SOUTH AFRICA SCOPING STUDY:

Assessing the Potential for Green Bonds Financing Green Buildings

ALCB FUND

INTRODUCTORY NOTE & ACKNOWLEDGMENTS

This report has been prepared by Megan Sager, Adrian Lotter and Sarah Palhol of Consulting for Sustainable Solutions (www.sustainablesolutions.co.za), a consulting and advisory firm facilitating the flow of capital into sustainable property and infrastructure to enable cities of the future. Consulting for Sustainable Solutions is based in Cape Town, South Africa.

CSS can be contacted at info@sustainablesolutions.co.za.

This report is to be read in conjunction with the report titled South African Study: Reviewing the methodologies for certifying buildings under the CBI's Low Carbon Building criteria by Ecolution Consulting.

CSS is grateful to the ALCB Fund's Technical Assistance Facility for making this work possible, and the GBCSA for making extensive data and input available to support achievement of study outcomes.

9 September 2019

EXECUTIVE SUMMARY

The global green bond market has grown rapidly, with green buildings attracting substantial proceeds. In several respects, the property sector is an ideal feeder for green bond issuance. Property assets can generate stable income streams over a long productive life, with security offered via a perfected lien (mortgage registration), offering great investor appeal. Greening property is pivotal to the fight against climate change. Globally, buildings account for 30-40% of total final energy demand and almost 30% of all energy-related carbon emissions. Because energy efficiency is cost-effective, financing low-carbon buildings can provide investors with very high emissions reductions per Rand invested. This helps to explain why 28% of proceeds raised by green bonds to date have been allocated to buildings, representing $46bn in capital.

In South Africa, the green bond market is nascent: just three meeting the JSE green bond requirements have been listed to date. Yet, demonstrably high levels of investor demand and growing investor awareness of the impact of Environmental, Social and Governance (ESG) factors on investment support significant future market growth. It appears that all three issuers derived some form of financial benefit from green labelling, including investor diversification and tenor extension. One of the three green bonds was a green property bond, raised by Growthpoint Properties in respect of Green Star rated buildings.

Great potential exists within the property sector to support green bonds as a financing mechanism. An estimated R216bn worth of residential property meets the CBI requirements for certification via a building regulation proxy (SANS 10400 XA). This eligible stock of 270 000 units is growing by some 40 000 units per year. Investor demand is likely to be especially high for homes which outperform the regulation, particularly when validated by a third-party rating – for example certification by the GBCSA using EDGE, Green Star or Net Zero tools. In the commercial property sector, rated new green buildings worth an expected R1.4bn are immediately eligible for CBI certification, whilst existing buildings worth some R4.7bn likely comply with the CBI's criteria. Eligibility is broader using the Green Building Principles: more than R100bn rated commercial building assets could qualify for inclusion via third party rating systems (Green Star, Net Zero, LEED, etc).

Projections reveal R15bn of cumulative issuance potential in respect of rated green buildings by 2020, rising to R60bn by 2030. While this appears modest in context of a R3 trillion bond market, it represents a rapidly growing niche accommodating progressive property sector participants as issuers and ESG-focused investors as buyers, using largely familiar financial assets and a listed platform. Major issuers will be mortgage lenders, as financial intermediaries, and listed property funds, particularly Growthpoint and Redefine. There is also scope for medium and smaller REITs to access the bond market through green labelling. Green labelling may assist with attracting investors through enhanced transparency, accountability and verified reporting.

To realise the full potential, several barriers will need to be overcome. On the bond sell-side, this includes closing data gaps in operational data collection, raising awareness regarding the benefits of green bond issuance, and minimising unnecessary compliance costs and complexities. On the demand-side, there is a requirement for more comprehensive incorporation of ESG factors in decision making, supported by greater ESG disclosure, ultimately tilting portfolios towards ESG investments including green bonds. The GBCSA can accelerate uptake through increasing the readiness of property owners to enter green bond markets, tailoring tools, communicating the linkages and supporting data collection. Development finance institutions (DFIs) like ALCB can stimulate the market through boosting the business case for green bond issuance for early adopters, which often bear the highest costs. Finally, it is acknowledged that Government's role is central, shaping incentives for green building across the market.

ACRONYMS

CBI	Climate Bond Initiative
CBS	Climate Bond Standard
DBSA	Development Bank of Southern Africa
DFI	Development Finance Institution
DLR	Debt Listing Requirements
DMTN	Domestic Medium-Term Note
DPW	Department of Public Works
EBP	Existing Building Performance
EDGE	Excellence in Design for Greater Efficiencies
EPC / WPC	Energy / Water Performance Certificate
ESG	Environmental, Social and Governance
EWP	Energy and Water Performance
GBCSA	Green Building Council of South Africa
GBCI	Green Business Certification Inc
GBP	Green Bond Principles
GEPF	Government Employees Pension Fund
GFA	Gross Floor Area
GLA	Gross Lettable Area
HQLA	High Quality Liquid Asset
ICMA	International Capital Markets Association
IDC	Industrial Development Corporation
IFC	International Finance Corporation
IHS	International Housing Solutions
JSE	Johannesburg Stock Exchange
LEED	Leadership in Energy and Environmental Design
MFMA	Municipal Finance Management Act

MUR	Multi-Unit Residential
OMAI	Old Mutual Alternative Investments
PEB	Public and Education Buildings
PFMA	Public Finance Management Act
PIC	Public Investment Corporation
PV	Photovoltaic
REIT	Real Estate Investment Trust
SANS	South African National Standard
SOE	State-Owned Enterprise
SPO	Second Party Opinion
TUHF	Trust for Urban Housing Finance
UN	United Nations

1. INTRODUCTION

Green bonds represent an exciting possibility for raising debt in capital markets to finance the low-carbon transition. They differ from vanilla bonds in the management and application of proceeds, which are ringfenced and exclusively applied to finance or re-finance eligible green projects or activities, with the issuer required to report on allocation. Eligibility is determined by individual green bond guidelines or standards. The Green Bond Principles developed by the International Capital Markets Association (ICMA) require that green projects have clear environmental benefits, encompassing a range of environmental themes.

Globally the green bond market has grown rapidly along with awareness of sustainability in investor decision making. Since the first green bond was issued in 2007, global annual issuance grew to reach $167bn in 2018[1]. In the early years, issuers in developed economies, particularly public sector organisations such as development finance institutions (DFIs), dominated the market. The landscape has evolved rapidly, with emerging market and corporate issuers featuring increasingly prominently.

In SA, the JSE Green Bond Segment was launched in late 2017, aligning with ICMA Green Bond Principles. Whilst there remains a limited universe of related issuance in South Africa, all three bonds listed in accordance with the JSE's Green Segment Debt Listing Requirements (DLRs) have delivered financial benefits to issuers, including greater levels of subscription, tighter credit spreads at issuance, and longer maturity. Further, corporate reputation benefits have been considerable, with first-time green bond issuance resulting in heightened media activity and even new business development opportunities.

Green building attracts a large share of the proceeds raised by green bonds. Globally $46bn of green bond proceeds have been allocated to fund green buildings, representing 28% of all proceeds raised[2]. In emerging markets, green buildings ranked second highest as use of proceeds in 2018[3]. This has been enabled by the vast scale of the property sector, its appeal to institutional investors, and the evolution and formalisation of the green building movement, manifest in the increasing adoption of both voluntary and compulsory standards.

Locally, only one green bond raising capital for green buildings has been listed to date: a Growthpoint issuance in March 2018. The company subsequently returned to the JSE with a vanilla issuance in December 2018. Whilst returns to listed property have slowed recently, reducing flows of capital into the sector, emerging evidence reveals that green rating offers investors in premium office buildings a shield against weak economic conditions: Green Star building vacancy rates are almost half[4]. As the market for green buildings matures, attention is turning to the potential of other green building tools (Net Zero; EWP; EBP; EDGE) and property market segments (retail, industrial, residential), triggering a diversification in uptake.

This paper explores the potential for green bond issuance linked to green buildings in South Africa over the coming decade. After presenting the approach and methodology, the paper unpacks the market supply side through covering trends in the adoption of green ratings in the property market, the diverse characteristics of green building ownership base, and implications for access to bond markets. The demand side is analysed primarily through a market survey capturing investor perspectives. Future projections of green bond issuance are presented next, with a scenario analysis enabling an assessment of the impact of sensitivity to key levers. Subsequently, the barriers to realisation of potential are discussed, with recommendations provided to overcome these.

[1] CBI (2019)
[2] CBI Executive Boot Camp materials
[3] CBI (2018)
[4] MSCI (2019)

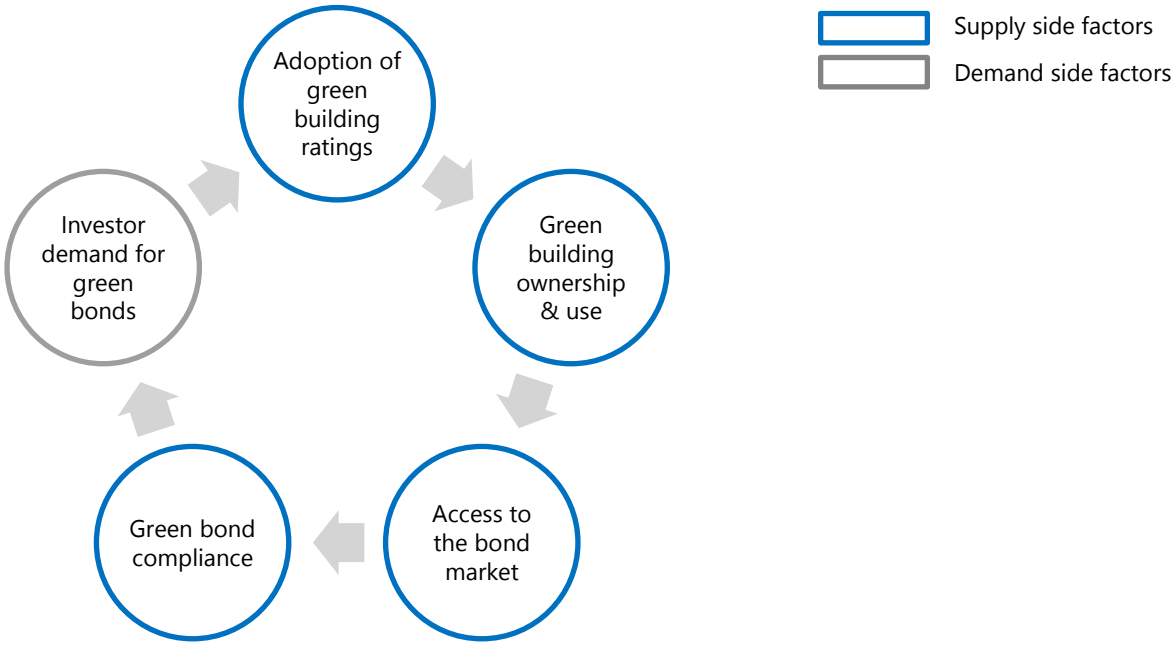
2. APPROACH AND METHODOLOGY

The conceptual approach to market analysis is built on a **total value chain approach**, which analyses production of green building, access to bond markets to finance this green building, and finally green labelled bonds as a new asset class traded on the JSE.

Accordingly, the study unpacks the key drivers of green bond issuance in South Africa, as follows:

- **Adoption of green building ratings**: Buildings which have been identified as green by independent measures (rating systems, standards or regulations) comprise the prospective eligible pool of assets which green bonds can finance (as per ICMA GBP);
- **Ownership and use of green buildings**: Financing options are determined by both asset use (e.g. ability to earn income which can service debt) and the scale and financial strength of building owners;
- **Access to the bond market**: Bond finance may be raised by property investors (direct exposures) as well as mortgage lenders in respect of their green building portfolios (indirect exposures). However, not all entities are able to tap bond markets, considering bond investor preferences;
- **Green bond compliance**: The JSE's Green Segment Debt Listing Requirements (DLR) prescribe additional compliance requirements. The cost and complexity of compliance will influence the decision to label the bond green;
- **Investor demand for green bonds**: To the extent that specific demand for green bonds exists (versus vanilla bonds), any additional compliance burden may be offset by financial benefit to the issuer.

Figure 1: Conceptual framework for market analysis



The study utilises mixed methods research, combining quantitative data from credible third-party sources including surveys and reports with qualitative data including primary research in the form of a market survey undertaken for purposes of this study. Where the robustness of findings drawn from individual sources is indeterminate, additional sources are sought for validation purposes.

Further details regarding the scenario modelling assumptions and methodology are provided in the annexure.

3. ANALYSING MARKET DRIVERS

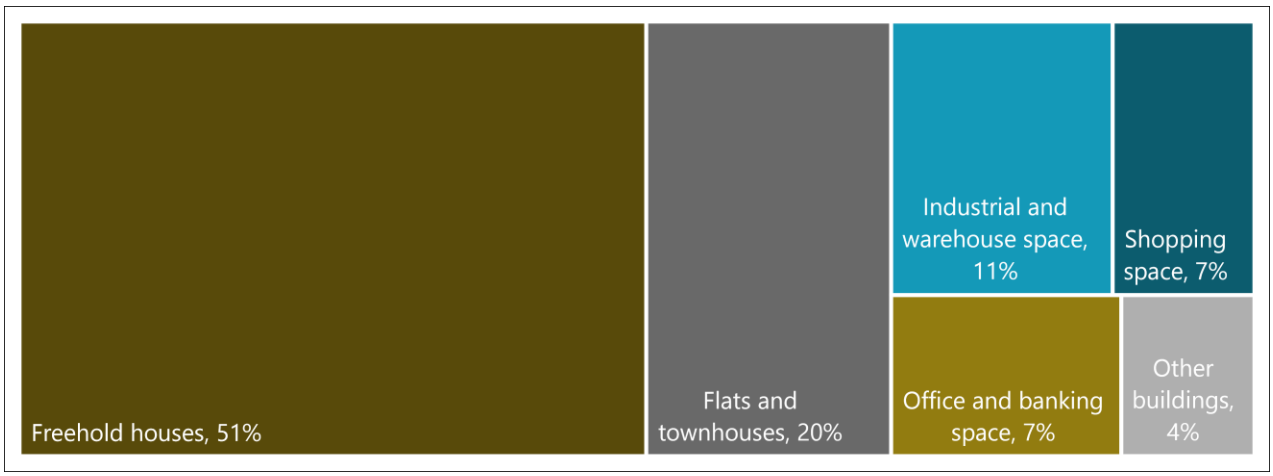
3.1 Adoption of green building standards

3.1.1 Property market overview

At the end of 2017, there were an estimated 7.227m properties registered in the Deeds Office, valued at approximately R6.814 trillion[5]. **6.379m properties - an 88% share - are residential**. This segment of the market also accounts for three quarters of value in the property sector.

Multi-unit residential represents a rapidly growing pocket in the local property market. In 2003, three times as much floor space was added in single dwellings on freehold properties as sectional title units (i.e. flats and townhouses). By 2018, the ratio was close to equal[6]. This trend is driven by a growing appreciation of the security, amenity and convenience offered by sectional title developments.

Figure 2: Share of growth in floor space by property type, 2000-2018 (% m² GFA added)



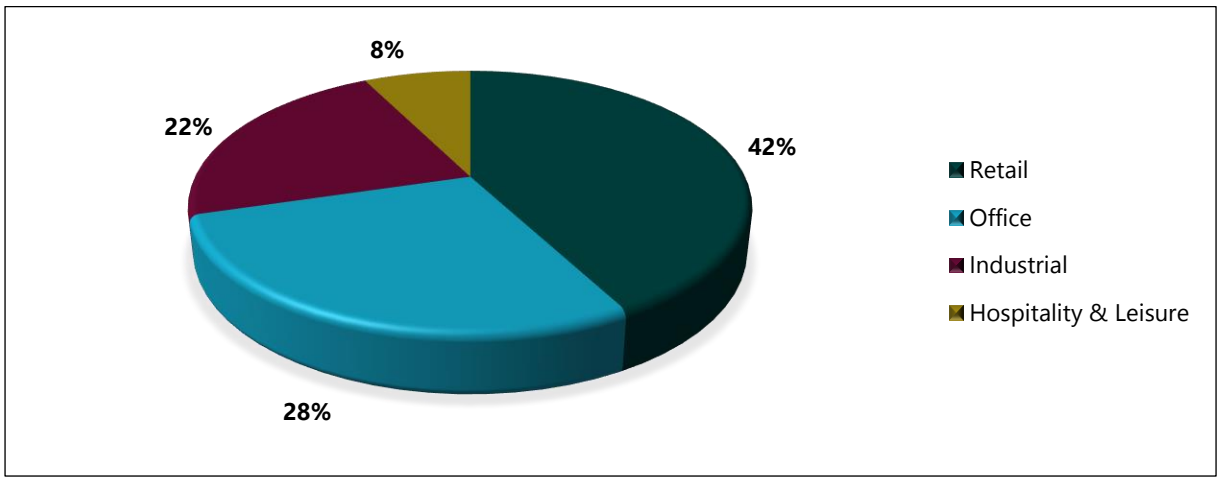
Source: Own analysis using data from Statistics South Africa Building Surveys

Note: Data covers stock delivered and financed by the private sector, so excludes fully subsidised housing. Data is for larger municipalities, accounting for approximately 85% of total building in SA. 'Other buildings' is a catch-all term for buildings not covered by other categories, including hostels, student accommodation, churches, clubs, community halls.

Within the commercial property category, industrial space is growing most rapidly, albeit from a relatively small base. It accounted for 40% of the 45 million m² additions to commercial property since 2000, driven primarily by rapid expansion of warehousing and logistics. Retail and office space each contributed about 25% of commercial property growth over the same period[7].

[5] As per Lightstone Property data
[6] Own analysis using Statistics South Africa Building Surveys
[7] Own analysis using Statistics South Africa Building Surveys

Figure 3: Commercial property by segment, 2015 (by share of value; 100% = R1.3 trillion)



Source: Property Sector Charter Council (2017)

3.1.2 Green building standards

Green building standards come in various forms. In South Africa, there are currently two types:

- **Energy efficiency regulation:** SANS 10400 XA is a compulsory building standard promulgated in 2011 under the National Building Regulations and Building Standards Act (No 103 of 1977) to ensure minimum levels of energy efficiency in new and refurbished buildings. To receive building plan approval from municipalities, all building plans must show conformity with these requirements;

- **Voluntary green building rating systems**: Independent certification bodies have introduced rating systems which reward good/best practice based on green building tools. The most prominent of these is the Green Building Council of South Africa (GBCSA), which currently certifies against four main tool categories: Green Star, Net Zero, Energy and Water Performance (EWP) and EDGE for homes. More recently, GBCI and thinkstep-SGS (a consortium) have launched certification for EDGE applied to commercial buildings. Further, LEED certification is available through GBCI. Finally, a specialist property lender, TUHF, has developed a green mortgage product and rating system known as Luhlaza, aimed at improving the energy and water efficiency of the inner-city apartments it finances.

Best estimates of market uptake as at April 2019 are as follows:

Table 1: Green building standard uptake (compulsory and voluntary)

Property Segment	Ratings Body	Rating System	Implementation Start	Coverage (no of buildings; other measure)
Residential	N/A	SANS 10400 XA	2012	270 000
	GBCSA	EDGE	2017	9 947 units in 29 developments
	GBCSA	Green Star New Build MUR Tool	2011	11
	TUHF	TUHF Luhlaza	2018	3 developments
Commercial	N/A	SANS 10400 XA	2012	16.652m m^2 GFA
	GBCSA	Green Star New Build	Office V1: 2010 Office V1.1: 2014 PEB: 2013 Retail: 2010 Industrial: 2018 Precincts: 2019	231
	GBCSA	Green Star Existing Building Performance	2014	184
	GBCSA	EWP	2015	24
	GBCSA	Net Zero	2017	10
	GBCI	LEED	V2: 2010	14

Sources: Statistics South Africa; TUHF; GBCI; GBCSA

Note: SANS 10400 XA compliant stock is calculated as space added by the private sector in larger municipalities (approximately 85% of the total countrywide), from May 2012-Dec 2018
Green rated projects include those which are in still in the rating process, assuming the ratings will be obtained.
Commercial property includes all non-residential property segments

As regards compulsory greening, the implementation of SANS 10400 XA has positively affected the construction of at least 270 000 new homes (this excludes fully subsidised units). This represents 4-5% of the estimated total of 6.4 million registered homes (end 2017)[8]. At an average house value of R800 000[9], this represents property stock valued at approximately R216 billion.

In the commercial property segment, defined here as all non-residential property, 16.652m m^2 floor space (GFA) has been added since the promulgation of Part XA (up to end 2017). It is not possible to estimate the share of the total accounted for by this property, since reliable estimates of total floor space are not widely available for the commercial property sector. It is similarly difficult to compute meaningful estimates of value.

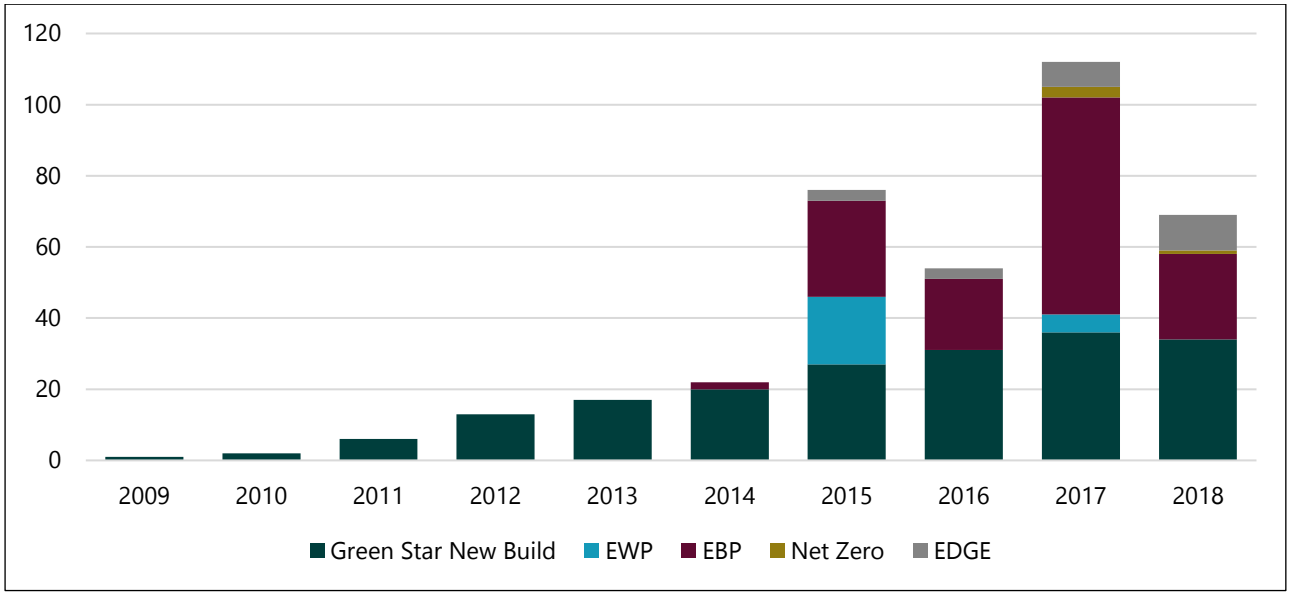
3.1.3 GBCSA green rating tools

Since the primary focus of the current study is on GBCSA rated green buildings, further analysis is specific to the GBCSA unless otherwise mentioned. However, the insights are generally applicable.

The graph below shows uptake over the GBCSA's first decade. While the number of new certifications slowed in 2018, **the growth rate over the past five years exceeded 50%.**

[8] This excludes the remaining registration backlog for fully subsidized units, estimated to affect 0.5-1m homes
[9] As per Lightstone Property data at end 2017

Figure 4: GBCSA certifications by year and tool type, number of projects



Source: GBCSA

Note: Projects refer to individual buildings for commercial ratings and developments for residential ratings.

Certification for existing buildings is growing rapidly, although new buildings rated on design tools still account for the largest share. In the last 3 years, buildings rated using the Existing Building Performance (EBP) Tool outstripped those rated with the Green Star new build (i.e. design) tools. This is a very positive development for the green building industry generally and green bond issuers specifically, for the following reasons:

a) **It extends the reach of green building ratings to a far larger market**: the stock of existing buildings is far larger than annual additions to it;
b) **It somewhat decouples growth in the green building industry from the property cycle**: property development is highly cyclical;
c) **It facilitates alignment with the CBI Low Carbon Building criteria** which require evidence of leadership in carbon footprint reduction.

Residential property

Voluntary rating systems have been adopted by developers and investors in the **multi-unit residential market** for a multitude of reasons, including market differentiation and access to capital, notably from development finance institutions (DFIs).

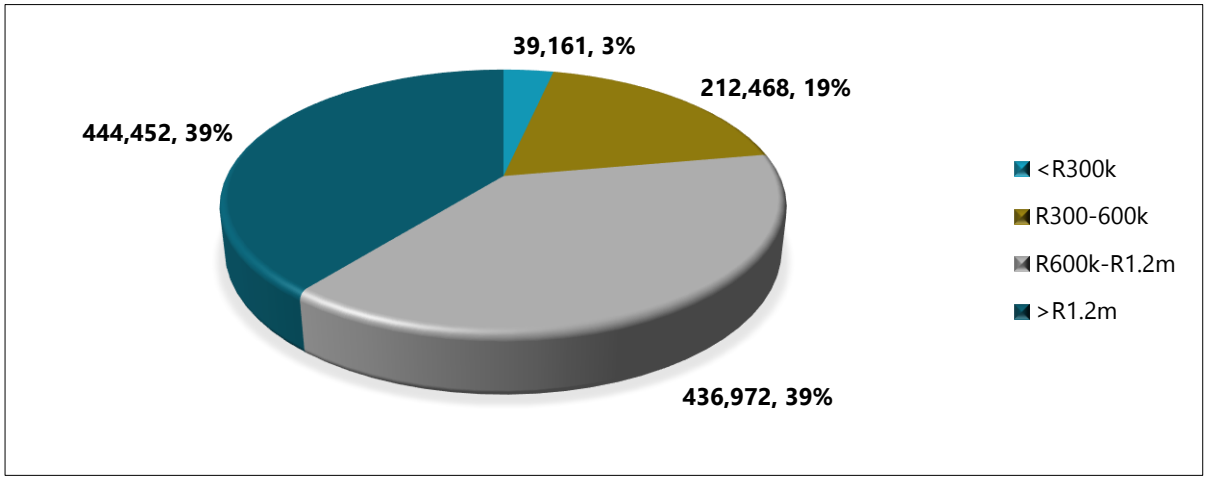
Environmental sustainability has supported differentiation towards the higher end of the housing market. The Green Star MUR rating has been used for this purpose, with 15 projects registered at the time of writing.

Access to finance has been a driver for developers in the affordable or 'gap' housing segment. EDGE is a tool developed by the IFC for emerging markets, focused specifically on the resource efficiency dimension of building sustainability. Social co-benefits have attracted DFIs, principally through funds managed by IHS. IHS Fund II has enabled the development of 5 000 EDGE rated affordable units, currently comprising half of SA EDGE certified stock. Indeed, 75% of existing EDGE certified units fall into the affordable housing category.

Operational efficiency is believed to be the greatest driver of uptake of green homes amongst end users. Savings are arguably of greatest value to lower income households, where the utility burden is greatest. Easing this burden is a potential enabler of access to housing in a market plagued by undersupply. Even

though more than a third of the population falls into the gap housing market[10], just 20% of stock caters to this group. This reflects multiple challenges including limited affordability, escalating unit costs and constrained access to finance for both developers and end users.

Figure 5: Multi-unit Residential Market by Property Value Band, 2017 (number of properties)



Note: Primarily the R300-600 000 value band caters to the gap market
Source: CAHF (Lightstone Property)

Commercial property

The value of rated property is believed to be in the region of R100-150bn[11]. Commercial buildings totalling approximately 8.3m square metres GFA have completed or are in the process of being rated by the GBCSA.

Within the commercial property sector, adoption of voluntary ratings has been greatest for large buildings (>6 000m^2), influenced by the large fixed component of certification costs. Properties valued at more than R1.2m account for just 30% of the total South African commercial property universe but represent more than 80% of sector value[12]. These 260 000 properties worth an estimated R1.4 trillion comprise the main commercial property universe for purposes of this study[13]. **Green rated buildings comprise 0.2% of this stock**.

Johannesburg accounts for half of all rated commercial buildings, with Cape Town home to a quarter. Only 6% of rated buildings fall outside the four major metropolitan areas[14]. This geographic concentration is useful for benchmarking purposes, undertaken by analytics companies (e.g. MSCI), property owners, and the CBI for assessing compliance with the CBS Low Carbon Building criteria.

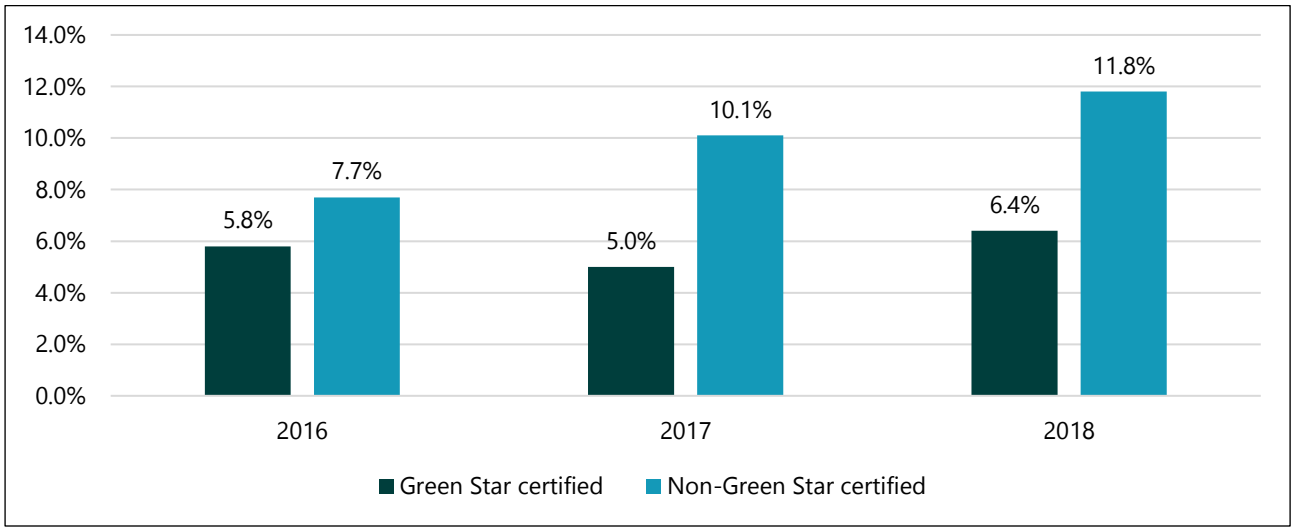
Most rated commercial buildings are in the office segment, **often premium grade buildings**. The first GBCSA Green Star ratings tool was developed for this segment during the 2000s; the EBP tool launched more

[10] Affordable housing market is defined here as households with monthly income between R3 500 and R23 300 (2018), as per the Banking Association of South Africa / Financial Sector Code.
[11] This includes buildings registered to be rated but not yet certified. The calculation is based on R150/m2 net income for premium offices – the dominant rated property type - as per MSCI (2019), capitalised at 10% (to be conservative). An adjustment is allowed for GLA being less than GFA.
[12] Lightstone Property data as at end 2017
[13] There may be exceptions where commercial developments are sectionalised into smaller units for sale.
[14] GBCSA data

recently. Growthpoint and Redefine Properties - the two large office-focused REITs - have committed to achieving 4 Star or better ratings across their office portfolios, already holding close to 200 Green Star rated buildings between them at the time of writing[15]. Green Star is a powerful brand in the office segment.

High uptake in offices is supported by evidence of financial outperformance. MSCI, a global provider of financial data and data services, has constructed a green property index. Currently the only sample with significance comprises P- and A-grade[16] office buildings. Empirical analysis reveals a considerable premium of 3.1% in total return (i.e. return combining income and capital growth) over a 3-year period in favour of Green Star rated buildings. One of the key drivers is the far lower vacancy rate. Green office buildings have demonstrated the ability to attract and retain high quality tenants in a lacklustre economy, protecting performance against market conditions of oversupply. While green office buildings may not yet attract rental premia, it is clear they generate far more resilient income streams.

Figure 6: Premium office building vacancy rates, 2016-2018 (%)



Source: MSCI (2019)

Public and education buildings rank second with 12 buildings rated against the Green Star PEB tool. This is very diverse category ranging from small sites - petrol stations and taxi ranks - to large educational facilities: schools and universities.

Retail is third with 6 Green Star rated buildings, growing as green retail-led, mixed-use precincts gain in popularity. These include the V&A Waterfront in Cape Town - developed by Growthpoint - and Waterfall City in Midrand - developed by Attacq. Amongst local rating tools, Green Star again features prominently. Growth node Waterfall City in Midrand aims to set global trends as an entirely green precinct. All buildings in the precinct will be applying for LEED accreditation, according to the Attacq CEO, Morne Wilken. This is because "the internationally-recognised LEED certification is the most well-known standard for international corporates that endeavour to have green buildings"[17]. The level of rating will be influenced by the demand from tenants in the precinct, including multinational companies such as Novartis and Schneider Electrical.

[15] They currently own 179 office buildings, although may plan to exit some of these investments.
[16] P-grade office rating indicates prime grade and is the highest grading possible.
[17] See http://waterfallcity.co.za/attacq-green-philosophy-applied-waterfall-city-beyond/

In the industrial space, Net Zero Carbon tools have shown early appeal for progressive property owners investing in photovoltaic (PV) solar systems. The combination of abundant roof space and relatively low, stable peak load (excluding production load) makes warehousing an ideal application for solar PV. The simplicity and cost effectiveness of the Net Zero rating enables uptake by property funds which aim to futureproof their portfolios for the low-carbon transition.

Drivers of adoption of green building vary by commercial property market segment:

- Tenant engagement drives uptake in the premium office segment, whilst also influencing adoption in upmarket retail space. Several property funds surveyed commented that high quality tenants, including both multinational and blue-chip local companies, now expect Green Star rating when they take up premium office space. Green Star rating is likely to signal lower operating costs and greater physical comfort, amongst other benefits;

- Policy is the main driver of uptake of green ratings in the public sector. In 2018, DPW launched a Green Building Policy centring on enhancing resource through implementing minimum building standards and improving monitoring and reporting. DPW, as the primary custodian of state-owned property, intends to lead by example, including through adoption of green building rating systems. The policy refers to the future development by Government of its own green building rating tool;

- Mounting concerns over the reliability of grid-supplied electricity are leading landlords to invest in hybrid renewable energy systems, aligning with the requirements of the Net Zero Carbon tools. Market feedback suggests that adoption is likely to be greatest in the industrial segment (including warehousing and logistics), with additional potential in suitable office and retail applications;

Some factors affect property owners across the spectrum:

- Property funds highlighted the growing importance of ESG focus to institutional investors. Increasingly, access to capital is influenced by ESG policy and performance;
- Similarly, the newly introduced carbon tax could reduce the feasibility of heavily grid-reliant buildings from 2023 onwards, when the scope of coverage expands beyond large carbon emitters. The mechanics are yet to be confirmed.

3.2 Ownership and use of green buildings

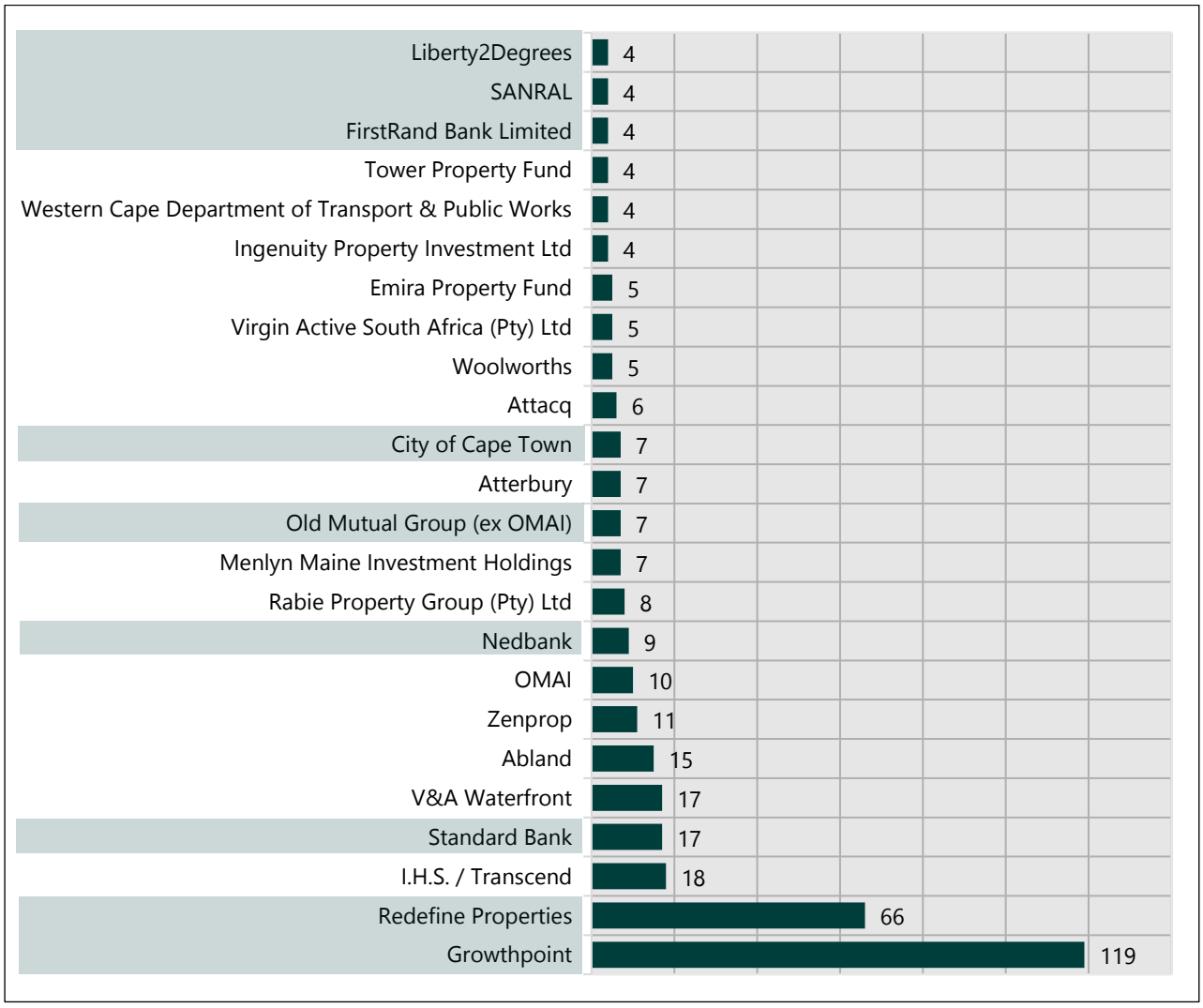
24 top green building owners account for 67% GBCSA rated projects[18], half of which are also active JSE bond issuers. Each institution currently owns at least 4 green rated projects: a sufficiently large portfolio to consider issuance of a green bond[19]. Generally, bond issuances smaller than R1bn are considered infeasible due to the associated transaction costs. Since many bond investors do not wish to take construction risk on new developments, existing portfolios are pivotal to green bond issuance prospects. By way of illustration, Growthpoint placed a R1.1bn green bond to finance 5 existing Green Star buildings from its Thrive Portfolio.

6 listed property funds account for 63% of the green projects held by top green building owners[20]. 7 unlisted funds own 20% at the time of green building rating; a number of these properties may be sold off to long-term investors (e.g. REITs) and owner occupiers (e.g. blue-chip corporates). Currently none appear to

[18] Commercial buildings and multi-unit residential developments are counted individually as green projects.
[19] Rated commercial properties generally range from R100m-R500m in value, averaging R150-250m.
[20] Note that IHS and Transcend are bundled together, since IHS may dispose of holdings via sales to Transcend.

be active bond issuers, due in part to often employing a development-focused business model with mainly short-term financing requirements. Owner occupiers hold the balance: a total of 62 green projects, possibly worth R10-20bn.

Figure 7: Major green property owners, April 2019 (by number of GBCSA rated projects)



Source: GBCSA; JSE; Own analysis
Note: Active JSE bond issuers as at April 2019 are shaded.

3.3 Access to the bond market

Currently the JSE bond market is worth close to R3 trillion, split as follows:

- Dominating the market, R2 trillion (67%) is sovereign issuance;
- Public enterprises account for a further R264bn (9%) – this figure is lower than usual considering the withdrawal from SOEs from debt capital markets in 2018;
- Municipalities are limited participants, with four metros raising R18bn amongst them;
- Within the private sector, banks and other lenders (TUHF; securitisation vehicles) received the lion's share of investment at R477bn or 17% of total issuance;
- Listed property funds account for R36bn issuance or less than 2% bonds outstanding:
    - Raising less than 10% of the debt capital raised by lenders
    - Financing less than 10% of their local portfolio value;

It is likely that issuance will increase as confidence is restored in the property sector in years to come;

- Other corporates account for R104bn: less than 5% total bonds outstanding.

Table 2: Outstanding bond issuance by issuer category, April 2019

Issuer Category	No. Issuers	No. Bonds	Amount Outstanding (R bn)
Sovereign	2	29	1 947
SOEs & Provincial Entities	12	87	264
Municipalities	4	19	18
Banks & other lenders incl. securitisation vehicles	58	1252	477
Property funds	10	117	36
Other corporates	40	205	104
Total	**126**	**1709**	**2 847**

Source: Own analysis on JSE data

3.3.3 Public entities

Public entities comprise national, provincial and local government, state owned enterprises (SOEs), provincial enterprises, and educational institutions such as universities.

Ability to access debt capital markets is limited by regulation. All borrowing is regulated by the Public Finance Management Act (PFMA) and Municipal Finance Management Act (MFMA). The MFMA regulates municipalities, while the PFMA regulates other public entities. In terms of the legislation, municipalities and self-sustaining public business enterprises (being major SOEs and provincial business enterprises) are empowered to borrow, subject to Board approval. Other public entities rely on central government for funding; National Treasury raises on capital from a variety of sources on their behalf.

Even when regulation allows debt capital raising, a wide spectrum of credit risk profiles has limited access to the bond market:

- National government is a regular bond issuer and by far the largest on the JSE's exchange;
- Larger SOEs were able to place large amounts of debt into the bond markets historically. Recently that has changed due to the Eskom crisis as well as broader concerns about the capability of national government to service SOE guarantees, considering its expanding liabilities (principally Eskom guarantees). Currently only the DFIs - Industrial Development Corporation (IDC), Development Bank of SA (DBSA) and Land Bank – are tapping bond markets;
- Several of the larger metros, including Cities of Cape Town, Tshwane and Johannesburg also issue bonds from time to time. City of Cape Town issued a landmark CBI-certified green bond in 2017, primarily to finance existing water projects.

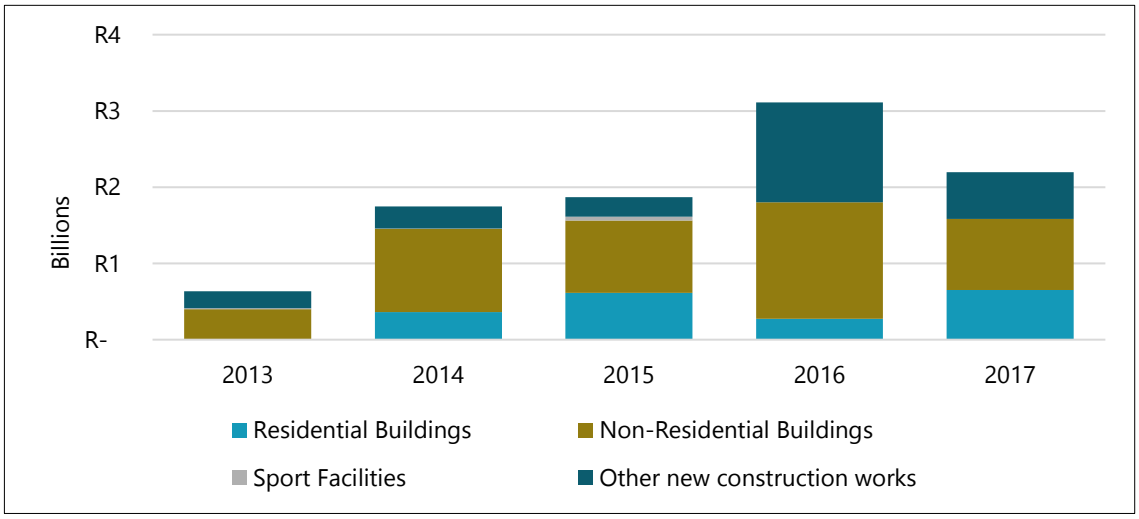
Prospects for green bond issuance are concentrated within SOEs and large metropolitan municipalities. As a rule, National Treasury does not ringfence funding since this limits its flexibility to re-allocate funds across budget line items as circumstances and policy priorities shift. This renders green bond issuance largely unsuitable for capital raising purposes for buildings owned by the national and provincial government departments, including the 90 000 buildings held by the DPW.

State-owned entities (SOEs) hold more promise as prospective green bond issuers. Several SOEs own non-core assets in the form of administrative buildings or investment property. 7 SOEs own at least one green-rated building, usually headquarter or regional office buildings. As investor confidence in SOEs returns, it should be possible for at least some these entities to re-enter bond markets and issue green bonds.

Large metropolitan municipalities could also access green bond markets to finance their green building portfolios. Municipalities are well-suited to green bond issuance considering their large property portfolios, increasing adoption of green rating, and financial autonomy. Two of the green labelled bonds issued in SA to date have originated from municipalities, namely Johannesburg in 2016 and Cape Town in 2017 (note however that the Johannesburg bond predated the launch of - and did not fulfil - the Green Segment DLR).

Educational institutions may offer further green bond issuance opportunities. Rating tools like Green Star PEB are well suited to classrooms and similar buildings, conceivably expanding across the national network of education institutions. Universities are increasingly exploring alternative funding models in response to financial pressures resulting from declining state contributions and dwindling tuition fee bases. Meanwhile, building spend is increasing: over R5bn was spent by higher education institutions in 2016 and 2017 combined. Achieving an acceptable credit risk rating is likely to be a challenge; government guarantees may solve this problem, assuming the fiscal position is stabilised over the medium term.

Figure 9: Cash flow from investment into non-financial assets by higher education institutions



Source: Statistics South Africa: Financial statistics of higher education facilities

3.3.2 Listed Property Funds

Listed property funds with green building portfolios adequate for green bond issuance[21] number 22. In total, their South African property portfolios are worth approximately R400bn, representing a quarter of South Africa's commercial property. Approximately 50% holdings are in the retail segment, with a further quarter in office. Industrial property accounts for a small share - approximately 10% - but is growing rapidly.

[21] Debt capital markets tolerate gearing of up to 40% for REITs, hence assets worth at least R2.5bn are required.

Table 3: Current and prospective property fund bond issuers

Listed property fund	No. properties	Local Direct Portfolio Value (R bn)	Split by Property Segment				
			Residential	Retail	Office	Industrial	Hospitality
Growthpoint Properties	447	77.20		29.88	35.32	13.43	
Redefine Properties	314	72.90		28.43	26.97	13.85	
Hyprop Investments	10	29.70		29.67	0.32		
Fortress REIT	302	25.28		10.41	3.32	3.95	
Resilient REIT	35	21.98		21.29			
Attacq	41	21.08		10.02	7.25	1.52	0.33
Investec Property Fund	102	17.30		6.69	6.03	3.48	
SA Corporate Real Estate	191	17.00		5.41	0.63	3.53	
Vukile Property Fund	60	14.50		13.30			
Emira Property Fund	104	12.53	0.15	5.24	5.23	1.90	
Accelerate Property Fund	61	12.60		7.10	3.40	0.50	
Hospitality Property Fund	53	12.53					12.53
Octodec Investments	294	13.00	X	X	X	X	
Delta Property Fund	105	11.50		0.30	11.00	0.20	
Liberty2Degrees	17	10.15		5.29	3.35		0.35
Dipula Income Fund	199	8.30		5.40	1.70	1.20	
Equites Property Fund	58	8.00		0.16		6.37	
Arrowhead Properties	49	5.70		3.48	1.77	0.46	
Transcend / International Housing Solutions	13	4.99	4.99				
Indluplace Properties	176	4.34	X	X			
Stor-age Self Storage	49	3.80				3.80	
Fairvest Property Holdings	45	3.14		3.14			
Total	**2725**	**407.53**	**5.14**	**185.21**	**106.29**	**54.19**	**13.21**

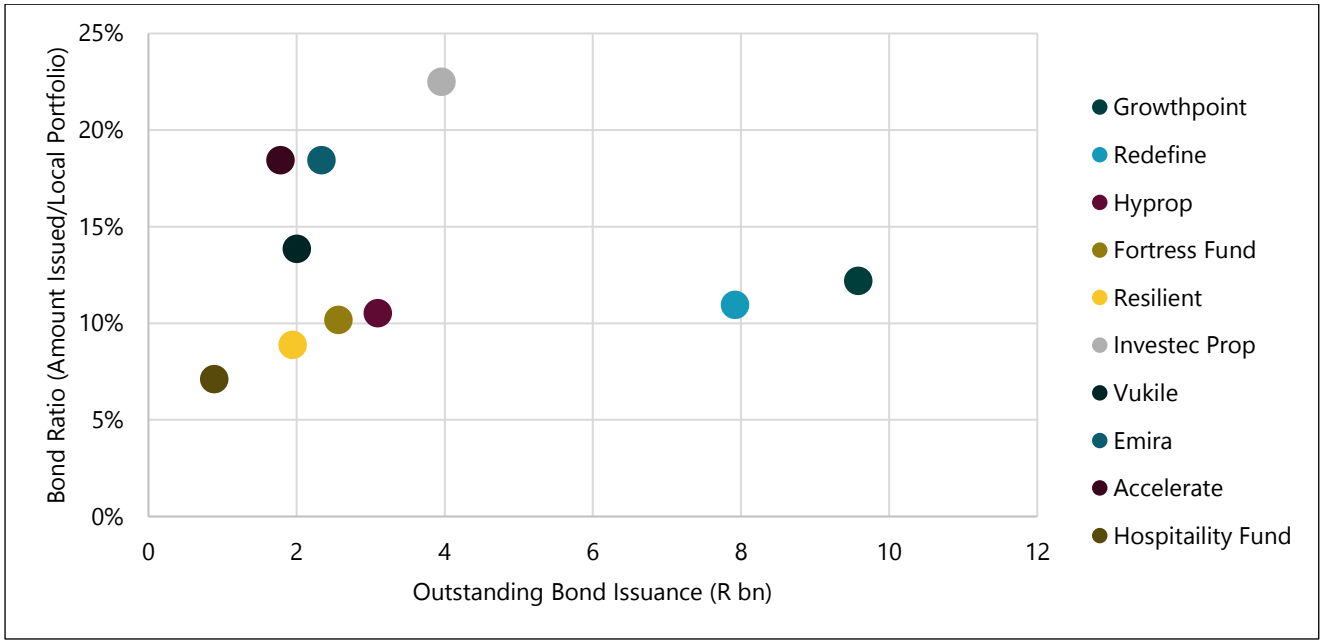
Source: Annual reports; Interviews

Notes: JSE bond issuers are shaded.
Transcend and IHS assets are combined since IHS sells assets into Transcend from time to time.
An 'X' displays where REITs do not disclose portfolio split across segments.

Currently only half of these 22 listed funds participate in bond markets, with a minimum portfolio of R10bn appearing to be a prerequisite to attract investors.

Even amongst issuers, reliance on debt capital markets is limited. Only one, Investec Property Fund, has a bond ratio over 20%, implying that others source more than half of their debt from other sources, principally banks.

Figure 8: Participation in JSE bond market by listed property funds, April 2019



Source: JSE; Company reports

In part limited bond market participation is due to **a bond investor-imposed ceiling of 35-40% corporate gearing**, including loans from banks and other sources[22]. This conservative approach can be attributed to two factors:

- Substantial volatility in asset values due to deteriorating vacancies, rental escalations and rental reversions driven by the market downturn, and
- Perceptions of unreliable financial reporting by property funds, resulting in inflated asset values.

It is also due to the **availability of convenient alternatives**. Historically banks have offered property funds more accommodating terms: higher gearing and more flexible terms. Further, banks are often willing to finance the building construction and early operational period, whilst many institutional investors such as retirement funds actively avoid taking any exposure to construction risk.

Nonetheless, **the appeal of the bond market is growing**. Several REITs were planning a first bond market issuance at the time of interview. There are at least two reasons for this shift:

- Pricing: Blue-chip funds such as Growthpoint and Redefine are currently achieving better pricing in primary bond markets than via banking relationships, even on senior unsecured bond issues[23]. This suggests that investor demand for quality property debt from highly regarded funds remains buoyant, despite recent sectoral challenges;
- Tightening bank credit terms: Basel III banking regulation penalises long-term property loan holdings through the imposition of additional liquidity and capital reserving requirements. As a result, maturity

[22] This figure is well below the JSE's regulated REIT maximum

[23] Unsecured paper is perceived as riskier, particularly when a large part of the portfolio has been secured by other creditors

on typical commercial property finance bullet loan structures[24] is shortening to 5 years or less. This is compounded by currently weak property market fundamentals.

Bonds may be secured, with ringfencing of an otherwise unencumbered property portfolio[25], or unsecured - raised against net asset value excluding any security pledged to other lenders. Large, well-established issuers with excellent credit ratings, such as Growthpoint, generally issue senior unsecured paper. For many other REITs this may not be possible.

3.3.3 Corporates

For present purposes, corporates are segmented into lenders and other corporates.

Lenders

Financial intermediaries are uniquely positioned to catalyse new segments within the bond market, considering that they originate mortgages which can be packaged as securities. Through determining the terms of finance available to investors during the critical building construction phase, lenders can tilt incentives towards green building whilst creating their own portfolios of green mortgages.

Banks are extremely active participants in the JSE bond market. Other lenders and debt vehicles issuing bonds include TUHF (Trust for Urban Housing Finance) and securitisation vehicles (i.e. asset-backed securities).

Banks participate in bond markets in three capacities:

- As issuers: Accessing liquidity in bond markets through issuance on the back of their commercial and/or residential mortgage portfolios (Treasury);
- As arrangers: Advising funds and other property finance clients in respect of bond issuance (Debt Capital Markets); and
- As investors: Providing liquidity in bond markets through purchases of high-quality liquid assets (HQLA) to meet regulatory requirements (Treasury).

As a niche financial intermediary focused on inner city property finance, TUHF plays a similar role to banks, shaping the incentives for green building. In 2017, TUHF entered capital markets with a covered bond, which it followed by a securitised issuance in late 2018. As the only lender with a dedicated green mortgage product (Luhlaza) driving visible social impact, TUHF is ideally positioned to access the market for green or sustainability bonds in South Africa, despite its modest size. TUHF currently has issued R0.7bn to date.

Securitisation is a mechanism commonly used by financial intermediaries to access liquidity in debt capital markets. These structures are used most commonly to package and sell off home loan portfolios. However, it involves complex documentation, restricting the universe of prospective investors to larger investment managers with the requisite legal documentation review and risk pricing capabilities. This requirement somewhat reduces the demand for and liquidity of securitised notes.

Other corporates

Other corporate issuance includes issuers which own property for own occupation (i.e. property not classified as investment property). Blue chips like Woolworths and Old Mutual are active participants in debt capital markets and could presumably use green bonds to fund their green property portfolios (e.g. head office, distribution centres and regional campuses).

[24] Only interest payments are made during the life of these loans, with the capital repaid on maturity.
[25] Properties which are not currently pledged to lenders under mortgages or other credit agreements

3.4 Green bond compliance

Green bonds differ from vanilla bonds in that proceeds are ringfenced and exclusively applied to finance or re-finance eligible green projects, both new and existing. The eligibility of green projects is determined by individual green bond guidelines or standards.

JSE requirements

The Green Segment amendment to the JSE Debt Listings Requirements prescribes three elements:

1) **A green bond framework** which clearly discloses how bond proceeds will be managed and allocated towards eligible green projects, following the Green Bond Principles (GBP) or an accepted standard;
2) **An assurance report from a suitably qualified, independent organisation**, confirming compliance with the relevant guideline: certification (CBS, for now), verification, second opinion, or rating;
3) **Ongoing reporting** regarding the management and allocation of proceeds to eligible green projects as well as environmental impact (estimated or actual) of these projects.

Currently, issuers must comply with the GBP and may opt additionally to pursue certification against the CBS, with varying implications for compliance, summarised below.

Table 4: Summary of GBP and CBI compliance requirements for property bond issuers

Compliance item	Green Bond Principles	CBI Climate Building Standard: Low Carbon Building Criteria
Eligible assets	• Clear environmental impact • Compliance with international, national or regional green building standards	• Pathway 1: Building is in top 15% CO_2 distribution AND on decarbonization trajectory (zero carbon by 2050) OR • Pathway 2: Energy efficiency improved by 30-50% OR • Pathway 3: Proxy certified
Determining eligibility	• Green building rating (Green Star; Net Zero; EWP; LEED; EDGE)	• Pathways 1 & 2: Provide operational data (electricity and on-site energy) for a specified time to CBI OR • Pathway 3: Proxy building certification (currently EDGE New Build and LEED only, excluding Office and Supermarkets)
Independent review	• Certification OR • Verification OR • Second opinion OR • Green bond rating	• Certification and verification
Ongoing reporting for JSE	• Annual compliance certificate • Monitoring report (management of proceeds and project impact)	• Annual compliance certificate • Monitoring report (management of proceeds and project impact)
Ongoing verification	• Verification / audit by qualified organisation to confirm continuous compliance with Green Segment DLR	• Pathways 1 & 2: Independent audit statement confirming project impact

Source: ICMA (2018); CBI (2017)

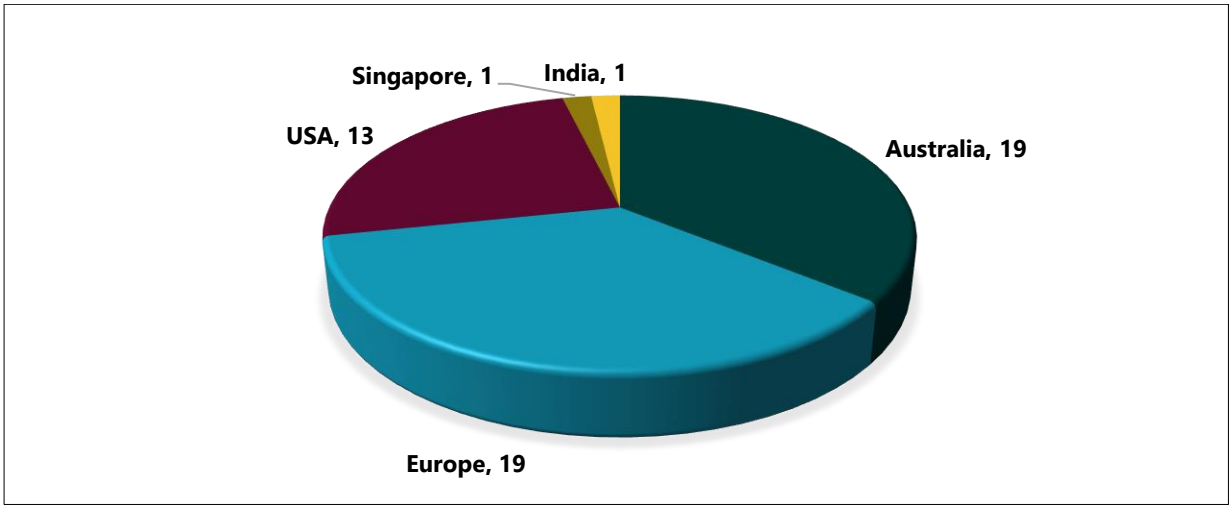
Going the GBP route is relatively straightforward and inexpensive with a great deal of flexibility afforded to the issuer. Green asset eligibility requirements are satisfied by recognised green building standards (ratings included) and demonstrating clear environmental impact. The Growthpoint green bond issuance of March 2018 pursued this route, packaging five Green Star rated buildings from its Thrive portfolio. Verification was undertaken by KPMG to meet the independent review requirement.

Climate Bond Standard requirements

The CBS requirements are more prescriptive, usually requiring the submission of credible operational performance data for green buildings proving compliance with prescribed energy efficiency targets (Pathways 1 and 2). Under the Low Carbon Building criteria, the carbon footprints of buildings are benchmarked against their peer group on the basis of carbon intensity ($kgCO_2/m^2$). Eligible buildings fall within the top 15% of the distribution, with the target set at the midpoint of the bond term on a trajectory to zero carbon by 2050. In this way, buildings financed by longer dated bonds must meet more ambitious targets.

Historically, the major hurdle to meeting the CBI standard has been the availability of reliable carbon emissions data. Sourcing building operational performance data is often challenging in emerging markets like South Africa, undermining efforts to construct market baselines and assess green buildings against these. Currently CBI can produce market baselines for SA office and supermarket buildings for major metros. It is not clear how readily other baselines could be produced, or whether prospective green bond issuers would need to assist with provision of data. At the time of writing, one CBI certified bond using the Low Carbon Building criteria has been issued in an emerging market (a bank in India with a mixed portfolio of assets).

Figure 10: Origin of CBI certified bonds financing low carbon buildings, April 2019 (no. bonds)



Source: CBI green bond database

A green building rating or certification can be used to fast track CBI certification if it constitutes a proxy or approved eligible standard. Further, minimum scores on specific green building ratings systems can provisionally indicate eligibility, although standard CBS compliance requirements apply.

Proxy certification confers automatic eligibility on buildings, with reduced ongoing reporting requirements which cater for data challenges. Proxies are regularly reviewed for market relevance and applicability; they are intended for situations where operational performance data does not exist, e.g. the residential sector or commercial buildings in new markets. However, the fast track offered by proxies does come at a cost: **maximum bond maturity is 6 years.** At face value, this is problematic for the property sector, where the useful life of assets is far longer.

Yet this limitation is not likely to be a significant deterrent to SA issuers for two reasons:

- Property investors tend to prefer shorter dated bonds (up to five years), refinanced at maturity, due to the lower interest rate applicable;
- Securitised notes linked to pools of longer dated mortgages usually have effective maturities less than 5 years, despite extended legal maturities. The CBI should accommodate these bond structures.

Approved eligible standards provide a fast track to certification through aligned energy efficiency requirements, although ongoing reporting and verification requirements remain unchanged. Unlike proxies, no restriction on bond maturity applies.

In South Africa, accepted CBI proxies and eligible standards are as follows:

Table 5: CBI accepted green building standards in South Africa, proxies and pathways

Property segment	GBCSA certifications	Other certifications / standards
Residential	• EDGE Residential (New and Existing)	• SANS 10400 XA
Commercial & Industrial	• *Net Zero Carbon/Positive: Pathways 1 and 2 only*	• EDGE Commercial & Industrial (New & Existing) • LEED Gold or Platinum with minimum 30% emissions improvement against ASHRAE 90.1

Note: Italicised standards show eligible standards.
All building tools/standards which require compliance with SANS 10400 XA are also eligible for certification by virtue of the building regulation, including GBCSA Green Star Multi Unit Residential Tool and TUHF Luhlaza.

Finally, achieving minimum scores on certain green building rating tools indicates likely eligibility with CBS requirements, although the issuer will need to follow the usual prescriptive route to prove compliance. In South Africa, these eligibility indicators are as follows:

- Scores of 8-10 on the GBCSA EWP Tool OR 16+ points under ENE-1 credit on the GBCSA EBP Tool (Compliance Path 1) on Low Carbon Building Pathway 1 – Low Carbon Trajectory; or
- Scores of 11+ points on the EBP Tool under ENE-1 credit (Compliance Path 3) on Low Carbon Building Pathway 2 – Significant Upgrade.

The table below presents an overview of current eligibility for CBI certification by proxy, eligible standard and eligibility indicator.

It is useful to estimate the value of these properties for bond issuance potential purposes. Best estimates are as follows:

- Commercial property:
  - Predominantly new buildings certified against proxies or eligible standards: R1.4bn (~100 000m^2 GFA);
  - Existing buildings certified against eligibility indicators: R4.7bn (~400 000m^2 GFA);

- Residential property:
  - Homes certified against proxy standard SANS10400-XA, including those with additional certifications such as EDGE and Green Star: R216bn (~270 000 units).

Table 6: SA building stock currently eligible for CBI certification

Segment	Rating tool & required rating	Registered	Certified	Approx. GFA
Commercial New & Existing	Net Zero Carbon, Pathways 1&2 only	2	4	25 337 m^2
Commercial New	LEED Gold/Platinum + 30% ASHRAE 90.1	Indeterminate	4	44 000 m^2
Commercial New & Existing	EDGE certification	2	0	26 700 m^2
Commercial Existing	EWP >= 8 energy	Indeterminate	8	81 743 m^2
Commercial Existing	EBP >= 16 points under ENE-1 credit (using Compliance Path 1)	Indeterminate	41	322 708 m^2
Commercial Existing	EBP >= 11 points under ENE-1 credit (using Compliance Path 3)	Indeterminate	0	0 m^2
Residential New	Net Zero Carbon	0	1	
Residential New / Refurb	SANS 10400-XA	± 40-50,000 p.a.	± 270 000 (~6.4% market)	
Residential Existing	TUHF	3	0	
Residential New & Existing	EDGE	3,542	8,683	

Source: Various

3.5 Investor demand for green bonds

Portfolio allocation to green bonds as a new asset class

Demand for green bonds is shaped by the investment strategy and preferences of bond investors. Financial performance is central to inclusion in asset portfolios. Asset owners, primarily life assurance companies and retirement funds, typically set portfolio performance targets within a defined boundary. These are laid out in investment policy statements and mandates which serve as instructions to investment managers, which subsequently deploy capital according to various factors:

- Applicable regulation (e.g. Regulation 28 which applies to retirement funds);
- Asset owner risk tolerance, time horizon and liquidity requirements;
- Expected financial return of an asset class; and
- Factors specific to individual instruments including management quality, ESG risk management, social and environmental impact (in the case of actively managed investments only).

To the extent that green bonds outperform vanilla bonds on any dimension – financial or otherwise - investors may prefer green bonds. If this is the case, they may consequently be willing to make concessions in respect of pricing or other key terms (e.g. structure, maturity, liquidity) to hold them. Conversely, if green bonds involve additional cost and complexity for investors which is not rewarded in some way, issuers may struggle to sell green bonds or else be forced to pay a premium, resulting in a preference for vanilla issuance.

Evidence to date

International evidence on the relative performance of green bonds shows that investor demand is robust, sometimes sufficiently to drive better terms. However, this is highly context-dependent, for instance:

- Green Euro bonds were more highly subscribed than vanilla equivalents in H2 2018, whilst Dollar bonds reflected the opposite trend;
- Spread compression was greater for green than vanilla bonds in primary markets in H1 2018 (i.e. issuer captured a "greenium"), but lower in H2 2018 (i.e. pricing advantage was temporary)[26].

Locally, the sample of green bonds remains too small to derive robust and representative findings, with just three issuances – by City of Cape Town (July 2017), Growthpoint (March 2018) and Nedbank (April 2019) – comprising the pool of bonds conforming with the JSE Green Segment requirements. These pioneering issuers also happen to be highly regarded local sustainability leaders, with credible organisational sustainability strategies providing the necessary underpin for successful green bond issuance.

The bond characteristics can be described as follows:

- Bond type: All three were so-called "use of proceeds" bonds, with recourse to the issuer's balance sheet and so a comparable credit rating to other bonds issued by the same entity
- Assurance strategy: Two of the three green bonds were certified by the CBI – City of Cape Town and Nedbank – whilst the third – by Growthpoint – opted for verification to fulfil its assurance requirements, drawing on asset level certification provided by GBCSA to provide comfort to investors regarding environmental impact;
- Bond labelling: Whilst the Nedbank bond was listed on the Green Segment, it could readily be classified as a sustainability bond, combining the targeting of social and environmental objectives. The bond framework references the UN's Sustainable Development Goals, which Nedbank has adopted as an overarching guide for its sustainable business strategy.

[26] CBI (2019)

Table 7: Types of green bonds

Type	Proceeds raised by bond sale	Debt recourse
"Use of Proceeds" Bond	Earmarked for green projects	Recourse to the issuer: same credit rating applies as issuer's other bonds
"Use of Proceeds" Revenue Bond or ABS	Earmarked for or refinances green projects	Revenue streams from the issuers though fees, taxes etc are collateral for the debt
Project Bond	Ring-fenced for the specific underlying green project(s)	Recourse is only to the project's assets and balance sheet
Securitisation Bond	Refinance portfolios of green projects or proceeds are earmarked for green projects	Recourse is to a group of projects that have been grouped together (e.g. solar leases or green mortgages)
Covered Bond	Earmarked for eligible projects included in the covered pool	Recourse to the issuer and, if the issuer is unable to repay the bond, to the covered pool
Loan	Earmarked for eligible projects or secured on eligible assets	Full recourse to the borrower(s) in the case of unsecured loans. Recourse to the collateral in the case of secured loans but may also feature limited recourse to the borrower(s).
Other debt instruments	Earmarked for eligible projects	

Source: CBI

Nonetheless each of the issuers of these green bonds appear to have derived some form of financial benefit from issuance, suggesting that the market has great potential to grow. These included:-

- Investor diversification: All three issuers attracted interest from new investors, including international and impact investors;
- Tenor extension: Growthpoint issued 10-year notes via public auction for the first time, anchored by ALCB;
- Pricing: Two of the three issuers achieved superior pricing, although the 'greenium'[27] was usually modest (2-5 bps). Further, bond market experts queried whether the pricing benefit was attributable to greening specifically, considering the range of factors at play.

Domestic investor appeal

A market survey revealed three characteristics of green bonds which appeal to local investors:

1) Additional transparency and reporting at the issuer level,
2) Superior credit risk profile at the asset level, and
3) Enhanced ESG profile at the instrument level.

The first factor has the greatest implications for REITs, the second enhances the opportunity for lenders, and the third aligns with international investment trends.

[27] Discount relative to price guidance for issuance or comparable vanilla issuance

Additional transparency and reporting (issuer level)

Firstly, the **property sector is currently suffering from a deficit of trust**. A major contributor was a corporate governance scandal emerging from the Resilient REIT stable in early 2018 which wiped 20% off a property sector market capitalisation of R600bn[28]. Other issues include a lack of transparency in REIT reporting associated with perceptions of complex legal structures and questionable accounting practices which make it difficult for investors to validate or falsify issuer claims. The additional reporting requirements and third-party checks associated with the Green Segment listing requirements are viewed by bond market experts as a prospective game-changer for REITs, rebuilding trust. One respondent even suggested that the Resilient REIT stable may be able to place a green bond, despite a general lack of appetite for its debt.

Superior credit risk profile (asset level)

Secondly, **green investment properties may offer better credit risk profiles as underlying assets:**

- Enhanced cash flows: MSCI research for the premium office segment shows greater resilience of income streams to weak economic conditions and a glut in supply.
- Favourable capitalisation rates: To the extent that the risk profile of green property assets emerges as more attractive, a lower capitalisation rate may apply[29].

The implications are very positive – expected loss falls:

- Probability of default is reduced since the serviceability of debt is maintained under a range of scenarios, and
- Loss given default is reduced if the underlying assets fetch a market premium.

ESG profile (instrument level)

Finally, **green bonds offer investors a mechanism for channelling capital at scale** into investments with positive ESG characteristics. Asset managers integrate ESG into their decision making in various ways:

- At the 'lite' end of the spectrum, some use ESG considerations only to screen out very risky investments,
- For more progressive managers, ESG factors are fully integrated into bond pricing models as contributors to credit risk,
- In a limited number of cases, specific social and/or environmental impact is a precondition to investment (i.e. impact investors).

[28] Anderson (2019)

[29] Investment properties are typically valued on an income capitalisation basis.

4. ESTIMATES OF GREEN BOND MARKET POTENTIAL

Considering the nascent stage of both the green building and green bond markets in South Africa, scenario modelling was undertaken to estimate the potential for green bond issuance over a longer horizon: 2020-2030. Projections describe the maximum potential supply without adjusting for specifics of bond investor demand.

4.1 Modelling logic and key assumptions

Issuers

Three issuer categories were included:

- Listed property funds (referred to here as REITs),
- In respect of public entities, SOEs and municipalities - being the two categories of public entity most likely to issue green bonds linked to green property holdings, and
- Mortgage lenders - banks and TUHF - both in their capacities as financial intermediaries and – in the case of banks – as green building owner-occupiers.

Exclusions are motivated as follows:

- Listed corporates outside the property sector and unlisted property funds: insufficient information exists to draw conclusions regarding their willingness and ability to become green bond issuers;
- Other public entities, including national and provincial State departments, considering the conflict between the principle of pooled, non-ringfenced funding and green bond compliance requirements.

Eligible assets

- Green buildings are those certified by GBCSA, against tools including EDGE for homes, Green Star, EWP, Net Zero, all of which are assumed to be eligible under the GBP guidelines[30];
- This means that residential property compliant with SANS 10400 XA has been excluded as an eligible asset, despite being technically eligible assets via CBI proxy. The motivation to exclude these properties was twofold:
    - Discriminating between XA compliant and other stock was infeasible: very little data exists on the age profile of relevant residential stock (i.e. residential rental portfolios; residential development finance; and retail mortgages);
    - While these properties qualify for CBI certification purposes, sustainability-focused investors may require additional environmental benefits over and above the minimum energy efficiency prescribed by building regulation.

Key assumptions:

[30] In practice, some may not be considered environmentally sustainable, e.g. existing buildings with lower EBP ratings.

- Bond market participation:
    - Issuers must have proven their ability to sell bonds in the past to continue doing so in future (i.e. no prospective issuers are included);
    - Issuers maintain existing bond ratios (i.e. bond issuance as a share of total assets) unless otherwise stated;
- Green building ownership:
    - Entities must currently own GBCSA green rated buildings to be included as prospective green bond issuers unless otherwise stated;
- Eligible asset portfolios:
    - For REITs, the value of the green portfolio is estimated based on the average building value across their portfolio and the number of GBCSA rated green buildings currently held;
    - For banks, the share of current property finance book assumed to be green is 7.9%, commensurate with the share of GBCSA rated building in the eligible (R2.5bn+) REIT portfolios;
    - For banks, property sector exposure levels remain unchanged (except when bond ratios are changed, as noted);
    - For TUHF, 10% of its loan book is assumed to be green in 2020, considering that the Luhlaza programme is new.

Different scenarios are modelled as a function of the economic outlook of the country, property sector outlook and adoption of green buildings within the property sector (as measured by rated buildings).

Table 8: Scenario modelling parameters

Issuer Category	Growth Variable	Low Growth Scenario	Base Case	High Growth Scenario
REITs	Annual Growth Rate of Total Portfolio (%)	2.0%	5.0%	8.0%
	Annual Growth Rate of Green Portfolio (%)	10.0%	15.0%	20.0%
Public Sector	Annual Growth Rate of Total Public Portfolio (%)	0.0%	0.0%	0.0%
	Annual Growth Rate of Green Portfolio (%)	5.0%	10.0%	15.0%
Banks as Owners	Annual Growth Rate of Banks' Green Portfolio (%)	5.0%	10.0%	15.0%
Bank as Lenders	Annual Growth Rate of Property Loanbook (%)	2.0%	5.0%	8.0%
TUHF	Annual Growth Rate of Total Loan Book (%)	5.0%	10.0%	15.0%
	Annual Growth Rate of Green Property Finance (%)	10.0%	20.0%	30.0%

Additionally, the effect of two levers on green bond issuance is examined:

- Lever 1: expanding the universe of prospective issuers to accommodate all REIT issuers, including those which currently do not hold any green rated building; and
- Lever 2: expanding access to bond markets for two issuer categories which currently source a relatively small share of their debt from capital markets, namely REITs and TUHF:
    - For REITs, bond ratios increase by 8% per year;

- For TUHF, bond ratio increases by 10% per year.

In this instance, a bond ratio ceiling applies, namely the last reported corporate gearing ratio per issuer (i.e. total debt as a percentage of assets).

4.2 Green bond projections

All subsequent analyses use the base case scenario as a point of departure. All Rand values are in 2019 terms, i.e. constant currency value (i.e. after inflation).

Total supply

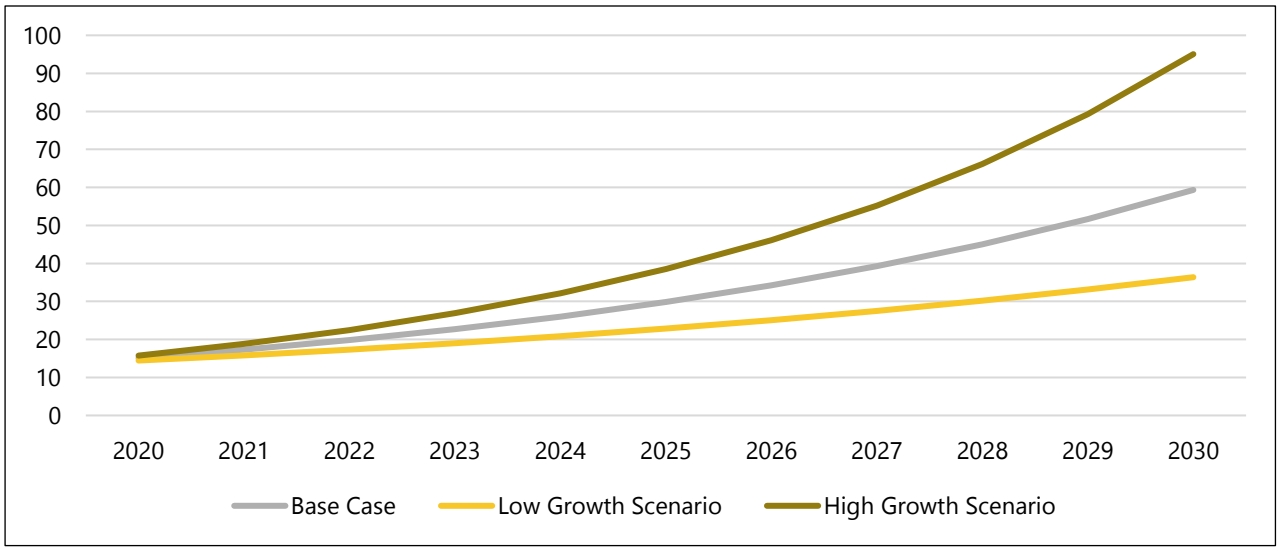
Rapid growth in issuance is possible, facilitated by the recovery in economic conditions.

- In the base case scenario, it is expected that cumulative green bond issuance potential rises from around R15bn in 2020 to R59bn by 2030 (~300% increase).
- In the high scenario where the economy prospers, a further R35bn green issuance potential exists by 2030, with the total exceeding R90bn.
- Conversely, slow green building adoption and low property sector growth could result in total green bond issuance potential of only R36 bn by 2030: 40% lower than in the base case.

Projected growth is considered plausible in context.

- The implied annual growth rate in the base case is 40%, if the baseline is existing green bond property-linked issuance (i.e. R1.1bn in 2018 being Growthpoint's first green bond issuance).
- Green bond issuance in emerging market peers Brazil, India China has grown at approximately 150% in the earliest years of market development.
- The global average growth rate is currently hovering around 80%, double the SA projection for the coming decade. However, as the green bond market matures, growth rates are likely to fall.

Figure 13: Scenario estimates of green bond issuance potential, 2020 – 2030 (Cumulative; ZAR bn)



Source: Own analysis

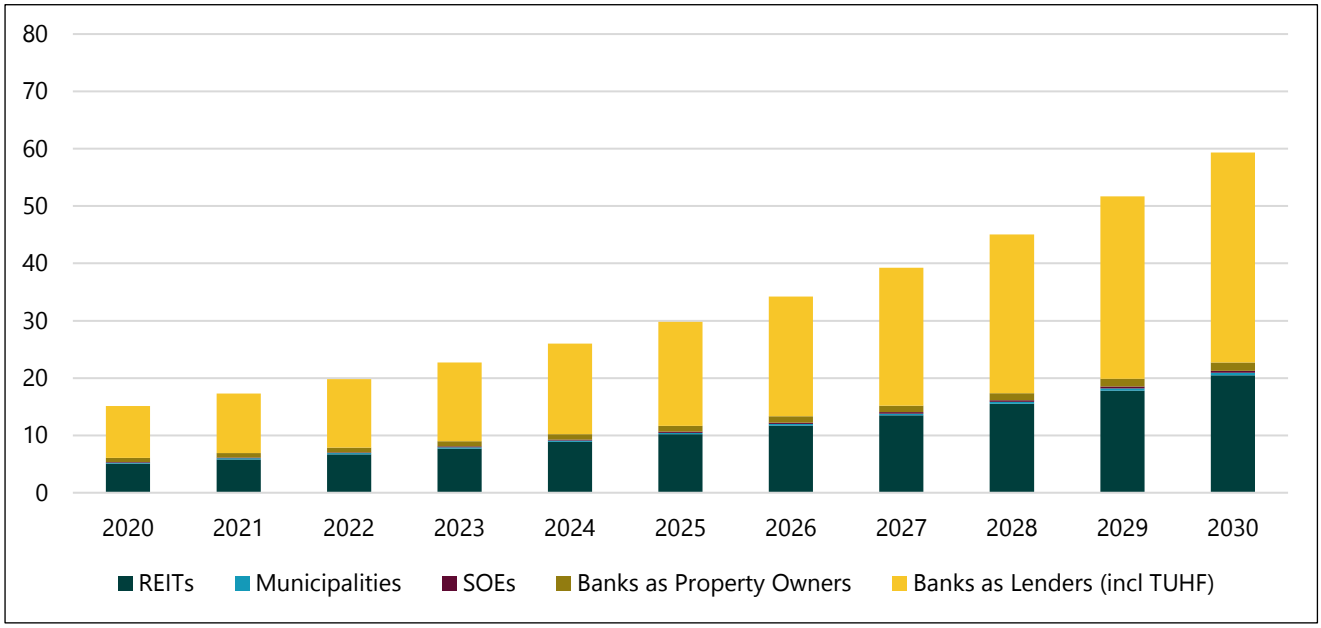
Supply by issuer category

Figure 14 provides a breakdown of green bond issuance potential by issuer category.

Banks and REITs emerge as dominant market forces.

- Property debt providers are the largest players, accounting for close to 60% of the total with a cumulative potential of R31bn green bonds by 2030.
    - The projection is heavily dependent upon the uptake of green building by property investors, notably property funds (driving demand for property finance);
    - While SANS 10400 XA compliant residential property is not included in this estimate, it represents additional potential to be captured via lending to homeowners (retail banks and home loan companies e.g. SA Home Loans). It is addressed later in this report.
- Listed property funds dominate the supply of green bonds by property owners, accounting for 38% of bond issuance over the coming decade.
    - Cumulative REIT green bond issuance potential could grow from around R5bn in 2020 (including Growthpoint's R1.1bn outstanding) to more than R20bn by 2030;
    - Growthpoint and Redefine are key players.
- Issuance by major South African banks financing owner-occupied buildings could amount to R1.5 bn by 2030.
    - Several banks have greened larger administrative buildings including headquarters, with one – Standard Bank – expanding the focus to operations via its branch network.
- Municipal issuance potential grows from R160 million in 2020 to around half a billion in 2030, or ~0.8% of market, likely too small to warrant dedicated issuance.
    - This results from only one of the 4 eligible metros currently holding any green rated building stock, i.e. City of Cape Town.
- Similarly, SOEs issuance potential is less than R350 million by 2030, due to a combination of factors:
    - SOE bond market access is limited at present. SOEs with sufficiently large green building portfolios to justify a dedicated issuance are Eskom, SANRAL and Transnet: entities which are not active issuers at the time of writing. However, this may change in future;
    - Zero growth in the overall size of SOE building portfolios, as structural reforms aimed at containing the associated fiscal cost are implemented.

Figure 14: Green bond potential by issuer type, 2020 – 2030 (Cumulative; ZAR bn)



Source: Own analysis

Applying growth levers

The lever with greatest influence on green bond issuance potential is increasing issuer participation in local bond markets, boosting potential by 50%.

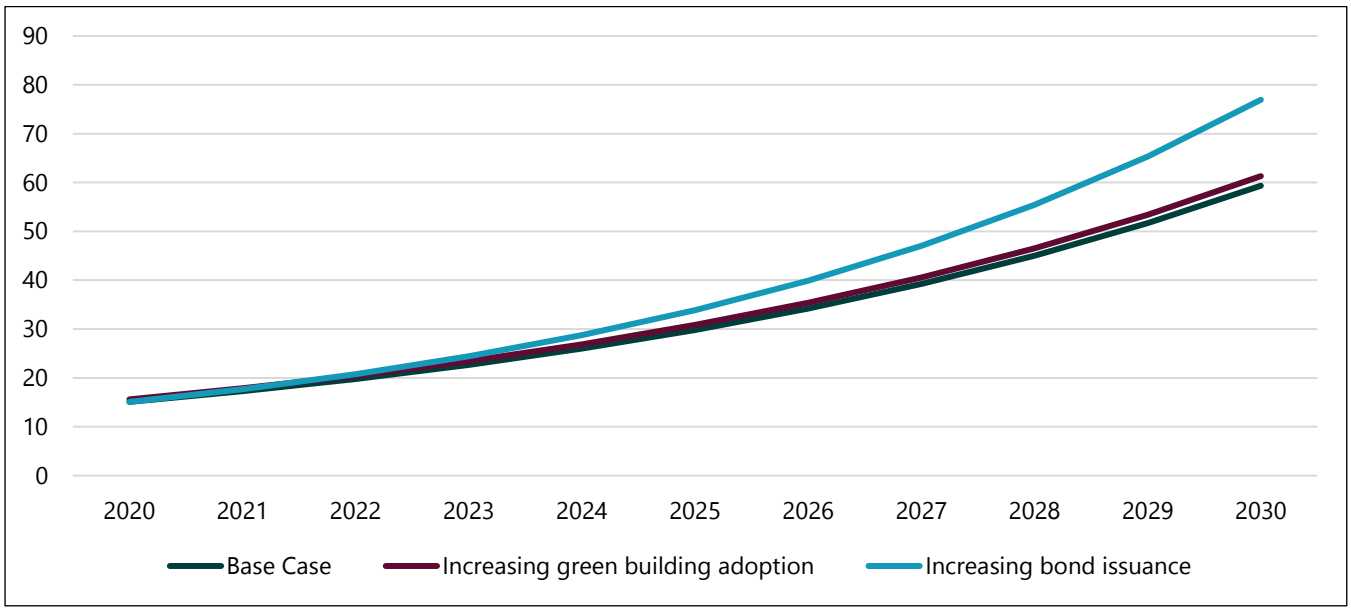
- To evaluate its impact, the bond ratio of selected issuers increased, gradually reducing reliance on other sources of debt, including banks, while maintaining overall gearing;
- In this scenario, REITs double green bond issuance by 2030, increasing their cumulative potential to R44bn and adding about R20bn to the baseline scenario;
- Similarly, TUHF can more than double expected issuance by 2030, to about R1.4 bn.

The other lever, making green building ownership universal for REITs[31], lifts supply by less than 5%.

- To test its effect, REITs without green building stock add one green building to their portfolio by 2020, with the same scenario-driven green portfolio growth rates applying thereafter
- The marginal increase of R2bn by 2030 reflects the concentration of green building ownership and bond issuance within the sector: Growthpoint and Redefine account for the bulk of opportunity.

[31] R2.5bn+ local property portfolios as defined earlier

Figure 15: Effects of levers on green bond issuance, 2020 – 2030 (Cumulative issuance, ZAR bn)



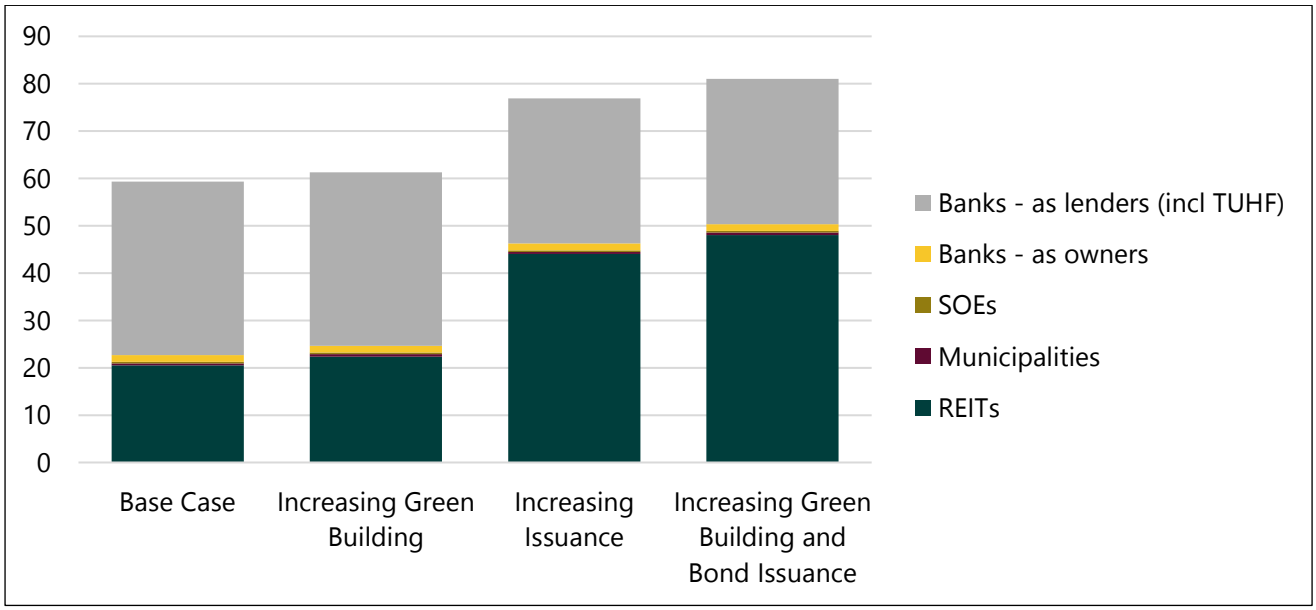
Source: Own analysis

Combining both levers yields **a cumulative potential for green bond issuance of between R50bn and R81bn**. This depends on two factors:

- The evolution of the local bond market as it affects REIT participation, and
- The ability of GBCSA to drive uptake of green building ratings amongst listed property funds.

Further upside exists amongst other corporate owner-occupiers and unlisted property investors with sizeable green portfolios.

Figure 16: Effects of levers on total market size, 2030 (ZAR bn)



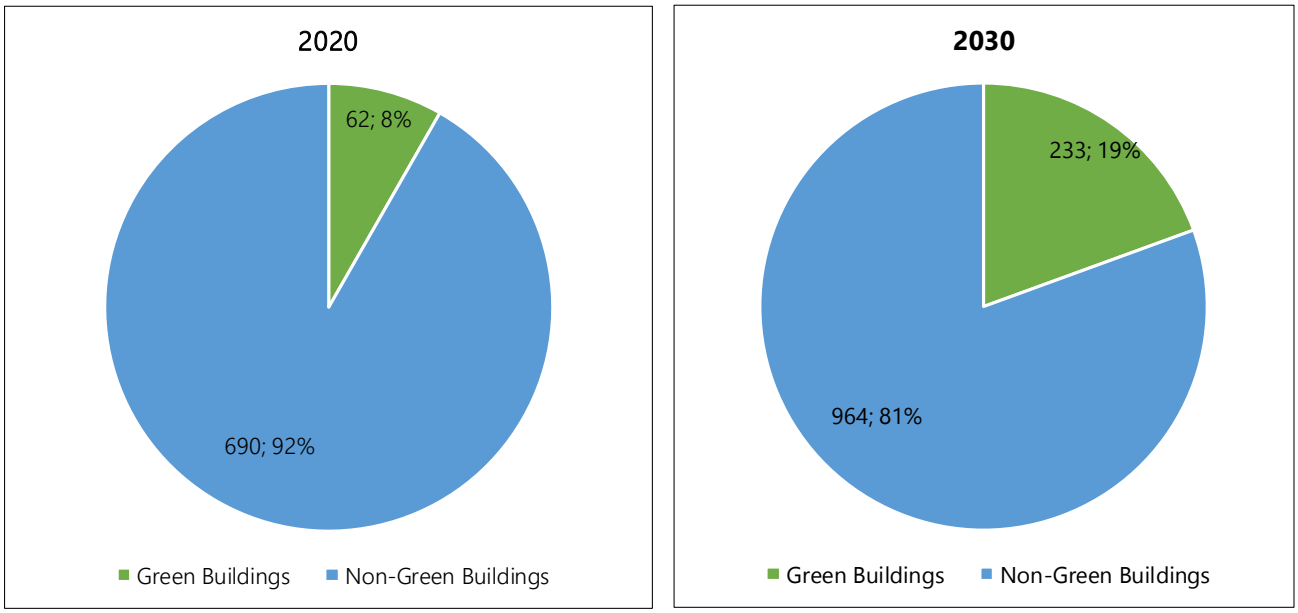
Source: Own analysis

4.2 Green rated property projections

Projections of green bond issuance overlay a green building trajectory. In economic terms, the demand for financial capital grows as the real asset base expands (i.e. it is a derived demand). Attention shifts next to the implied evolution of green building in SA over the coming decade.

Green rated property is expected to double as a share of the local property portfolios of prospective green bond issuers, increasing from 8% in 2020 to 19% in the next 10 years. This translates into real growth in the estimated value of the GBCSA rated portfolios of these issuers over the coming decade from R60bn to R230bn (~280%).

Figure 17: Evolution of green property portfolios, prospective issuers, 2020 – 2030 (R bn)



Source: Own analysis

4.3 Accounting for residential property complying with SANS 10400 XA

Under the CBI Low Carbon Building Standard criteria, homes complying with SANS 10400 XA automatically qualify for inclusion in green bond issuance. This building regulation is an accepted proxy for CBI certification.

Compliant homes comprise some 270 000 units[32]. This stock is growing at about 40 000 units annually.

Most of these homes belong to individuals without access to green bond markets. However, some institutions can act as aggregators, accessing bond markets through sizeable portfolios of eligible assets:

- Equity: Residential property investors, such as International Housing Solutions and Indluplace;
- Debt: Mortgage lenders, including banks, specialists (e.g. TUHF) and home loan companies.

In practice, bond investors motivated by ESG factors may demand more than mere regulatory compliance, Nonetheless, the proxy status of Part XA provides a foundation from which to start identifying green homes.

[32] Homes built since May 2012 (date of Part XA promulgation) according to Statistics South Africa Building Statistics.

5. ADDRESSING THE BARRIERS TO MARKET DEVELOPMENT

To achieve the potential outlined above, steps will need to be taken to overcome barriers to market development in the context of the green property sector. The table below summarises the barriers with proposed solutions, with a more detailed discussion following.

Table 9: Overcoming barriers to realising full market potential

Lever	Barrier	Recommendation
Adoption of green building ratings	• Low levels of awareness of rating tools (excl. Green Star Office)	• GBCSA: Publicise other tools: EDGE Residential; Net Zero • IFC: Publicise EDGE Commercial
	• Limited alignment between current ratings and investor needs	• Target improved operational performance in tool design (energy, water, carbon)
	• Limited green building policy and regulation	• Increase ambition and scope of existing regulation, introduce EPCs
Green building ownership & use	• Limited analysis of performance of green investment property	• Work with key stakeholders to quantify financial impact of rating
Access to the bond market	• Subscale green property portfolios	• Promote green debt instruments amongst lenders as aggregators
	• Lack of appetite for certain issuers	• Explore ringfenced green bond structures with third party checks
Green bond compliance	• Inadequate data collection (CBI & GBP)	• Assist property owners with systems or tools to collect operational data
	• Limited CBI baselines	• Work with CBI and property owners to expand universe of baselines
	• Limited evidence of issuer benefit	• Minimise additional issuer costs and complexities e.g. through CBI proxies
Investor demand for green bonds	• Limited incorporation of ESG in investment policy statements (institutional investors)	• Raise awareness of impact of ESG factors on investment performance
	• Specific ESG investor requirements (investment managers)	• Engage with bond advisors and/or investors prior to issuance • Explore ringfenced green bond structures where appropriate • Consider sustainability bonds
	• Limited ESG integration in investment decision making (investment managers)	• Raise awareness of impact of ESG factors on investment performance and best practice in incorporation • CBI certification as a signal • Regulation on ESG disclosure

5.1 Barriers to adoption of green building ratings and standards

Interviews with property funds revealed lower levels of awareness of and buy-in to green building rating systems beyond Green Star Office. Whilst the Green Star Office tool is well supported, REIT retail holdings are far larger than office, with industrial portfolios growing fast.

The residential segment represents another largely untapped opportunity. While IHS and OMAI hold sizeable portfolios of EDGE rated housing (combined in excess of R5bn and growing), there is a substantial opportunity within the broader base of existing residential stock built since 2012[33]. Many of these homes likely already comply with the technical requirements of EDGE for existing buildings or require minimal intervention to raise them to the required level.

Green building ratings bodies and tool developers such as GBCSA and IFC should evaluate the fit of their tools to the property portfolios of prospective green bond issuers, creating greater awareness and tailoring tools as necessary to encourage uptake outside of the premium office segment.

Further, the degree of alignment between green building rating tools and investor requirements is limited. Green bond investors require evidence of positive environmental impact, incorporating both an acceptable level of ambition embodied in clear targets and measures of performance against these targets.

The CBI's Low Carbon Building Standard, as a case in point, sets an ambition of a low and continuously reducing carbon footprint. Currently, the only green building rating tools which signal automatic compliance are EDGE, Net Zero Carbon, LEED and residential tools requiring compliance with SANS 10400 XA (Green Star MUR, TUHF Luhlaza). The limited alignment is due both to differing definitions of environmentally sustainable buildings and a frequent lack of emphasis on operational performance by green building certification bodies.

This is changing. The GBCSA Green Star Existing Building Performance and Energy Water Performance Tools consider the actual operational performance of buildings, so encouraging building owners to focus on this dimension of green building and collect associated data to track performance. GBCSA could work with owners of buildings rated by these and other tools to implement better environmental impact tracking systems, which assist both with identification of eligible green bond assets and reporting.

Finally, **the scope and ambition of green building policy and regulation remains limited**. Since the implementation of SANS 10400 XA in 2012, no notable changes have been made to building regulations to raise the bar in terms of consumption of energy, water or carbon emissions. Mooted introduction of national water efficiency and energy performance certification (EPC) regulations is lagging. Elsewhere in the world, the introduction of EPCs has facilitated rapid development of a market for green buildings through visible and near-universal signals of efficiency.

The taxation regime has evolved more rapidly in response to the growing green building agenda. The newly implemented carbon tax may drive adoption of green building in years to come. Over the medium term (2019-2022), it will affect only energy producers (Scope 1 emitters), so excluding the consumption of grid electricity in buildings. In the interim, scope may exist for green buildings owners to sell carbon offsets generated by renewable energy installations or energy efficiency upgrades to these large emitters, however a fairly large scale (per renewable energy system or portfolio of systems) is required to justify the associated carbon project administration costs, including in respect of measurement and verification (M&V) of savings.

[33] Date of implementation of SANS 10400 XA

There are also two tax incentives applicable to green building owners: Section 12B of the Income Tax Act, which provides for accelerated depreciation of solar PV systems, effectively reducing capital outlay for owners, and Section 12L of the same legislation, which provides a (modest) once-off energy efficiency tax deduction of R0,95/kWh. Similar M&V protocols apply to verification of savings in respect of S.12L claims, historically deterring many property owners.

To support international climate change commitments and national policy objectives, Government should re-evaluate the scope and level of ambition in SA's green building policy and regulation. Several extremely valuable initiatives would not have significant capital cost implications for building owners, including water saving measures like flow restrictors and mandatory energy performance certification for larger buildings. Further, it could set an example with its own property portfolio. Taking responsibility for some 90 000 buildings, the DPW could act as a remarkable agent of change.

5.2 Barriers in green building ownership and use

Limited evidence on the comparable financial performance of green rated buildings weakens the business case for prospective investors. Data points are assessed by analytics companies such as MSCI, property valuers (usually preceding transactions involving comparable properties) and property owners.

Currently the only publicly available and representative analysis is published by MSCI for the premium office segment. Constraints include both sample size and availability of data for the sample. Property valuers are similarly constrained; to form a substantiated opinion on the market premium attributable to a specific green property, they require evidence in the form of sales. To date, this evidence remains limited, particularly outside the office segment. Property owners have a clear line of sight into the performance of their green portfolios, although rigorous comparisons with brown portfolios are not always undertaken, for various reasons (lack of availability of utility data; limited comparability in building typology, location or use; etc). Ratings bodies including GBCSA should assist where possible in expanding the coverage of market research, create their own awareness through engaging with valuers and other key stakeholders, and support property owner efforts to collect and analyse data for their own portfolios.

5.3 Barriers in access to the bond market

Issuer scale and type are critical determinants of access to the bond market.

- Issuer scale: For property funds, a portfolio worth at least R10bn appears necessary to actively participate on the JSE bond market. Only 15 REITs currently meet this requirement. For financial institutions, however, the hurdle seems to be lower: for example, TUHF is an active bond issuer with less than R5bn in assets;

- Issuer type: SOEs struggle to place paper, currently, as mentioned earlier. Lesser known REITs may also find it more difficult to raise capital than mortgage lenders, despite similar size, credit rating and bond security, due to industry-specific factors influencing investor perceptions.

Mortgage lenders could play a pivotal role as aggregators with ready access to debt capital markets. For example, it is estimated that close to 200 green projects are owned by entities without the requisite critical mass to contemplate dedicated property-linked green bond issuance[34].

[34] It is possible to combine eligible asset types for purposes of green bond issuance: this is common practice for banks

For other issuers, a potential solution is to explore ringfenced green bond structures which protect lenders against any exposure to the general balance sheet and business. While these structures may not hold appeal for all issuers due to being more complex, less liquid and possibly more expensive, they may serve issuers that would otherwise struggle to access bond markets.

5.4 Barriers related to green bond compliance

Green bond compliance costs and complexities have been outlined in detail earlier in this report. **Green bond compliance costs are often non-negligible** in South African context. There are three reasons:

a) **Relative external assurance costs are larger since local issuance is smaller**. Most independent review fees have large fixed components which are more difficult to absorb in the context of smaller bonds. The table below provides an illustration, suggesting that green labelling could add R400-800 000 to total listing costs for a typical issuer (note that this excludes any ongoing auditing or verification costs which could add a further R100-400 000 annually: compulsory for CBI issuers using Pathways 1 and 2). For context, the City of Cape paid R400 000 (ex VAT) in arranging costs on its R1bn green bond in 2017 (~0,4% issuance);

b) **Prospective issuers may not be well geared up** for asset identification and environmental reporting, due to data management challenges as well as a lack of familiarity with green bond investor reporting requirements. This has been mentioned by current issuers as a real internal challenge;

c) **Investor preference for physical asset ringfencing introduces complexity into bond structuring**, with implications for legal costs and bond pricing (less demand hence likely higher pricing). Several ESG investors explicitly wish to see physical separation of green assets from the balance of the portfolio through ringfenced bond structures e.g. securitisations or project bonds. These investors do not wish to take indirect exposure to 'brown' assets through providing balance sheet level debt.

Table 10: Typical assurance costs relating to listing on the JSE Green Bond Segment, R1bn bond

	Second Opinion	Certification	Verification	Rating
Fee basis	SPO: $10-20 000	CBI: 0,1% bps issuance Verifier: Technology type, issuer readiness, bond type and allocation of proceeds	Verifier: Technology type, issuer readiness, bond type and allocation of proceeds	No estimates available
Low end of range (ZAR)	R150 000	CBI: R10 000 Verifier: R225 000	R225 000	N/A
High end of range (ZAR)	R300 000	CBI: R10 000 Verifier: R750 000	R750 000	N/A

Note: Verification fees include pre- and post-issuance services in respect of the allocation of bond proceeds but not verification of annual issuer reporting

Source: Various

In response to **weak data collection systems and practices by property owners**, ratings bodies like GBCSA can create awareness regarding the scope of information required by investors into green buildings. It can also assist with implementing adequate data collection systems, which in turn may facilitate rating on tools such as the EBP and EWP, so expanding the universe of green building certification.

The availability of data is also a constraint for the CBI, which currently can produce **baselines only for the SA office and supermarket segments**. In its role as an advocacy body, GBCSA can encourage owners of large property portfolios to make energy and carbon emission data available to the CBI for all properties (not just green), to broaden the scope for CBI certified green bonds in the property sector.

Finally, to deal with the mismatch between **certain costs and uncertain benefits to the green bond issuer**, additional costs and complexities should be minimised. One way to do this, in respect of direct costs, is through additional CBI proxy approval, enabling fast track access for owners of buildings certified by eligible tools. Another mechanism, tackling indirect costs, is support for data collection and reporting, as outlined above. A third mechanism, addressing financial upside, is to play a developmental role, as ALCB has done in all three SA green bond issuances. This could take the form of technical assistance, providing credit enhancement, or crowding in other investors through signalling.

5.5 Barriers related to investor demand for green bonds

Several investment managers highlight **an absence of emphasis on ESG factors in institutional investor mandates** as limiting the appeal of instruments like green bonds. They are measured exclusively on financial performance by their clients, suggesting that green bonds would be unattractive investments if the issuer expected discounted pricing to offset expenditure on Green Segment compliance costs. Investment managers with prominent ESG credentials are equally unwilling to make concessions to hold green bonds. However, they challenge the claim that investors do not measure investment managers on ESG factors.

Investment managers differ widely in their approach to incorporating ESG into decision making. Most managers seem to consider ESG factors during the due diligence process, although ESG analysis is usually a qualitative assessment which supplements the financial analysis and – in extreme cases – results in a decision not to invest (i.e. negative screening). In very few cases, ESG factors are included in credit risk modelling, ultimately determining the price at which investors enter the market and their subsequent expectation of return. In this regard, it is noteworthy that even the large global credit rating agencies are still grappling with accounting for ESG factors in their models.

For ESG-focused managers, demand is determined by the type of impact targeted by bond issuance.

- Local context, namely a developing economy with widespread poverty and inequality, was highlighted during the market survey, with social co-benefits required to unlock substantial capital from several managers.
- Within the category of environmental impact, ESG investors are likely to scrutinise the scope and magnitude of impact.
    - Scope: Whilst international ESG investors are usually most concerned with climate change, local ESG investors may prioritise water and transition to (on-site) renewable energy sources. For guidance, GRESB provides a useful set of Green Bond Guidelines aimed at listed property companies incorporating a holistic perspective on green building.
    - Magnitude: A bond market expert was of the view that renewable energy projects provide a more attractive use of proceeds than green buildings, in terms of environmental 'bang for

buck'. Considerations include carbon saving per Rand invested[35] and the extent to which eligible assets represent a deviation from business as usual, referred to as additionality in climate finance circles. Buildings targeting Net Zero ratings on the back of on-site solar PV installations may be an easier sell than those delivering incremental energy efficiency.

Figure 18: CICERO Shades of Green classification

Dark green	Projects and solutions that already realise the long-term vision of a low-carbon and climate-resilient future. Typically, this will entail zero-emission solutions and governance structures that integrate environmental concerns into all activities. Example projects include renewable energy projects such as solar or wind.
Medium green	Projects and solutions that represent steps towards the long-term vision, but are not quite there yet. Example projects include sustainable buildings with good (but not excellent) energy efficiency ratings.
Light green	Projects and solutions that are environmentally friendly but are not by themselves a part of the long-term vision. Example projects include energy efficiency improvements in fossil-based industry that result in short-term reductions of greenhouse gas emissions, and diesel-fueled buses.
Brown	Projects that are in opposition to the long-term vision of a low carbon and climate-resilient future.

Source: Clapp (2016)

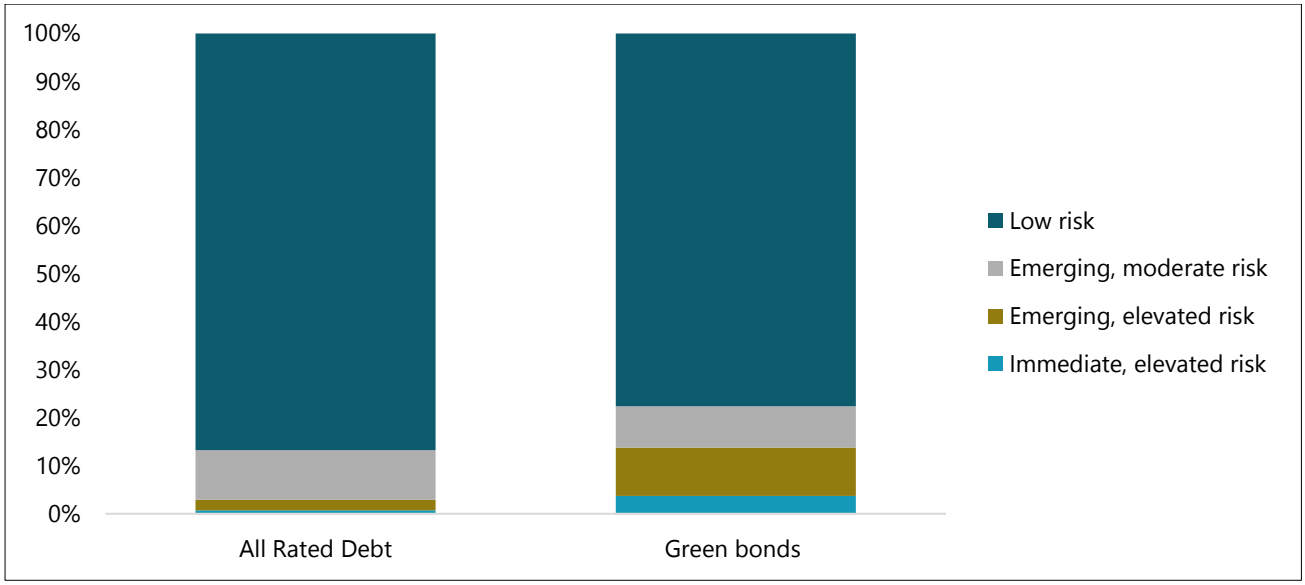
Select investment managers believe that ringfenced ESG bond structures are more desirable. This may be driven by a desire to avoid indirect exposure to 'dirty' projects or business activities. Although the proceeds of green bonds must be allocated to eligible green assets or activities, the most common bond structures employed in the property sector remain senior unsecured notes in terms of which aggregated corporate cash flows are used to service obligations. In these structures, green bond investors are ultimately exposed to environmental credit risk associated with other projects and activities, which may include 'brown' elements, despite only funding green projects. International literature which shows green bond investors have not necessarily reduced their exposure to environmental risk – counterintuitively - for this very reason (see Figure 19). This highlights the importance of a sound overarching sustainability strategy at issuer corporate level.

In the South African corporate bond market, ringfenced corporate bond structures such as project bonds and securitised notes remain niche. Extensive legal documentation detailing complex contractual relationships limits the pool of prospective investors; many investment managers do not have the necessary capability to evaluate and accurately price these structures. Limited investor demand may in turn result in higher bon pricing and less liquidity, dampening general issuer interest. However, these structures may be very appealing to certain types of issuers, which may be willing to absorb some of the extra cost to access additional capital:

- Companies without well-established sustainability credentials; and
- Companies which would otherwise struggle to tap bond markets, including mid-size REITs and issuers with perceived governance challenges (e.g. Resilient stable; SOEs).

[35] See for example the Carbon Yield methodology, developed by Lions Head Global Partners, South Pole Group and Affirmative Investment Management

Figure 19: Environmental credit risk composition of debt instruments, 2015 (%)



Source: Ehlers & Packer (2017)

To address the barriers regarding ESG integration in investment decision making, it would be useful to publicise the growing body of global research on the **impact of material ESG factors on long-term financial performance**.

This should be coupled with **increased ESG disclosure requirements for all major financial institutions**, aligning with international best practice. Currently, the only notable legal ESG disclosure requirement for institutional investors is Regulation 28, issued under the Pension Funds Act. Amongst other things, this prescribes that pension funds consider material environmental, social and governance factors that may affect long-term performance before investing in an asset. Proposed changes which give effect to this provision will increase pressure on owners of R2 trillion in assets if enacted[36]. National Treasury is currently exploring the introduction of ESG disclosure regulation with far greater reach, possibly affecting reporting across banking, insurance and other financial industries. This follows the growing traction of international investor reporting initiatives such as the Task Force on Climate-related Financial Disclosures.

Signals may elevate the profile of an issuance and so drive broader demand and greater liquidity. CBI certification is amongst the best recognised investor signals globally. Financial market participants attributed greatest value to CBI certification in instances in which investor confidence needed to be bolstered, for example new bond issuers, novel bond structures, or new markets (e.g. student accommodation). Signals may also prove very valuable to ESG integration efforts for investment managers without the necessary in-house expertise to perform extensive due diligence on niche ESG investment opportunities.

With regards to the specific requirements of ESG-focused investors, **green bond issuers should consult with qualified bond advisors including arranging banks**. Advisors can assist issuers in determining which type of ESG bond to target (i.e. green or sustainability), which structure to employ, and which investors to target. While only a Green Bond Segment exists at present, the ICMA has developed guidelines for **sustainability bonds**, which are experiencing rapid growth internationally, albeit off a small base. Locally, the JSE is currently investigating social and sustainability bonds with the possibility of amendments to the DLR to follow. Particularly where achievement of social co-benefits is not feasible, **targeting darker green buildings** with renewable energy sources to support net zero carbon commitments may be preferable.

[36] The GEPF, which is worth close to R2 trillion, is not subject to Regulation 28, according to the PIC

6. CONCLUSION

Significant potential exists for green bonds linked to green property, given both the scale of the eligible asset pool and the character of investors capitalising these assets. The issuers delivering most of this potential are REITs, as property investors, and banks, as financial intermediaries. There are secondary opportunities amongst other green building owner occupiers, notably listed corporates, and unlisted property funds, which currently do not issue bonds on the JSE. Over the medium term, most of the eligible assets will be residential (all income segments) and/or office (premium segment) projects. The industrial sector is the one to watch for development of net zero carbon properties which appeal to investors seeking 'dark green' assets.

However, **the realisation of this potential relies fundamentally upon a recovery in the South African economy**, which has languished in recent years. Economic growth drives not only demand for property in the real economy, but also sentiment and activity in financial markets. As local economic and political stability has deteriorated, so too has the demand for riskier investments, including bonds issued by less highly rated issuers (e.g. mid-size REITs).

CBI certification could play an important role in unlocking the potential as a credible signal of the environmental impact of projects financed by green bonds. Considering that building efficiency spans a broad spectrum, CBI certification could be used to distinguish 'dark green' from 'medium green' portfolios as per Figure 18, flagging those consistent with a zero-carbon ambition. However, data scarcity challenges need to be comprehensively addressed to do so, both in terms of creating market baselines and assessing green buildings against these. In the interim, proxy certifications such as EDGE, LEED and SANS 10400 XA, and eligible standards like Net Zero, will assist issuers with fast track access to CBI certification by bypassing data challenges.

To fully tap ESG investor demand, issuers should address South African context when articulating impact in their green bond frameworks. From an environmental perspective, this implies including indicators beyond emissions abatement, for example renewable energy produced and water saved. Where relevant, social co-benefits should be included, for example affordable housing provision (residential property bonds). Finally, issuers should engage with advisors and prospective investors prior to bond issuance to determine optimal bond structure, bearing in mind that ESG investors may wish to avoid indirect exposure to other assets and business activities.

Government is a crucial role player, shaping the landscape for green buildings through a combination of carrots, sticks and role modelling:

- Building regulation: Energy performance certification requirements would close existing data gaps for property investors, the CBI and bond investors. Introduction of national water efficiency regulation and gradual tightening of energy efficiency regulation would support the achievement of national policy and international commitments;
- Taxation: Initiatives like the carbon tax and income tax incentives internalises externalities (carbon emissions), improving the business case for energy efficient, low-carbon buildings;
- Investor disclosure: Requiring a broad spectrum of financial institutions to report on ESG decision making and portfolio characteristics will likely tilt their portfolios towards more sustainable investments, including green mortgages and green bonds;
- Leadership by example: Through adopting recognised green building rating tools, Government could increase its access to ESG investors for revitalisation and/or replacement of an ageing property portfolio. It could also leverage the largest property portfolio in the country to expand the base of local suppliers of green building technologies and drive change in commercial building specification.

As the most prominent green building rating body in SA, GBCSA could deliver tremendous impact as a catalyst at the nexus between property owners and investors. This includes support for data collection efforts by property owners and analytics providers, aligning with investor focus on building operational performance in tool design, raising market awareness on both the supply and demand side of the green bond market, and lobbying government for more ambitious green building policy, regulation and green building adoption as the single largest property owner.

Augmenting the efforts of Government and green building ratings bodies, **developmental funds including the ALCB can stimulate the green bond market** by removing hurdles. This could include assisting early issuers with minimising the additional compliance costs, offsetting these with financial benefit, e.g. longer tenor, pricing below commercial levels (not necessarily on an absolute basis but on a risk-adjusted basis), or serving as anchor investor to crowd in other investors for a new issuer (e.g. midsized REIT) or ringfenced bond structure (e.g. project bond).

REFERENCES

Anderson, A. (2019). Listed Property's Slow Recovery Still Outpaced by Equity Investments. *Business Day,* [online]. Available at: https://www.businesslive.co.za/bd/companies/property/2019-04-23-listed-propertys-slow-recovery-still-outpaced-by-equity-investments/

Centre for Affordable Housing Finance, (2015). *The South African Residential Property Market: An Overview.* [online] Available at: https://housingfinanceafrica.org/app/uploads/The-South-African-Housing-Market-Overview-2015.pdf

Clapp, C. (2016). Climate Risk for Investors. Environmental Finance. [online] Available at: https://www.environmental-finance.com/content/the-green-bond-hub/what-is-green.html

Climate Bonds Initiative, (2017). *Climate Bond Standard – Version 2.1.* [online] Available at: https://www.climatebonds.net/files/files/Climate%20Bonds%20Standard%20v2_1%20-%20January_2017%281%29.pdf

Climate Bonds Initiative, (2018). *Green Bonds Pricing in the Primary Market: January – June 2018.* [online] Available at: https://www.climatebonds.net/resources/reports/green-bond-pricing-primary-market-january-june-2018

Climate Bonds Initiative, (2019). *Green Bonds Pricing in the Primary Market: July - December 2018.* [online] Available at: https://www.climatebonds.net/resources/reports/green-bond-pricing-primary-market-july-december-2018

Department Public Works (DPW), (2013). *DPW Green Building Policy*. [online] Available at: https://www.ecsa.co.za/news/News%20Articles/181113_DPW_Green_Building_Policy.pdf

Ehlers, T. and Packer, F. (2017). Green Bond Finance and Certification*. Bank for International Settlement,* [online]. Available at: https://www.bis.org/publ/qtrpdf/r_qt1709h.htm

International Capital Markets Association (ICMA) (2018). Green Bond Principles: Voluntary Process Guidelines for Issuing Green Bonds. Available at: https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/

Lightstone Property, (2017). *Lightstone Gives an Overview of the Current Property Market*. [online]. Available at: https://www.lightstoneproperty.co.za/news/LightstonePropertyOverviewOctober2017.pdf

MSCI, (201). *IPD SA Annual Green Property Index Insight for Performance.*

Property Sector Charter Council, (2017). *2015/2016 State of Transformation Report for the South African Property Sector.* [online] Available at: http://www.propertycharter.co.za/page/15

Statistics South Africa, Various Years. *Financial Statistics of Higher Education Institutions.* [online] Available at: http://www.statssa.gov.za

Statistics South Africa, Various Years. *Selected Building Statistics of the Private Sector as Reported by Local Government Institutions (Preliminary).* [online] Available at: http://www.statssa.gov.za

ANNEXES

ANNEX A: Market study participants

Banks	Investment Managers	Property Funds
Nedbank	Public Investment Corporation	Growthpoint
ABSA	Futuregrowth Asset Management	Redefine
Standard Bank	PSG	Attacq
Rand Merchant Bank	Sanlam Investments	Fortress
BBVA	Old Mutual Alternative Investments	Equites
HSBC	Granate Asset Management	International Housing Solutions
JP Morgan		

ANNEX B: Regulation 28 of the Pension Fund Act

Regulation 28 is part of the Pension Funds Act, governing asset allocation in pension funds. Part (2)(c)(ix), added in 2011, requires that boards of pension funds consider material environmental, social and governance factors before investing in an asset. The primary mechanism for achieving this is the investment policy statement, which - as a guiding set of investment objectives and parameters – is used by investment managers to implement investment strategy.

Despite the introduction of the sustainability provision, little has changed in pension fund investment practice to date, primarily because many worker trustees (i.e. those appointed to represent the employer) lack the necessary awareness and skills to consider ESG factors.

In March 2018 the Financial Services Board (now the Financial Sector Conduct Authority), released its long-awaited Draft Directive on Sustainability Reporting and Disclosure Requirements, giving expression to Part (2)(c)(ix). This aims to change the status quo by prescribing what should be contained in an investment policy statement insofar as the sustainability and active ownership of assets are concerned, as well as how funds need to report on these issues.

Under the directive, "*every pension fund must reflect in its investment policy statement:*

- *How its investment approach ensures the sustainable long-term performance of its assets;*
- *Its policy in applying ESG factors to the assets it intends to acquire;*
- *How regularly it measures the compliance of its assets with these ESG factors and its sustainability criteria, in particular, the manner in which broad based black economic empowerment is advanced by the business;*
- *Its active ownership policy*."

Further, annual financial statements and trustee reports must deal with how the investment policy statement has been complied with or changed in the reporting year.

This draft directive had not been promulgated at the time of writing.

ANNEX C: Scenario modelling overview

1. Introduction

This section provides a brief overview of the financial projection model developed for ALCB and GBCSA's CBI project. The purpose of the model is to help assess the market opportunity for green bonds linked to green building in South Africa. It provides a comprehensive list of potential issuers across public and private sectors and the opportunity associated with each of them. Functionally, the model estimates the potential size of the green bond market – specifically where proceeds are allocated to green building - for a range of growth scenarios and levers between 2020 and 2030.

2. Approach and Methodology

A holistic approach was followed in the design of this model, both for defining the problem statement and in crafting a solution. In order to overcome some of the data gaps across various sources, a dual method was chosen to bolster quantitative research with qualitative verification. Practically, this means verifying data with multiple sources where available, inferring assumptions based on experience and qualitative research, estimating expected trends based on historic and international information, and finally testing results with industry experts.

The model built on the total value chain methodology applied during research, integrating data from a wide range of sources to link production of green building to access to bond markets, via both property investors and financiers, ultimately enabling estimation of green bond issuance potential per issuer. Inclusion criteria were developed and applied to prominent market participants within these sectors, based on various indicators informed by the most recent published data. In the absence of granular information, industry-related figures were used or simplifying assumptions were made as appropriate. The chronological process undertaken was as follows:

Process

a) Assess historic and current local green bond landscape.

b) Conceptualise drivers and barriers to green bond market development.

c) Define inclusion criteria and compile eligible issuer list (see below).

d) Evaluate issuers and identify data gaps.

e) Develop simplifying assumptions and scenario variables.

f) Create and refine initial growth projections.

g) Test assumptions and results with relevant stakeholders, including ALCB, GBCSA, Ecolution, selected investment managers and property sector specialists.

h) Integrate feedback into model and stress test.

i) Refine and report results of growth projection.

3. Determining the universe of eligible Issuers

Given certain constraints to green building, and especially to issuing green bonds, it was necessary to narrow the scope of study and focus on entities which could reasonably overcome such constraints. Constraints included minimum green portfolio size to justify dedicated green bond issuance (at generally accepted gearing levels) and demonstrated ability to issue bonds. While criteria are specific to categories of issuers, flexibility has been achieved by allowing for certain deviations, for example due to scale and unique business model (TUHF).

Inclusion Criteria

Category	Inclusion Criteria	Rationale
REITs		
Real Estate Investment Trusts (REITs)	A local direct property portfolio of ZAR2.5bn or more.	Typical note programme minimum of ZAR1bn at 35-40% gearing
Public Sector		
SOEs	Current outstanding bond issuance and at least one green-rated building in their portfolio	Several SOEs are active participants in the bond market and green building space
Municipalities	Prior or current bond issuance	Prior bond issuance signals the ability to attract investors. Municipalities are beginning to adopt and implement green building practices
Banks and Lenders		
Banks – as property owners	Banks with current green property holdings	Banks can readily access bond markets and those with current green bond issuance has exhibited implementation of sustainable practices and would likely continue to do so
Banks – as lenders	Dedicated commercial property finance (CPF) department	Banks may choose to raise debt through green bonds in order to on-lend to green building projects. Only banks with dedicated CPF capacity would likely have the ability to manage green building nuances
TUHF	No inclusion requirement	TUHF is included as potential beneficiary and promising opportunity due to their unique business model, successful recent issuances and potential scalability

4. Dimension of analysis

a. Growth scenarios and variables

The property sector is highly cyclical and generally sensitive to the country's economic conditions. Given the large potential variability over time, various scenarios were developed based on possible growth paths for green building adoption and the property sector at large. The results comprise a range of green building and green bond issuance outcomes. Initial projections are tested with industry stakeholders and refined based on their feedback. The model imagines three growth scenarios:

- Low growth scenario: The economy exhibits low or now growth, resulting in reduced property investment and slowdown of green building adoption.
- Realistic growth scenario / Base Case: Continuation of economic growth observed in recent years, which results in some positive activity in property market and slightly better green building adoption.
- High growth scenario: Largely positive national economic outlook stimulates green building and the property sector beyond current conditions.

Given these likely outcomes, growth variables are isolated to differentiate between scenarios for identified categories of eligible issuer:

Property owners	• Annual change in total portfolio value (y-o-y %) • Annual change in green portfolio value (y-o-y %)
Lenders	• Annual change in (commercial) property loan book size (y-o-y %)

Growth rates for property portfolios and loan book size, respectively for owners and lenders, are derived from historical data (where available) and aggregated for each potential issuer type. Results are tested against local observations to date and industry expert opinion, as well as international trends and comparable economies such as BRICS[37] nations. Where necessary and appropriate, adjustments are made to better align results with these metrics. For example, green building adoption is tested against Australian green building adoption as many of South Africa's rating systems are based on theirs and the countries have similar climatic and property market characteristics.

Constraints are imposed on various growth elements to reasonably restrict growth projections and so maintain conservative estimates. While all effort is made to maintain consistency among eligible issuer groups, some anomalies require individual adjustment to remain realistic. For example, depending on the current penetration of green property as portion a portfolio, green property growth rate requires manual adjustment to prevent the value of green buildings exceeding total portfolio value by 2030.

Sources:

- Annual financial statements of banks, SOEs, REITs & TUHF
- Municipal data: https://municipaldata.treasury.gov.za/table/bsheet/?year=2017&amountType=AUDA
- CBI reports: https://www.climatebonds.net/resources/reports
- Expert opinion: Andre Harms & Cornelia Oberholzer of Ecolution Consulting Engineers.

[37]Association of five major emerging economies: Brazil, Russia, India, China, South Africa

b. Financial Intermediation by Lenders

The market opportunity for green building related green bonds can be expanded to include bonds raised against loans funding green buildings. Banks and other financial intermediaries could increase access to green bonds by aggregating loans, including small to mid-sized property owners unable to access bond markets directly.

c. Market levers: Green Building vs Bond Market Access

Various market levers exist which could be used to develop and stimulate the green building bond market in South Africa. Most notably:

- increasing access to bond markets by identified eligible issuers, or
- promoting greater green building adoption by property owners (investment- and owner-occupied properties)

In order to make informed recommendation on which of these to prioritise, their respective effects on green bond issuance by 2030 is tested and presented.

5. Assumptions

a. Issuer category

Category	Assumption
Real Estate Investment Trusts (REITs)	• Total property portfolio grows at constant annual rate as defined • Green property portfolio grows at constant annual rate as defined • Base case considers only REITs with existing green buildings and outstanding issuance • Value of green buildings calculated using average building value across total portfolio
SOEs & Municipalities	• Size of total portfolio is static – does not change over time • Green portfolio grows - green buildings replace old buildings or are developed through major refurbishment • Average building value equal to average building value City of Cape Town's green building portfolio
Banks – as property owners	• Total property portfolio is static – i.e. does not grow over time • Green property grows over time as existing portfolio is greened • Total bond issuance outstanding does not grow over time • Property values calculated based on rental and capitalisation rates specific to area in which buildings are located • Bond gearing (outstanding issuance / non-current assets) applied to non-investment property to estimate bond portion financing owner-occupied buildings • Green property does not exceed 70% of total non-investment property portfolio by 2030 – manually adjusted down in such cases.
Banks – as lenders	• Banks source funding from green bonds to finance green loans and advances to commercial property

	• Bond ratio (outstanding issuance / non-current assets) applied to non-investment property to estimate bond portion of CPF loans and advances • Green portion of loan book is pegged to green portion of total portfolio of all REITs
TUHF	• Green portion of total buildings on loan book assumed to be 5% • Despite being a lender, TUHFs growth was modelled similar to that of a REIT (growing total portfolio, growing green portion,) as well as the possibility of increasing bond ratio

b. Market levers

Lever	**Base case / Activated lever**
Increasing green building adoption	• Base Case: Only entities currently holding green rated buildings grow their green portfolio over time • Expanded Green Portfolio: All entities add at least one green building of average portfolio value by 2020 and continue to grow their portfolio thereafter.
Increasing bond issuance	• Base Case: Only entities with current bond issuance outstanding issue bonds over the period, bond ratio is constant over the period (that is, the portion of bond debt finance does not change) • Increasing bond issuance: Only entities with current bond issuance outstanding issue bonds over the period, and their bond ratio grows by predefined rate annually.

6. Rationale and discussion

Category	**Discussion**
Real Estate Investment Trusts (REITs)	Despite some recent loss in investor confidence, REITs are a large and growing asset class in South Africa. Their business model of property-related income-generation is ideally suited to green building and green bonds. Despite some sensitivity to economic shocks, well diversified property portfolios, expected growth in the medium-term and credit risk benefits of green buildings and bonds make them an attractive bond issuer class.
SOEs	Many state-owned entities have historically been highly active bond market issuers, commonly backed by government guarantees. Bonds are mostly used to finance core operations like infrastructure. Recent evidence shows some green building adoption, typically in non-core office headquarters. However, a recent spate of financial and governance scandals combined with weakening government ability to support SOEs means many are unable to offload commercial paper.
Municipalities	Only four municipalities in South Africa has ever issued bond debt, all of which are large metros. Such entities typically have the required scale and investor confidence to go to market with bonds, and even green bonds. Indeed, City of Cape Town issued the first JSE Green Segment compliant green bond in SA. However, the size and use of their property portfolios may be subpar or ill-suited to bond financing respectively.
Banks – as property owners	All 'big five' banks in South Africa have both (non-investment) green buildings in their portfolio and current outstanding bond issuance. Green buildings are typically

	administrative regional headquarters, with the exception of Standard Bank (SB), which has started greening bank branches. At first glance they may seem ideally suited to issue green building related bonds. However, banks are not currently growing amid increasing competition (in fact, some like SB have begun closing branches) and a substantial portion of their portfolios are already green.
Banks – as lenders	Banks as financial intermediaries are well-suited to aggregate green building projects, arrange bond issuance and manage disbursement of the proceeds. Indeed, such green lending and potentially other specialised green finance products could unlock a new market of borrowers without the ability to access bond markets directly.
TUHF	TUHF as financier of small scale residential rental properties is well suited to green building related green bonds, as they are currently active on the bond market and have incorporated green building into their lending business. Due to their role as lenders (and not direct property owners) , they are grouped with Banks as Lenders in the model.

ANNEX D: Rating Tool Summary

Rating Tool	Description	Rating Scale	Variations	Building applicability	Commercial	Residential
Green Star New Build	Green star certification promotes integrated design to minimise environmental impacts of buildings. The system is rapidly gaining popularity and is constantly being updated to ensure continuous relevance.	4-6 Stars	•Office •Retail •Public & Education •Multi-unit Residential •Industrial •Custom	•New buildings •Major renovations	X	X
Green Star EBP	Covers the same environmental categories of GS New Build tool but with an explicit focus on optimising operating and maintenance efficiency in existing buildings.	1-6 Stars. 1- and 2-star ratings only recognising a building "On the journey to a better, greener building"	N/A	Existing buildings only, minimum 12 months operational	X	X
EWP	Energy and water benchmarking tool intended to inform commercial property owner decision making such as buildings to retrofit, sell or hold, and to attract tenants. The EWP tool makes up 40% of the GS EBP tool but is also available as standalone.	10-level scale based on performance relative to national benchmark	N/A	Existing buildings only, minimum 12 months operational	X	X
Net Zero / Net positive	The Net Zero suite of rating tools measuring the extent to which a buildingcan neutralise its impact on the environment. Net Zero indicates a building generates as much resources as it uses, while Net Positive indicated production exceeding consumption.	Net Zero or Net Positive	•Carbon •Ecology •Water •Waste	•New buildings •Existing buildings •Fit-outs	X	X
EDGE	A simple, user-friendly green building design tool and rating system intended for developing markets. The EDGE standard requires a minimum reduction of 20% across energy consumption, water and embodied energy for buildings compared to geographic baseline.	EDGE certification	N/A	•New buildings •Existing buildings •Major renovations	X	X
LEED	LEED was developed by the U.S. Green Building Council and is one of the most popular green building certifications used worldwide. It includes a broad set of rating systems for the design, construction, operation and maintenance of commercial and residential buildings.	Certified: 40 - 49 points Silver: 50 - 59 points Gold: 60 - 79 points Platinum: 80+ points	LEED 2009, includes 10 rating systems	•New buildings •Existing buildings •Major commercial renovations	X	X