

Cityscape to pioneer real eco-friendly buildings

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WHAT was once a dream for many realtors in Bangladesh to set up world standard, environment friendly green buildings will become a reality sooner than expected.

Cityscape International Ltd, a local real estate company, plans to open an eco-friendly commercial building, Cityscape Tower, of international standards in Bangladesh in March.

"This will be a real green building as each and every area of the building has been designed such that it will ensure an efficient use of water and energy," said Nahid Sarwar, the company's managing director.

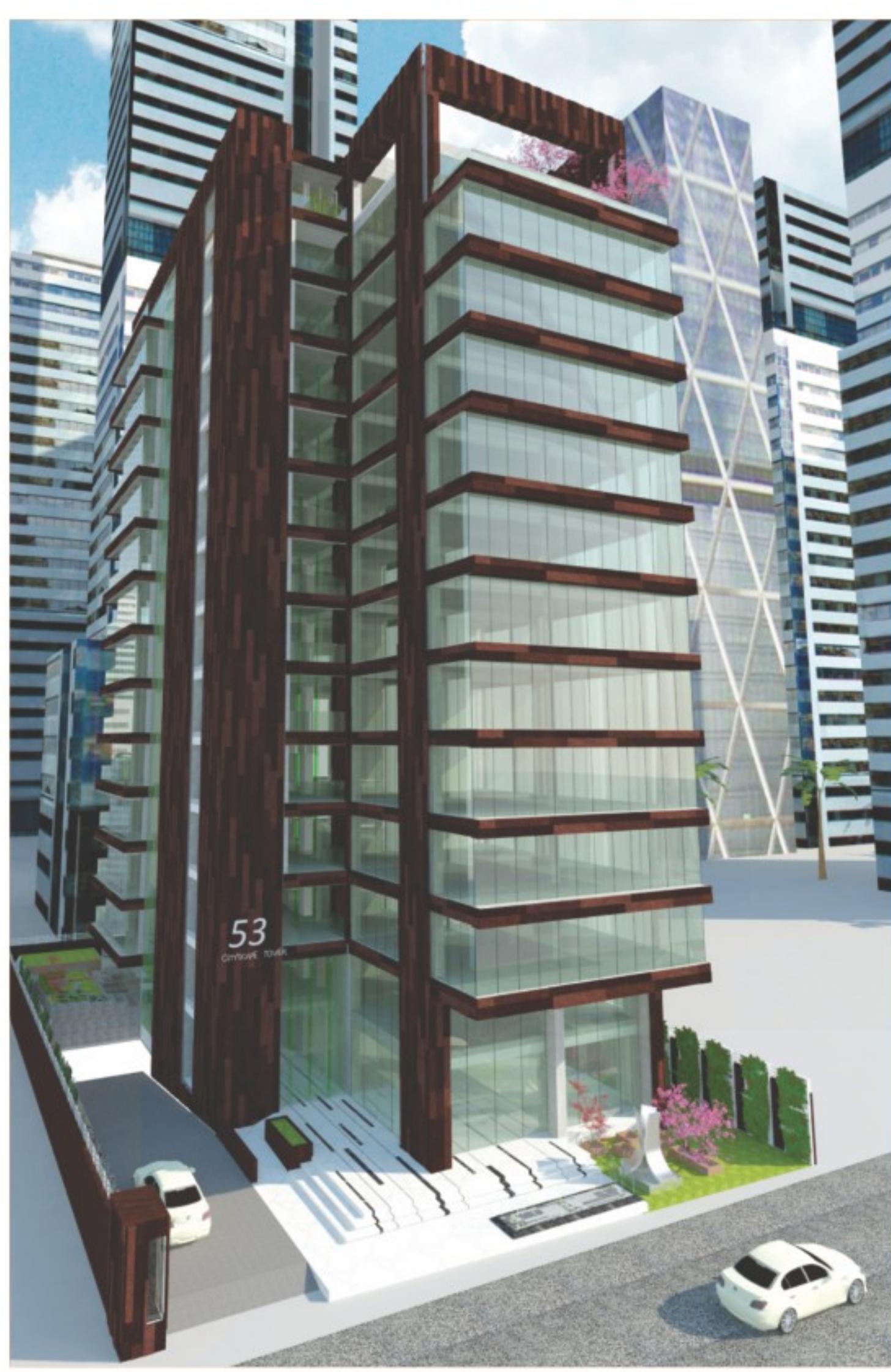
Located on Gulshan Avenue, the building will have a number of facilities such as a water treatment plant, a sewage treatment plant and a rain water harvesting system. It will also have an 18 KW solar panel, smart occupancy sensors, and LED lighting solutions.

The building, which will be able to withstand earthquakes of up to 7.5 on the Richter scale, will save 44 percent on power consumption and 60 percent water use, Sarwar said.

The company has already registered the project with the US Green Building Council (USGBC) and is pursuing the first LEED (leadership in energy and environmental design) platinum certification for a commercial green building in Bangladesh, he added.

Such a certified building minimises the impacts on the eco-system and water supply, uses reasonably appropriate landscaping and prevents storm water run-off, top soil erosion and heat-island effect.

NASA Sustainability Base, Taipei 101 Tower, Google headquarters and Adobe headquarters are some renowned LEED certi-



fied buildings in the world.

The 14-storied building with three basement car parking will have adequate space for green landscaping and rooftop greenery, Sarwar said.

The company is constructing the building on 11,248 square feet of land and will have a total floor space of 104,019 square feet at a project cost of around Tk 315 crore (including land price), he added.

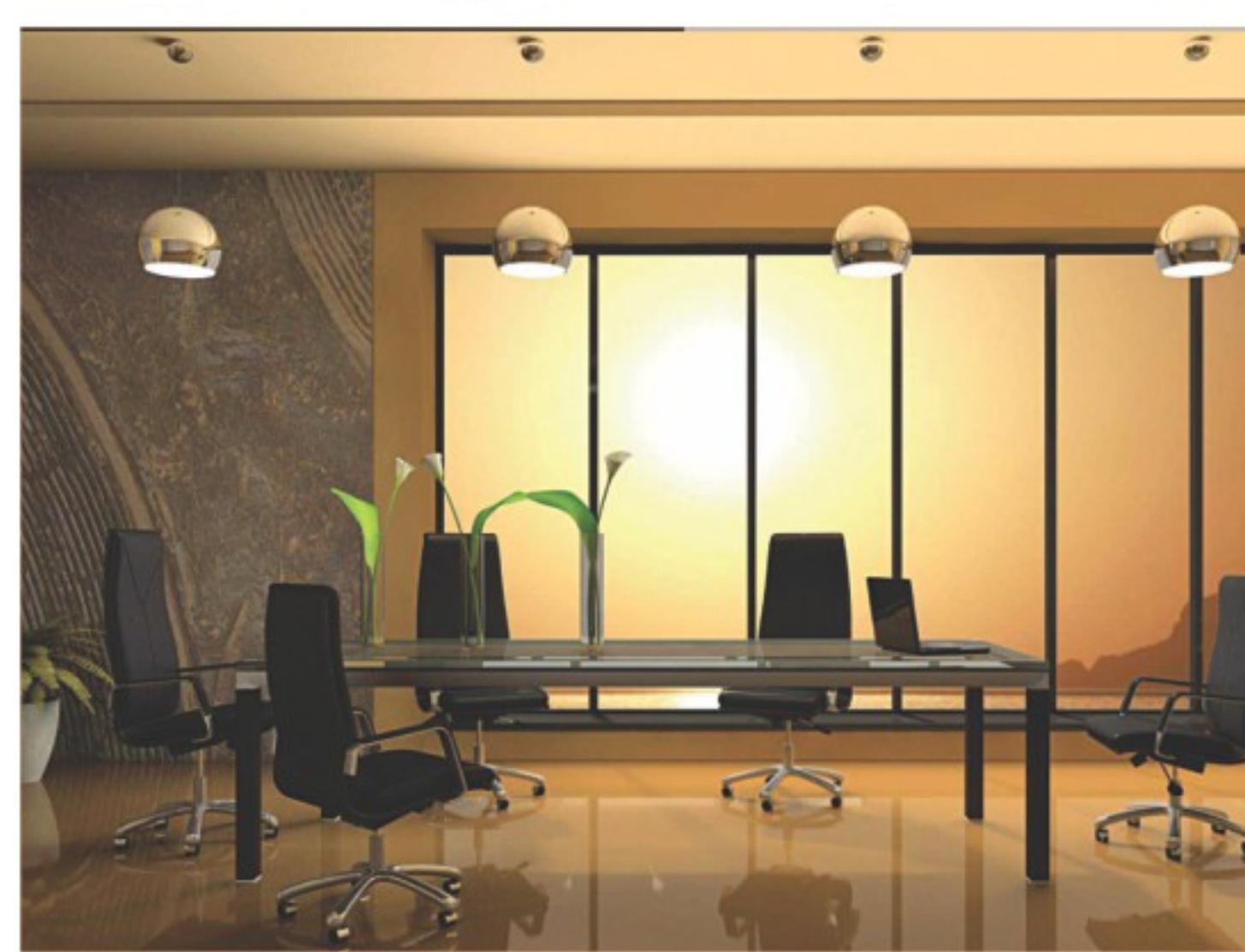
The water treatment plant will purify all of the used water and the water received from outside

and send it to the overhead tank, from where the purified water will be delivered throughout the building.

Wastewater will be treated on-site using a sewage treatment plant to tertiary standards, meaning water worthy for reuse in landscaping, air conditioning, and toilet flushing.

Smart occupancy sensors fitted to lighting systems will automatically switch on or off in the presence of humans.

The company will use LED lighting solutions provided by



OCTAGON Lighting Consultants for interiors, exteriors and bolards for landscaping that will ensure around 90 percent overall energy efficiency, he said.

Around 50,000 square feet of wooden veneer panels will be used for the exteriors, such as cladding material, and insulation is being used beneath the panels to ensure no heat gain through the building surface.

The building is installed with real time carbon dioxide detectors and monitored to ensure fresh air to occupants.

"Building occupants can easily enjoy the benefits of natural daylight as minimising solar heat gain will substantially reduce annual cooling energy demands and contribute to LEED credits," Sarwar said.

The system will also detect and monitor temperature and humidity inside the building.

Natural stone, travertine and luscious marble will be used inside the building. "We will not use any tiles as it contains high VOC (volatile organic compounds)."

In addition, low VOC odour free paint, adhesives and sealants will be used, which will ensure an atmosphere free from toxic

fumes.

Generally, such type of conventional buildings requires 1,280 KW of electricity an hour, but this building will require half of that.

Cityscape International that began its journey in August 2009 aims to start at least 10 such green building projects in Bangladesh next year, Sarwar said.

"We are planning more green building projects as it will help reduce carbon emission and organisations can increase employee productivity by up to 20 percent through such buildings."

More than 54,000 projects are currently participating in LEED, comprising more than 10.1 billion square feet of construction space, according to the USGBC website.

USGBC is a membership-based non-profit organisation that promotes sustainability in how buildings are designed, built, and operated.

So far, 49 projects from Bangladesh, mostly garment factories, have been registered with USGBC.

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SAFETY IN CONSTRUCTION

Ductile and fatigue properties of steel

M FIROZE

CONSTRUCTION steel is the material for the backbone of a country's economic development. A nation's state of economic development can be gauged from the annual per capita consumption of steel. The table below shows at a glance the steel consumption of selected countries of the world.

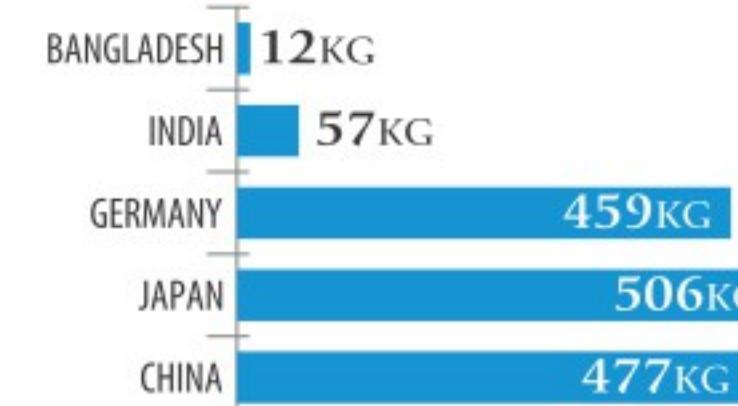
Countries with a strong manufacturing base, such as Germany and Japan, have much higher per capita steel consumption.

The figures in the graph below speak of the immense growth potential of the steel industry in the country. Our country has just started its journey towards urbanisation and industrialisation, the two power houses of economic development. Both the power houses are fuelled by steel consumption. Steel production is a core industry in every country and is considered 'strategic' to national development. In the last five years, the Bangladesh steel industry has undergone a qualitative change with the bulk of its constructional steel now being produced in the high strength 500 MPa category. While high strength ensures economy in design and construction by reducing steel consumption it also raises the danger of brittle failure if proper attention is not paid to Quality Assurance in the steel production process chain. This article will try to highlight the importance of



M Firoze

PER CAPITA STEEL CONSUMPTION



SOURCE: WORLD STEEL ASSOCIATION 2013

two important properties of steel in ensuring safe construction.

In recent years the Bangladesh construction industry has also undergone a qualitative change. Hitherto, the most common structure being designed and built was a reinforced concrete building frame for commercial and residential purposes. In recent years multi-storey industrial buildings, mostly in the garment industry, have been built. Flyovers in the urban centres are yet another new development. Flyovers and multi-storey industrial buildings are all highly steel intensive construction. A typical flyover requires 2,500 tonnes of reinforcing steel per kilometre. It also requires another 300 tonnes of pre-stressing steel tendons per kilometre. A 10-storey industrial building needs around 12-15kg steel reinforcement per square feet of built up area. In contrast, a residential building with 10 storeys would need around 4kg of steel per square feet.

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