Oculus Complex in Dubai

There will surely come a day when Dubai runs the world's reserves of hyperbole dry. Dubai represents the will, vision and ambition of our species. Yet many believe it shines an unflattering light on our tendency for folly and hubris, creating a market for exorbitant luxury that leaves the world's environmentalists with their heads in their hands.

Even without the twin threats of climate change and a global economic recession, Dubai's grandiose plans might seem shortsighted to some. Is it really wise to be building at all, let alone on this scale, in a place that the United Nations describes as one of the most "water-imperiled" environments on the planet, but where per capita water use is three times the global average?

It is grotesque that while the world's poorest people face the loss of their homes and livelihoods, as well as disease and starvation, because of climate change, the world's richest people think it's acceptable to waste precious energy so pointlessly.

The rapid growth of the rural and urban economy over the last decades has had a profound effect on Dubai's natural resources. With an ever-increasing population of and ambitious economic developmental projects, the important challenge in the next decade is to balance available resources within sustainable environmental, economic and social frameworks.

Today's buildings are striving to meet that 'common sense design' head-on despite a number of environmental setbacks. Technically speaking, the biggest challenge is the climate. Providing a comfortable indoor area when it is 50 degrees outside is extremely challenging. There is also no abundant natural supply of fresh water in the UAE. Communities generally have to source fresh water from desalination sources, which is a process that requires high-energy consumption.

In the next years it is anticipated that the quality of life and the built environment will attract expatriate immigration and tourists who will in turn, leverage business investment and synergize development of a world-class cultural and commercial center. Not only does this massive growth provide opportunities for innovative town planning and state of the art architecture, it will also demand close attention balance the increasing demand in energy. Promotion of sustainability will be an overriding consideration for economic and social well-being.

This growth of energy demand and consumption has been as result of a number of factors, prime amongst which is economic growth and the demographic pressures of a growing population. Equally important to these factors are the heavy subsidies on the domestic energy market, which encourages overconsumption.

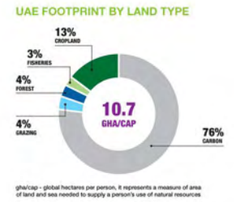
Oil now contributes only 3% to Dubai's GDP, so a reasonable way would be to sustain Dubai's environment, ensuring that it is safe and clean. Conservation of energy and reduction of green- house gas emissions and concerns for the climatic impacts of development will probably be among the attractions of living in a modern community.

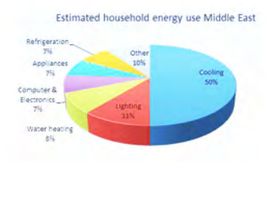
UAE has amongst the highest Ecological Footprints per capita in the world with 76% of the country's Ecological Footprint is due to carbon dioxide emissions, resulting largely from consumption of energy and desalinated water. Dubai now considers using nuclear power to desalinate its fresh water.

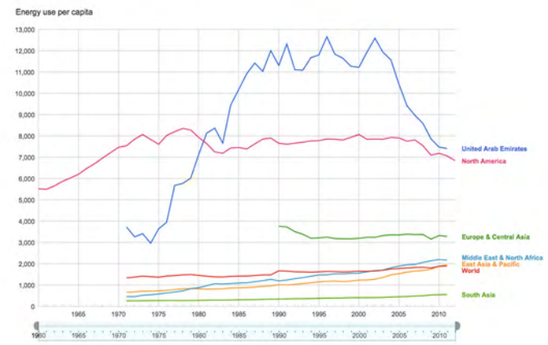
The UAE is the world's 5th highest consumer of energy per capita in the world. Much of this water and energy consumption is wasteful and can be easily avoided. This wasteful consumption contributes to two key issues: water and electricity shortages and a rising carbon footprint that contributes to climate change.

Dubai is one of the largest carbon-emitting areas in the world. Burning fossil fuels (primarily gas) to produce electricity and water releases greenhouse gases, mainly CO2. In fact, approximately 90% of the CO2 that the UAE emits is caused by the process of burning fossil fuels to provide energy. As excess CO2 builds up in the atmosphere it traps additional heat, causing temperatures to rise. By 2050, they're projected to be 2.1ºC to 2.8ºC warmer than the historical average, and from 4.1ºC to 5.3ºC warmer by 2100. An already hot climate is getting even hotter.

Scarcity of resources and the escalating cost of electricity are two of the biggest drivers for improving energy efficiency. Obviously, environmental concerns are also another major incentive for the continuous pursuit of energy savings. There are a number of issues that need to be balanced in sustainable design strategies, which include financial viability, socioeconomics and engineering feasibility.







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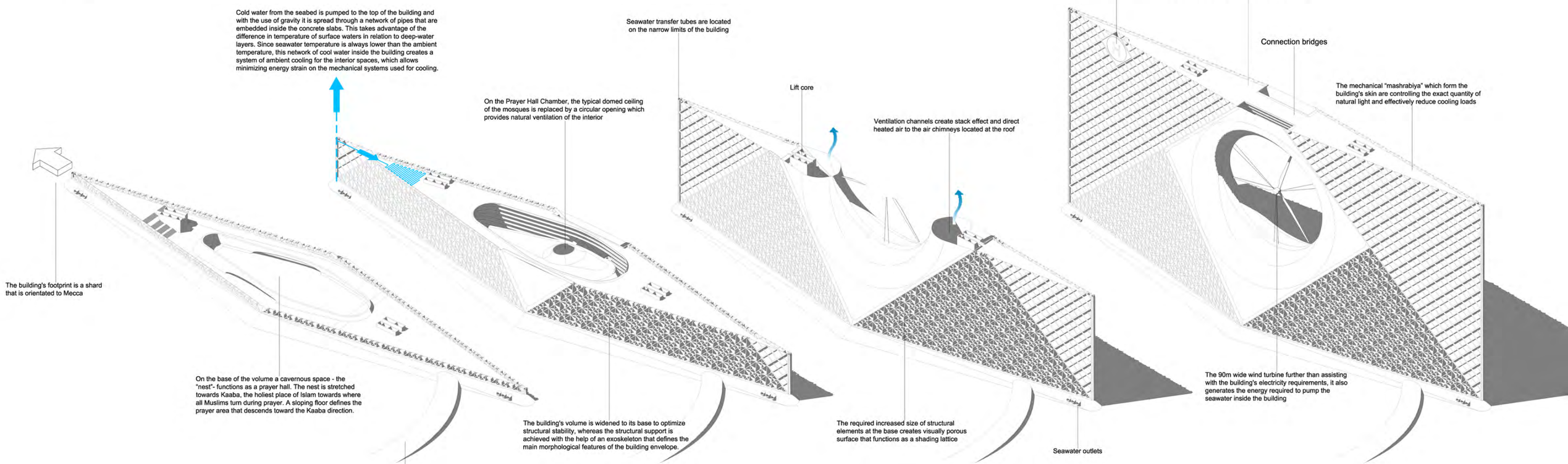

Purpose of this project is to significantly improve the energy efficiency through innovative approaches to architecture and engineering. The Oculus building is designed as a contemporary reinterpretation of traditional elements of Arab vernacular architecture. A sustainable environmental concept determines the orientation, layout and design of the building envelope.

The prevailing wind in Dubai comes from the northwest direction. The building raises as a wall that faces the wind in the open sea, developed around a circular opening that houses a giant wind turbine. Building's form directs air through the opening and speeds it up, which increases power production.