THE INTERNATIONAL REVIEW OF LANDSCAPE ARCHITECTURE AND URBAN DESIGN

Topos

70 2010

Sustainability

BETTER CITY, BETTER LIFE SHANGHAI WORLD EXPO 2010 • **REGENERATIVE DESIGN** QIAOYUAN PARK • **FUTURE-ORIENTED DEVELOPMENT** NEW LIVING IN HAMBURG-JENFELD • **WATERSQUARES** BUFFERING RAINWATER IN CITIES • **PARACENTRIC ARCHITECTURE** STRATEGIC SOCIAL AND ECOLOGICAL PROJECTS • **RENEWABLE ENERGIES** LAND USE AND DESIGN CHALLENGE • **BIOCITY** SELF-ORGANISING SYSTEMS • **CARBON FOOTPRINT** FREE MARKET AND CLIMATE CHANGE • **ECO-CITIES** MASDAR AND XERITOWN • **SUSTAINABLE SITES** RATING SYSTEM

José M. Almiñana

THE SUSTAINABLE SITES INITIATIVE

The Sustainable Sites Initiative (SITES) is an endeavor to create the first performance-based rating system for the development, maintenance, and regeneration of landscape projects. Modeled after the Leadership in Energy and Environmental Design (LEED) rating system, SITES focuses on the space outside of buildings.

Imagine a site that has reestablished its ecological processes and natural systems to provide services that are essential to sustaining life on this planet. This imaginary site has been designed to integrate seamlessly with the regional hydrologic cycle by managing all the rainwater on-site, through infiltration and evapo-transpiration. Its soils that were once disturbed by previous development and activities, have been restored to support a biotic soil community capable of recycling nutrients (nitrogen, carbon) and cleaning water and air, and now it has the capacity to support diverse and resilient plant communities that are native to the eco-region where it is located. The process of designing and developing this site has engaged its users to create a diverse and dispersed ownership and to meaningfully contribute to the project outcome; the site now provides spaces for social interaction and outdoor activities, promotes sustainability awareness and education and encourages the equitable use of the site. As this design process outcome seeks to improve human health and well-being by fostering social and cultural improvements, it also has an overarching goal to lessen the site's carbon footprint, and it does this by becoming a living system, a landscape that is alive, that interacts with its occupants and that provides ecosystem services for intergenerational equity. This is the intention of the Sustainable Sites Initiative (SITES) and what it seeks to achieve for landscapes.

Sustainable sites come in all shapes and sizes. From a backyard garden to a housing develop-

The Queens Botanical Garden Visitor and Administration Center by Atelier Dreiseitl of Germany serves as a case study for SITES. Native species grow on the green roof of the building, which is accessible to the public. All rainwater that falls upon the site is treated as a resource and is collected, cooled, cleansed, and re-circulated for multiple benefits.

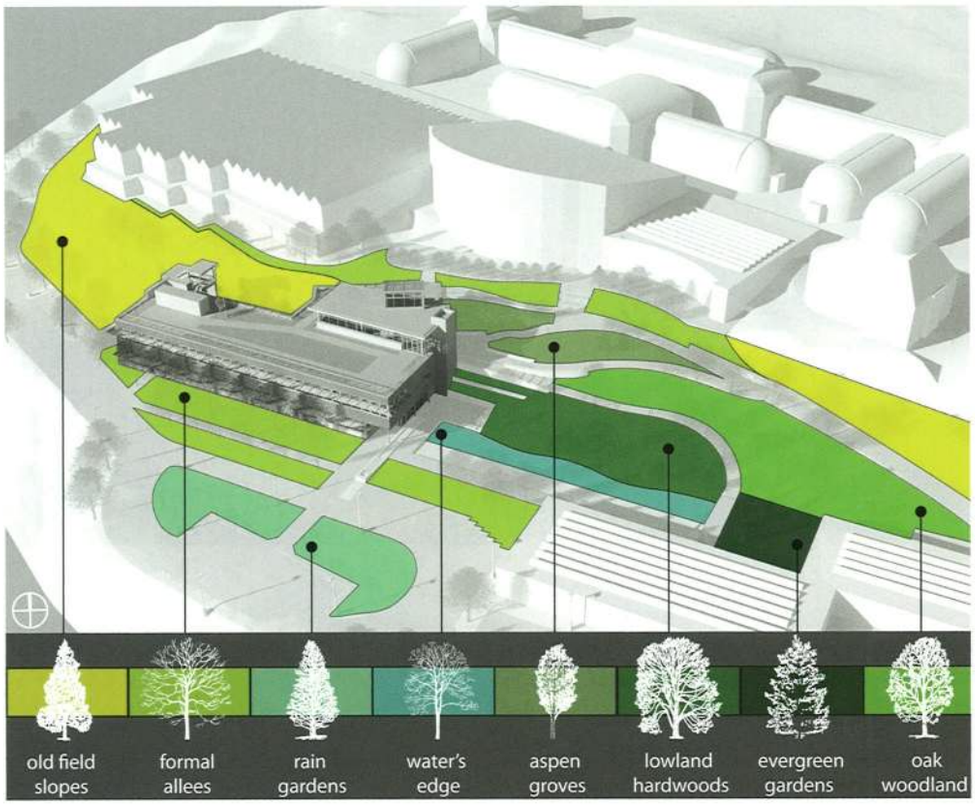
ment, all sustainable sites are expected to:

- Minimize resources transported to the site and materials leaving the site
- Support viable habitats
- Promote healthy ecosystems beyond the site's boundaries
- Replicate natural processes of a reference site
- Enhance the quality of life for users
- Act as a carbon sink and regulates other greenhouse gases

The Sustainable Sites Initiative (SITES) is an American endeavor founded in 2005 to create the first performance-based rating system for the development, maintenance, and regeneration of landscape projects. The impetus for its creation came from the recognition that although buildings have national standards for "green" construction, little existed for the outdoor space. Modeled after the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating system, SITES is a voluntary rating system, focused on the space outside of the building, or on projects without a building at all, and targets on site-based issues that are perceived to be absent from the existing LEED rating system.

The Sustainable Sites Initiative is a partnership between two Washington DC-based organizations, the American Society of Landscape Architects (ASLA) and the U.S. Botanic Garden, and the Lady Bird Johnson Wildflower Center of the University of Texas at Austin. In 2006, a Steering Committee representing stakeholder groups was selected to guide the Initiative. This coalition was charged with overseeing the development of the guidelines and performance benchmarks, and includes the USGBC; U.S. Environmental Protection Agency, GreenScapes Program; National Recreation and Park Association; National Association of County and City Health Officials; The Nature Conservancy, Global Invasive Species Team; University of Texas at Austin, Center for Sustainable Development; and American Society of Civil Engineers, Environment and Water Resources Institute. More than 55 experts have been working on technical subcommittees developing sustainable benchmarks for soils, hydrology, vegetation, human health and well-being and materials selection. These subcommittees have been developing the technical foundation

Phipps Conservatory, the Center for Sustainable Landscapes in Pittsburgh, is planned on a brownfield site. Andropogon Associates developed the SITES pilot project candidate to manage all rainwater on site and restore appropriate vegetative biomass. Several native plant communities and corresponding soil types will be installed to foster diversity and will regenerate a living ecosystem throughout the site.



for the Guidelines and Performance Benchmarks. The latest report, *The Sustainable Sites Initiative: Guidelines and Performance Benchmarks 2009,* is the product of more than four years of work by this varied group of landscape architects, ecologists, engineers, and others with expertise ranging from invasive species, urban forestry, biology, economics, resource management and conservation. These volunteer experts have contributed to the guidelines and technical benchmarks that professionals will use to design, build and maintain greener landscapes.

Guiding principles

Throughout the life cycle of each site, the benchmarks will enable built landscapes to support natural ecological functions by protecting existing ecosystems and regenerating ecological capacity where it has been lost. To that end, the principles below not only inform the work of SITES, but should also inform all aspects of sustainable site development. The guiding principles of a sustainable site are:

- Do no harm
- Use the precautionary principle – risk evaluation to human and environmental health
- Design with nature and culture
- Use a decision-making hierarchy of preservation, conservation and regeneration
- Provide regenerative systems as intergenerational equity
- Support a living process – adapt to change
- Use a systems thinking approach
- Use a collaborative and ethical approach
- Maintain integrity in leadership and research
- Instill a sense of stewardship

Regardless of the size of a site, any landscape holds the potential to improve and regenerate the natural benefits and services provided by ecosystems in their undeveloped state. The goal of SITES is to transform land development and management practices so that they can promote essential "ecosystem services." To this end, SITES

strives to go beyond site conservation and move toward the regeneration of "ecosystem services" as part of the design process.

The term ecosystem services describes the goods and services provided by healthy ecosystems. To explain ecosystem services, the SITES report uses the examples of pollination of crops by bees, bats or birds, or the flood protection provided by wetlands, or the filtration of air and water by vegetation and soils. While there is no real monetary value attached to these ecosystem benefits, only estimates, understanding the environmental, social, mental and physical value has influenced the approach to land practices from developers to municipalities to designers. Any size land – from backyards to parks, to commercial and public sites, parks, campuses, roadsides, residential landscapes, recreation centers and utility corridors – can be designed to mimic the performance of natural patterns and healthy systems, increasing the ecosystems services. This approach demonstrates that all contributions, big or small, matter to the health and well-being of human and natural world.

SITES has focused on the following, often overlapping, ecosystem services:

- Amelioration of global and local climate
- Detoxifying and cleansing air and water
- Regulation of water supply
- Control of erosion and sediment
- Pollination, habitat and refuge functions
- Waste decomposition, treatment and reuse
- Fostering human health and well-being
- Growing food and renewable non-food products

Seattle's public television station, KCTS 9, is located in a rapidly evolving neighborhood that is experiencing another cultural renaissance with the adjacent Gates Foundation headquarters opening soon and a 21st Century plan underway to redevelop Seattle Center, the site of the 1962 World Exposition. This is a conceptual design idea by Mithun for possible redevelopment of the station as a candidate SITES pilot project, a LEED platinum target and potential Living Building pavilion. The roof, which provides both vegetation and a solar energy array, is a place where the station's popular local cooking shows and organic gardening can mix – components of a strategy to address zero net water, zero net energy and zero waste that contributes to building a strong, sustainable community.

- Promoting educational and cultural benefits as well as aesthetic values
- Hazard mitigation

Throughout the life cycle of each site – from design and construction through operations and maintenance – sustainable performance benchmarks will enable built landscapes to support natural ecological functions by protecting existing ecosystems and regenerating ecological capacity where it has been lost.

SITES and LEED

Many of the credits within LEED tools are tied explicitly to performance-based goals within the building. The USGBC recognizes this and has tried to extend the benefits of LEED beyond the building footprint into the neighborhood it serves by introducing the LEED for Neighborhood Development Rating System. This neighborhood rating system and SITES are similar in that they both significantly extend the focus of green building beyond the single-building envelope. A distinguishing characteristic of LEED for Neighborhood Development is its focus on location and community pattern – where people live and work and how they move around. SITES focuses on the site scale and the ways in which people maintain, protect or restore ecosystem services, such as clean air and water, climate protection and habitat. Although the two systems are quite different, they are intended to complement one another. USGBC knows that there is more work to do within LEED to improve the site components. It is anticipated that the standards from SITES will be incorporated into future versions of its LEED rating system, and make a deeper mark on architects, engineers, designers, curators, landscape contractors, maintenance workers, planners and even homeowners as they set out to design outdoor spaces.

SITES in practice

In spring 2008, the Sustainable Sites Initiative put out a call for case studies to see these sustainable landscape guidelines in reality. SITES now has a library of 100 plus case studies, among them a residential garden in Portland, Oregon, a restored, contaminated brownfield site in Perth, Australia and an adaptive reuse development at the Pearl Brewery in San Antonio, Texas. Project budgets range from 16,500 to 8.6 million US dollars. Since that time, a rating system for sustainable landscapes has been developed. In November 2009, SITES called for pilot projects to help test this rating system.

The rating system covers all stages of the site development process from site selection to landscape maintenance. Approximately 75 to 150 projects of any type of designed landscape will be selected and used to help test and refine the rating system over the course of two years. The pilot program will evaluate the point systems and evaluate the appropriateness and value of the credits in a variety of climate zones, regions, and project types. Like the LEED rating system, there is a submittal documentation requirement to demonstrate that the parameters of the credit or prerequisite have been met.

The rating system works on a 250-point scale, with levels of achievement for obtaining 40, 50, 60 or 80 percent of available points, recognized with one through four stars of certification. If prerequisites are met, points are awarded through 51 credits, divided into the following credit categories:

- Site Selection
- Pre-Design Assessment
- Site Design – Water
- Site Design – Soil and Vegetation
- Site Design – Materials
- Site Design – Human Health and Well Being
- Construction
- Operation and Maintenance
- Monitoring and Innovation

Credit categories are organized in a sequence that mimics the project development phases: from site selection and planning through operation and maintenance.

The services people enjoy from healthy ecosystems are not always tangible or easily defined, but they are ultimately critical to human survival. Yet people often underestimate or simply ignore the values from these ecosystem services when making land-use decisions – only to realize later how difficult, expensive, and sometimes impossible it is to replicate these services once they are lost. The central message of SITES is that any landscape – whether the site of a large subdivision, an urban plaza, parking lot, shopping mall, park, abandoned rail yard, or even a home – holds the potential to recover and to regenerate the natural benefits and services provided (without cost) by undisturbed, natural ecosystems.