

Greening our cities

A stack of green and white papers is shown, with a silver mesh pencil holder containing several orange pencils. The background is a light gray gradient.

In pretty much every case, each time a city issues Green Bonds, they become oversubscribed. That's an awesome achievement in the investment environment and sends a clear message that business and individuals ARE committed to changing our world, to play a role in climate change and more importantly, expresses confidence in local governance strategies for counteracting climate change effects.

BY: KERRY DIMMER

With global cities accounting for some 70 percent of emissions combined to a 70 percent city population growth in, largely, the cities in developing countries, the projections from various sources suggest cities require some US\$1.7-trillion for climate change mitigation projects. Capital is hard to come by, particularly for developing African cities, which is why tapping into bond markets for infrastructure financing is an attractive solution.

Green Bonds are really rather special. For the cities that issue them, there is the advantage of being able to afford to motivate certain developmental projects that might otherwise be shelved given other municipal priorities. For those that buy them, it expresses their environmental consciousness and sends a clear message that climate change is everyone's problem and that collective efforts can make a difference.

Much like any other bond issued on a stock exchange, the difference is that the funds a Green Bond generates must be directed specifically to finance sustainable development projects that have a direct link to a city becoming more resilient to the effects of climate change, or produce a positive environmental impact. Such projects could include clean and renewable energy, public transportation, emissions reduction, and counteracting extreme weather.

As a debt instrument, Green Bonds can be issued by any government, bank or corporate that in return for the investment, commits to repay the bond over a specific time frame with a fixed or variable rate of return.

Green Bonds evolved eight years ago when the European Investment Bank, followed by the World Bank, issued the product. Corporates followed in 2013 and the developing trend was quickly recognised and picked up by municipal and local governments the same year. The first municipal Green Bond was issued by Massachusetts in the US, followed by Gothenburg in Sweden.



Prejelin Naggan

“Since most Green Bonds in the market currently carry similar financial characteristics as regular bonds from the same issuer – that is they are backed by the full credit of the issuers – one could argue they those benefits could be at a potentially higher cost to issuer due to accreditations.”

First African city Green Bond

Johannesburg, South Africa was quick to join the foray, and in fact became not only the first African city to issue a Green Bond in 2014, but also the first C40 city to do so. The response was immediate, it was oversubscribed by 150 percent, significant because the bond has a life of 10-years and is worth some US\$143-million.

Prejelin Naggan is the Head of Primary Markets at the Johannesburg Stock Exchange (JSE). He explains that being over-subscribed literally means that demand exceeded supply: “There were more people/funds willing to buy the Green Bond than the value that was available for sale.

“This indicated that investors have an appetite for Socially Responsible Investments (SRI) and Environmental, Social & Governance (ESG) initiatives in the country even though those assets were relatively new and had not yet provided evidence of a superior return profile.

“Another aspect is that there is a willingness to increase capital allocation to projects that the Green Bond will fund. Although valued on the same basis as conventional bonds, anecdotally investors in Green Bonds have been able to sell at higher prices than conventional bonds because of the rarity of the Green Bond.”

The JSE is currently developing a framework criteria for Green Bonds, which may be of interest to African cities, Naggan describes the procedure.

“The process in theory of issuing a Green Bond is the same as a general obligation bond, however Green Bonds issued globally conform to generally accepted frameworks. The most commonly used is the International Finance Corporation's (IFC) Green Bond Framework and Rules and Procedures for Climate-Related activities, which has a Green Bond issuance process that complies with the four components identified by the Green Bond Principles.”

Those components are: the use of proceeds; process for project evaluation and selection; management of proceeds; and reporting and monitoring.

Naggan highlights that the IFC's voluntary process guidelines recommend transparency and disclosure. "They promote integrity in the development of the Green Bond market. Intended for broad use by the variety of actors participating in the market, the processes are also designed to provide the information needed to increase capital allocation to environmentally sustainable projects without any single arbiter.

"These principles are supported by The International Capital Market Association (ICMA) that serves as Secretariat, assuming administrative duties, and providing guidance for the governance of the Green Bond Principles and other issues. The Secretariat's duties include facilitating information exchange with issuers, investors, underwriters, and other stakeholders, as well as gathering input for the annual update of the Green Bond Principles."

Who are the investors?

Naggan says that typically investors into Green Bonds are institutional, such as asset managers and pension funds that invest within their existing portfolios, responding to interest in support climate-focused activities. "Asset managers have set up dedicated Green Bond funds or have set targets for funds under management that should include Green Bonds.

"Since most Green Bonds in the market currently carry similar financial characteristics as regular bonds from the same issuer – that is they are backed by the full credit of the issuers – one could argue they those benefits could be at a potentially higher cost to issuer due to accreditations," says Naggan. "However, reaching different investor groups is valuable to expand funding sources. In particular, Green Bonds have attracted investors from the growing segment focused on sustainable and responsible investing and investors that incorporate ESG criteria as part of their investment analysis."

To date only Johannesburg and Morocco have issued Green Bonds. "In South Africa, the Johannesburg city Green Bond was the fourth issuance on the JSE and we are looking to creating enabling platforms and frameworks within the SA context that will provide a sound foundation to propel this asset type," Naggan comments.

In furthering Green Bonds in Africa, Naggan says that the JSE, as a founding member of the African Securities Exchanges Association (ASEA), has and will continue to promote Green Bonds together with other stakeholders 'including financiers, advisors, issuers, sponsors and the investment community to develop this market across the continent."



African countries prepping for **Green Bonds**

Kenya

As the Green Bond concept gallops through the continent, Kenya has announced it intends to issue within forthcoming months, and will be the first East African country to do so. The Nairobi Securities Exchange, which will float the Green Bond is in collaboration with the Kenya Bankers Association (KBA), and in-line with the Bourse's commitment to develop sustainable capital markets through the United Nations-led Sustainable Stock Exchanges (SSE) Initiative.

The projects that the KBA is focused on include priorities to energy, agriculture, transport, infrastructure, construction and urban planning, water and waste management.

Nuru Mugambi, Director of Communications and Public Affairs at KBA has been quoted in the media saying: "Viable projects are especially those with carbon neutral projects. You could be working on an idea that will see buildings built with the lowest production of carbon. Those are the kinds of ideas that stand to get loans."



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Nigeria

In a recent statement issued by the Special Assistant to the Minister of Environment on Communications, Nigeria, Ms Esther Agbarakwe is quoted saying that Nigeria needs US\$142-million between now (Sept 2016) and 2030 to finance its Intended Nationally Determined Commitment (INDC) toward reducing emission and low carbon for improved environment." Quoting figures, the Minister of Environment, Mrs Amina J. Mohammed

has also commented that tapping into international and domestic capital markets is crucial and why the issuance of Green Bonds presents a viable option to raise the funding required.

Nigeria, with a population of some 180-million people has projected annual emissions of 900m tonnes, requires some muscular mitigation and adaption interventions that will help to move Nigeria to a less intensive emissions environment.

If plans proceed well, Nigeria will float its first Green Bond in the first quarter of 2017, and the focus will be on developing the North Eastern and Niger Delta areas, which have been destroyed by oil pollution, climate change and terrorism, as well as Ogoniland. •



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The African Climate Business Plan

An initiative by The World Bank, The African Climate Business Plan, sets out to bridge the funding gap to fast-track The Bank's efforts in mitigating climate change on the continent, as well as ensuring the sustainability of related projects.

BY KERRY DIMMER



Climate Change has become such a 'drop-phrase' that many have either forgotten what it actually means, or just accept that it's a phenomenon that is used to explain a myriad of environmental impacts, the latter of which is actually true. But what does it really mean? Let's remind you.

Climate change, or global warming, is the rise in the Earth's overall temperature due to the increases of greenhouse gasses (GHGs) in the atmosphere. GHG's are created by human's given the manner in which we use the land today, generally through industrialisation and burning of fossil fuels, whereby natural gasses release carbon dioxide into the atmosphere, which in turn trap the sun's heat on the planet. The result is a rise in temperature, particularly at the poles more than the equator, and cause changes in rainfall and the distribution of biodiversity.

The stresses that are put on habitat are enormous and varied, for example: the destruction of wetlands; agriculture vulnerability; ocean degradation; flooding; (to the point where islands could be completely lost); melting glaciers, coral-reef bleaching; longer droughts; and an increase in natural disasters. Making the situation considerably worse is the way we manage global warming with inappropriate or bad development, little to no concern for the environment, and the overuse of resources.

One of the most important global documents that recognises just how serious the problem is, and in 1998 called

for a world-wide commitment to address climate change, is the Kyoto Protocol. It required ratification from at least 55 countries that together accounted for 55 percent of the total carbon emissions for 1990. 157 actually signed, and accepted individually legally binding emissions limits in an effort to reduce global emission levels.

Since then we've come a long way, with measures in place just about everywhere to counteract climate change. It's resulted in changes: in the way we do business, the way we live; mostly in the way we think, which is a call to action. Many organisations have implemented strategies, as have companies, that include climate change protocols, not least of which is the World Bank, which in relation to Africa, produced last year The African Climate Business Plan (ACBP). Contained within the ACBP is a very significant and relevant piece of information: 'While Africa is the region that contributes the least to greenhouse gas emissions, African countries suffer the most from the impact of climate change.' And it is statements and knowledge such as this that has brought together African leaders and enabled them to speak with one voice and unite to ensure that climate-change challenges and opportunities are addressed collectively.

The aim of the ACBP is to reduce The World Bank's funding gap, relevant to climate change on the continent, which will be achieved by 'deploying technical expertise, mobilising financing from various sources, and facilitating the engagement of stakeholders on climate action.'

In this vein the World Bank's ACBP calls for US\$16-billion by 2020 from various bilateral and multilateral sources, public and private, that will increase the Bank's efforts to mitigate global warming on the continent. In effect this translates into a one third increase – from 21 to 28 percent. Is it enough?

Makhtar Diop, Vice-President, Africa Region of The World Bank says in the report: 'While this Plan is arguably only a partial contribution to meet Africa's financial needs for climate action, it is a meaningful one ... By galvanising climate action, deploying expertise and mobilising financing, together we can support Africa in its quest for a greener and more resilient future.'

What that future could be, without plans like the ACBP, is an extra 43-billion Africans living below the poverty line by 2030 ... unacceptable given Africa's growing commitment and continued efforts to eliminate poverty.

To implement ACBP, The World Bank estimates some US\$16.1-billion will be required in the next four years, with US\$8.5-billion coming from the International Development Association (IDA). Extending beyond 2020 is not improbable, with an estimated US\$21-billion required.

The ACBP highlights a number of initiatives that will boost resilience, and cities are included as focus areas. The Plan highlights a number of priority groups that have been clustered into three main categories: strengthening resilience; powering resilience; and enabling resilience. (see box).

In terms of support to Climate-Smart Cities, the ACBP outlines two activities:

- Provide US\$50-million in technical assistance for 30 cities.
- Invest US\$2-billion to support climate- and disaster-resilient development in 30 cities.

The selection of cities is based on size and population growth, disaster and climate risk, and demand. 'The focus will be on megacities, large and medium cities that are growing at more than three percent

Strengthening, Powering and Enabling resilience

The first cluster of the plan ("strengthening resilience") includes selected initiatives aimed at boosting the resilience of the continent's assets. These initiatives comprise Africa's natural capital (landscapes, forests, agricultural land, inland water bodies, and oceans, with a special focus on small island developing states); physical capital (cities and physical assets in coastal areas, including roads and other infrastructure); and human and social capital (including improving social protection against climate shocks for the more vulnerable and addressing the climate-related drivers of migration, in order to mitigate the effects of climate shocks on social cohesion).

The second cluster ("powering resilience") relates to opportunities for scaling up low-carbon energy sources in Africa. In addition to helping mitigate climate change, these activities yield considerable resilience benefits. Societies with adequate access to energy are less vulnerable to climate shocks, because when power becomes more accessible, irrigation systems can be activated in times of drought, early warning systems and telecommunication systems can be deployed before and after natural disasters, alternative revenue-generating activities can be undertaken, health services can be provided more easily, study hours can be extended (contributing to better education), and so forth.

The third cluster ("enabling resilience") provides data, information, and decision-making tools for promoting climate-resilient development across sectors by strengthening the region's hydro-meteorological systems at the regional and county level and building the capacity to plan and design climate-resilient investments.

per year.' Consideration is also given to the severity of hazard exposure and climatic impact, as well as the willingness and support from a city to ensure sustained and effective engagement.

Fast-tracking efforts means that by 2023 the expected outcomes will result in capacity building and planning for climate resilience and low-carbon development in 20 cities, and investment in resilience-building activities will be ongoing in four cities and initiated in five.

Six Initiatives underway – supporting resilience planning

- Urban resilience planning is being conducted and the City Strength Diagnostic used in Addis Ababa and selected secondary cities in Ethiopia.
- Urban poverty and resilience studies are being conducted in Antananarivo, Madagascar and Maputo, Mozambique.
- Flood resilience planning is being done in greater Accra.
- Climate change and disaster risk management multi-sectoral investment plans are being developed as a part of IDA's policy commitment to provide an opportunity to support urban resilience planning in cities in Burkina Faso, Cameroon, Ghana, Malawi, Mali, and Senegal.
- The GEF sustainable cities program is in effect in Senegal.
- A creditworthiness academy is engaged in more than 90 municipalities in Kenya, Tanzania, and Uganda.

The World Bank's partners include global organisations: AFD, AfDB, C40, Cities Alliance, Global Facility for Disaster Reduction and Recovery (GFDRR), GEF, GIZ, International Council for Local Environmental Initiatives (ICLEI), Resilient Cities Initiative, and the Rockefeller Foundation. Partners from the sub-Saharan region are: African Water Association (AfWA), African Union Commission (AUC), regional economic communities (RECs), and United Cities and Local Government of Africa (UCLG-A).

A truly African city

New Johannesburg governance changes its motto

Just two months since the Democratic Alliance took over the local governance of Johannesburg South Africa, from opposition party the African National Congress, the new Executive Mayor, Herman Mashaba, has clarified his focus on reinventing Johannesburg returning it to its former glory, he says.

BY KERRY DIMMER





Mayor Mashaba started our interview with a very strong statement: "I've inherited a city that was projected by the previous administration as a 'world-class African city', and positioned it as a world player. This is something I became very concerned with during the campaign trail because what I found on the ground was disturbing.

'Our service levels are shocking, deplorable and unacceptable. Unemployment is unbelievably, and unacceptably, high. There are housing backlogs, little to no entrepreneurial development. Consider that, for example, with 180 informal settlements in the jurisdiction, half of them don't even have basic services. We are failing at all levels in terms of delivering to our people."

That's all about to change however. The Mayor is adamant that before he can talk about international issues or attending conferences like COP22, regardless of their value and importance he stresses, he must ensure that the economic growth of the city is addressed. "Without this priority we will be unable to take care of our society, and everything else will be just pie in the sky.

"Economic growth is a facilitator and enabler, and has to come from the private sector. Businesses that make money will be my darling. They will be paying taxes, distributing their profits, creating jobs and so on."

In this vein, and within four days of taking office, the new executive key-holders of Johannesburg had met and formulated a 10 Point Plan that is set to make the city great again, and its third point is particularly pertinent to the Mayor's previous comment:

'Plans and policies must be aligned for the City to work towards achieving a five percent economic growth rate. While this is an ambitious target, given that the country's own economic growth rate is projected at 0.6 percent by the Reserve Bank, we appreciate the fact that if we do not achieve this, unemployment will remain high, the youth will still be out of school and out of jobs at the end of this term. We want Joburg to be the engine of the country's economic growth. This can't happen at the current growth rate. We appreciate that achieving this five percent jump requires both government and the business sector to join hands, understanding that it is absolutely critical for us to achieve five percent GDP growth because failing to kickstart the Joburg economy has dire implications beyond Joburg's own borders.'

The Mayor says that the pain in inheriting the previous administration's budget was the discovery of a five-year strategy that aimed for a mere 2.2 to 2.5 percent growth rate. "If we had to apply this, what I would need to do is issue a statement to our residents that the unemployment of 800 000 people is only going to get worse.

'By next March, when I announce the city budget, it has to demonstrate that we are able to reverse the spiral of unemployment. We need bold and drastic actions to drive this economy and we are going to ensure those actions happen, with many of those being fast-tracked.'

Civil society, corruption and crime

That Mayor Mashaba loves Johannesburg dearly is evident. When he talks about it in comparison to the cities he has visited globally in the past 30 years, he is clearly shocked by the decay of the city centre. 'When the ANC came into power over 20 years ago, the city had incredible infrastructure. The decline that followed resulted from ignoring the rule of law, which is to respect the by-laws.

'What do businesses do when there are no by-laws? They run somewhere else, and in this case, Sandton emerged. In my opinion the government must take full responsibility for the collapse of this great city,' he says. 'When I look at this 100-year old stalwart and see its beautiful old buildings over-run by criminal elements, I am distressed. I want to see the rule of law being applied, and need civil society to work with me to revive its historical value.'

Tied closely to this is the priority of establishing a professional public service. In early October the city's Human Resources department implemented a skills auditing action that started with investigations into the senior employees within civil service.

are those that are proud to be civil servants,' says Mashaba. 'We have developed a motto that says "Service with Pride" because, of the 33 000 civil servants currently employed, a huge percentage are demoralised by the corruption, cronyism and nepotism that existed, and further frustrated by having to maintain silence in their objections to such practices. Daily we receive calls from whistle-blowers who either left the service or were pushed out and now want to come back because they sincerely loved their jobs.'

The skills audit is thus, says the Mayor, very important and works towards building confidence and trust. 'People are not going to believe in what we say,' says Mashaba. 'they are only going to believe in what we do. It's difficult for us to rebuild credibility because people have been lied to for so long or ignored.

'Our stance is that we are committed to being responsive to our people. We are listening. And there is also going to be a complete intolerance to corruption.' Both points are reiterated in the Ten Point Plan, which states that aside from being responsive, Joburg will also be a pro-poor government while still having a business-friendly environment.

In terms of corruption, and in both the Plan and the Mayor's words: 'Corruption is public enemy number 1. It steals from the poor and should be nipped in the bud. Investigations must be conducted into alleged fraud or corruption and the administration will work closely with law

enforcement authorities to see to it that nobody is above the law.'

Already some of the actions from the Ten Point Plan are in effect. Tenders in Johannesburg are soon to be transparent and open to public scrutiny, a first for the city. 29 fire engines have been repaired and put back into service after the discovery that of the 28 fire stations in the jurisdiction, only eight of them had working fire engines. Keys to the beneficiaries of fully-subsidised houses in Soweto have been handed over, among the first of a total of 550 properties that will be delivered to new residents in forthcoming weeks, as will title deeds to another 450 residents.

Actions such as these have been fast-tracked but there is, as Mashaba says, so much to do and change is a process

“
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”



Executive Mayor Cllr Herman Mashaba of Johannesburg handing over a home title deeds, and on a service delivery improvement drive in Zandspruit, north of the City.

City of Johannesburg vs Salga: The knock-out round commences

One of the most controversial debates being played out in South African media, is the decision taken by the City of Johannesburg, to withdraw its funding to SALGA, the South African Local Government Association. There are a number of reasons for this as mentioned in a media report issued by the City of Johannesburg, quoting Mayor Mashaba:

The efficacy of the South African Local Government Association (SALGA) has been questioned for some time. SALGA was established to empower local government councillors, and to act as their spokesperson in the national arena. Out of its very nature, that means that SALGA must represent all local government councillors in a manner consistent with democracy.

Over the years, SALGA has, in my view, strayed from its mandate. It has become bloated and top-heavy. It has spent too much money on nice-to-haves and on projects of dubious utility.

There is much that suggests that it has become an instrument for the deployment of cadres of the majority party in our country. This was starkly illustrated by the recent Gauteng provincial executive of SALGA.'

What Mayor Mashaba is referring to in the last sentence, and why he personally feels so strongly about SALGA is that at the organisation's provincial elective conference, the City of Johannesburg's requests were ignored with regard to the proposed appointment of previous Johannesburg ANC Mayor Parks Tau, as National Chairperson of SALGA. A week later, Parks Tau was appointed to the position, and this was two months before SALGA's National elections.

Mayor Mashaba told African cities magazine that "I am not prepared to use public monies entrusted to me, to support SALGA, and I hope other DA municipalities follow suit.

"In my personal capacity I have to wonder why should I support this, and therefore want nothing to do with SALGA's conference in December. Johannesburg is the biggest financial contributor to SALGA given that the contributions are based on the size of the city."

"SALGA must become a body that represents what people voted for in the national local elections in August," continued Mashaba. "They voted for change. They did not expect the ANC to govern us through the backdoor and if I endorse SALGA, I'd be doing just that. I can assure the people in my city that I'm not going to let this happen under my watch. "

In response SALGA issued its own statement (shortened):

Contrary to what the Mayor has raised, SALGA at all times acts in a non-partisan manner consistent with the political diversity of its voice. This means that SALGA acts in the best interest of all our member municipalities regardless of which political party controls a specific municipality. For the record, SALGA is a high performing organisation and has achieved many awards locally and internationally in this regard. We observe with disappointment the unfortunate and unfounded allegations by the Executive Mayor.

After a mere 43 days in office it is unfortunate for Mayor Mashaba to have made these unfounded observations and determinations without first familiarising himself with organisational policies of SALGA and its governance records which is easily accessible by all municipalities and is public record.

As recent as two weeks ago SALGA Gauteng at its Provincial Conference received praise from municipalities for achieving all its targets over the last 8 years. It is also important to indicate that the City of Johannesburg has been one of the most consistent and meaningful players in the affairs of SALGA since its establishment and we remain confident it will continue to occupy its rightful place in the affairs of SALGA. It is in this context that SALGA will prioritise engagement with the City of Johannesburg to resolve this matter in an amicable way so that the voice of organised local government is not defocused from its meaningful work.

The DA has since made a statement that the participation of Joburg in SALGA activities will be determined by the party, after engaging with Salga on the matter on transformation.

that requires planning to turn around the deep-rooted problems.

"Do I want to see Johannesburg positioned as a World Class City, yes, but first it must be a truly African City," When the Mayor returned to his opening statement he made it clear that the two cities he believes that truly reflect the concept of an African city are Kigali, Rwanda and Cape Town, South Africa.

"These are the ideal models of an African city, and which Johannesburg should measure itself against. I've said in the past, and still believe it, Kigali is set to be the Singapore of Africa."

Ultimately, for Mashaba and in consideration of the two cities he admires, local governance is about service delivery and so the priority focus is on people, particularly the poor. Mashaba says that despite the ANC governed-country being

in opposition to his administration, his boss is the people of Johannesburg.

"These are the people that I respect and must react to. While I value the relationship I have with the national and provincial governments, and perhaps their policies will make it difficult for us in Johannesburg, the history made on the 3rd of August during the national local government elections cannot be reversed, my being here is the will of the people." •

A blueprint for affordable housing

The National Home Builders Registration Council of South Africa (NHBRC) has launched its 'Guidelines for designing affordable innovative building technology housing' which could be considered a blueprint for African city development, given the extensive content and research undertaken in compiling the booklet.

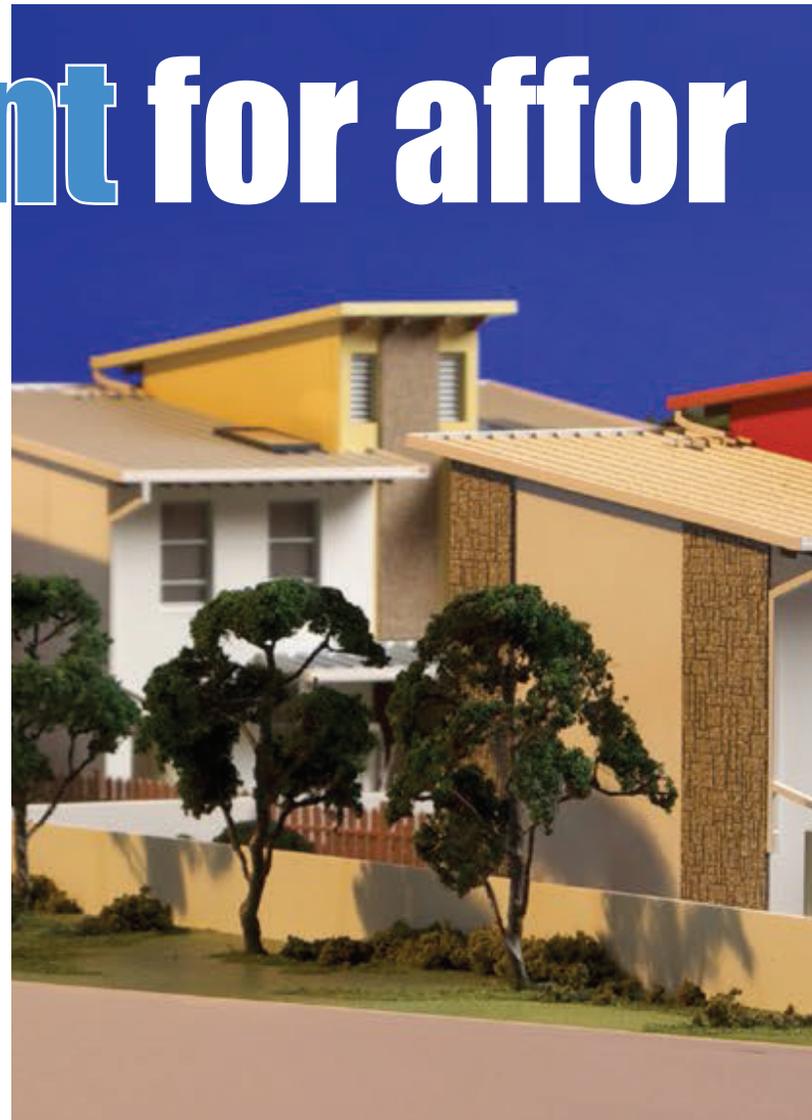
BY KERRY DIMMER.

Innovative Building Technologies (IBT) is a term most cities are becoming more familiar with. IBTs are, essentially, methods or construction related products or services that assist with improvements to construction times or reductions in labour costs. Ultimately a mix of both is desired in order to achieve an overall objective that results in a meaningful change in the lives of less fortunate people in the provision of a home.

The NHBRC, as an agency under South Africa's Department of Human Settlements, basically regulates the country's home building industry, but in elevating that role, seeks to provide valuable information and research on addressing and presenting IBTs, especially given South Africa's backlog in providing adequate housing to poorer communities.

The IBTs recommended by the NHBRC in its latest publication is focused on the erection of 50-70m² homes that have been proven to effectively improve overall quality in home building without compromising market value. Tshepo Nkosi, the NHBRC's Manager of Corporate Communications & Stakeholder Relations explains that to prove its case, the organisation provides two different home models, a double-storey semi-detached, and a single-storey detached.

"The models are an illustration of a medium-density housing solution using IBTs," says Nkosi, "and represent a typical scenario in the lower to middle income groups of the country. Ideally we recommend that any similar projects should be sited close to usual city amenities such as transport webs, health and educational institutions, and where jobs can be easily accessed.



"Most importantly however, we have determined that affordable efficiency aspects should be included in architectural plans, such as energy reducing measures, and be incorporated as far as possible," says Nkosi.

In that regard the green solutions that are most prominent in the lower-running cost SA home builds tend towards energy saving. Nkosi explains that the Department of Human Settlements has committed to including minimum energy efficiency requirements in low-income homes.

"The minimum rules in this standard require a reduction of electricity usage which is relevant in South Africa's context where we experience challenges with energy shortages.

"To take climate change into consideration would require further measures to be taken such as reducing carbon dioxide, waste, embodied energy and water usage. Fortunately The Green Building Council of South Africa provides for this with a green rating certificate on a voluntary basis for housing."

affordable, innovative



Nkosi says that the NHBRC uses a tablet that determines the Building Quality Index. "A number of tools are used to ensure the condition of a building at post-construction stage; thermal performance measures; and uses South Africa's CSIR (Council for Scientific and Industrial Research) Köppen Geiger Map that compares various IBT systems to 14 different climate zones to determine which system performs best."

The buildings that the NHBRC ideally looks to approve are those that have been constructed with structurally insulated panels that allow for fast-pace erection using interlocking type blocks that are covered in a specialised bonding cement. In this way less mortar is used and many further components can be assembled off-site and added to the home at a fraction of the labour time usually required.

Using a simple shape, as per the two models mentioned earlier, that can be adapted to incorporate many different technologies, the NHBRC says that IBTs introduced to affordable housing schemes should take into consideration climate zones, accessibility of materials and products, maintenance of the building, economics of scale, local labour force and lead-time flexibility.

Eric Molobi Innovation Hub

The NHBRC has long been supporters of housing designs that provide a home owner with lower running-costs. It created, along with public and private sector companies, the Eric Molobi Innovation Hub in 2005 specifically to showcase and attract innovative housing systems, be those local or international, from developers. To date 22 developers have constructed housing units, all approved within the NHBRC's criteria for good build within affordable parameters that actually come under greater scrutiny when compared to standard brick and mortar.



Eric Molobi Innovation Hub Centre

A series mock-up of the type of housing development, the NHBC would approve.



ARCHITECTURAL DRAWINGS:

- NORTH ELEVATION 1:100
- SOUTH ELEVATION 1:100
- EAST ELEVATION 1:50
- SECTION A-A 1:100
- SECTION B-B 1:100
- SEWERAGE SECTION
- LOCALITY PLAN 1:250
- FENESTRATION SCHEDULE
- WINDOW SCHEDULE
- DOOR SCHEDULE
- ENERGY EFFICIENCY SCHEDULE
- R-VALUES FOR WALLS
- SITE & GROUND FLOOR 1:100
- GROUND FLOOR 1:100
- FIRST FLOOR 1:100
- ROOF PLAN 1:100

LEGACY PROJECT:

NHBC



ARCHITECTURAL DRAWINGS:

- STREET
- GROUND FLOOR PLAN
- SITE PLAN
- AREA SCHEDULE
- HIPPED ROOF PLAN
- DRAINAGE LAYOUT
- DRAINAGE ELEVATION
- WINDOW AND DOOR SCHEDULE

LEGACY PROJECT:

NHBC

Guidelines

The guidelines presented in the NHBRC's 'Designing Affordable Innovative Building Technology Housing' indicate that IBT housing typologies are common to most projects of the nation and highlights six in particular:

Reduce the chances of water penetration: inclusive of ensuring adequate roof overhangs and coverings that protect external doors and walls; weather bars to prevent wind blowing under external doors; and weatherproof finishes.

Improve social acceptability: to improve the quality of a lifestyle, small covered external outdoor areas should be included and where possible use open plan designs to increase the perception of space.

Improve technical cohesion of the house is achieved by ensuring: compatibility of materials; the design connections are suitable; and technical solutions are in context with the design and location.

Interventions that improve energy efficiency and have no cost implications include among others: two semi-detached units because they improve energy efficiency and are predominantly sited to face the north; windows should be placed correction to again avail of optimal light conditions; roof overhangs should be in accordance with the movement of the sun; and the use of energy-labeled appliances to reduce energy consumption.

Energy efficiency interventions that will lead to additional upfront costs: wall and roof insulation to improve thermal resistance; renewable hot water heating systems (solar water heaters for example), and good quality high- or low-pressure systems with approved guarantees; compact fluorescent lights or light-emitting diode usage; and passive solar building designs, such a using trombe walls.

Other sustainable measures for consideration: water tanks; and vegetable gardens inclusive of training. •

Cape Town showcase: The Legacy Project

In another project implemented between the NHBRC and the Department of Human Settlements, the Legacy Project of 2011, saw the building of eight double-storey units of 60 m² on four sub-divided stands in the lower-middle income area called Conifers, Blue Downs in Cape Town.

These semi-detached homes each have a 30 m² footprint, are modern in design yet simple in shape, joined by a central core that the NHBRC's Head of Centre for Research and Housing Innovation, Dr Jeffrey Mahachi describes as 'reflecting South Africa's appreciation of nature' given the abstract application of natural materials, warm colours and textures. This proves that low-cost housing does not need to be boring and can incorporate local cultural aspects.

The Legacy Project uses a range of products that satisfy the National Building Regulations and were registered with the NHBRC, inclusive of a number of precast concrete products that reduce concrete consumption and ensure less Co2 emissions are released into the atmosphere, as well as improvements in thermal performance; a lightweight energy panel that simulates an interlocking tongue and groove method for walling; a system that provides a ventilated foundation protects the homes from moisture and potential radon gas; and light-steel frameworks and insulation technology.

Former Minister of Human Settlements Tokyo Sexwale (centre) and Mayor of Cape Town Patricia De Lille break ground together.

