

Protecting Green Spaces

Integrating natural and built environments is a vital ingredient in the sustainable development of urban centers. Being one of the world's most arid regions, the protection of green spaces in the Middle East is fundamental to the creation of a livable, aesthetically-pleasing and ecologically sustainable geographical entity. The unending benefits of green spaces include the reduction of air pollutants, the renewal of freshwater, the decrease in soil erosion and the improvement of public health.

Lifeline For Modern Cities

Green spaces are an excellent indicator of the ecological health of a city. As Tatiana Antonelli, Founder and Managing Director of online environmental directory Goumbook, says "The role of green spaces is vital for a modern city as green belts, natural reserves, urban parks, wetlands and green roofs have the ability to contribute positively to public health, youth development, community building and environmental conservation".

The green movement is sweeping across the world in one form or the other, and the Middle East is no exception. "The Middle East is witnessing a steady increase in the number of protected natural lands, ecological reserves, wetlands and other green areas dedicated to providing healthy habitats for indigenous animals and plants", adds Tatiana.

Most of the neighborhoods in the Middle East have a park and there are plans to build more in the near future. Capital Garden (Abu Dhabi), Corniche Park (Abu Dhabi), Creek Park (Dubai), Jumeirah Beach Park (Dubai), Mamzar Beach Park (Dubai), Sharjah National Park (Sharjah) and Saqr Park (Ras Al Khaimah) are some examples of green oasis scattered across the concrete landscape.

Water Scarcity And Green Growth

The transformation of any desert into a park comes at a big cost to the scarce water resources as a huge amount of water is consumed daily in the development and maintenance of parks and other green spaces. Being the world's most water-scarce region, it would be illogical for Middle Eastern nations to divert highly precious natural water or desalinated water for urban landscaping activities.

To maintain a fine balance between water scarcity and green growth, it is essential to implement water conservation strategies like greywater recycling, smart landscaping and modern irrigation techniques. Sunanda Swain, a Dubai-based green buildings expert, says "The water demand for green spaces can be minimized through carefully selecting plants, using modern irrigation strategies and promoting the reuse of recycled municipal wastewater".

Reusing Municipal Wastewater

Greywater and sewage water recycling can be instrumental in easing water availability

problems for the maintenance of green spaces. The use of greywater or Treated Sewage Effluent for irrigating landscapes is vital to sustain parks, golf courses, resorts, streetscapes etc. Treated sewage is actually a better alternative than desalinated water as plants need some of the minerals for growth that are removed from seawater during the desalination process.

Sustainable Landscaping

The Middle East is characterized by harsh weather, degraded soils, and scarce water resources. However, careful planning and smart landscaping techniques can reduce the consumption of water for creation and maintenance of green spaces.

Landscape design in the U.A.E., Saudi Arabia and other Middle East nations should consider natural resources, especially for the selection of the right plants, which should be adapted to the natural environment. As Sunanda Swain explained, "Plantings should be designed such a way that plant species with similar soil and micro-climate requirements and water demand are grouped together. Native and adaptive drought-tolerant plants require less water for development and survival."

The Role of Xeriscaping

Xeriscaping is a recent approach being applied in the Middle Eastern desert landscapes, which uses a low-water landscape concept, especially developed for use in countries with low rainfall and very limited water resources. Xeriscaping in the U.A.E. is focused on using aesthetically-appealing and drought-tolerant native plants instead of water-thirsty exotic plants.

"Native plants like Ghaf (*Propolis Cineraria*) and Acacia (*Vachellia Nilotica*) are known to help fight desertification and reduce sand movements, offering shelter to many native species", explains Tatiana. Ghaf is a drought-tolerant, evergreen tree which can be seen growing on low sand dunes, undulating sand sheets and along margins of gravel plains of Abu Dhabi, Dubai, Sharjah and Ras Al Khaimah.

Soil health is also a crucial factor for the protection of green spaces in desert-dominated Middle East. Sandy soils have larger particles and do not retain water well, but provide good aeration. Adding organic matter, such as compost, to sandy soil can improve its quality, enabling better water retention.

Smart Irrigation Techniques

Smart irrigation strategies and water efficient irrigation networks, such as sensor controlled and drip irrigation systems, can reduce water consumption by green spaces. Zone irrigation, the use of mulch and soil amendment techniques, can also help increasing water retention capacity of the soil and reduce evapotranspiration.

Another simple method to reduce water consumption is to avoid watering green spaces in the middle of the day and scheduling lawn irrigation for early morning or evening hours. Using drip irrigation systems or a cycle-soak method, instead of sprinklers, is also an attractive option for achieving greater water efficiency and improved water penetration.

All GCC countries are plagued by high irrigation water losses in sandy soils as the plants

have little time to use the irrigation water before it percolates to the water table. An interesting innovation is the development of water retention additives that has the potential to cut irrigation water by as much as 50%.

Future Perspectives

With more and more public parks and gardens being planned across the region, it is imperative for policy-makers and urban planners to strike a balance between water consumption and the greening of urban habitats. Water conservation is set to become a major consideration in all its uses in the near future, especially for the development and maintenance of green spaces. Technology is going to play a key role in the battle to create green cities in the Middle East.

As Tatiana Antonelli says, “Sensors can be applied to indigenous trees to study their internal water flow and calculate rate of CO₂ absorption and O₂ production, satellite images can identify underground water while drones can help count trees and analyze natural formations.

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