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INFRASTRUCTURE

Learn from the past, build for the future: Saudi Arabia's new city on the Red Sea

Fahd Al-Rasheed

To build a city from scratch, create a solid economic foundation.

Three millennia ago, Akhenaten began construction of the Egyptian city of Amarna—perhaps the first example of planned urban infrastructure in recorded history. Within a decade of Akhenaten's death, Amarna was abandoned—ancient evidence that building infrastructure and convincing people to use it are two fundamentally different challenges.

Building an economic infrastructure

King Abdullah Economic City (KAEC) is the world's largest privately funded city. Located about 100 kilometers north of Jeddah on the coast of the Red Sea, KAEC is a public–private partnership with the government of Saudi Arabia; it is built with private capital, independently of oil revenue. KAEC is an image of what Saudi Arabia could look like without hydrocarbons: a trade and logistics gateway offering companies access to a fast-growing regional market of 620 million people.

KAEC is master planned to accommodate a population of two million people over an area of 181 square kilometers—about the size of Washington, DC. Today, around 25 percent of the total area is either developed or under development. KAEC could be home to about 10,000 people by the end of the year. By 2020, 40 percent of the planned area will be developed, and the population should be around 50,000 people.

KAEC was conceived to attract new industries to the city by meeting latent demand within Saudi Arabia, which is the largest economy in the region. For example, 80 percent of Saudi Arabia's pharmaceuticals are imported; KAEC therefore encouraged leading pharmaceutical companies to establish operations in the city. Today, pharmaceuticals is one of its fastest-growing clusters.

More than 100 global and local companies are setting up operations in the city in non-oil industries, including pharmaceutical, automotive, logistics, and consumer goods. One European oil company operates a blending plant for its lubricants business in the city; a carmaker is assembling commercial trucks; an air-conditioner firm is getting ready for production and exports. Next year will see the addition of a bonded zone and sophisticated warehousing operations.

An integral part of KAEC's economic model is the construction of trade and logistics infrastructure. The city operates King Abdullah Port, a deepwater port and the first in the region to be built entirely with private capital. The port now has the capacity to manage 3 million containers a year. This will increase to 4.5 million by the end of 2016 and 20 million by the time it is finished in 2025.

The port is connected to the national road network to facilitate transportation, thus attracting companies that need improved access to the Saudi market. The port is also adjacent to the city's Industrial Valley light-manufacturing zone, allowing companies to ship raw materials in to their manufacturing plants and ship product out, either to the Saudi market or the broader region.

This economic infrastructure creates jobs and thus growing demand for residential and civic infrastructure, such as housing, schools, healthcare facilities, and recreation. KAEC builds this civic infrastructure to scale.

The “ghost cities” developed elsewhere are an eloquent example of the risk of building for long-term end use without an economic base. Facilities that lie idle until the population expands to support them are expensive to maintain. In a private-sector model, however, facilities must be economically viable almost from the outset to mitigate maintenance costs. Infrastructure is built to meet near-term projections and then expanded as the economic cycle gains momentum.

KAEC’s main medical center at the moment, for example, is a secondary-care facility providing emergency support, general medicine, laboratory services, and a rotating schedule of specialist clinics. There is insufficient demand for a full hospital in the city today. If built, it would be largely mothballed until the population expanded to accommodate it. Hospital construction is a project for the future.

Building a social infrastructure

A significant challenge with planned cities is creating spaces in which people want to live and interact while keeping the city affordable, particularly in Saudi Arabia, where there is a shortage of affordable housing. It is one thing to build a city that works. It is another thing to build one that lives.

Ultimately, the residents themselves will add color and vibrancy as they begin to define the space in which they live—opening boutique businesses, creating cultural neighborhoods, and initiating community-led programs. KAEC’s residential communities are built to encourage interaction, incorporating green spaces, community centers, cycle paths, and ready access to the city’s recreational facilities.

Social infrastructure also needs to adapt to emerging and future technologies. KAEC is constantly updating its master plan to adapt to the fact that technologies that were prohibitively expensive a decade ago can be installed today at low cost. The original master plan has evolved to incorporate advanced fiber optics, smart-utility networks, and a wide array of sensors to manage city operations.

Technology is also profoundly changing the relationship that people enjoy with their cities and city administrators. Citizens of KAEC can report municipal issues directly to the city management via a dedicated app, allowing information to be acted upon quickly while reducing the time and cost of providing essential community-care services. A central incident-control room monitors more serious issues such as traffic accidents and petty crime, coordinating the emergency and security services through a real-time city-information system.

Technology will be a major factor in city planning far into the future. The adoption of autonomous vehicles (AVs), for example, could have a profound impact on urban design. What will it mean to be able to significantly decrease the number of vehicles on the roads? What do AVs mean for residential spaces? To commuters? To parks and pedestrian areas? These are among the many questions that KAEC is working through today. The widespread use of AVs may be a decade or more away, but planning a new city requires thinking at least that far ahead.



Amarna is an object lesson in the dangers of building cities on little more than a political whim. Every city needs a reason to exist. It's not enough to build infrastructure: cities need to compete economically and be attractive to all kinds of people. Those that fail in these respects will, like Amarna, disappear into the deserts of history. By focusing on creating and maintaining a sustainable economic cycle, KAEC is applying the lessons of the past to build for the future. 🌐

Fahd Al-Rasheed is the managing director and group CEO of King Abdullah Economic City.

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