178
11	1373	Standard Bank Group Retirement Fund	27 010
12	7697	Sasol Pension Fund	26 504
13	23053	Mineworkers Provident Fund	22 271
14	27324	ABSA Group Pension Fund	22 271
15	3130	FNB Pension Fund	19 831
16	34766	Alexander Forbes Retirement Fund (Provident Section)	19 599
17	1216	Mine Employees Pension Fund	18 925
18	29256	Municipal Gratuity Fund	13 202
19	34768	Alexander Forbes Retirement Fund (Pension Section)	13 046
20	559	De Beers Pension Fund	11 761
21	32689	Cape Retirement Fund For Local Government	11 686
22	27024	Corporate Selection Umbrella Retirement Fund	11 278
23	998	AECI Pension Fund	11 259
24	909	Cape Municipal Pension Fund	10 258

Source: FSB (2013)
*Note: *Large retirement funds are defined for present purposes as those with more than R10bn in total assets as at end 2012*

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WWF is one of the world's largest and most experienced independent conservation organisations, with over 5 million supporters and a global network active in more than 100 countries. WWF's mission is stop the degradation of the planet'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.

The Global Climate & Energy Initiative (GCEI) is WWF's global programme addressing climate change and a move to 100% renewable energy through engagement with business, promoting renewable and sustainable energy, scaling green finance and working nationally and internationally on low carbon frameworks. The team is based over three hubs – Mexico, South Africa and Belgium.

www.panda.org/climateandenergy

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Exploring the role of retirement funds in achieving Renewable Energy Vision 2030

100% RECYCLED

RETIREMENT FUNDS

should start acknowledging the implications of climate risks for their portfolios

ASSET CONSULTANTS

will need to support retirement funds in adopting sustainable investment practices and evaluating clean investment opportunities such as RE.

LOCAL RE INDUSTRY

need to play its own catalytic investment role by demonstrating that it is capable of delivering solid returns.

INVESTMENT MANAGERS AND FINANCIERS

eed to create more appropriate instruments into which retirement funds can invest.

PHOTO: © ADAM OSWELL / WWF-CANON

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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.

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