

## **CONCEPT NOTE 1:**

### **FINANCING MECHANISMS AND APPROACHES TO NZC BUILDINGS**

Prepared by Megan Sager & David Hazell

For **Sustainable Energy Africa**

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#### **A. Key Points**

- The major financial hurdle to uptake of net zero carbon (NZC) buildings is negative impact on financial feasibility. If investors cannot maintain or improve their risk-adjusted financial return by investing in emerging NZC opportunities, they will prefer conventional product.
- To achieve NZC building, capital must be incentivised to build back better. The barriers to achieving financial feasibility can be addressed in three ways:
  - Public policy and regulation
  - Green business models
  - Financial mechanisms
- Government has an incredibly powerful role to play in shaping the landscape of market incentives. It can do this through applying several levers, namely:
  - Regulating building energy efficiency;
  - Requiring building owners to make information available regarding energy intensity; and
  - Pricing and so internalising both positive and negative externalities.
- Alternative business models such as green leases and third-party ownership of green technologies provide ways to deal with split incentives deterring investment.
- Market-oriented financial mechanisms address the elevated risk of failure in the early stage of new product, enterprise or market development.
- Blended finance will play an increasingly important role in addressing these barriers and accelerating the NZC transition. The public sector can catalyse private investment through de-risking opportunities and rebalancing the risk-adjusted return to investors.
- Four key types of financial mechanisms which will prove fundamental in driving this change: technical assistance; risk underwriting instruments; market incentives; and direct funding.
- A plan to overcome the current challenges should be dynamic, adapting and responding to the NZC buildings market as it evolves. Furthermore, it needs to clearly distinguish and outline the distinct approaches to both short-and medium-term interventions.
- Actions at the city level will be central to achieving net zero carbon.

## Introduction

Increasingly, **policymakers recognize the importance of achieving net zero carbon building to climate change mitigation efforts**. Cities are leading the transition to NZC, spearheaded by C40 and other initiatives. Just 3 years after the Paris Agreement was concluded, catalysing the NZC movement, cities supporting NZC already accounted for more than a third of the MSCI global annual property index.

**Yet there is a gap between policy-level commitments and property-level action**, particularly in developing countries like South Africa where resources are limited. A crucial clue to the gap lies in disparity between private and public optimality. Individual property investors consider primarily technical and financial feasibility, in the absence of being able to capture positive externalities. Yet these positive externalities – including carbon abatement, better population health outcomes, mitigating unemployment, to name a few – are central to policymakers concerned with economic feasibility. Closing the gap requires realigning incentives between individual and public economic actors through a shared value model which tilts capital allocation towards socially optimal infrastructure. Or to put it more plainly, to achieve NZC building, capital must be incentivised to build back better.

This concept note explores a range of solutions to these financial feasibility challenges comprising **public policy interventions, business models, and financial mechanisms**. Public policy interventions shape market incentives, amongst others by internalising externalities. Business models are underpinned by revenue models which monetise assets associated with NZC, being either a green building or specific green technologies contributing towards the achievement of NZC. Where these technologies generate distinct revenue streams, capital expenditure can be incurred by an entity other than the building owner, relieving pressure on the property financial feasibility. Financial mechanisms are solutions to capital raising challenges for the various business models, considering typical form of the asset owner, its access to capital and customer base.

The note starts with a discussion of the anticipated evolution of the market for NZC buildings. The stage of market development is foundational to determining the type and extent of public support required, ensuring highly targeted intervention and cost-effective use of public – i.e. taxpayer - funds. The paper goes on to review a range of mechanisms dealing with the financial feasibility challenges through three different lenses: public sector, real economy and financial sector. It concludes with a preliminary assessment of the ability of these solutions to solve the challenges in the SA city context.

This paper is part of a broader body of research undertaken by Sustainable Energy Africa in partnership with the C40.

## B. Addressing the evolving market for green buildings

**New markets and business models are intrinsically risky**. Factors including limited experience, information, regulation and number of market participants combine to elevate risk and so the return required by early investors. Market signals are not always sufficiently strong to deliver this return. For example, in the case of NZC buildings, occupants might express a preference for NZC over conventional buildings yet be unwilling to absorb the incremental cost. Worse yet, occupants may lack awareness of the benefits of NZC and have no preference at all. Markets for green products and services often fail to develop for similar reasons, with the result that societies get trapped on suboptimal development trajectories powered by unsustainable production and consumption activity. At its core, this failure is driven by the rift between financial and economic feasibility. If investors cannot maintain or improve their risk-adjusted financial return by investing in emerging green opportunities, they will continue to allocate capital to conventional products, maintaining business as usual across the economy.

**The major hurdle to uptake of NZC buildings is the negative impact on property developer or investor financial feasibility.** To date, incremental cost has not been rewarded consistently by higher property valuations for either commercial or residential property<sup>1</sup>. Therefore, mortgage lenders are unwilling to absorb the extra expense through larger loans, increasing the equity capital requirement. Unless equity investors are reasonably certain that they can earn a market-related return on the additional capital, the investment will likely not take place. Considering that the SA market for green buildings is nascent, and the operating profit impact often uncertain, this is seldom the case. Ultimately, factors which reduce NZC project-level financial feasibility – i.e. the risk-adjusted return to investors - will result in projects not going ahead. Due to market failures – including the inability of private investors to capture value embedded in positive externalities – business as usual prevails.

**To mitigate the risk of the market for NZC buildings stalling, carrots, sticks, or a combination** can be introduced. Carrots refer to financial incentives to invest in green buildings, which may include lower property rates, better borrowing terms, or higher market prices, for example. Sticks refer to financial disincentives to invest in brown buildings, which may include regulatory penalties and taxes - reducing asset returns - or investor ESG requirements – affecting the property owner’s access to capital. Globally, a mix of carrots and sticks has often proven the most successful in stimulating the market for green buildings. Deploying only brown building sticks can damage trust between public and private sectors, with large-scale non-compliance often ensuing<sup>2</sup>. Offering only green building incentives creates fiscal challenges, compounded over time by a delay in market development caused by a lesser impact on relative returns than could otherwise be achieved by simultaneous introduction of brown building penalties.

**Ensuring comprehensive, high quality and widely available market information is critical** to achieving rapid and balanced uptake of NZC building. Information is essential for proper transmission of market signals, ultimately enabling price discovery which allows supply and demand to balance. Yet challenges in capturing a return to investment in intellectual property result in pervasive under-provision of knowledge in the public domain or else prohibitively priced private supply, slowing down market development. The value of growing the market knowledge base is often underestimated by public sector organisations, gravitating towards tangible outputs with photo opportunities. The result: large property funds and institutional investors, with large marketing budgets, pay for subscriptions to databases covering the market for NZC buildings – currently the top end of the commercial market. They continue to invest in this pocket of the market while evidence supports the investment case. Meanwhile, smaller investors and developers with negligible marketing budgets serving the affordable housing market can find no reason to introduce NZC to their highly constrained customer base. The outcome: unbalanced urban development, at the cost of less affluent households, which remain fully exposed to tariff hikes and an unstable grid.

**In general, public subsidies – whether funded locally or globally – should be phased out as markets mature and risks decline.** Public funds absorb risk and fill gaps caused by market undersupply. It stands to reason that the need for public funding drops as markets normalise. This does not imply that the public sector should reduce its expectation of impact, but rather that its ability to crowd in private capital should improve over time. Whilst initially capital requirements might be almost fully met by public sources, the ratio of private to public capital deployed (i.e. leverage) could easily exceed 10 once the market is functioning properly. This philosophy is captured by the concept of blended finance, discussed at length later in this paper. When considering the introduction of financial incentives for NZC buildings, policymakers, donors, DFIs and other developmental institutions should interrogate the sustainability of their intervention, clearly defining

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<sup>1</sup> Emerging research by MSCI for Green Star rated premium office buildings is encouraging: these assets defended their values far more successfully than brown buildings during 2019.

<sup>2</sup> The implementation of building energy efficiency regulation SANS10400 XA provides lessons in this regard.

expectations over the longer term, setting key performance indicators, and regularly reviewing progress and the suitability of the selected strategy.

### C. Public policy & regulation

Government has an incredibly powerful role to play in shaping the landscape of market incentives.

**The first lever it can pull is building regulation which influences the product delivered into the market.** A relevant example is Part XA of the compulsory building standard SANS 10400, which governs energy efficiency. Building regulations can progressively tighten over time, reflecting the evolution of technology, building usage and market demand. While building regulations often form the cornerstone of effective green building markets, policymakers must carefully consider the financial feasibility implications for developers and investors if they wish to avoid undesirable outcomes. Avoidance mechanisms include exploitation of legal loopholes and bribery.

**The second lever is increasing market information through compulsory energy performance certification (EPC),** strengthening the ability of market participants to discriminate between green and brown buildings. This measure is often extremely effective at enabling green building price discovery, especially when the EPC signal is reliable (i.e. a good measure of operational energy performance). Publicly available information on the energy intensity of buildings enables large-scale tracking of the “green premium” across all segments of the property market, universally informing valuations. It also enables quick identification of climate-resilient assets for both private purposes (e.g. issuance of green bonds) and public purposes (e.g. estimating progress towards policy objectives).

**In Europe, EPCs are used as a proxy for the energy efficiency of a dwelling.** There are several ongoing studies across the EU into the correlation between EPC certificate ratings and the impact on property values and property sale time. In the Netherlands, the most recent research shows that EPC rating correlates positively with both value and time taken to sell. An ‘A’ rated property has a higher price and a quicker sale time. The research also points to a brown “penalty”: homes with lower ratings experience a disproportionate value loss and longer sale time. The information conveyed by these certificates reduces the information asymmetry between buyers and sellers and signals quality<sup>3</sup>.

**The third lever is pricing and internalising negative externalities,** in this instance primarily greenhouse gas (GHG) emissions associated with use of the national grid (i.e. Scope 2 emissions). The Carbon Tax Act of 2019 seeks to do this, initially focused on large energy users generating energy through fossil fuels (i.e. generating Scope 1 emissions). During a future phase of implementation, the scope of applicability may expand to include other energy users and Scope 2 emissions, which would make it less profitable to own and operate brown buildings. Consideration should be given to the impact on the property sector at large as well as the affordability of more vulnerable building occupants (e.g. low-income households, SMEs).

**The fourth lever is pricing and internalising positive externalities.** In the NZC case, the positive externalities are numerous, accruing across space. For instance, lower electricity consumption and demand may reduce the need for public investment in energy generation infrastructure, resulting in a national saving. Reduced demand for health care due to less coal mining and burning may result in savings at provincial level. At municipal level, bulk infrastructure requirements associated with population growth may reduce, while growth in local industry curbs unemployment and contributes to the commercial rates base. The spread of benefits makes a case for consideration by policymakers at various levels of government.

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<sup>3</sup> Aydin, Erdal, Santiago Bohórquez, and Dirk Brounen. 2019. *Energy performance certification and time on the market*. Tilburg: Tilburg University.

Several green building incentives currently exist:

- S. 12L Income Tax Act offers a taxable income deduction of R0,95/kWh for energy efficiency initiatives as a one-off incentive in the first year after implementation. In practice, few green building projects have pursued this incentive due to the prescriptive energy savings measurement and verification requirement. The incentive ends in 2022;
- S. 12B Income Tax Act offers owners of captive renewable energy systems an accelerated depreciation benefit. This incentive is widely utilised by owners of solar PV systems, including third party owners selling units of energy to the occupants of buildings on which systems are located;
- The Carbon Tax Act offers the possibility of selling carbon offsets from eligible NZC building projects to affected taxpayers to reduce liability<sup>4</sup>;
- Feed-in Tariffs (FiTs) offer a limited energy export possibility for owners of embedded generation systems in several municipalities, to date concentrated in the Western Cape but expanding across the country. To qualify, owners must remain net electricity importers. In SA, unlike Europe, FiTs are typically well below consumption tariffs, converging on the avoided cost of Eskom supply to municipalities. Whilst this limits the impact on municipal finances, it also restricts incentivisation to invest in embedded generation, particularly where the levelized cost of energy exceeds the FiT (which remains the case for most small-scale systems).

Currently, a precarious fiscal situation renders the further introduction and indefinite operation of incentives at either national or provincial level unlikely. However, municipalities – as institutions empowered to raise tax from residents – have more flexibility. Sources of funding for the implementation of local government incentives such as reduced property rates may include ringfenced taxes on brown activity, infrastructure savings, grants from DFIs and donors, amongst others. For example, the eThekweni 2019/ 2020 rates policy allows rebates or reductions in property rates on buildings that are in possession of an ‘As Built’ rating certificate awarded by the GBCSA and which comply with related criteria<sup>5</sup> (GBCSA, 2019). Further, local governments can offer incentives which have positive municipal net income implications, such as additional development rights.

#### **D. Business models for green buildings**

**Most commonly, the same business models are applied to green buildings as conventional ones.** Any additional expenditure incurred to achieve green building status is capitalised by the developer which subsequently tries to pass it on to the customer in the form of a higher selling price or market rental. For the latter, the higher rental may be partially or fully offset by lower utility bills, mitigating the impact on customer cash flow. In this model, the occupant typically carries all technology performance and utility pricing risk,

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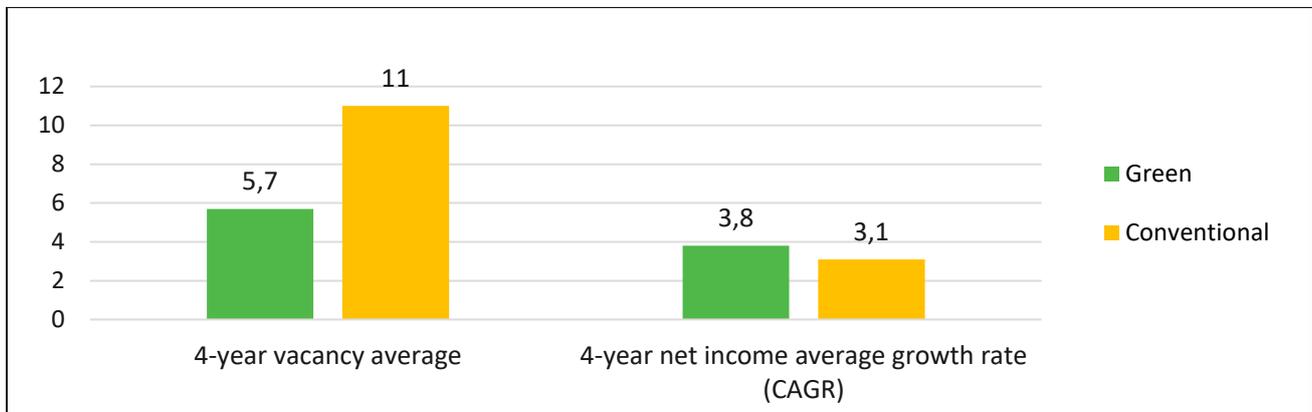
<sup>4</sup> During the first phase of the carbon tax, the carbon offset system will rely primarily on existing international carbon offset standards namely, the CDM, Verified Carbon Standard (VCS) and the Gold Standard (GS). To be accepted under the South African carbon offset system, the offset projects will need to be developed in line with one of these accepted international standards. Project activities eligible as carbon offsets include small and medium-scale renewable energy projects with a generating capacity of up to 50MW; energy efficiency projects on project activities outside the carbon tax net which do not claim the 12L energy efficiency savings tax incentive e.g. energy efficiency in buildings.

<sup>5</sup> GBCSA. 2019. *Incentives to build green in South Africa*. October 29. <https://gbcса.org.za/incentives-to-build-green-in-south-africa/>

hence may not achieve the anticipated savings despite paying more to be in a green building. Understandably, market demand may be limited, at least until robust evidence of utility savings can justify premium pricing.

**Locally, a case study of green building impact on office property returns informs the attractiveness of application of this model to NZC buildings.** It appears higher base rentals have not been achieved consistently for Green Star rated office buildings<sup>6</sup>, suggesting the developer or investor is required to absorb the additional cost. Property funds note that premium clients often expect Green Star to be built into the baseline specification as a condition of lease. However, other financial benefits do accrue to investors. Enhanced escalations and substantially lower vacancy rates safeguard green building income streams and property valuations against inflation and weak market conditions caused by oversupply and deteriorating macroeconomic fundamentals. These features position green premium office buildings favourably for raising finance and delivering superior long-term returns. Whether similar results emerge for other office buildings, or properties in other segments, remains to be seen.

Figure 1: Relative performance of premium office buildings, 2016-2019 (%)



Notes: Green buildings are Green Star certified

Source: MSCI Property Index

**Tweaking the conventional model, green leases provide a mechanism to deal with split incentives** arising between investor and tenant when the investor cannot pass on the additional green building cost. In these contractual arrangements, both parties commit to sustainable building operation and sharing the savings arising from green intervention. Growthpoint Properties became an early adopter in South Africa. As with other energy efficiency contracts, one of the major challenges may be reaching agreement regarding the quantum of savings attributable to green intervention, considering the wide range of factors influencing energy usage.

**Third party ownership of green technologies yields an alternative business model option** which can significantly reduce the incremental cost incurred by the property owner. Whilst the business model is essentially the same, two distinct revenue models are offered to customers:

1. **Energy supply:** A renewable energy project developer installs a generation system on-site, selling units of energy produced to its customer through a power purchase agreement. From inception, the price of energy is typically below the applicable grid tariff, escalating at grid rate or an agreed alternative over the life of the contract (typically 15-20 years).

<sup>6</sup> Interviews conducted with various property funds in 2019

2. **Energy efficiency:** An Energy Services Company (ESCO) installs one or more energy efficiency products on-site, usually tied to a shared savings agreement which splits the financial savings between the property owner and ESCO on an agreed basis over a defined payback period (e.g. 5 years). Lighting is a common example. To establish savings, a baseline must be developed prior to implementation, limiting application to existing buildings.

In addition to easing capital budgeting, the property owner carries negligible technology performance risk and maintenance responsibility whilst enjoying a significant ongoing operating cost saving. Disadvantages include contractual lock-in and foregone regulatory incentives (tax and other).

## E. Market-oriented financial mechanisms

The third suite of solutions directly addresses the elevated risk of failure in the early stage of new product, enterprise or market development. In this paradigm, the public sector – comprising governments, DFIs and donors – seeks to catalyse private investment through de-risking opportunities and so rebalancing the risk-adjusted return to investors. **The term “blended finance” has emerged to refer to the “strategic use of development finance and philanthropic funds to mobilise private capital flows to emerging and frontier markets”<sup>7</sup>.**

Within this school of thought, there are two roles for the public sector:

1. Use of supporting mechanisms which manage risks and reduce transaction costs. Examples include:
  - a. Technical assistance, to supplement the capacity of investees and lower transaction costs;
  - b. Risk underwriting, to protect the investor against risks and capital losses;
  - c. Market incentives, to provide results-based financing and offtake guarantees contingent on performance and/or guaranteed payments in exchange for upfront financing in new or distressed markets.
2. Provision of direct funding to a project or enterprise. Financial instruments such as grants, equity, and debt can crowd in private capital at various stages of the investment life cycle, as follows<sup>8</sup>:
  - a. *“Preparing, reducing uncertainty and high initial costs before commissioning of a project.*
  - b. *Pioneering, helping manage the failure rates and elevated transaction costs associated with high-risk enterprises or projects that are experimenting with, testing and piloting new business approaches.*
  - c. *Facilitating, deferring returns or providing more generous terms than the market to encourage investments with high expected development impact but limited commercial returns.*
  - d. *Anchoring, ‘Crowding in’ private capital on equal terms for mature or credible projects by signalling that macro risks can be managed and that the investment is commercially viable.*
  - e. *Transitioning, providing a cultivated pipeline that meets the needs of private investors to source mature transactions and deploy capital at scale.”*

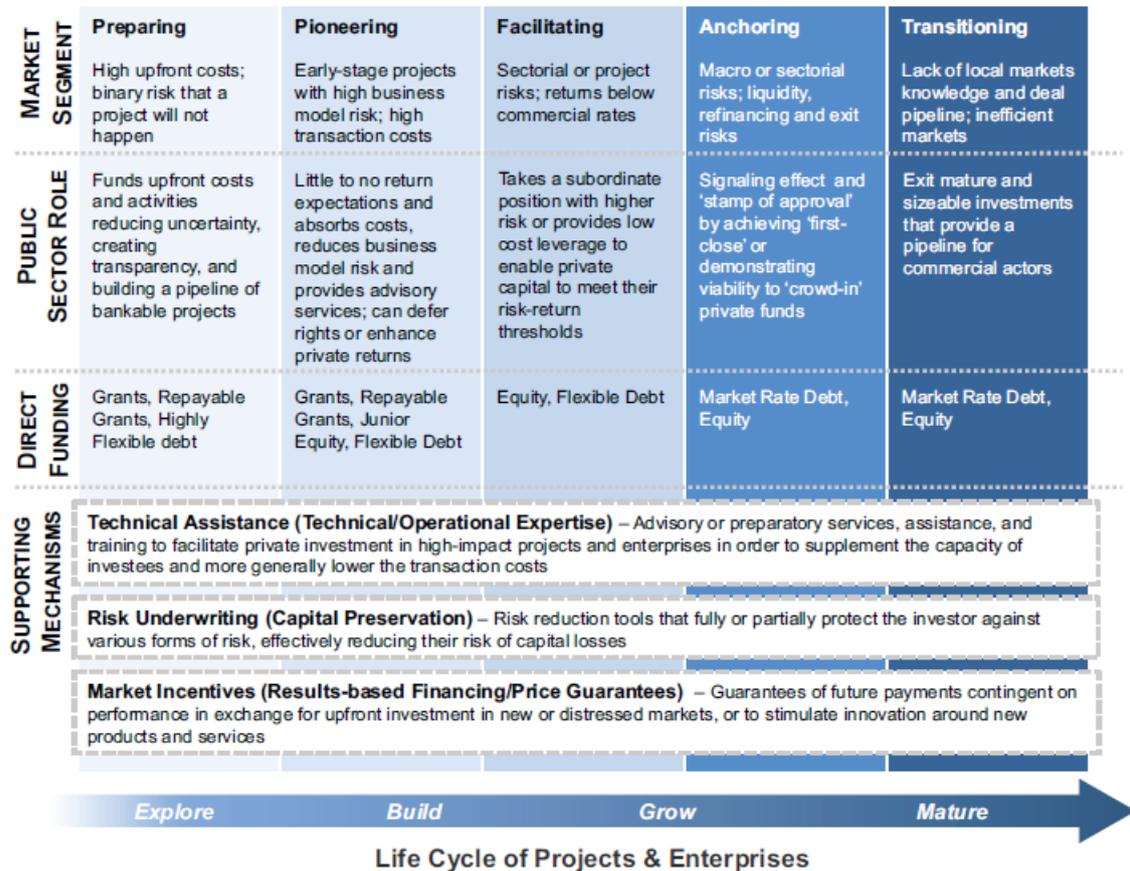
Figure 2 provides a diagrammatic illustration of the application of these concepts across the lifecycle, from nascent to well developed. Grants have the greatest role to play at the start, when risk levels are highest,

<sup>7</sup> World Economic Forum (2015): *A Primer for Development Finance and Philanthropic Funders*

<sup>8</sup> World Economic Forum (2015): *A Primer for Development Finance and Philanthropic Funders*

replaced by equity and subordinated debt as opportunities become bankable. Supporting mechanisms such as guarantees may have a longer-term role, particularly in riskier or marginal markets which even at maturity struggle to attract capital on competitive terms (e.g. affordable housing).

Figure 2: Blended Finance Across the Lifecycle



Source: World Economic Forum (2015): *A Primer for Development Finance and Philanthropic Funders*

**Ways in which DFIs fulfil their mandate to leverage private investment in emerging markets continues to evolve.** Public-private collaboration has taken the form of joint investments in long-term infrastructure and green bonds but is expanding toward joint capitalization of development funds and the creation of more national green investment banks. In more mature markets and sectors, DFIs can unlock private capital by partnering with banks and asset managers to co-finance projects, progressively shifting the focus of their activity from deploying capital directly to providing less costly guarantees and other risk-sharing instruments<sup>9</sup>.

The next section examines the application of blended finance to NZC buildings.

### Supporting mechanisms

#### *Technical assistance*

Technical assistance can be financial or in-kind, in the form of technical advisors provided free of charge to facilitating institutions or project developers. Whilst essentially a donation, and so similar to grant funding,

<sup>9</sup> Climate Finance Leadership Initiative. 2019. *Financing the Low-Carbon Future: A Private-Sector View on Mobilizing Climate Finance*. New York: Bloomberg.

technical assistance is usually linked to uptake of a financial mechanism, whether a supporting mechanism or direct funding.

#### *Risk underwriting*

**Risk underwriting instruments involve the transfer of risk to a guarantor or insurer in exchange for fee.** Instruments include guarantees, local currency loans and facilities, liquidity facilities and swaps/derivatives.

Credit guarantees are the most used risk instrument in SA, absorbing some or all credit risk and so allowing banks and lenders to price debt on more favourable terms than would otherwise apply.

Applications of credit risk guarantees in respect of the NZC building case could include the following:

1. Credit guarantee on NZC property loan: Covering additional cost without robustly establishing proportionately better cash flow and value heightens the expected loss for banks, resulting in higher loan pricing. A partial credit risk guarantee could offset the additional risk, enabling banks to maintain standard pricing on the larger loan;
2. Credit guarantee on ESCO / renewable energy developer loan: Banks are currently unwilling to provide long-term funding to ESCOs and renewable energy developers due to a range of factors, including weak balance sheets, limited track record, and weak macroeconomic conditions. A credit risk guarantee may improve their risk appetite and unlock term debt for more bankable prospects. A local example is the Embedded Generation Investment Programme to be operated by the DBSA, with co-funding from the Green Climate Fund;

Another type of guarantee that is popular locally is a performance guarantee applicable to ESCOs / renewable energy developers. Currently these guarantees are usually issued by the project developers themselves, offering limited de-risking value to the customer. A credible assurance of contractual performance by a respected financial institution may induce a customer to enter a long-term agreement with an enterprise with limited track record or a business model they are unfamiliar with.

#### *Market incentives*

Incentives can be provided to encourage the attainment of specific goals to compensate for the absence of reward by the market, whether due to externalities, nascence, or distress.

The first example is **results-based financing** which is “*any program that rewards the delivery of one or more outputs or outcomes by one or more incentives, financial or otherwise*” (World Bank definition). A local example is the Green Outcomes Fund, developed by the World Bank, Green Cape, WWF and the UCT GSB Bertha Centre. It incentivises local South African fund managers to increase their investment in green SMMEs by paying for outcomes, such as green job creation, climate mitigation, and improved water and waste management. These outcomes must be independently verified before payment is made, insulating the investor from the risk of non-performance. R93m in grant funding has unlocked R396m in private capital, enabling a leverage ratio of 4. This Fund represents a useful source of support for ESCOs and renewable energy developers active in the NZC building space.

The second example is a **price guarantee**. This offers the developer of a project assurance of offtake or exit at a defined price which enables feasibility. In the NZC building space, examples may include a commitment to compensate the NZC cost increment, either through directly procuring the building (sale or rental) at an adjusted price or (temporarily) compensating the difference between the price offered by the market and the price required to enable the project to go ahead.

#### Direct funding

**Direct funding can flow to projects and enterprises directly, or through a facilitating intermediary.** In the NZC building space, municipalities may unlock additional funding for projects through their scale – and so ability to aggregate projects and access capital markets – and funding networks. Whilst historical examples<sup>10</sup> focus on fundraising for own capital projects, it is possible to undertake fundraising on behalf of the market and fill gaps in financing or provide financing on preferential terms.

**Property Assessed Clean Energy (PACE) is a prominent international city-level investment structure,** implemented successfully in the USA and more recently in Melbourne. The Sustainable Melbourne Fund was set up in 2002, catalysing private funding to support renewable energy and energy efficiency projects concluded under Environmental Upgrade Agreements. To date, close to USD20m projects have been spearheaded as a result. Under PACE arrangements, the cost of a building retrofit attaches to a property (i.e. the property serves as collateral for the loan) and is financed over an extended period by a lender with access to patient capital (e.g. a blended fund). The municipal taxing authority collects loan repayments through an additional item on the rates bill, redistributing the proceeds to the lender. The lender is often able to offer better terms than commercial lenders due to a combination of attractive credit risk profile (i.e. secured loan), bundling/aggregation, and concessionary capital supply. Whilst City of Cape Town is understood to be exploring a PACE programme, fundamental legal and operational issues need to be resolved.

**Cities are increasingly targeted by climate funds as facilitators of sustainable infrastructure investment.** For example, the European Bank for Reconstruction and Development has recently raised USD300m (including funding from Green Climate Fund) for 10 municipalities in central Europe, Middle East and Asia. One of the express objectives of the Green Cities Facility is to build a case for private investment into sustainable infrastructure. Figure 3 describes a spectrum of municipal capacity scenarios and highlights the ways in which climate funds can focus on maximising the enabling potential of their resources in an urban context.

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<sup>10</sup> These include City of Cape Town wastewater management loan from KfW; City of Cape Town green bond issuance in respect of primarily water infrastructure; City of Joburg green bond for various projects.

Figure 3: Proposed climate fund support for cities

Capacity of a city to plan and finance investments	Characteristics	Suggested Climate Fund Focus
Strong	Relatively strong revenue base; more developed local financial markets; possible municipal credit rating; considerable autonomy; adequate institutional capacities for urban planning and project preparation.	Concessional finance or guarantees to municipalities/LFIs/national infrastructure funds to enable scaled up on-lending/investment in targeted sectors. Grants where necessary to target specific capacity-related or technical deficiencies.
Developing	Developing revenue base; nascent local financial markets; limited ability to borrow; moderate autonomy and institutional capacities.	Concessional finance to enable implementation of marginal demonstration investments. Grants for capacity building and technical assistance, including to support municipal governments in developing bankable projects to attract wider finance
Struggling	Weak revenue base; strong reliance on inter-governmental transfers; undeveloped local financial markets; inability to borrow; low autonomy; weak institutional capacities.	Grants for technical assistance and capacity building, support to traditional donor investments where necessary to enhance resilience and mitigation benefits of essential infrastructure.

Source: Global Fund for Cities Development. 2019. *Climate Finance Landscape for Sub-Saharan African Cities*.

There are three types of direct funding: grants, debt and equity.

#### Grants

Grants are provided when there is no expectation of generating a return to compensate the risk taken. They are most frequently non-repayable (i.e. effectively conditional donations). They are often applied to building institutional capacity, project preparation, or testing a concept at small scale, thereby laying the groundwork for larger scale implementation.

#### Debt

**Debt to enable blended finance structures is often supplied to enhance credit quality and so catalyse commercial lending**, which typically ranks first in order of repayment (i.e. senior debt). Subordinated debt fits in between senior debt and equity in the capital stack, with varying characteristics adapted to the project. Subordinated debt participation offers multiple benefits:

- It reduces equity requirements to a minimum for project developers, which would otherwise be required to fund up to the level at which senior lenders are willing to participate (for example 50% property value);
- It insulates senior lenders from unacceptable risks by limiting their exposure to loss while retaining control of the project and first right to settlement in event of default. In this way, subordinated debt provides credit enhancement to a transaction;
- Its second-ranked position in the cash flow waterfall lends itself to tenor extension, i.e. a portion of the subordinated debt may be repaid after the senior debt. This spreads the project debt service obligations over a longer period, providing cash flow relief.

Recently, the Development Bank of Southern Africa (DBSA) and the Green Climate Fund signed an agreement to accelerate investments into climate projects and break market barriers in Southern Africa. The Climate Finance Facility provides credit enhancements such as subordinated debt tranches and tenor extensions to de-risk and increase the bankability of climate projects to crowd-in significant investments from commercial banks and project sponsors.

In NZC context, subordinated debt may provide the credit enhancement requirement to overcome risks presented by higher gearing, pressure on debt servicing, and new revenue models (e.g. green leases allowing investors to share in the saving).

**Another application of public debt is lowering the funding costs of financial intermediaries which on-lend to NZC building investors.** A lower cost of funding enables commercial lenders to compensate for higher risk through increasing interest margin at typical loan pricing levels (e.g. in respect of riskier assets or borrowers or higher gearing levels) or else pass on an interest rate discount which partially or fully offsets the additional capital cost associated with NZC building for the investor, mitigating the financial feasibility impact. The collaboration between Nedbank and DBSA on green affordable housing development is a useful case study, offering developers and investors opportunity to tap R120m property finance at preferential rates in exchange for meeting the EDGE resource efficiency standard.

**In other instances, public debt may replace commercial lending entirely,** typically in instances where either the prospect is too risky, or banks do not provide the desired loan structure in a specific market. For instance, green loans provide finance to companies pursuing environmentally friendly projects or objectives, typically with more attractive terms than those provided from commercial lenders. When publicly funded, they are most often available to SMEs which might struggle to secure commercial bank financing. The AFD-backed Sunref facility at IDC provides a good local example in this regard. In NZC context, green loans may be suitable for ESCOs, renewable energy project developers, and households.

**Green bonds offer access to deep and wide capital markets as projects and markets mature.** Since bond investors typically do not take construction risk, they are not suitable for financing new NZC buildings. Instead, they are useful for refinancing green property portfolios (e.g. at a fund level) or green property-related loans (mortgages and other). Locally, Growthpoint Properties issued a green bond in 2018 to refinance several Green Star rated commercial properties, setting a precedent in the property sector. In the USA, government agency Fannie Mae finances green homes on large scale through mortgage-backed securitisation programmes. Over USD50 bn has been raised over the past decade using this mechanism<sup>11</sup>, focused primarily on the affordable market.

### *Equity*

**Equity instruments may be used by public investors to derisk blended investments, crowding in commercial capital.** Impact investing is relevant to NZC building, describing the practice of investing for both financial return and social or environmental impact. International DFIs investing into International Housing Solutions Fund II were willing to accept a lower financial return in exchange for EDGE certification. Implemented across a portfolio of more than 5 000 units, this effectively removed the short-term disincentive to financial feasibility for IHS whilst simultaneously providing an opportunity to learn from doing. Accordingly, IHS' cost of compliance has fallen from R17 000 to R3 000 per unit (<1% affordable housing unit cost) whilst generating measurable financial benefits for tenants. This positive experience with voluntary green building standards has facilitated adoption beyond Fund II, as IHS expands its portfolio to other African markets. The partnership

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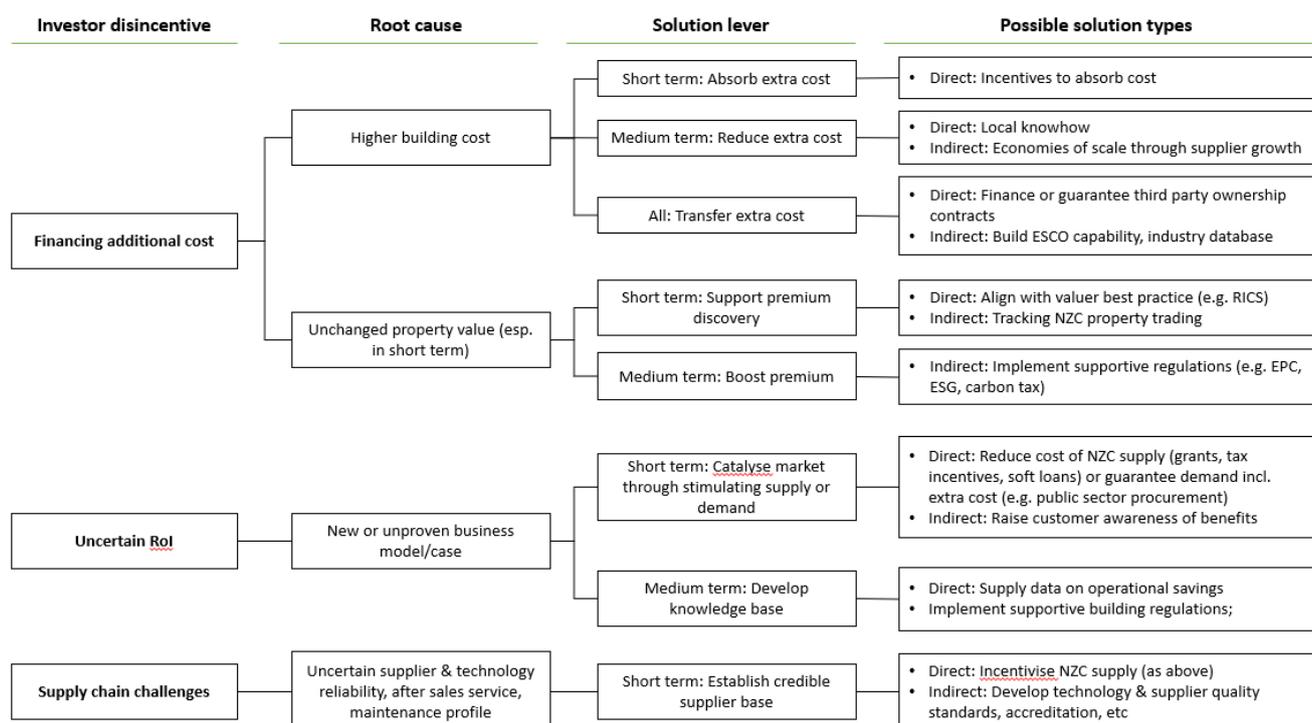
<sup>11</sup> <https://www.environmental-finance.com/content/the-green-bond-hub/bringing-billions-and-housing-to-the-green-bond-market.html>

between IHS and public investors has also enormously beneficial for the market at large, providing EDGE proof points and stock which will be traded in future, enabling the quantification of EDGE premium.

## F. Recommendations for NZC buildings in South Africa

A plan to overcome the current challenges should be dynamic, adapting and responding to the NZC buildings market as it evolves. This is aligned with the blended finance paradigm set out in this paper. Figure 4 sets out our understanding of the deterrents to investors, the root causes, the levers that can address these root causes and practical solution types. It distinguishes between short- and medium-term interventions. It also considers how outcomes can be supported both directly, at the project level, and indirectly through shaping the market environment in which projects take place.

Figure 4: Solutions to the NZC challenge



Source: Own analysis

**In the short term, the technical elements of NZC buildings need to be specified across all market segments,** so that implications for building cost and complexity can be investigated by developers. Once these are well understood, a variety of business and revenue models can be explored to determine the optimal commercial arrangements for transitioning to a NZC market. **The incremental cost on new buildings could be absorbed for a period through a range of mechanisms,** particularly where the financial feasibility is low and social or economic co-benefits are high (e.g. affordable housing). Creating NZC stock is critical to collecting information on how NZC buildings perform, whether they command a market premium, and starting to resolve the supply chain challenges associated with niche demand.

**In the medium term, regulation shifting capital allocation has a critical role to play.** This should address both capital demand and supply sides of the market. On the demand side, energy efficiency regulation should be updated, and compulsory EPC regulation introduced to drive energy intensity disclosure, allowing the market for green building to develop as it has abroad. Similarly, quality standards are necessary to ensure net zero performance of green buildings. On the supply side, regulation focused on climate risk integration and

disclosure is needed, aligned with the Task Force on Climate Related Financial Disclosure. National Treasury has recently commenced this work and is coordinating efforts across the financial sector; a long road lies ahead. In the interim, pension funds have been challenged to make more sustainable decisions by the publication of a Guidance Note on sustainability-related aspects of Regulation 28 in mid-2018.

**City level actions will be central to achieving net zero carbon.** Through setting bylaws, controlling the building planning process, collecting property taxes, aggregating small projects and engaging with funders, cities can be dynamic forces for change.