JUNE 2020





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SPECIAL REPORT

Landscape Solutions on the Front Lines of Climate Change

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Landscape Solutions on the Front Lines of Climate Change

Our built environment needs to be retooled in order to mitigate and adapt to global climate change. Landscape solutions, which are designed to work with natural processes, are often overlooked but have tremendous potential to yield high returns. As this report demonstrates, landscape solutions at the site, neighborhood, and even city scale are making communities more resilient while providing recreational opportunities, economic development, social cohesion, and a host of other benefits.

Introduction

Miami Beach: A City in Peril

In response to sea level rise and what has become routine flooding, Miami Beach embarked on an ambitious \$500 million plan that includes pumps, raising roads, and incorporating green infrastructure. Restoring natural areas and the creation of parks, living shorelines, new trails, and systems to capture rainwater on site are all part of this integrated water management strategy. Miami Beach has already spent \$100 million, and it's only getting started.

New York City and Norfolk: Rising Rivers, Growing Risks

Creating an island campus from scratch in the middle of New York City's heavily trafficked East River would be a logistical challenge under the best of circumstances. Creating one that will survive and flourish as seas rise and storms increase is far more demanding. Landscape played a primary role in the design of the Cornell Tech campus, reducing the risk of flooding and reinforcing the school's innovative mission.

The working-class neighborhoods along the Elizabeth River in Norfolk, Virginia, are also threatened by climate-related flooding. A series of landscape interventions are being proposed to address both the environmental conditions of the site and the needs of the residents.

This special report is co-sponsored by the Initiative for Global Environmental Leadership, the Landscape Architecture Foundation and Jacobs.

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Introduction

Our world needs to be reimagined and redesigned in order to mitigate and adapt to global climate change. That was the key takeaway from a June 2016 Landscape Architecture Foundation (LAF) summit held at the University of Pennsylvania's Wharton School. Urban areas are on the front lines of adaptation efforts, developing strategies to address sea level rise, climbing temperatures, increases in the frequency and intensity of storms and floods, drought, and the spread of diseases into new environments.

Even in dense urban areas like New York City, only about 12% of the land area is occupied by buildings. The other 88% is outdoor space that includes streets, parks, and public and private open spaces. These areas — and how the buildings are located within the system — make up the urban landscape. The outdoor systems and spaces serve critical functions and are a vital part of each community's character, brand, resilience, and health.

This outdoor landscape represents a tremendous opportunity to retool our built environment to mitigate and adapt to climate change, but engineered solutions like seawalls and pumps often dominate discussions and budgets. Landscape solutions, which are designed to work with — not against — natural processes, are often overlooked but have tremendous potential to yield high returns for landowners, investors, and the public. Unlike hard engineering strategies, landscape solutions are multi-use and multi-functional, providing a variety of proven environmental, social, and economic benefits.

"A waterfront park can be designed to store and filter water, offer trails and other recreational amenities, be a driver for economic development and revitalization, provide habitat for birds and pollinators, bolster community by providing space for events and gatherings, and address issues of access and equity," LAF CEO Barbara Deutsch explained. Landscape solutions are often decentralized and can be incorporated on public and private property and at a range of scales, making them incremental and adaptable. This green infrastructure can be integrated with engineered solutions or designed to work in concert with them. Landscape architecture is the discipline trained to design for the outdoor environment and its built, natural, and cultural systems. Landscape architects integrate function and give artistic physical form to seemingly disparate goals such as resilience, recreation, and placemaking.

The call to action at the LAF summit was clear about the discipline's role: "The urgent challenge before us is to redesign our communities in the context of their bioregional landscapes, enabling them to adapt to climate change and mitigate its root causes. As designers versed in both environmental and cultural systems, landscape architects are uniquely positioned to bring related professions together into new alliances to address complex social and ecological problems."

Landscape architecture projects at the site, neighborhood, and city scale are making communities more resilient while providing recreational opportunities, economic development, social cohesion, and many other benefits. Confronting the climate crisis will demand a myriad of solutions at all scales. Landscape solutions add significant value and should be used to their fullest potential.



Miami Beach: A City in Peril

Landscape solutions are being put to the test in cities such as Miami Beach, Florida, whose challenges are tightly bound to climate change. The city, where flooding has become routine during so-called "king" tides, has embarked on an ambitious \$500 million project to install new stormwater pumps, raise roads to levels that will, at least theoretical-ly, protect them for 30 years, and use green infrastructure to mitigate the impacts of inevitable sea level rise. A 2018 review by the Urban Land Institute's Advisory Services Panel praised the city's proactive work, regional collaboration, and ongoing assessment of its strategies. Among other recommendations, the panel identified opportunities for Miami Beach to broaden its approach to actively use green and open space, take advantage of natural capital, and elevate aesthetics by building on the area's rich arts and cultural heritage. In essence, it suggested that landscape solutions should be an integral part of the city's climate adaptation strategy.

South Florida is flat and low-lying, much of it less than five feet above sea level. Home to over 90,000 residents, Miami Beach occupies a 7-mile stretch of coastal barrier island and is consistently identified as one of the U.S. cities most at risk from sea level rise. As such, the city has been a leader in adaptation planning and embracing the need to learn to "live with water."

Miami Beach occupies a 7-mile stretch of coastal barrier island and is consistently identified as one of the U.S. cities most at risk from sea level rise.

Susy Torriente was the first chief resilience officer for the City of Miami Beach, a role she was in for four years until December 2019. She is now the director of city resilience at Jacobs, a global professional services firm.

"South Florida as a whole has been focused on climate adaptation and mitigation for the last 10 years," Torriente said. "That's when the Southeast Florida Regional Climate Change Compact was formed between Broward, Miami-Dade, Monroe and Palm Beach counties. Miami Beach was the first city to act and to decide to make investments that will help us adapt to climate change. Private-sector partners are helping find solutions to these complex problems. It's necessary to have smart, action-oriented teams working with City Hall. With landscape architects and urban planners on board, you have a better result at the end of the day."

Jacobs has been working with Miami Beach since 2008. The firm is currently developing an integrated water management strategy with blue-green stormwater infrastructure, which combines "green" systems that use vegetation and/or soils with "blue" systems such as detention ponds. Instead of directing water into pipes and ultimately out into the Biscayne Bay, blue-green infrastructure captures and treats rainwater where it falls by storing it, allowing it to be absorbed into the ground or used by plants. This improves water quality, reduces flooding from small storms, and helps prevent saltwater incursion to which the region is acutely vulnerable because it sits on a porous limestone plateau.

Blue-green infrastructure such as rain gardens, green roofs, constructed wetlands, cisterns, and stormwater planters can be integrated into parks, along roads, at schools and other public facilities, and on residential and commercial properties. Another method is simply to increase or retain Miami Beach's green spaces, which filter water naturally. Collectively, these solutions are part of a holistic approach that can not only manage the water but also create new opportunities for recreation, improve community aesthetics, mitigate extreme heat, restore ecosystem health, and more. Through Jacob's work to identify and prioritize opportunities, blue-green infrastructure will be integrated into the city's capital improvement projects and encouraged in private development and redevelopment.

Resilience in the face of larger storms and sea level rise also means preserving and restoring natural areas and shoring up coastlines. Historically, coastal mangrove forests were a bulwark against flood damage, but the destruction of those forests was an inevitable result of coastal development. According to Jade Paul, Chicagobased principal landscape architect for sustainable urban systems at Jacobs, "Miami Beach is a barrier island in its natural form, but because the coastlines have become armored and secured, you can't just plant mangroves and restore the conditions. So, our work takes a hybrid form, combining the gray and the green. Achieving living shoreline solutions using native plants is always the goal, but you have to do it where it makes the most sense."

"We are actively looking to bring back mangroves," said Elizabeth "Betsy" Wheaton, Miami Beach's environmental and sustainability director. "The plants have started to recruit [re-establish themselves] around our crumbling seawalls, and when we rebuild those walls, we're installing them further back to make room for planting mangroves on the water side."

The city's east side is more protected (with a robust dune system), than the lower and more vulnerable Biscayne Bay side. With that map in mind, Miami Beach is also taking a closer look at its existing trees. "We're making sure we're putting trees with a high salt tolerance in the right place and planting them so they'll last a long time," Wheaton said. To that end, the city is working with landscape architects, including Calvin, Giordano & Associates of Fort Lauderdale for master plan planting guidelines, and Ohio-based Davey Resource Group, which developed the Urban Forestry Master Plan.

Matt Friesen, director of urban design and landscape architecture at Jacobs, said that lessons the company learned from working to redevelop Florida's Tyndall Air Force Base, which sustained a direct hit from Category 5 Hurricane Michael in 2018, are being applied in Miami Beach. "Coastal resilience strategies are big drivers there also," he said. At Tyndall, that means planting native longleaf pine, which is naturally resilient to climate change effects and now covers just 3% of its pre-settlement range. The goal, at Tyndall and in Miami Beach, is to have regional natural processes "functioning as close to possible to what they were before humans showed up on the block," Friesen said.

CASE STUDIES

Savino & Miller Design Studio has been deeply involved in developing plans and designs for landscape solutions in Miami and Miami Beach for 30 years. Principals Barry Miller and Adriana Savino offer case studies from the front lines as climate change affects South Florida.

First proposed in 2014, a former golf course in the Bayshore neighborhood of Miami Beach is being replaced with a 20-acre park with a lake in the middle. "When we first proposed our plan, we said the lake would be great for recreation, and also great because it gave us an opportunity to re-plumb the neighborhood," said Barry Miller. "While raising the streets, we could have the water runoff go into our open space instead of the storm sewer and out into the already challenged Biscayne Bay."

"We are actively looking to bring back mangroves."

 Elizabeth Wheaton, Environmental and Sustainbility Director, Miami Beach

That proposal met with opposition from the city's chief engineer and others. "We were chased out of the meetings," Miller recalled. But after consultation with outside experts, Savino & Miller were invited back in last year. "There'd been a 'pumps and pipes' approach that involved raising seawalls, eradicating mangroves and damn the torpedoes, but it's changing dramatically," Miller said.

Ralph Munroe's The Barnacle is the oldest house in its original location in Miami-Dade County, dating back to the founding of Coconut Grove neighborhood in the 19th century. But despite its location on a limestone cliff, the house was flooding during sunny-day king tides. "You can't get permits to go out from the property into the bay, so our solution was an on-site retreat, creating a living shoreline with 60 feet of the property," Miller said. "Instead of building a tall seawall, this plan gives us an opportunity to have a coastal marsh with a boardwalk. Funding for phase one of the plan is now complete."

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A third project is a collaboration between Savino & Miller and RSM Design for Miami Waterwalk, 16 miles of walking and biking paths tying together 30 public and private waterfront spaces. The plan calls for a 25-foot-wide people-oriented strip from the seawall in, with accompanying mangrove planting in key locations, seagrass protection, and redeveloped fish habitat. *Fast Company* honored the project with a "World Changing Ideas Award" in 2019. "We need new thinking about how we treat the waterfront, including the use of barrier islands," said Savino.

A WORK IN PROGRESS

Miami Beach has already spent \$100 million, but it is just getting started. Pumping stations, which treat stormwater before returning it to the bay, have begun to appear all over the city, and 90 are planned. At the end of 2019, just 15% of the stormwater program had been implemented, and the end date is a moving target. There's some concern among property owners that elevated streets will dump water on their properties and make flooding worse, and they're being accommodated with drains that connect to the municipal stormwater system. Torriente said that the city is still seeing sunny-day flooding at seasonal king tides, but where there are elevated roads and pumps, "it's working — the water moves away more quickly."

Miami Beach and its residents are at the forefront of adapting to climate change and designing new ways to live with water. The blue-green infrastructure recommendations from Jacobs and the work of landscape architects including Savino & Miller Design Studio will ensure that future projects in Miami Beach incorporate landscape solutions, which unlike drains and pumps can provide beauty, ecological value, and opportunities for recreation along with water management and flood protection.

For Wheaton, "Doing nothing is not an option for a city that brings in millions of visitors every year. We have made the decision to look at the challenge of sea level rise and adapt to it."



New York City and Norfolk: Rising Rivers, Growing Risks

When it comes to climate change and flood risk, cities and towns tend to focus on massive infrastructure projects such as seawalls, levees, pumps, and pipes. By reimagining and reshaping the entire landscape – everything from parks and plazas to streetscapes and playgrounds – landscape architects are helping communities mitigate and adapt to the growing threat of climate change.

While the approach they take is always holistic combining engineered and natural systems to address both environmental and social issues — the solutions landscape architects create are as individual as the places and people they serve. Rising sea levels threaten all low-lying areas, but the landscape architects creating a high-tech campus on New York City's Roosevelt Island faced very different challenges from the ones confronting their colleagues in the working-class neighborhoods of Norfolk, Virginia.

CORNELL TECH: AN ISLAND CAMPUS IN THE MIDDLE OF MANHATTAN

Once the site of a smallpox hospital, a workhouse for petty criminals, and the New York City Lunatic Asylum, Roosevelt Island is now home to a small residential community, a four-acre park commemorating President Franklin D. Roosevelt's "Four Freedoms" speech, and Cornell Tech, a new kind of college conceived after the 2008 recession as a way to accelerate the growth of the city's technology sector.

Creating an island campus from scratch in the middle of New York's heavily trafficked East River would be a logistical challenge under the best of circumstances. Creating one that will survive and flourish as seas rise and storms increase is far more demanding. To avoid flooding, the Roosevelt Island site must be raised higher than the area's 500-year floodplain. And with future floods threatening the city's power supply and water treatment plants, the campus must be made as self-sufficient as possible.

"Still, from a landscape perspective, working on an island in the middle of New York is pretty incredible," said Karen Tamir, the principal in charge of the project for landscape design firm James Corner Field Operations, known as Field Ops. Not only does the site combine dramatic views of the Manhattan skyline with the tranquility of a coastal community, it also offers the kind of open space most urban designers can only dream about. In fact, one of Cornell's design requirements was that the campus reserve at least 20% of its 12 acres for open space.

"Still, from a landscape perspective, working on an island in the middle of New York is pretty incredible."

- Karen Tamir, Principal, James Corner Field Operations

Cornell also wanted the campus to facilitate informal interactions among the varied members of the school community — faculty, business leaders, tech entrepreneurs, and students. Instead of a traditional campus, where most of the work happens in classrooms and labs, the university asked the designers to create a campus that encouraged "creative collisions" as people walked from building to building and gathered casually in small groups.

The design approach Cornell adopted was as innovative as the open-style campus the school envisioned. Rather than giving architect/developer teams the lead, with landscape architects filling in the spaces between the buildings, Cornell elected to start the design process with a site team that included Field Ops and SOM, the firm leading the development of the campus master plan. "The landscape was seen as the glue that holds the campus together," said Tamir.

The first phase of construction began in 2015. One of the first steps was to raise a central ridge seven feet, which was two feet above the level required. Not all of the earth needed to achieve the nearly seven-foot elevation was brought over on barges. The Field Ops team made use of masonry left behind by the razing of a Depression-era hospital on the site. They also eased the ridge into the landscape by creating a gentle slope leading up to the campus. According to Tamir, pedestrians walking up from the surrounding roadway barely notice the incline. In fact, the rise is gradual enough to qualify as accessible under the Americans with Disabilities Act.

"The landscape was seen as the glue that holds the campus together."

Karen Tamir, Principal, James Corner Field Operations

At the top of the ridge, a quarter-mile long, tree-lined path known as Tech Walk runs like a gently curving spine from one end of the campus to the other. As they developed the master plan for the campus, the landscape architects created a loose framework to guide the placement of buildings along this path. "It's a different way of thinking about a quad, because here the ridge running through the campus is the central space where people meet and gather," said Tamir.

To facilitate their collaboration with the building architects, the site team carved out generous spaces — Tamir calls them "scoops" — within which the architects have complete freedom. As the building designs take shape, the landscape architects adapt their plans to accommodate building details such as doors and windows, cantilevers, garages, and other features. Once the architects' plans are complete, Field Ops comes back in. "We bring the landscape in from the public space all the way to the doors and walls of the buildings. It's a really interesting way of working," Tamir said. The landscape design also includes a series of outdoor rooms along Tech walk. The first is the Entry Courtyard at the north end of the ridge. As people enter the campus, they can walk around the circular cluster of trees in the middle of the courtyard or stop and sit on the wooden benches circling the small bosque of trees.

Additional outdoor spaces are designed to reflect the character and grade of adjacent buildings. The landscape architects designed an outdoor café area for the LEED Platinum Bloomberg Center, the academic hub of the school, as well as an area with a picnic table large enough to accommodate a class.

The Tata Innovation Center across the way is where students looking to commercialize ideas, startup entrepreneurs and teams conducting groundbreaking research meet. The conversations that start inside can continue on the wide grassy seating steps outside the main entrance.

And at the bottom of the steps, Tech Walk expands into large multi-use space known as Campus Plaza. This central gathering spot is designed without any permanent structures or plantings that might limit its usefulness in the future.

All of these outdoor rooms — the café, the grassy steps and the Campus Plaza — overlook a sprawling open lawn where students can visit or study while enjoying the incredible views, or gather for school-wide activities including commencements.

This lawn lends a bucolic charm to the campus, but it also provides essential environmental services. To ensure the campus can supply all its own power, solar panels and a small generating plant on campus are supplemented by 80 closed-loop geothermal wells under the lawn, each 400 feet deep. And helping to reduce the school's reliance on outside water treatment plants, a 40,000-gallon rainwater harvesting tank under the lawn provides non-potable water for the Bloomberg Center's plumbing system, cooling tower and on-site irrigation.

On rainy days and during the increasingly intense storms that lie ahead, the water that doesn't enter the tank will flow harmlessly down from the ridge into trench drains lining campus paths. From there, the rainwater will flow into biofiltration gardens where it is naturally cleaned before being released into the river.

Only the first phase of the Cornell Tech campus has been completed so far. By the time the still-evolving school is completed in 2037, the current enrollment of 300 may have grown to 2,000 students. No one knows for sure how high the East River will have risen by then or how frequent mega storms like Hurricane Sandy will have become. But whatever happens, the landscape architecture of the campus promises a bright future for New York City's technology sector.

THE OHIO CREEK PROJECT: OFFERING ENVIRONMENTAL AND SOCIAL RESILIENCY

Flooding is nothing new to the residents of Chesterfield Heights and Grandy Village in Norfolk, Virginia. Wedged between Interstate 264 and the Elizabeth River, the predominantly African-American neighborhoods depend on two access roads, one of which, Kimball Terrace, floods with distressing regularity. When that happens, residents are cut off from their jobs and friends as well as from the rest of the city.

Climate change has made the flooding increasingly frequent. According to town officials, the area used to flood two or three times a year. Now it's more like 10 times a year.

It doesn't take much to cause problems. Everyday rain showers and high tides can make Kimball Terrace impassable. The problem is especially bad when storms dump heavy rains on the region. And intense storms are becoming increasingly frequent in the area. According to local officials, Norfolk experienced more major coastal storms and hurricanes in the 2000s than in the four previous decades combined.

Rising sea levels are making matters even worse. In fact, sea level rise in the region is accelerating at nearly twice the global average. Climate change is only partly to blame, because rising water is just part of the problem. The other issue is subsidence. The Hampton Roads region, which includes Norfolk, has been losing elevation since the last Ice Age. And the natural process has been compounded by the withdrawal of water from underground aquifers. The more water that is pumped out to meet local needs, the more the earth sinks. The combined effect of sinking land and rising water makes the region's relative sea level rise the worst in the U.S. after New Orleans, Louisiana.

Determined to find a long-term solution to the growing water problem, local officials met with experts from Norfolk, New Orleans and Holland in 2015 to consider how the region could benefit from the Dutch concept of living with water. Over the centuries, Holland has learned that the best way to avoid flooding is to manage water rather than resist it. Long-term success depends not on pumping water out but on allowing it in, collecting it, and then releasing it slowly and safely back into the sea. A workshop called the Dutch Dialogues brought a wide range of experts to Norfolk to brainstorm solutions based on the Dutch principle of living with water. There were landscape architects, civil engineers, architects, environmental scientists, geologists, and experts in hydraulics. A presentation by students from nearby Old Dominion University (ODU), who had been studying the issue and interviewing neighborhood residents, helped the team develop a proposal for the National Disaster Resilience Competition. With \$112 million in funding from the U.S. Department of Housing and Urban Development, the Ohio Creek Watershed Resiliency Project got underway.

SCAPE, a landscape architecture firm based in New York and New Orleans, led the planning for the park at the heart of the project. The new Norfolk Resilience Park will replace the muddy field that now runs between Chesterfield Heights and Grandy Village. To protect both neighborhoods from flooding during major storms, the park will include a vegetated berm along the river. Drains underneath the expansive lawn next to the berm will help keep the surface dry and channel rainfall back to the river. A nearby park area of longleaf pines will also help hold water, as will the soil and native plants, such as Prairie Dropseed, Black-Eyed Susans, and Little Bluestem.

In addition to mitigating the risks of flooding, the new park is also designed to boost the social resilience in the area. According to Kyle Spencer, deputy chief resilience officer for the City of Norfolk, relations between the residents of Chesterfield Heights, a historic district of single-family homes, and Grandy Village, a public housing neighborhood, are somewhat strained. "The two don't really intermingle very much, except for the Chesterfield Heights Academy where some of the kids go to school together," he said.

The new park will include ... green open spaces and trails, picnic areas, ball fields, chess tables, exercise equipment, and playgrounds.

To encourage residents of both neighborhoods to enjoy the park together, the city met with people from both Chesterfield Heights and Grandy Village to find out what features they wanted. Once it is completed in the next couple of years, the new park will include much of what they asked for — green open spaces and trails, picnic areas, ball fields, chess tables, exercise equipment, and playgrounds. A new fishing pier will be built where the amenity residents enjoyed in the 1950s once stood.

"We're hoping the park will not only bring people in from outside the community but also help bridge a gap between the Chesterfield Heights and Grandy Village neighborhoods," said Traci Munion, resiliency program manager for the Virginia Department of Housing and Community Development.

Local creeks are also being rehabilitated to bolster both environmental and social resilience. Architect David Waggonner, who initiated the first Dutch Dialogues in New Orleans after Hurricane Katrina, describes Norfolk's Haynes Creek as "a scrubby wetland that people don't even know is there because it's all overgrown." As part of the project, the creek will be cleaned up and surrounded by a berm so that it can hold much more water. A tide gate will also be installed. Before an approaching storm has a chance to swell the river and overwhelm the creek, the tide gate will be closed. That way, said Spencer, "the creek can serve as a stormwater storage area," and the water can be slowly released as needed. Like the park, the once-neglected wetland will become a local attraction, restored and equipped with kayaks and paddle boats residents can use to enjoy the scenic spot.

The nearby Ohio Creek is being left without a tide gate. Instead, a vegetated berm will protect the neighborhoods from flooding, and Kimball Terrace will be raised and rerouted to prevent it from being inundated whenever the creek overflows.

Once again, the change to the landscape serves a social purpose as well. The new road will avoid the unsightly and heavily trafficked industrial area that the current Kimball Terrace now passes through. "And we can provide a nice walking path along it and space for folks to get out and enjoy those wetlands that have been all cleaned up," said Spencer. The new, more pleasant street will not only allow residents to come and go without worrying about flooding, it will also help connect them to the rest of the city.

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USEFUL RESOURCES:

https://www.lafoundation.org/take-action/new-landscape-declaration

https://seflorida.uli.org/wp-content/uploads/sites/13/2018/09/Miami-Beach_PanelReport.pdf

https://www.remiamibeach.com/citywide/miami-beachs-chief-resiliency-officer-leaving-for-private-sector/

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https://rsmdesign.com/miami-waterwalk-named-fast-company-world-changing-idea/?fbclid=IwAR3LBv4Vrfr0zWHQG M6rLQZULX1mU4VWsHaP9i0iw0h1grAHGZ9M2dFhDPM

SPECIAL REPORT

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IGEL INITIATIVE for GLOBAL ENVIRONMENTAL LEADERSHIP

About IGEL

The Wharton-led, Penn-wide Initiative for Global Environmental Leadership (IGEL) promotes knowledge for business sustainability through world-class research, transformative teaching and constructive dialogue between top alumni, academic, corporate, government, and non-government organizations. IGEL is a hub for business and sustainability, connecting and leveraging academic capital at Penn to help business leaders of today and tomorrow to create more sustainable industries.

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Knowledge@Wharton is the online business analysis journal of the Wharton School of the University of Pennsylvania. The site, which is free, captures relevant knowledge generated at Wharton and beyond by offering articles and videos based on research, conferences, speakers, books and interviews with faculty and other experts on global business topics.

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LANDSCAPE ARCHITECTURE FOUNDATION

About LAF

The Landscape Architecture Foundation (LAF) works to increase the influence and impact of landscape architects to create a more sustainable, just, and resilient future. The foundation invests in research, scholarships, and leadership initiatives. Established in 1966, LAF is a 501(c)(3) nonprofit organization based in Washington, DC.

Jacobs

About Jacobs

https://www.jacobs.com/about

Eric Orts

Faculty Director Initiative for Global Environmental Leadership (IGEL) The Wharton School, University of Pennsylvania ortse@wharton.upenn.edu

Joanne Spigonardo

Senior Associate Director of Business Development Initiative for Global Environmental Leadership (IGEL) The Wharton School, University of Pennsylvania spigonaj@wharton.upenn.edu