

GREEN BUILDING

GREEN-BUILDING GREENHOUSE

Electricity crisis creates nurturing environment for accelerated deployment of green-building techniques

Brindaveni Naidoo | Staff Writer

Awareness of the need to save energy and safeguard natural resources has grown markedly over the last decade as scientific evidence of climate change and its potential consequences has permeated the popular imagination. This has led the world into a frenzy of activity in a bid to find solutions, to ensure a 'brighter' future, without entirely undermining the lifestyle benefits that have accompanied economic progress and development.

But with economies booming in many developing countries, infrastructural development is burgeoning, which, in turn, is placing severe strain on energy supply systems and resulting in supply-side responses that are also raising carbon emissions.

This has brought the issue of green building technologies and methodologies into sharp relief, given that they are perceived as one critical element in improving the sustainability of residential, commercial and government buildings.

In South Africa, this energy-saving mindset has now also become an economic imperative, given current electricity-supply shortages, and a call by government and power utility Eskom for residential and commercial consumers to play their role, along with industry and mining, in saving 3 000 MW every day for the foreseeable future.

But is this necessarily translating into green building virtue?

Last year, *Engineering News* reported that, by developed-economy standards, South Africa was still lagging far behind in its adoption of green building practices, despite the fact that government and the private sector were becoming increasingly conscious of the need for environment-friendly building practices.

A positive development, though, was the creation, in September, of the Green Building Council of South Africa (GBCSA), which aims to promote green building in the commercial property sector, and will provide a forum for all players in the property industry, including scientists, property owners, developers, consultants and government to work in promoting sustainable building practices.

As things stand, green-building proponents believe the country is still a laggard, but they acknowledge that much headway has been made, with impetus also being provided by the power crisis. The economics also look increasingly attractive if Eskom prevails in getting the regulator to allow it to raise tariffs by 60%.



BRUCE KERSWILL
The green-building rating tool is a market-led initiative



MICHELLE MALANCA
It appears that there is a demand for green building in South Africa



LISA REYNOLDS
People have the best intentions to comply with green building

A crucial development relates to the move to establish a green-building rating tool for South Africa, which will be key in moving forward with sustainable building practices in the country, and transforming the property market.

This rating tool will be a guide for the establishment of green buildings and will play an important role in ensuring that energy and resources are used efficiently and, most importantly, wisely, and that carbon dioxide emissions are reduced.

Green energy services and solutions company Agama Energy MD Glynn Morris summarised the position succinctly recently, stating that "energy is a cross-cutting issue and, consequently, every decision is an energy decision".

These sentiments also sum up the importance of the decision to implement a rating tool for green buildings, where energy efficiency is a key driver.

THE TOOL FOR A GREENER FUTURE

It is understood that the first pilot rating tool will

be released in July this year, and once proper processes, such as industry feedback, are completed, the GBCSA will move towards implementation.

The process of developing the rating tool has been similar to that pursued in Australia, given the similarities between the two southern hemisphere nations.

The rating tool, however, will be adapted to South African conditions, taking into account unique conditions, applicable standards and legislation, and available resources.

"This is a voluntary tool and a market-led initiative rather than a regulatory intervention. It is designed to galvanise built-environment professionals and practitioners around the issue of sustainability. It incorporates high standards which will apply to the top end of the property market and new commercial and public developments," GBCSA chairperson Bruce Kerswill tells *Engineering News*.

The main concern is whether the South Africa

market is ready and willing to change and embrace the transformation that comes along with green building.

GBCSA rating tool project manager **Michelle Malanca**, from San Francisco, who was the previous Green Star-rating tool director for the Green Building Council, in Australia, says that the response in South Africa, thus far, has been positive.

"It appears that there is a demand for green building in South Africa, as most people that I have encountered are interested in the concept. There is also expertise in green building in this country. But the challenge will be to educate people and ensure that they understand this rating tool," says Malanca.

"Once the rating tool becomes available leaders in industry adhere to it, it will gather momentum as organisations try to compete, which sets the pace and the evolution of green building, as occurred in Australia, and elsewhere," says Malanca.

Kerswill adds that the current energy crisis in the country has been a catalyst for interest in the energy aspect of green building.

Commenting on whether the rating tool will become legislation, Kerswill stresses that it is a "voluntary tool" with set targets, which will in most cases exceed current legislation, in order to shift industry practices. Government may choose to legislate certain aspects of the rating tool in time, primarily with regard to water and energy.

However, Kerswill believes that, as soon as one legislates standards, it then becomes the "bare minimum". Sharing similar sentiments, Malanca says, "Our aim is addressing best practice, as opposed to minimum practice."

The Australian market has transformed as a result of the introduction of Green Star, with over 500 buildings already registered for certification. The transition there has resulted in the move away from just saving energy and building green buildings, but also the transformation of building and material suppliers and manufacturers.

Such has been the impact in Australia that Kerswill believes a similar model should be pursued in South Africa, and he is convinced that it will have a powerful and far-reaching impact.

Sharing a similar perspective is South African Property Owners' Association CEO and founder of the GBCSA **Neil Gopal**, who says that, while this is a voluntary tool, it will assist those landlords and property owners who want to go green, while adding an element of peer pressure into the system.

But he acknowledges that it might not be sufficient to fully ensure that practices change.

"I do believe that a certain degree of regulation and legislation is also an important tool, as the country will inevitably pay for pollution, which means that taxpayers will have to fork out more money in future," explains Gopal.

THE ENERGY IMPERATIVE

The green building rating tool will also offer a good way of dealing with the energy crisis, Kerswill asserts.

This is because the energy category has a heavy 25% weighting. And, to qualify as a green building, development has to address the issue either by reducing energy consumption or through generating renewable energy.

Green buildings have been known to reduce the consumption of electricity from the grid by up to 50%, which is well above the 10% saving being sought by Eskom.

Even retrofitting can sometimes increase energy efficiency by up to 70%, decrease piped water use by 80%, and lower discharge to sewers by 70%.

Given that conventional and renewable energy sources are becoming increasingly expensive, these kinds of savings could also improve the overall operational economics of a building.

Malanca says that, on a global scale, it has been found that buildings are responsible for 40% to 50% of electricity consumption. "Studies released indicate that green building is the one mitigation solution that not only reduces carbon emissions, but, at the same time, is also the least expensive and most cost-effective solution of all," she adds.

Eskom spokesperson **Andrew Etzinger** concurs. He tells *Engineering News* that green building has a pivotal role to play in South Africa's energy crisis, adding that less electricity consumption will result in lower emissions of greenhouse gases.

Etzinger points out that while awareness of the concept of green building in the country has to be increased, on the electricity supply side, South Africans are making a positive step by participating in reducing energy consumption.

Gopal also adds that green building practices will play a "great role" in the country's current power crisis. "This is an opportunity to fast-track energy-efficient methodologies and practice, in light of the current crisis. This was one of the reasons the GBCSA was established – to start thinking carefully about the manner in which we consume energy," Gopal explains.

WASTING YOUR MONEY

The government's position on energy saving is equally strident. "If you are wasting energy, then you are also emitting carbon dioxide, which you can be paid for under the [Clean Development Mechanism] banner, if you reduce the emissions of this greenhouse gas. And if you are not reducing the carbon dioxide emissions, then you are burning your own money," Department of Minerals and Energy (DME) CDM director **Lwazikazi Tyani** tells *Engineering News*.

Similarly, Saint-Gobain Construction Products technical and specification division GM **Lisa**



THE TWO-MINUTE INTERVIEW



Neil Gopal

How important is it that the GBCSA be recognised by government, supporting the establishment of green building practices? In the light of the current energy crisis – very important.

Is South Africa lagging behind in incorporating green-building practices?

We are behind! However, the power crisis is an opportunity to move much more quickly, as we can learn from other countries as we move forward.

How much effort is the building fraternity making in its attempts to conform to green building practices?

The South African Property Owners Association established the GBCSA last year, after discussion with our Australian counterparts. We did this because we believe it's in the interest of the country. So, yes, we have put in a great deal of effort.

What specific role do green building practices and green buildings have in helping South Africa to adapt to the power shortages?

A great deal. This is an opportunity for us to fast-track energy-efficient methodologies and practices. This was one of the reasons why we established the GBCSA, bearing in mind that the thinking and establishment of the GBCSA, by Sapoa, was way before the current energy crisis.

Has there been construction of green buildings in the past year?

A few, but more needs to be done.

What role will the green building rating tool have in South Africa?

This is a voluntary tool. It will certainly assist as many landlords and property owners want to go 'green', but the 'push' must also come from tenants who occupy or wish to occupy those buildings. I do believe that a certain degree of regulation and legislation is also an important tool because the country will inevitably pay for pollution, which means that taxpayers will have to fork out.

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Reynolds, who was also the 2007 winner of the women in energy industry category at the eta Awards, endorsed by the DME and Eskom, says that relevant stakeholders are at least looking at the benefits of green buildings rather than simply at the costs. But she also acknowledges that this mindset has not fully evolved.

"Even with the energy crisis, we are still finding certain developers and contractors who are concerned with the costs of energy-efficient building practices. The whole of South Africa has X amount of energy, and if your building wastes energy, then you are wasting your own energy. And if you claim to be a victim of load-shedding, then you deserve no sympathy. We are all connected through energy and I think it is a difficult concept for people to understand," Reynolds points out.

Green building does fall within the context of the CDM, which deals with reduction of carbon emissions from energy consumption and the generation of clean electricity.

Green buildings, says Tyani, will result in energy savings and the reduction of emissions, which also reduce the consumer's energy expenditure. This provides opportunities for other investments by the consumer and contributes to creating a more economically comfortable and profitable life for households.

Tyani also reveals that municipalities are making significant efforts to make their buildings if not 'greener', then more energy efficient.

A LOT OF TALK AND SOME ACTION

But what progress is the country really making in establishing its green buildings?

Engineering News reported last year that the DME and the Department of Public Works (DPW) were driving the initiative to retrofit 106 000 government buildings throughout the country with energy-efficient lighting.

Further, the BP head office at the V&A Waterfront, in Cape Town, the Department of Science and Technology's campus in Pretoria, gold producer AngloGold Ashanti's new head office, in Newtown, Johannesburg, and the Woolworth's national distribution centre, in Midrand, Gauteng, have all sought to integrate some green building elements.

Reynolds adds that, at technical meetings of the GBCSA, some perceive their buildings to be green, but fail to satisfy the criteria once audits are completed.

"People evidently have the best intentions to comply with green building; however, they do not have the necessary tools to assist them," says Reynolds.

Thus, it is vital that there be a yardstick against which a development can be measured. It is argued that when the rating tool is implemented, it will assist in establishing if a building is truly 'green' or not. It is also hoped that the rating tool would be a catalyst for the construction of green buildings in the country.

Eskom and the DME are pursuing a wide variety of programmes, including solar water heating, which could help incentivise greener practices.

Further, the DPW indicated in February that it would implement an energy-efficient programme in all government-owned and leased buildings. This would include the promotion of efficient individual use of air conditioners and heaters compared with centralised systems, energy-efficient light bulbs, card-control devices and motion detectors.

Some in the private sector are also looking to be innovative. South African retailer Clicks has taken up the initiative to halt the sale of incandescent light bulbs. This, in addition to the development of free energy-saving bulbs, could prove material, especially given that the International Energy Agency calculates that lighting consumes 19% of the world's electricity, and that replacing incandescent bulbs with compact fluorescent lamps could lead to a 40% reduction in energy consumption.

BUILDING DURING AN ENERGY CRISIS

While it should be stressed that energy is but one component of going green, there is little question that practitioners perceive a possible thin edge of a far more virtuous wedge.

The DME set energy-efficiency goals in its strategy in May 2004, which included reducing energy consumption, by 2015, to 10% in the residential sector, and 15% in the commercial and public-building sector.

To achieve this, an energy steering committee was set up to formulate building standards that would become a regulatory framework.

Reynolds, who chairs the committee responsible for establishing the building standard, says that the new energy-efficient building rates will be published by mid-2008.

After researching countries with energy-efficiency building standards, taking cognisance of climatic conditions in South Africa and the way in which building designs and construction are approached in the South African market, two solution standards were chosen for buildings in this country.

These included energy efficiency in naturally ventilated buildings and in artificially controlled buildings.

Reynolds says, "The new building standards for energy efficiency in the construction of buildings is not a new way of building, but it will provide different ways in which you can build to save energy, and will cater for the bulk of the energy crisis. Government is looking for a saving of 15% and these interventions will provide energy savings of up to 20% and more."

She adds that, in terms of energy savings, the new building standards are a solution to government's energy requirements and that green building will take it one step further.

The new building standards will include legislation on insulation levels, solar water

heaters and energy-efficient lighting.

"Compared with green building standards which are voluntary and an aspiration by standard, the new building standards will be legislated so that when people build for the good of all," says Reynolds.

She refers to Eskom's proposed tariff rat says that, if one cannot get people to save e "you then have to hit their pockets".

"Having to legislate with new building standards is not an ideal, but we know that they will embrace them because people are looking for answers and solutions," Reynolds says.

THE GREEN FUTURE

South Africa's acceptance of the need for policy change in the early 1990s is still respected globally. And it is that same respect for embracing change that is needed now as the country is to build the foundations of a green building.

Reynolds indicates that the ability of the construction industry to embrace change will be pivotal to the success of green building.

"South Africa is set in its ways and has been building the same way for the past 80 years. Change required from the construction industry is not as huge as people make it out to be and is as expensive," she adds.

Ideally, green building is one of the most needed solutions required not only for protecting the country's resources such as water, but also saving the much-needed energy that this country currently is in short supply of.

The question of whether the concept of green building will be accepted in South Africa is no longer a choice – it is a social and corporate responsibility of government, public and private enterprises and even the residential homeowner.

Internationally, the move to green building has been described as a phenomenon, and the benefits are significant. South Africa may have been slow on the uptake of the concept, but the remains that it is striving towards establishing green building practices.

We continually develop ourselves, to derive economic and social benefit for ourselves and our country. In the process, natural resources have been destroyed and almost depleted, and global warming is not a concern but a "global warning" and a reality.

The decision to become an environmentally responsible world or country is not a choice, but, fortunately, there are solutions to alleviate the disaster people have created for themselves.

And the one that seems to be top of the list is green building. Considering South Africa's current power crisis, and a possible water crisis, green building will not only save energy, but also place South Africa on the map of protected resources and becoming an environmentally friendly nation, premised on economic growth and development.