

5 Ways Landscape Architects Can Influence Climate Change

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The leaders of the world recently met to discuss global climate change and its impacts on all forms of life and the natural and built environment. It will be up to many individuals working together to make the necessary changes that we need to reduce the effects of global climate change and to mitigate the impacts of the climate changes that are already in motion. Everyone can lend a bit of expertise and the design community in particular has long thought about sustainable initiatives, energy efficient building, and ways to reuse and adapt buildings and materials. Here are 5 ways landscape architects can influence climate change through sustainable measures.

1. WATER EFFICIENCY

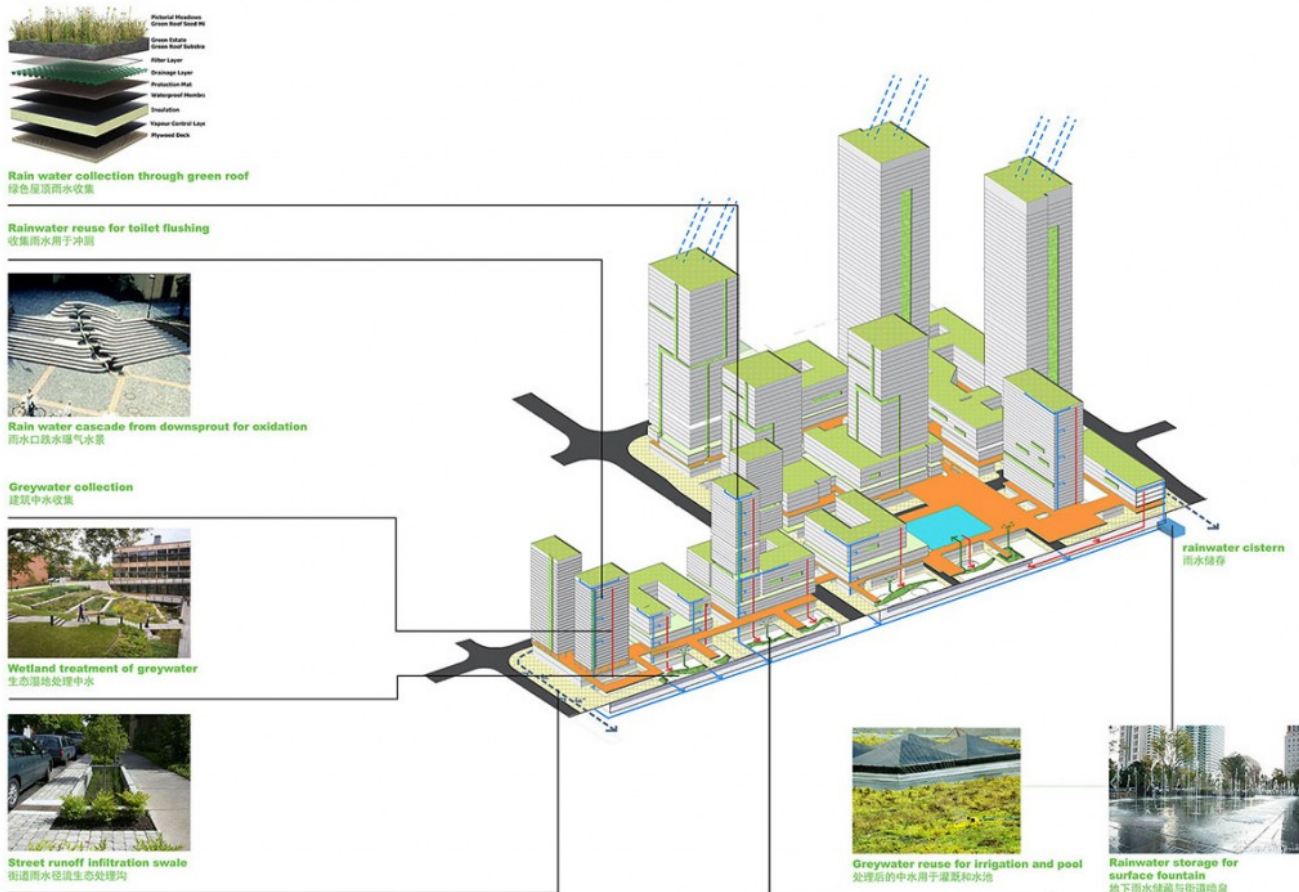
Research has shown that temperature increases will have an effect on the hydrologic cycle. An increase in evaporation rates lead to decreases in precipitation amounts, changes in timing, and intensity rates. As a result, we are likely to face longer periods of drought and a slower groundwater recharge process. We value design approaches that respond to the need of higher water efficiency. Through design elements like rain gardens, bioswales, constructed wetlands, permeable pavers, rooftop gardens, and many more, we can help rain water and storm water penetrate into the ground instead of running off. We have advocated for these elements in many of our projects.



Miami University, Western Campus Dining



University of Rhode Island, Center for Biotechnology and Life Sciences



Shenzhen Bay Tech-Eco Park, Shenzhen, China

2. RECYCLED MATERIALS

Designers can specify local and recycled materials to reduce construction waste heading to the landfill. In the United States, construction projects account for as much as 40% of the 251 million tons of consumer waste generated each year, and it is estimated that less than a third of that gets recycled. As Landscape Architects, more efforts should be made to reduce construction waste by salvaging and reusing on-site materials, which in turn would help improve air quality, produce less landfill waste, and save old growth timber products (i.e. architectural trimmings, posts, support beams, etc.) that in many cases are no longer available new. By transforming on-site materials into unique artwork or reformed design features, we hope to bring sustainability and originality into design.



Massport Navy Fuel Pier Airport Buffer, Boston, MA



Fresh Pond Reservation, Cambridge, MA

3. REDUCE HEAT-ISLAND EFFECTS

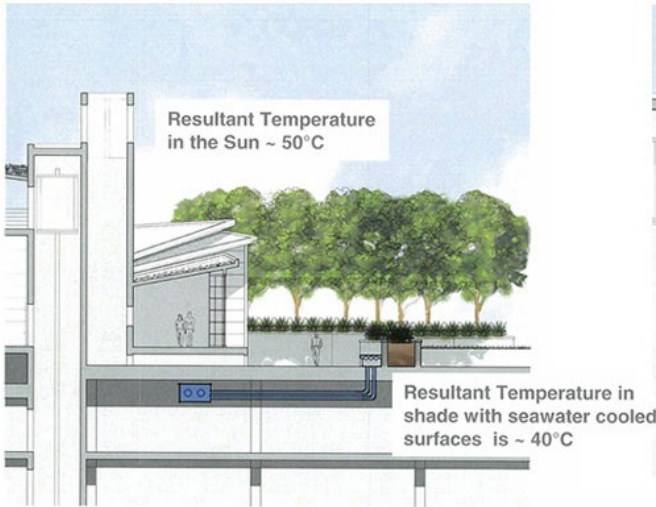
Green roofs, open space, hardscape and softscape elements can reduce the heat-island effect of a building. This helps lower the energy needed to operate a building and mediates the temperature of the project site. Urban heat island effect is recognized as a rise in temperature of an urban center compared to that of the surrounding rural area by as much as five to nine degrees Fahrenheit (F). This unnatural rise in temperature leads to the emission of more Greenhouse Gases through the high demand on artificial cooling during peak summer hours, which in turn contributes to global warming even further. A major contribution is the massive amounts of heat that urban structures generate where they consume and re-radiate solar radiations and produce additional anthropogenic heat sources (i.e. vehicles, power plants, air conditioners, etc.). To help mitigate this problem, as landscape architects we can bring urban trees, open green space, lighter colored paving material, vegetative roof + wall systems, and photovoltaic shade canopies into our design. Take urban forests, for example. By providing shade coverage to shelter buildings, air-condition units, as well as outdoor spaces, urban trees are able to lower the temperature

down in the city to measurable beneficial results. Furthermore, it also mitigates the climate change through its ability to store and sequester carbon dioxide as well as evapotranspiration.

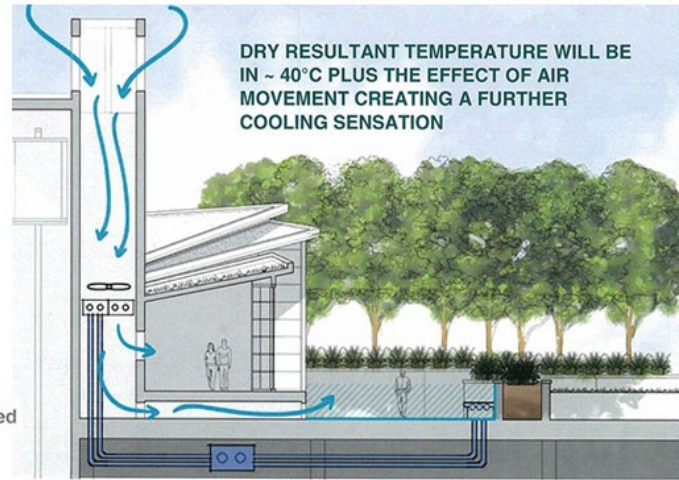


American University in Cairo, University Green

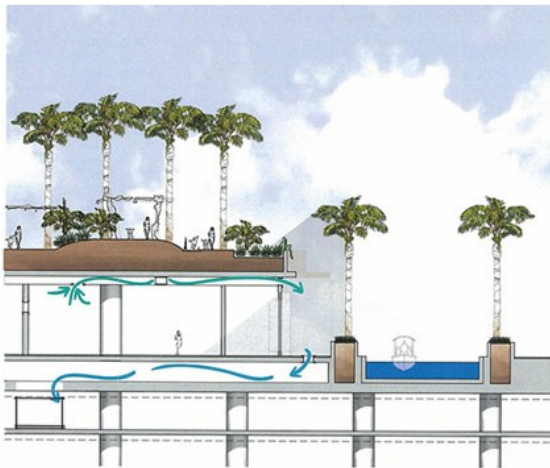
Radiant cooling for pavilion benches



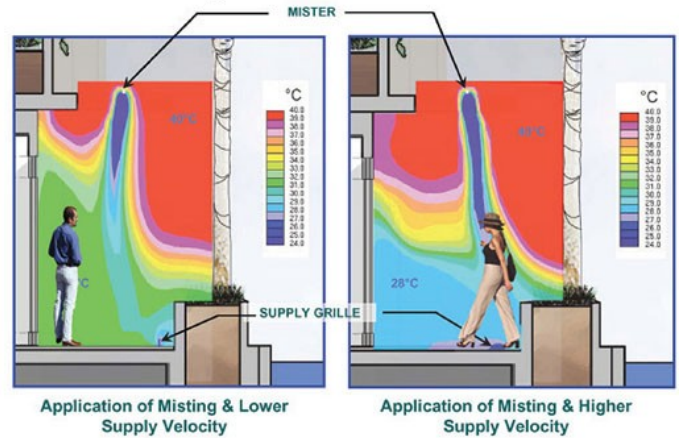
Active wind towers and radiant cooling



Use of 'Clean' Exhaust Air



Chilled Water Misting



Shams Abu Dhabi, UAE

4. PROMOTE REGIONAL MATERIAL

When it comes to materials, a piece of wood that is harvested, manufactured, and purchased from hundreds of miles away may be the same price as the one found regionally. However, the efforts related to harvesting and transportation may result in significantly different environmental costs. We recognized that our carbon footprint can be reduced by shortening the transportation distance, and we are cautious about the choice of materiality in our design. To us, regional materials also mean the opportunity to support the project through both design and programming. With urban farming, on-site nurseries, and rain water harvesting, we encourage and promote self-sufficient projects.



Southern New Hampshire University Library / Learning Commons, Manchester, NH



U.S. Embassy, Oslo, Norway

5. ENCOURAGE ALTERNATIVE TRAVEL

Although there are several different types of Greenhouse gases that contribute to global warming, Carbon Dioxide released by automobiles plays a significant role. This has encouraged all of us to rethink the way we commute. Landscape architects have advocated for low carbon alternative travel through designs like complete streets (which includes bike paths, trails, sidewalks, and bus stations) to encourage sustainable modes of travel. In each design case, we have tailored our design in response to fit cohesively within the community to ensure they will be used.



MIT Vassar Street, Cambridge, MA



Main Street, Concord, NH



Franklin Street, Portland, ME

Sources:

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