INDIA'S VERTICAL QUEST

Preeti Parashar

AS THE WORLD'S tallest building, the 828-metre Burj Khalifa, alters the skyline of Dubai, other nations look on to join the race of tallest skyscrapers! Countries across the globe have been modifying their policies for developers and engineers to innovate and explore new designs. Where does India stand in this race? Do we have policies or guidelines that can make these skyscrapers a reality in India in the next ten years? The answers are still uncertain.

Given India's low floor space index (FSI) policy—government regulations that allow specific number of building floors based on the land area, thus determining heights. India doesn't have many skyscrapers (defined as buildings of over 24 m in height). As of now, except a 300-metre-high TV tower at Worli, Mumbai, India cannot boast of many tall buildings. Shreepati Arcade, constructed in 2002 is another tall building in the city with 45 floors and a height of 153 metres. Soon two residential towers in Mumbai—Imperial Towers (149 m) and India Tower (a hotel, 301 m)—will be completed.

Of the newer constructions, the APIIC Tower (Andhra Pradesh Industrial Infrastructure Corporation Tower) being built at Hyderabad is expected to be a 100-storey building with a height of 450 metres. Lanco Hills at Hyderabad, which is a 100-acre township project, is likely to house a signature tower with over 90 storeys. The Noida Tower, conceptualised by architect Hafeez Contractor, can bring India on the world map with a height of 710 metres, but the project is on hold. Bengaluru Turf Tower (660 m) and the Maharishi Vedic Vishwa Prashasan building (678 m) proposed near Jabalpur are other contenders for the tallest buildings spaces in India.

A majority of real estate developers and market analysts feel that it's imperative for the FSI norms to be relaxed for India to grow the vertical way. It will facilitate effective use of land. Many agree that in order to compete globally, Indian FSI standards should be increased from 1-3 to at least 10-25. Sachin Sandhir, MD and country head, Royal Institution of Chartered Surveyors India, feels that FSI is considered to be an important determinant in development. "In India the FSI is exceptionally low, even when compared to Asian cities such as Singapore, Bangkok, Malaysia, etc, where it is benchmarked between 5 and 50. In order for the Indian real estate market to compete on a global platform, an upward revision needs to be considered. However, increasing the FSR puts additional load on existing infrastructure," he says.

Recently, in a national conference organised by the Confederation of Real Estate Developers' Associations of India, delegates requested the government to increase the FSI across the country.

Reiterating the point, Manoj Goyal, VP, Raheja Developers, says, "Stringent norms to get height clearance act as a major impediment in the way of building tall structures. Almost all metro towns (where skyscrapers can be built) are in areas controlled by the Airport Authority. Presently, FSI allowed is 1.50-2.75 in all metros and ground coverage is 30-40%. It is insufficient to build skyscrapers here." He adds, "The maximum height that can be built (based on per acres calculation) is approximately nine floors (about 30 m). To make a 800-metre-high tower in India, developers need a minimum of 150 acres (as per FSI and ground coverage allowed), impossible in metros."

Another factor where India is lagging behind in constructing skyscrapers seems to be lack of technical knowhow. Samir Chopra, Director, RE/MAX India, elaborates, "In India, there is low awareness about the benefits of tall buildings. There are inherent fears that exist, again due to lack of knowledge. Also, there is not much availability of technical knowhow. The expertise required is still limited to a few companies and, therefore, costs more and is time consuming. We in India still haven't reached the level of development where construction takes place at a very fast pace and a piece of land can start generating revenue in a very short span of time. And our planning is not so synchronised with long-term goals."

Sunil Jindal, CEO, SVP Builders India, agrees. "Developers restrain from entering the tall building segment due to lack of technology and the price factor. Where average construction cost of a conventional building comes to around Rs 1,500-2,000 per sq ft, a tall building will cost around Rs 4,000-5,000 per sq ft or more."

Tall buildings are also seen as a solution to the space problem that urban India is facing. Since there is a near saturation of the land available within the city boundaries for any use, be it residential or commercial, the solution would be to conduct a land audit and construct viable tall structures, which will generate greater availability of space per square feet of ground area used. Building tall is not an option anymore, it is almost inevitable. "Basically, high-rise buildings provide developers with a means of saving on land costs. They open up wider arenas to operate on. This means projects will be cheaper on a unit-to-unit basis and also more plentiful in profitable areas, which is good news for investors and the buyers. However, allowing high-rises indiscriminately in certain city areas is definitely asking for trouble, and will result in an infrastructure deadlock and eventual fall in prices," says Gagan Singh, CEO, project development services, Jones Lang LaSalle Meghraj.

Goyal from Raheja Developers disagrees, "In my opinion, tall buildings will not solve the space crunch in urban India. Based on present FAR affordable housing in metros is not possible."

However Manish Periwal, CMD, Pioneer Urban Land and Infrastructure, believes that tall buildings help in proper allocation of resources and utilisation of space. "Verticality leads to compact development and better accessibility. It also brings down the costs of water and waste management. Distinguished technological expertise and more cooperation from the government can help redefine urban India," he says.

"Hyderabad swelled from 174 sq km to 625 sq km, putting a lot of pressure on its infrastructure. The hi-tech city has fibre optic lines but no sewer lines! Huge investments are needed to provide roads, drainage, water pipelines, sewerage system, mass transport etc. Sensible tall buildings to some extent may ease this pain," says Karuna Gopal, President, Foundation for Futuristic Cities.

A few like Rohit Raj Modi, spokesperson, Raj Nagar extension developers' association, feel skyscrapers are not symbolic of a nation's economic development. "If there exist good infrastructure facilities such as sanitation, water, roads, connectivity, etc, that itself speaks volumes about the economic development of a country," he says. Seconding his view, Chopra from RE/MAX adds, "What we need today is integrated development. This is possible only through adequate planning. This will help plan an area, which will be self-sufficient, energy efficient and therefore environment-friendly."

"There is a need for more service providers of eco-friendly construction materials to reduce costs," says Periwal.

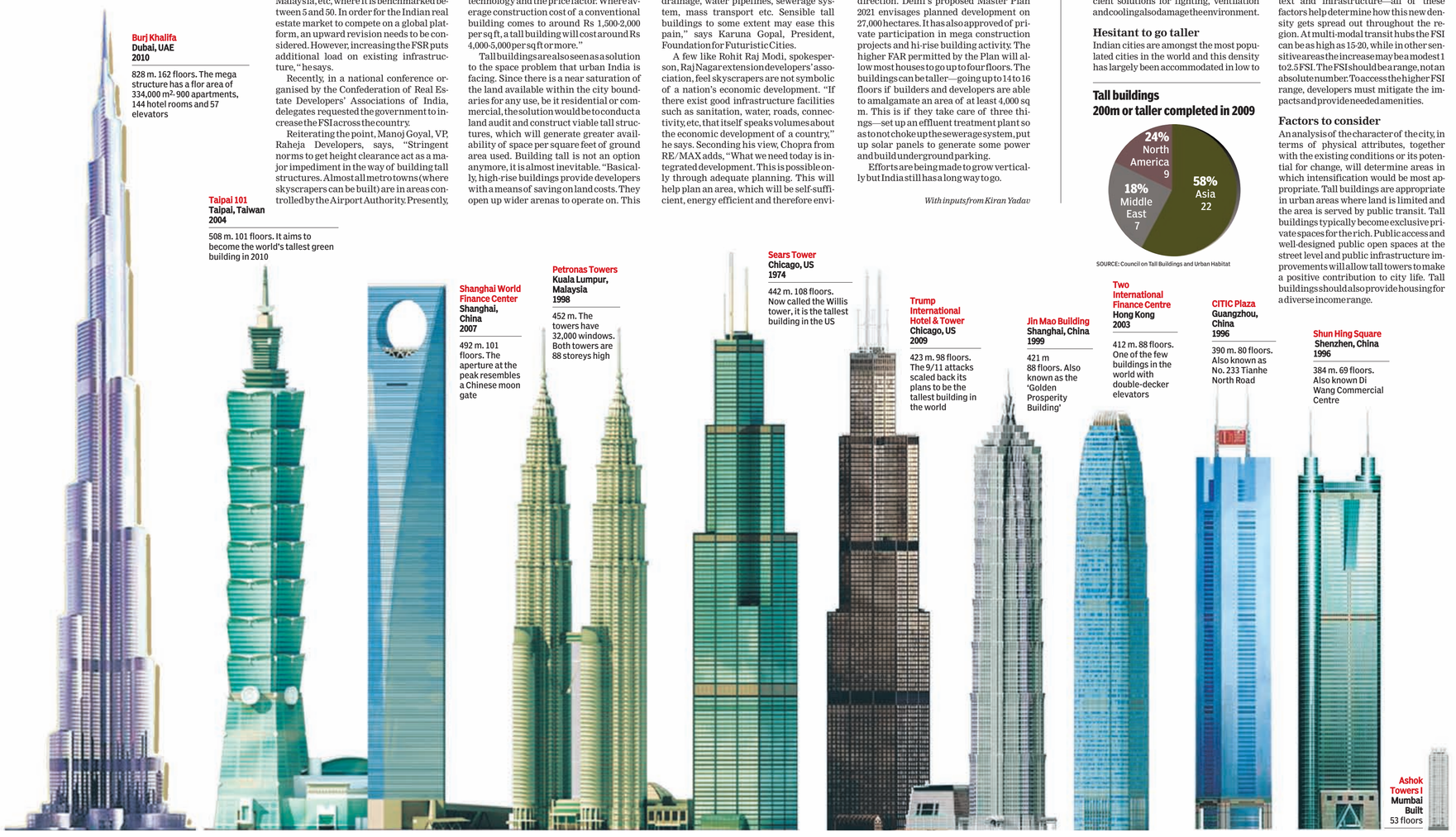
However Sandhir thinks of high-rises as financially viable, especially in cities where there is no alternative to vertical expansion. He says, "From the environmental perspective, too, these buildings could be considered viable as densely populated spaces are less carbon intensive and usually better served by existing public transport and other infrastructure amenities." But few developers caution that as skyscrapers consume more energy and contribute a lot in warming of surroundings it leads to more climate changes.

The future of green skyscrapers seems bright in India and they hold great potential. Chopra says, "To match India's increasing demand for housing for its ever-rising population, it certainly sounds like the most viable solution." Singh from JLLM feels, "Realistically, we are a long way off from seeing sustainable skyscrapers as a norm rather than exceptions to the rule in India. Cost will continue to dictate most construction in this country and the fact remains that such buildings are extremely costly to develop."

The government is moving in the right direction. Delhi's proposed Master Plan 2021 envisages planned development on 27,000 hectares. It has also approved of private participation in mega construction projects and hi-rise building activity. The higher FAR permitted by the Plan will allow most houses to go up to four floors. The buildings can be taller—going up to 14 to 16 floors if builders and developers are able to amalgamate an area of at least 4,000 sq m. This is if they take care of three things—set up an effluent treatment plant so as to not choke up the sewerage system, put up solar panels to generate some power and build underground parking.

Efforts are being made to grow vertically but India still has a long way to go.

With inputs from Kiran Yadav



TALL CAN BE BEAUTIFUL

Kaizer Rangwala

Winston Churchill said, "We make our buildings and afterwards they make us." A tall building reaching for the sky is the most potent and visible symbol of success and technological *savoir faire*. Tall buildings in urban setting can be efficient use of land if build properly—they pack more people on less land and preserve open spaces and farms that supply local food. However, tall buildings can also perpetuate social segregation and isolation, much like a vertical gated community. A common damaging aspect of the tall building is how it meets the streets—lank walls and security gates destroy the street life. Streets are universally the most public spaces in a city. "Streets matter more than buildings," notes Paul Goldberger, architecture critic for the New Yorker.

Just as well-designed tall buildings can be stand alone landmarks, badly designed tall buildings will not blend in easily and harm the image of the city. A total lack of public design review and decent development codes put the citizens at greater risk of getting architectural kitsch. Tall buildings that fail to incorporate energy-efficient solutions for lighting, ventilation and cooling also damage the environment.

Hesitant to go taller

Indian cities are amongst the most populated cities in the world and this density has largely been accommodated in low to mid-rise buildings. This is because Indian cities have the lowest floor space index (FSI), in the world. Government regulations that allow specific number of building floors based on the land area, thus determining heights, is called the floor space index. A larger FSI allows a taller building. The principle reason for controlling floor space index is to limit density to what the infrastructure can support. However, "controlling FSI does not reduce density, it just reduces floor consumption by making it more expensive," explains Alain Bertaud, a World Bank consultant. More people occupy smaller units, resulting in unhealthy overcrowding. FSI slows down economic growth and takes away the revenue source to pay for infrastructure improvements and maintenance. Ill-conceived FSI are a major hindrance to tall buildings. Indian cities have over 50% of its population living in substandard or illegal housing. Indian cities are projected to add several million people. Taller buildings are going to be necessary. Where and how we grow are important considerations.

Planning starts at the regional level with a well thought out response based on transportation network, geographic limitation, environmental sensitivity, context and infrastructure—all of these factors help determine how this new density gets spread out throughout the region. At multi-modal transit hubs the FSI can be as high as 15-20, while in other sensitive areas the increase may be a modest 1 to 2.5 FSI. The FSI should be a range, not an absolute number. To access the higher FSI range, developers must mitigate the impacts and provide needed amenities.

Factors to consider

An analysis of the character of the city, in terms of physical attributes, together with the existing conditions or its potential for change, will determine areas in which intensification would be most appropriate. Tall buildings are appropriate in urban areas where land is limited and the area is served by public transit. Tall buildings typically become exclusive private spaces for the rich. Public access and well-designed public open spaces at the street level and public infrastructure improvements will allow tall towers to make a positive contribution to city life. Tall buildings should also provide housing for a diverse income range.

Tall towers should be designed for the Indian context. They should take advantage of the local climate—rainfall, light, ventilation, solar orientation without sacrificing the street-level orientation of buildings; history; local building materials and construction and individual choices and sensibilities of the cities. The city's skyline should be viewed as its topography. Should tall buildings stand as monumental objects or form a deliberate skyline composition? "While a single tall building has high image value and is easier to insert at various locations in the city, the intensification from a single tall building is relatively low," says Lora Nicolaou, Head of Research, Urban Renaissance Institute. "Clusters of tall buildings achieve more intensification but may be appropriate only in few areas." Each city needs a unique tall building strategy based on urban design, street level uses, infrastructure and local context.

The public sector should eliminate regulatory barriers. Form-based codes (FBC) produce predictable built results and a superior public realm by using physical form as the organising principle. FBCs are graphic-based codes that allow the public to visualise in advance the form and location of the streets, buildings, and open spaces leading to a higher comfort level with taller buildings.

Tall buildings should be self-sustaining and not depend on taxpayer funds to provide affordable housing, infrastructure improvements, network of mobility options, public amenities and maintenance. The public sector has to determine needs for each area and set up a developer impact fee system to fund on site improvements. Tax Increment Financing (TIF) can fund off-site improvements. In TIF, the developer upfronts the cost of infrastructure and gets refunded from the increment in taxes generated from new development. Maintenance can be funded by the creation of public-private partnerships.

Tall buildings consume a third more material and energy and require more service area and offer less usable floor space than a low or mid-rise building. "There's no need to build tall just for the sake of it," says Lora Nicolaou. Tall needs to be a planned strategy that delivers more efficiency in land use and innovative contextual design. Tall buildings need to enhance the neighbourhood by focusing on enhanced public realm, be sustainable and provide for abroad segment of the population.

The writer is Principal, Rangwala Associates

Tall buildings 200m or taller completed in 2009

SOURCE: Council on Tall Buildings and Urban Habitat

SCRAPING THE SKY, FOR WHAT?

Kiran Yadav

What's there in a name? Plenty, at least for Dubai. What the world so far knew as Burj Dubai suddenly became Burj Khalifa this week, christened after Sheikh Khalifa bin Zayed Al Nahyan, leader of neighbouring Abu Dhabi. The headlines that followed said the rest: 'Dubai's demise sees Abu Dhabi's rise', 'Is the world's tallest building a monument or a tombstone for Dubai?' The $25-billion aid that Abu Dhabi gave Dubai last year to tide over economic recession was probably the genesis. And a change in the name, of what the world today knows as the tallest building in the world, has meant as symbolic shift in the balance of power in favour of Abu Dhabi. A shift not just in terms of economic power, but also political!

It's literally a race now. Even as Burj Khalifa opened, bids for its successor, the 1.1-km high Kingdom Tower in Jeddah, already lined up. And, the former 'world's tallest', Taipei 101, is gearing up to become the 'world's tallest green' in 2010.

"Skyscrapers definitely symbolise progress of economy and of technology. They are icons by which cities are recognised—Petronas for Kuala Lumpur, the Empire State Building for New York…," says Sudhir S Jambhekar, Senior Partner, FXFOWLE, an architecture firm with offices in New York, Washington DC and Dubai.

Icons they definitely are. "Though Burj Khalifa is now considered a symbol of financial meltdown, it will remain extremely unique real estate. It embodies the development of Dubai into a global city. The building is the biggest marketing campaign the city could have come up with," says Jan Klerks, Research & Communications Manager, Council on Tall Buildings and Urban Habitat, Chicago. Certainly a campaign that ensures long-term returns, considering that Taipei 101 received 1.2 million visitors to its observation deck in 2009.

The quest, feels Jambhekar, can be traced back to "man's passion to defy gravity". The tall *shikhars* in old Hindu temples were an attempt to reach out to the skies and to God. In the US, it was the invention of elevators that ushered in the concept of tall buildings, with Chicago taking the lead after World War I—again, a period marked by economic growth and technological advancements.

"From the '50s to the '70s, skyscrapers usually symbolised the health of a corporate entity. So, you have Sears towers, Seagram Towers etc. In the '90s and beyond, skyscrapers came to symbolise the economic health of a city and in particular the financial capitals of the country," adds SK Das, SK Das architects, Gurgaon.

So, why has India, one of the leading economies in the world not yet tapped the symbolic value, while China has? "Possibly because China's political set-up, vision for urbanisation and aggression present a stark contrast to the Indian scenario," explains Karuna Gopal, President, Foundation for Futuristic Cities. "However, the very fact that Asia accounts for almost 60% of the high-rises in the world, with more than half of them built recently indicate a link between economic prosperity, policy environment as well as the culture of a place. Europe is a classic example particularly in the context of culture," she adds in the same breath.

The economy definitely plays a significant role if taken into view the fact that recession has seen its share of cancelled and canned projects. Interestingly, Scott Johnson in his book *Tall Building: Imagining the Skyscraper*, brings out that signature tall buildings built since 2000 are no longer found in the US or Europe, but in former developing countries. It's now the oil-rich countries in the Middle East and Russia taking the lead. "In case of US, the recession is a factor yes, but there are more: security concerns post-9/11, and the availability of land vis-a-vis the population, which is hardly over 330 million people," explains Jambhekar.

He is, however, sure that the future of tall buildings in India is inevitable and has a word of caution: "The NY Subway will never give you a hint of the urban density it supports. The same holds good for Hong Kong. To reach the downtown from the airport takes no more than 25 minutes. And, to reach Taj Mahal Hotel from Mumbai airport, depending on the traffic, needs at least two-three hours. So, an infrastructure supporting the tall buildings must be in place too."

Tallest residential towers

Q1, Gold Coast (AUS)
Height (mt) : 323 Floors : 78
Completed : 2005
Material: concrete

Eureka Tower, Melbourne (AUS)
Height (mt) : 297, Floors : 91
Completed : 2006
Material: Concrete

Emirates Crown, Dubai (UAE)
Height (mt) : 296, Floors : 63
Completed : 2008
Material: Concrete

Millennium Tower, Dubai (UAE)
Height (mt) : 285, Floors : 59
Completed : 2006
Material: Concrete

The Cullinan I, Hong Kong (CHN)
Height (mt) : 270, Floors : 68
Completed : 2008
Material: Concrete

Tallest all-office towers

Taipei 10, Taipei (TAIWAN)
Height (mt) : 508, Floors : 101
Completed : 2004
Material: Composite

Petronas Towers, Kuala Lumpur (MAL)
Height (mt) : 452, Floors : 88
Completed : 1998
Material: Composite

Willis Tower, Chicago (US)
Height (mt) : 442, Floors : 108
Completed : 1974
Material: Steel

Two International Finance Centre, Hong Kong (CHN)
Height (mt) : 412, Floors : 88
Completed : 2003
Material: Composite

CITIC Plaza, Guangzhou (CHN)
Height (mt) : 390, Floors : 80
Completed : 1996
Material: Concrete

Tallest all-hotel towers

Rose Rotana Tower, Dubai (UAE)
Height (mt) : 333, Floors : 72
Completed : 2007
Material: Composite

Shimao International Plaza, Shanghai (CHN)
Height (mt) : 333, Floors : 60
Completed : 2006
Material: Concrete

Burj al Arab Hotel, Dubai (UAE)
Height (mt) : 321, Floors : 60
Completed : 1999
Material: Composite

Emirates Tower Two, Dubai (UAE)
Height (mt) : 309, Floors : 56
Completed : 2000
Material: Concrete

The Address Downtown Burj Dubai, Dubai (UAE)
Height (mt) : 306, Floors : 63
Completed : 2008
Material: Concrete

Future tallest buildings

Nakheel Tower Dubai (UAE)
Height: 1000 (mt)
Floors: 200 Floors
Material: concrete-steel

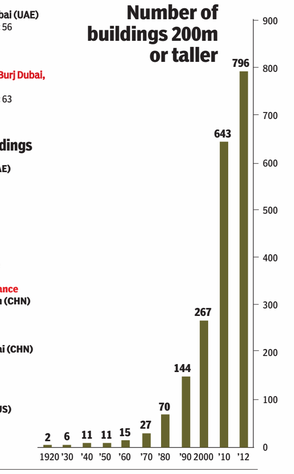
Burj Dubai Dubai (UAE)
Height: 800
Floors: 162
Material: Steel-concrete

Pingan International Finance Center Tower 1 Shenzhen (CHN)
Height: 646
Floors: 115

Shanghai Tower Shanghai (CHN)
Height: 632
Floors: 128
composite

Chicago Spire Chicago (US)
Height: 610
Floors: 150
composite

Number of buildings 200m or taller



Defying gravity

- There were no buildings from Europe, Africa, Australasia, Central and South America among the tallest 50 completed in 2009.
- 4 supertall buildings (300 m+) were completed during 2009, the same as in 2008. 16 supertall are expected in 2010.

SOURCE: CTBUH, GRAPHICS: MANOJ BHRAMAR, SADHNA SAXENA

FOCUS

WHAT STOPS INDIA FROM TESTING HIGHER GROUNDS?

VERTICAL LIMITS