

DUBAI: Tall Growth on the Desert Coast

By Lawrence J. Fabian

To create urban life in the desert, before all else comes the need for water. Then you need power, roads and some buildings. Sewerage and landscaping become important. When it gets too congested, traffic and parking management and maybe mass transit become critical.

Fifty years ago Dubai was a small, sleepy port on the southern shore of the Persian Gulf. Today it buzzes with two million multi-national residents.

In centuries past, before Europe established direct ocean transport with Asia, Dubai and its neighbors were in an active trading zone competing with the all-land "Silk Road" to the north. When artificial pearl farming killed demand for pearl-diving, the economy further languished. Over recent centuries Dubai survived in a very hot region that is also very short on fresh water. Fifty years ago, its population was about 50,000 when all dhows were in port.

[\[Dubai-scrapers](#)

No longer small or sleepy, Dubai's skyline is dominated by skyscrapers.

In the 1970s, oil and gas discovery and exploitation brought vast change. Accurate population statistics are hard to maintain with rapid growth dominated by temporary foreign workers and tourists who come and go. Dubai's population was pegged at one million as we moved into the 21st century. For those who like bold, new architecture and well managed and manicured streets, Dubai is an urban delight. It has two million stakeholders proud of their superlatives. In many ways, it is a Disneyland without the sleaze. This rapid growth, much of it in high-rise structures, uses tens of thousands of elevators.

This rapid urban growth is not confined to this one emirate out of the seven that make up the United Arab Emirates (UAE). Abu Dhabi and Sharjah are also active construction markets for. Many of the buildings are high-rise.

Recovery Numbers

Alongside with much of the global economy, Dubai's development engine stalled in 2009. Construction levels are still down from what they were in 2007, but many see Dubai ready for a resumption of growth. Dubai has found notable, creative city-building ways to combine the infrastructures of power generation, desalinization, irrigation, and air-conditioning. A synergetic combination can efficiently transform dry inhospitable landscape into comfortable green urban life that can be quite sustainable.

Worldwide, scores of new cities (or expansions of existing ones) are needed to absorb billions of people as major village-to-city shifts continue. The Arabian Peninsula has long, sparsely settled coastlines that could accommodate millions of migrants and refugees. How many Syrian, Iraqi and inundated Bengalis may start new lives there? It is easy to foresee salt water coasts transformed by desalinization and modern city-building.

[sidebox	Rough population estimates in millions of residents
Dubai	2.1
Abu Dhabi	0.9
Sharjah	0.8

Dubai's two million residents include many who have bought a get-away condo (winter weather is quite pleasant). Many toiling in the hot oil fields can afford a few condos as investment. To the northwest is Abu Dhabi with another million people. To the east is Sharjah where many Dubai workers live.

Dubai Superlatives

Whether it is the world's tallest building or the largest mall, Dubai has many claims. It shows off the world's longest driverless metro network in style. The airports accommodate traffic that is growing by leaps and bounds. What better symbol of this urban finesse than the engineering and artistry that have created artificial Gulf islands that, from the sky, look like palm trees or the world map. One vision, shown here, would pull Gulf waters into the desert.

[\[Burj Khalifa\]](#)

Burj Khalifa seen from the long pedestrian way that links the Mall of Dubai to a metro station.

[\[Dubai - aerial\]](#)

A vision of a Dubai to accommodate several more million residents.

Dubai just announced construction of large-scale solar park to desalinate more water. There is little doubt that the potential for continued growth is great. What kinds of elevators will be in demand? The simple answer is: those that go high and others that circulate horizontally to connect to metro stations.

Dubai already has scores of high-rise buildings located near metro stations, and clearly more are coming. In the whole of Arabia, high-rise buildings linked centered around metro stations seem to be the urban future. Riyadh, Makkah, Jeddah, Doha, Kuwait, Bahrein and other growing cities are planning multi-line metro networks with hundreds of stations.

Dubai's Metro and Elevator Successes

Dubai's metro claims to be the world's longest driverless network. The bulk of that mileage is a straight stretch of elevated dual track across flat desert parallel to a wide highway that goes to Jebel Ali and Abu Dhabi. The initial section opened in 2009, and ridership has grown to substantial flows. It has quickly expanded to become the spine of Dubai's urban life and future growth. If there are shortcomings, they stem from their success which creates the need for more capacity in the central district. Compared to rusty North American subways, trams, and other brands of rail, Dubai's Metro is a stunning international success.

[\[Dubai-multi\]](#)

Metro passengers can walk over the highway to nearby destinations.

[\[Dubai-ele-stairs\]](#)

Elevators are very visible for metro passengers who need them.

Transit orientation is reshaping the city. Nodes of dense development are emerging throughout the metro network. To the east are airport stations. In the near west, are stretches of high towers. The Burj Khalifa is perhaps best known, but there are many. Buses distribute many metro passengers. A tram to the west circulates from two metro stations to the Jumeirah district, which itself has a private, driverless monorail out the stem of the huge off-coast resort district shaped like a palm tree.

Dense, transit-oriented urban districts reduce sprawl and parking needs. They translate into an elevator industry that is dominated by high-rise installations. Before the 2009 financial crisis, about 4000 units were delivered annually. It has stabilized to about 2500 today. According to N Chandrasekaran of Toshiba Elevator-Middle East, there is little work in rehab and replacement. 30-40 year old buildings are typically razed to make way for higher towers. Otis dominates the market. Mitsubishi supplied not only trains for the driverless metro (controls by Thales), but also the elevators and escalators for its many stations.

Needed: Better Metro Circulators

The Mall of Dubai invested millions of dollars to enhance an elevated, air-conditioned enclosed walkway that runs several hundred meters (about 2000 feet) from one of its entrances to a metro station. Seven pairs of Thyssen Krupp power walks assist visitors over the long stretch. The average speed is low. It works, but at what investment and O&M cost?

Automated people movers (APMs) could serve the need for such short distance links much better. Metro-feeders can extend the border of the district to be considered for transit-oriented development. Modern APMs with small elevator-like dimensions can provide high levels of “podcar” service.

Perhaps it is time for Otis to resurrect its vertical + horizontal Odyssey development, dormant since the 1990s despite an installation in Disney World (Florida). Last February *Elevator World* publisher Ricia Sturgeon-Hendrick noted that ThyssenKrupp’s new MULTI has many similar features. Last April King *et al.* described exciting new possibilities of the Articulated Funicular.

[Makkah

Makkah on Saudi Arabia's Red Sea coast is one of several desert cities with great metro ambitions.

The need for such systems to extend metro accessibility is great. Dubai is not alone in its metro success with high-rise transit-oriented districts around the stations. The pipeline of metro projects in the Arabian Peninsula and around the world calls out for better three-dimensional mobility systems.