Improving Mobility, Improving Resilience
Shanghai Houtan Park: Landscape as a Living System
Project Summary
Design Strategy
Benefits
### Shanghai Houtan Park

<table>
<thead>
<tr>
<th><strong>Location:</strong></th>
<th>Shanghai, 2010 Shanghai Expo Park, China</th>
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<tbody>
<tr>
<td><strong>Size:</strong></td>
<td>14 hectares</td>
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<tr>
<td><strong>Date of Design:</strong></td>
<td>January 2007-October 2009</td>
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<td><strong>Date of Completion:</strong></td>
<td>2010-15</td>
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<td><strong>Client:</strong></td>
<td>Shanghai World Expo Land Development Co., Ltd.</td>
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<tr>
<td><strong>Landscape Architect:</strong></td>
<td>Turenscape</td>
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A bird’s eye view from the southwest.
Shanghai Houtan Park

Objectives

• Create a green Expo that demonstrates green technologies in flood control, water treatment, and park design.

• To transition from a demonstration to a permanent public waterfront park.
Shanghai Houtan Park

Design Challenges

• Restore the degraded environment that is littered with industrial debris.
• Improve the water quality.
• Improve flood control.

Site conditions before development
Shanghai Houtan Park

Constructed Wetland and Regenerative Design

Cascades and Terraces oxygenate water, remove and retain nutrients, reduce suspended sediments.
Wetland plants absorb pollutants, improving water quality of approximately 2,400 cubic meters of water for non-potable uses.
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Constructed Wetland and Regenerative Design

The terraced wetland is heavily planted to clean contaminated water. The boardwalk is made of decomposable bamboo.
Crops of sunflower and rice filter excess nutrients from the water and makes the landscape productive and educational.
The water cleaning mechanism of the man-made wetland.
The hanging garden, designed around an existing industrial structure with hanging planters installed above the tea house.
The floating garden designed around the existing cargo pier, integrated with a shade structure, seating, planters and screens become an overlook above the Huangpu River.
The steel arbor is composed of recycled steel panels from the site, which provides shelter, frames views, and shapes spaces.
The existing cargo pier is transformed into an overlook platform above the Huangpu River, updated with an arbor, railings, seating and planters.
A network of paths is designed to allow visitors to surround themselves in the landscape. The native grass (*Miscanthus sinensis*) phytoremediates the soil and requires little maintenance.
The terraced wetland creates a quiet valley, allowing people to access the water and enjoy the views.
The terraced wetland is accessible for visitors to enter the inner spaces of the living landscape - dramatically increasing the capacity of the park without sacrificing sensational experience.
Shanghai Houtan Park

Environmental Benefits

- Cleans up to 634,000 gallons of polluted river water daily, improving the water’s quality from Grade V (unsuitable for human contact) to Grade II (suitable for landscape irrigation) using only biological processes.

- Increased the biodiversity of the site dramatically, with 93 species of plants and over 200 species of animals observed.

- Sequesters an estimated 242 tons of carbon annually in park’s extensive wetlands, perennial plantings, and trees.

- Successfully demonstrated state-of-the-art design and construction techniques, resulting in 8 national design patents and 20-30 subsequent ecological water purification projects that employ the techniques created for Houtan Park.
Provided recreation and educational opportunities to some 590,500 visitors during the 2010 Shanghai World Expo. The park continues to provide these benefits to city residents and visitors from around China and the world.
Shanghai Houtan Park

Economic Benefits

- Saves $116,800/year in water costs at the adjacent Expo Park where 264,000 gallons of water treated by Houtan Park’s wetland purification system is used in the water features.

- Reduced waste and saved an estimated $17,300 by reusing 37 tons of steel and roughly 34,000 post-industrial bricks found on the site.
Shanghai Houtan Park

Conclusion

Houtan Park demonstrates a living system where ecological infrastructure can provide multiple services for society and nature and new ecological water treatment and flood control methods. The postindustrial design demonstrates a unique productive landscape evoking the memories of the past and the future of the ecological civilization, paying homage to a new aesthetics based on low maintenance and high performance landscapes.

Sources:
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www.turenscape.com
http://landscapeperformance.org/case-study-briefs/shanghai-houtan-park