

# Revitalizing New York's East River Waterfront

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## Abstract

Urban waterfronts are undergoing significant transformations. In many Western cities former industrial sites are experiencing a renewal as they are being rebuilt for new uses. For a long period, many waterfronts in inner cities were used primarily as industrial zones and harbors, limiting the number of citizens living on the shore. However, in the future new urban maritime districts around the world will provide cities with more waterfront housing and leisure venues.

The city of New York has already opened up access to miles of shoreline that had been closed off to the public for decades. Diverse waterfronts are now among the most important of the city's resources. Open space, resiliency, living by the waterfront, transportation and in-water recreation are among the priorities for future development.

The aim of this paper is to look into current waterfront development along New York's East River, map the activities and functions, and research the processes behind the development. The key question is what are the existing activities at the waterfront and what kind of approaches does the city have to face the future challenges at the coastline. The methods include field study, observation, data research, data analysis and interviews with key actors involved in the development processes in New York.

This paper will contribute to the discussion on urban waterfront transformation and the experiences it provides. Emphasis is placed on urban planning, programming, cooperation and innovation in relation to the waterfront. Urban development is viewed as a condensation of activities, programs and networks. The themes include meantime strategies and collaboration strategies. The aim is to shed light on what lies beyond – the models and processes of waterfront development that create urban experiences.

**Keywords:** waterfront, New York, urban planning, urban design, revitalization

## Introduction

Urban waterfronts are facing significant transformations world-wide and they are among the most pressing urban design challenges of the next hundred years. Former industrial sites are being reclaimed and rebuilt for new uses, while new urban maritime districts are beginning to provide a mix of housing, recreation, and post-industrial uses, alongside ecological programs in the midst of greater environmental uncertainty. North American cities were among the first destinations in waterfront regeneration, with the revival of abandoned harbour areas close to downtown districts (Smith & Garcia Ferrari 2012).

The city of New York has already opened up access to miles of shoreline that had been closed off to the public for decades and the process is ongoing. Diverse



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waterfronts are among the city's most important resources. Open space, resiliency, affordable housing, transport, and recreation are priorities for future development. The coastline and the waterways are referred to as a "Sixth Borough", which has the potential to provide working harbor, public parks, housing districts and ferry routes. The aim of this paper is to study the different approaches used in certain locations to open New York City's waterfront to the public. The focus is on how to bring life to the waterfront and what types of urban experiences it can offer.

Besides offering great opportunities, the effects of climate change mean that the water is increasingly seen as a challenge. There is a growing need to integrate ecological research into urban regeneration processes at the waterfront to reduce the environmental impacts (Dyson & Yocom 2015), and to develop a more harmonious relationship between the built urban areas and water (Hayward 2015). The waterfront projects have to offer solutions for living "with the water instead of fighting it" (Waterfront Alliance 2015). Innovations are needed to find new ways of adapting to the changing conditions. The city of New York has invested in improving water quality in the harbor and collecting wastewater to be reused (Holloway 2011).

The role of culture and history is emphasized in the process of urban regeneration and re-constructing maritime identity (Sepe 2013). Earlier research studying social aspects of urban waterfront regeneration has identified four different dimensions: resources and identity, social status, access and activities and waterfront experience (Sairinen & Kumpulainen 2006). Bottom-up development arising from grassroots level is seen essential to sustainable long-term development (Taufen Wessells 2014; Campo 2002). Civic stewardship is strong in New York, and this can be seen clearly at the waterfront. According to urban planner Thaddeus Pawlowski and Jeffrey Shumaker, chief urban designer and director of urban design at City of New York, Department of City Planning, there are many different kinds of ownership on the waterfront. Civic organizations offer activities and education at the shoreline and participate in programming, while providing stewardship at the waterfront. According to an accessibility and stewardship report, "Civic organizations play a critical role in terms of providing public access to the waterfront and supporting waterfront stewardship" (Boicourt 2016, 3). Collaboration and bottom-up approaches can promote positive urban change (Orff 2016). Collaboration is a joint effort to achieve a common goal, where participants cooperate in order to profit a given community. Collaboration models typically include elements of communication, diversity, sharing and problem solving. In New York, various collaboration models have been developed to enliven and revitalize waterfront areas together with the people living and working there.

This paper investigates some of the tools and approaches that have been used to open up and revitalize the waterfront, creating urban experiences in collaboration with various participants. The key question is what are the existing activities at the waterfront and what kind of approaches does the city have to face the future challenges at the coastline. The paper focuses on the areas along the East River, specifically the cases of Brooklyn Bridge Park and East River Waterfront Esplanade. As a result ten different approaches are identified by the author for revitalizing the waterfront.

## **Urban planning history of the East River Waterfront**

New York City's coastline is 520 miles long and borders the ocean and rivers. The first settlements were built in a location, where the shoreline offered natural protection from storms. However, the coastline has faced dramatic changes as the city has grown. Some of the historic natural features, such as vast wetlands and oyster beds, almost vanished as piers and bulkheads were built and vast

cargo shipping harbors and storage areas were constructed. Nevertheless, urban growth and the changes it brought also enabled also economic growth.

Using the waterfront for harbors meant that it was closed to the wider public for decades. When major shifts in the economy led to the abandonment of the waterfront, even after most of the harbor functions were removed, there were large sections of the waterfront that remained unused. By the mid-1970's the waterfronts of the Hudson and East Rivers had become like a no man's land, isolated from the inner city districts by Robert Moses's highways (Balsley 2012, Anderson 2015). Along East River waterfront informal development created by local residents offered recreational and social spaces (Campo 2002).



**Figure 1.** New York's waterfront. Image by Meri Louekari.

According to Michael Marrella, director of Waterfront and Open Space Division at the City Planning Department, in the 1990's the city realized, that should the economy turn, the waterfront should also turn. In the recent years and decades, the city has been working on reconnecting New York with the water and transforming the abandoned banks into vibrant new locations. The projects include Harlem River Park, Governors Island and rezoning at Greenpoint and Hunters Point (Burden 2011). According to Mary Kimball, senior waterfront planner at City of New York, Department of City Planning, the development of the city's formerly industrial waterfront areas to residential, commercial, and recreational uses can be seen most notably along the East River.

The first long term initiative for the coastline of New York was published in 1992, when the Department of City Planning launched the first *New York City's Comprehensive Waterfront Plan*. It was a land-use plan, indicating residential and recreational uses for the waterfront. The plan was the starting point for the long term work to transform the waterfront; to create access and to reclaim the waterfront for the public.

A new sustainable vision for the coastline, the *Waterfront Vision and Enhancement Strategy*, was issued in 2008. The strategy aims to utilize and develop New York's waterfront while preparing for climate change and the

challenges it brings. The initiative consists of two parts. The first, *Vision 2020: New York City's Comprehensive Waterfront Plan*, is the centerpiece of the *Waterfront Vision and Enhancement Strategy*. It builds on *PlaNYC*, the sustainability plan released in 2007.

According to Marrella, who led the work, *Vision 2020: New York City's Comprehensive Waterfront Plan*, is the backbone of waterfront planning, and has a broad vision. It consists of eight broad goals, which are:

1. *Expand public access to the waterfront and waterways on public and private property for all New Yorkers and visitors alike.*
2. *Enliven the waterfront with a range of attractive uses integrated with adjacent upland communities. Support economic development activity on the working waterfront.*
3. *Improve water quality through measures that benefit natural habitats, support public recreation, and enhance waterfront and upland communities.*
4. *Restore degraded natural waterfront areas, and protect wetlands and shorefront habitats.*
5. *Enhance the public experience of the waterways that surround New York—our Blue Network.*
6. *Improve governmental regulation, coordination, and oversight of the waterfront and waterways.*
7. *Identify and pursue strategies to increase the city's resilience to climate change and sea level rise.*
8. *Identify and pursue strategies to increase the city's resilience to climate change and sea level rise (NYC-DCP 2011, 20-21).*

Four functional categories were identified for waterfront activity: the natural waterfront, the public waterfront, the working waterfront, and the redeveloping waterfront. The fifth, blue network, was added later (NYC-DCP 2011, 8).

*The Comprehensive Waterfront Plan* is accompanied by a three-year implementation component: *A Waterfront Action Agenda*, which presents the initiatives already realized and provides new ideas for implementing the strategy's goals (NYC-EDC 2015). Resiliency means adapting to the impacts of climate change, protecting ourselves from natural disasters and being prepared to recover quickly from them (NYC 2013). Resiliency report "*A Stronger, More Resilient New York*" published in 2013, presents a comprehensive coastal protection plan. Partnership with the federal government and other regional stakeholders plays an important role in implementing the plan (NYC 2013).

According to Amanda Burden, city planning commissioner of *Vision 2020*, "The design of waterfront spaces and shorelines is a critical part of achieving the goals of *Vision 2020*, from fully integrating the City with its waterways, to advancing the ecological vitality of the waterfront, and making the City more climate resilient" (Burden 2011, 42). To ensure design quality, the city has created new design and zoning guidelines for waterfronts. It is important, that planning for the waterfront is site-specific. Public spaces should provide a variety of features, including vegetation, benches and bike racks (Burden 2011). High-quality design is seen as a path to sustainability (Holloway 2011). To support access, resiliency and ecology on the waterfront, the Waterfront Alliance has developed *Waterfront Edge Design Guidelines* (WEDG) as a tool for reviewing and promoting waterfront projects (Waterfront Alliance 2015).

Creating public access is one of the main themes of the plans for the waterfront and reconnecting it to the inland districts of the city. Marrella states that there are many different ownership models on the waterfront. According to director of urban design, Jeffrey Shumaker, land ownership on the waterfront is scattered, and the state regulates the waterways. The City Planning Department regulates building using zoning.

Senior waterfront planner Mary Kimball states, that while ownership is scattered, much of the city's waterfront is owned by public entities, mostly parkland and some transportation uses. Public ownership of large stretches has enabled some of the most transformative projects to come to fruition - places like Hudson River Park, Battery Park City, Brooklyn Bridge Park, and Governor's Island. For other stretches that are owned by disparate private entities, change is more gradual and dependent on the real estate market, Kimball says.

Some of the challenges of the waterfront planning include how to regulate land use and how to guarantee public access. Recently, density on the waterfront (e.g. in Brooklyn) has increased, which requires more open space. In many places access to waterfront is provided by the developers, and often this has proven to be success. For example, developers can be allowed to build taller if they agree to build more public space. Along with the waterfront development, there is an aim to relax the regulations. According to Shumaker, regulations that used to be very strict, are now becoming more flexible.

Hurricane Sandy caused massive losses for New York in 2012. In the future, the rising sea level and warmer ocean temperatures will cause even more extreme weather. The threat of destructive storms creates challenges for the plans and ambitions to open up and revitalize the shoreline. However, the city of New York has decided that it will not abandon the waterfront, instead it will work harder to strengthen resiliency and find new ways to open up the shoreline while providing protection from storms. The aim is to turn "the risks into incentives to create a more inviting, livable, and resilient world" (Rodin 2010, 9). According to Shumaker, after Hurricane Sandy there has been a lot of new investment in the waterfront. Ideas include the East Side Resiliency Project, based on a competition entry known as the Big U by Bjarke Ingels Group (BIG). Strategies for resiliency include building offshore breakwaters to weaken waves, protecting inland districts by creating dunes and constructing floodwalls and tide gates and requiring elevations for new building areas.

The city's coastal zone management program, the *Waterfront Revitalization Program*, was originally issued in 1982, updated in 2002 and revised in 2016 (NYC-DCP 2016). It contains the city's policies for development and use of the waterfront. According to Kimball, changes to zoning and major public projects must be consistent with these policies. In addition to promoting the city's goals for public access, resiliency, and other issues, the Waterfront Revitalization Program prioritizes water-dependent industrial uses in areas well-suited to maritime uses, and protection of natural habitats in areas with extensive natural areas, Kimball explains.

## **Two case studies: Brooklyn Bridge Park and East River Waterfront**

### **Research materials and methods**

This paper is based on a case study. The research methods used for empirical material collection include field study and observation as well as data research. Interviews with key actors in the development processes were conducted by the author. The interviews, field work and most of the other empirical material collection were conducted by the author as a visiting scholar at Columbia University, GSAPP. The research material was analyzed during and after the visiting scholar period, as well as at an additional visit later in the same year. The development of the waterfront in New York was studied and analyzed by mapping activities and functions along the coastline and conducting research on the processes behind the development. In the selected locations - Brooklyn Bridge

Park and East River Waterfront - existing activities and the underlying processes were studied. The research included models for co-ordination and organization and investigated the participants and their different roles.



Figure 2. Dumbo, Brooklyn Bridge Park. Image by Meri Louekari.

### Approaches for revitalizing the waterfront at Brooklyn Bridge Park

Brooklyn Bridge Park is a vast new public park built on a post-industrial waterfront site. Stretching 1,3 miles along the banks of Brooklyn's East River, it has a great location and covers 85 acres of land. Formed as a long string of diverse locations, the park site stretches from the Manhattan Bridge in the north to Pier 6 and Atlantic Avenue in the south.

The area was used as a storage and cargo shipping harbor until the 1980's. Piers 1 and 6 were opened to the public in the first half of 2010. Today the park also includes Piers 2 to 5, the Empire Fulton Ferry, John Street, and Main Street. Investing in design has been an important part of the park development. The master plan was created by the city, the state, and landscape architecture office Michael Van Valkenburgh Associates. The starting point was to turn an industrial site into a natural one while preserving the experience of the industrial waterfront, and use of topography played an important role in the design. The park design by Michael Van Valkenburgh Associates reuses existing site structures; for example, old harbor structures are used as basketball courts. The section of the park that is adjacent to two residential districts creates many opportunities. However, in the southern part creating access to the long and narrow park is a challenge, as a highway separates it from the existing city structure for 3 miles along its length.

Founded in 2010, the city-owned not-for-profit entity Brooklyn Bridge Park Corporation, known as Brooklyn Bridge Park, is responsible for the planning, construction, maintenance and operation of the park. Regina Myer, president of the Brooklyn Bridge Park says that the park offers a wide variety of different uses, intentionally including neighborhood uses. There is a balance of passive and active uses. Areas used for activities include football and basketball courts, playgrounds, lawns, a roller rink, a greenway, playing fields, and picnic tables.

There is also fitness equipment, bocce, handball, and shuffleboard. Brooklyn Bridge Park encourages close interaction with the water, with boat launches and beaches. According to Myer, activities are planned and carried out in collaboration with the people who live in the surrounding districts. Identifying partners and inviting people to participate has been an important part of the development of the park: Myer says it is about people and getting to the water. The program of activities includes various art projects and events. Movies are shown outdoors regularly, literary events take place under the bridge, and there are music and theatre performances in the park. There are also many temporary sculptures and other works of art in the park, including a temporary living earthwork consisting of hundreds of plants. Regularly organized tours guide people through the history, architecture and nature of the park and its surroundings.

Brooklyn Bridge Park is required to be financially self-sustaining: "While a small fraction of the required operations and maintenance funds for the park will be collected from permits and concessions, the majority of the funds will come from a limited number of revenue-generating development sites within the project's footprint" (Brooklyn Bridge Park). However, according to director of Waterfront and Open Space Division Michael Marrella, upkeep is very expensive, and it is difficult to be financially sustaining. Brooklyn Bridge Park has developed an alternative funding mechanism, which is sometimes seen as controversial, generating revenue from the developers who are allowed to build in the area. After an in-depth analysis, potential locations were identified for uses that would generate revenue for running the park. The development footprint was minimized and the existing urban structure was utilized.

There is no budget for programming. Brooklyn Bridge Park does not pay for the program – instead money is raised from the private sector and government, which demands a lot of balancing, according to president of the Brooklyn Bridge Park, Regina Myer. Developments in the area pay taxes to Brooklyn Bridge Park. This money is used for maintenance and waterfront development. Other similar models include High Line and Hudson River Park, which raise money from the private sector for maintenance. According to Myer, the development of the park has been a continuous, very dynamic process. It is conducted using a top-down model, but with many meetings between the various stakeholders. The Brooklyn Bridge Park has continued to play a very proactive role in reaching out to the active "doers".

Before area was used as a storage and cargo harbor, the shores along the East River flourished with plants and birds. The aim of the park design has been to rebuild some of these natural habitats, including salt marshes and meadows. Some elements of the harbor construction have been recycled to create park structures. In addition, the park has a storm water recycling system, where rainwater is collected and used to water the lawns and gardens. Others actions aiming to increase sustainability include building green roofs, conserving energy and growing organically. Maintaining the balance between nature and programs demands careful coordination of activities. Thanks to its design - elevation and soft edges - Brooklyn Bridge Park survived Hurricane Sandy with comparatively well (NYC 2013).

The connections from Brooklyn Bridge Park to Manhattan, Queens and other parts of Brooklyn are enhanced by the East River Ferry Service, which revitalizes New York's waterfront by offering a fast new transportation option. The city-subsidized pilot service was launched in 2010. The three-year goal of 1.2 million riders was achieved in only 14 months. Because ferry service increases access to previously underused areas of the city, new development potential has been opened up along the coastline. According to director of urban design, Jeffrey Shumaker, new ferry stops were provided in the areas where growth is expected.

The East River Ferry service was initially intended as pilot but it was extended as a permanent service, says senior waterfront planner Mary Kimball. Following its' success the city launched a study to examine additional routes to expand the service throughout the city. According to Kimball, in 2017, new routes to Astoria, South Brooklyn, and the Rockaways will be launched, followed by additional routes serving the Lower East Side and the Bronx in 2018.



**Figure 3. Water transport connects Brooklyn Bridge Park to East River Waterfront.** Image by Meri Louekari.

### **Approaches for revitalizing the waterfront at the East River Waterfront**

Collaboration and community involvement play a very important role in the development of the East River Waterfront, which is an extraordinary example of a participatory and interactive planning process. The city departments conducted a study of the area in 2004. The outcome of the study, a concept plan, was developed with local communities, elected officials, and civic leaders, in addition to tenant representatives in over 70 separate meetings. This cooperation has continued, and the locals are involved in design and programming work for the area. Collaboration with community boards was considered especially important and helped to build trust and active dialogue. (East River Waterfront)

The aim of the work is to strengthen access to the waterfront and create new recreational opportunities and amenities by designing and implementing waterfront-related programming. The project includes creating a new waterfront esplanade and enhancing connections from Lower Manhattan to the East River Waterfront. Programmed spaces include basketball courts, a petanque area and an open-air exercise area. Urban design provides spaces for gatherings and organizing events. The sustainable approach can be seen in the use of recycled materials, collecting rainwater and aiming for improved air and water quality. Besides new seating and plantings, the new esplanade will include amenities such as pavilions underneath the Franklin D. Roosevelt (FDR) Drive, and open piers to the public.

The new plan for the area was created by a design team including architecture firm SHoP architects / Richard Rogers and Ken Smith, the Department of City

Planning, the Economic Development Corporation and the local community. The plan proposes both "short-term improvements and long-term strategies to reconnect Lower Manhattan's diverse communities to a two-mile stretch of East River waterfront" (East River Waterfront). The project was opened to the public in four phases in 2011-2016. The aim is to gain a collective approach to develop the area in order to respond to local needs. A new set of activities and amenities is called 'the Foundation Projects'. Their role is to encourage the establishment of other activities on the water's edge. Finding new waterfront uses is an important part of revitalizing the East River shoreline. Providing infrastructure as a sound base for new activities that respond to the needs of the community will improve the whole waterfront. Together 'the Foundation Projects' and the new amenities they inspire will bring vitality to the area. This approach is called planning by evolution rather than revolution: "By adding new among the old and smaller public interventions into the larger waterfront context positive change is in place to bring new programs and uses for neighborhood and city wide benefit" (East River Waterfront).

Since Hurricane Sandy, there have been many new investments and innovations in the waterfront. One of these is a proposal to construct the East Side Coastal Resiliency (ESCR) project. ESCR is "an integrated flood protection system that is intended to reduce coastal flooding and improve coastal and social resiliency" (NYC-Parks 2015). Unofficially called "the Dryline", ESCR was designed by the Bjarke Ingels Group (BIG) with the city. It aims to find a way to combine opening up the shoreline with protecting it from extreme weather conditions.

The South Street Seaport district along the East River was damaged by Hurricane Sandy. A pilot program involve many different developers was set up, producing an outdoor movie area and containers for commercial and cultural uses while the rebuilding took place.

The Lower Manhattan Cultural Council (LMCC) is working to bring the waterfront along the East River to life. The LMCC aims to enhance the communities in Lower Manhattan by supporting and enabling artists to work on diverse art projects on the area. Working in partnership with the public and private sectors (e.g. Department of Parks and Recreation), the LMCC provides resources to artists in the visual, performing, and new media arts, resulting in over 60 days of free urban experiences (LMCC). Arts East River Waterfront is a collaborative initiative organized by the LMCC. Its aim is to bring the people of the Lower East Side to the waterfront to participate in art installations and performances.

Paths to Pier 42 is a collaboration project initiated by LMCC to revitalize the pier located between the Manhattan and Williamsburg bridges. A temporary park located on the south side of FDR Drive is activated by artists who are commissioned to work with the local community. The ongoing process of creating new public space with cultural experiences is renewed every year by selecting new artists each summer. (Paths to Pier 42, LMCC) Over the years, number of people participating in the collaborative projects has grown, creating an asset for developing the public space further in the future. LMCC continues to play an enabling role, curating and producing the program.

According to Kay Takeda, director of grants and services for the Lower Manhattan Cultural Council, in addition to providing cultural experiences, the program aims to provide ecological education. Takeda oversees grant programs and professional development for artists. She is also responsible for planning and programming the LMCC's Manhattan arts grants and professional development programs as well as the East River Waterfront arts initiative, which is made up of several partnership projects including Paths to Pier 42. She sees the need to create different models in different waterfront locations. There are many artists in Lower East Side, and the chosen approach works well for the district. Takeda says that programming a pier next to subsidized housing area was done in

collaboration with Two Bridges Neighborhood Council. The core ideas included equity and involving people and the focus was on creative place-making. According to Takeda, the program is funded primarily by private investors with strong support from state and other political resources. The LMCC is also raising money for permanent development. It receives no multi-year funding, except for one three-year funding stream from the government. Many parks receive funds from partnerships. Often they have "friends" - groups that are non-profit organizations, such as Friends of Pier 35. Friends groups do volunteering work and receive small amounts of funding from the government.

Typically, artists are selected through an open call process. However, Takeda explains that in the case of transforming a vacant lot into a park, temporarily activating an empty space, a call was sent to seven artists and designers asking for proposals. All the artists and designers were focused on social practice, and community involvement was an essential part of the selected proposals. The LMCC received 40 proposals, of which a jury reviewed 18. An advisory committee consisting of 40 people including residents, staff members and artists chose five projects. As an arts partner, the LMCC took care of all the related work, including arranging artists' fees and organizing the volunteer work that was needed to implement the project. Takeda emphasizes that public programming was an essential part of the project. Each part of the community worked with the artists. For example, artist Mary Mattingly organized a fishing clinic and tours on the waterfront. Photographer Sonia Luis Davis ran an image making project with local people, emphasizing shared authorship. Artist Ted Foutang delivered a resilience project that focused on the theme of Hurricane Sandy, creating emergency kits in a workshop. The program also included an educational aspects, for example, an after school science program. Takeda says that two of the artists are continuing for a second year and the other participants are changing. Using a community model, three events were organized, and took place in May, July and September. At the first event, people living in the area were able to meet the artists and begin the participation process. The second event was for the public and artists to work together. The last meeting was a closing celebration, which was open to everyone.

### **Results: approaches for revitalizing the waterfront**

In this study ten different approaches were identified by the author for revitalizing the waterfront: (1) urban design, (2) programming, (3) participation and inclusion, (4) art and temporary use, (5) preservation, (6) reuse, (7) accessibility, (8) mobility, (9) ecology and biodiversity and (10) resiliency. Each of the approaches is manifested in the two study areas; Brooklyn Bridge Park and East River Waterfront Esplanade.

Approaches for revitalizing the waterfront	Brooklyn Bridge Park	East River Waterfront Esplanade
1. Urban design	A vast new public park, formed as a long string of diverse locations. Investing in design is important. Close interaction with the water.	Creating a new waterfront esplanade and spaces for gathering and organizing events. New pavilions underneath FDR Drive
2. Programming	Passive and active uses: for example, football and basketball courts, playgrounds, lawns, a roller rink, a greenway and playing fields, fitness equipment, picnic tables bocce, handball and shuffleboard, boat launches and beaches.	Passive and active uses: for example, basketball courts, a petanque area and an open air exercise area. A diverse, continuous art programme with public programming.
3. Participation and inclusion	Brooklyn Bridge Park has a very proactive role: activities are planned and delivered in collaboration with the people who are living in the surrounding districts.	Concept Plan developed with local communities, elected officials, civic leaders and tenant representatives Locals are involved in design and programming. Participatory art program.
4. Art and temporary use	Various art projects and events: movies, literary events, music and theater performances, temporary sculptures and other works of art in the parks.	Creating new public space with cultural experiences, for example, a temporary park. Continuous, participatory art program, using vacant lots. Focus on social practice.
5. Preservation	Built on a post-industrial site. Preserving the experience of the industrial waterfront was a starting point.	Built on a post-industrial site. A pilot program for rebuilding the damaged South Street Seaport district.
6. Reuse	Park design reuses harbor site structures (e.g. as sports courts and park structures). Opening piers to the public as sports fields.	Recycled materials. Opening piers to the public.
7. Accessibility	Strengthening access to the waterfront and to the water. Various new points of access.	Strengthening access to the waterfront and the water.
8. Mobility	The East River Ferry connects Brooklyn Bridge Park to Manhattan, Queens and other parts of Brooklyn.	East River Ferry connects East River Waterfront Esplanade to Northern Manhattan, Queens and Brooklyn.
9. Ecology and biodiversity	Turning an industrial site into natural one: aiming to rebuild some of the natural habitats. Building green roofs, conserving energy and growing organically.	Collecting rainwater and aiming for increased air and water quality. Providing ecological education.
10. Resiliency	Design for resiliency: storm-water recycling system, elevation and soft edges.	East Side Coastal Resiliency Project. A pilot program for rebuilding the damaged South Street Seaport district. Art projects reflecting on resiliency.

**Table 1. Approaches for revitalizing the waterfront.**

As the issues of opening, revitalizing and developing post-industrial sites have similarities around the world, it is interesting to study how ideas can translate into new environments and circumstances. Even though the big issues of harbor transformation have similar characteristics, the parameters vary, and naturally, the development should always be site-specific. What is unique for a site is the

starting point for transforming it. However, new ideas can serve as a platform and framework from which new models can be created based on the specific needs of each individual waterfront location.

Of the ten approaches presented in this study, urban design, participation and inclusion, accessibility and mobility, ecology and biodiversity and resiliency are almost inevitably part of each waterfront revitalization project, in one way or another. Programming, art and temporary use offer urban experiences, strengthen the cultural identity of a place, and help to develop a sense of community and commitment. In terms of sustainable development, preserving existing buildings and natural features and reusing the former industrial structures saves resources and draws the history of a place into a natural part of everyday life. Meantime strategies and self-learning help to refine ideas and take them further. Informal spaces provide opportunities for bottom-up development and creativity. Enabling the informal use of the waterfront can support civic stewardship. Civic organizations have an important role in providing programming at the waterfront. Their work aims at engaging people with the coastline through education, organizing events and water-related activities.



Figure 4. East River Waterfront. Image by Meri Louekari.

## Summary

Urban waterfronts around the world are going through a major process of transformation. In many cities, inner-city waterfronts had long been mainly engaged in industrial activities and port operations, limiting the public access to the shoreline. In the future, urban waterfronts will offer new opportunities as former transport and industrial areas are converted for new uses, such as residential and work. At the same time, however, environmental uncertainty is increasing and innovations are required in order to adapt to climate change.

In New York, the waterfront has faced dramatic changes as the city has grown. New York has already opened up miles of shoreline to the public and the process is still continuing. This paper has studied existing activities at the waterfront.

Today, the city's diverse waterfront is considered to be one of its most important resources and is referred to as the "Sixth Borough". Creating public access is one of the main themes of planning the waterfront and reconnecting it to the inland districts of the city. The coastal zone and the water are perceived and valued in many ways: not only as a working port, but also as a place that provides green spaces, residential districts and ferry routes. The waterfront is opened up, revived and made vibrant in a variety of ways, such as by building public parks, sports facilities and playgrounds, by investing in the arts and temporary uses and by organizing a range of public events.

This research has studied and analyzed, what kind of approaches does the city of New York have, to face the future challenges at the coastline. Hurricane Sandy caused massive destruction in New York in 2012. In the future, the rising sea level and warmer ocean temperatures will cause more extreme weather conditions. The threat of devastating storms creates challenges for plans and objectives relating to opening up the shoreline. However, the City of New York has decided that it will not reject the waterfront, instead, it will work even more diligently to strengthen resilience to climate change. The aim is to find new ways to open up the waterfront while at the same time protecting it from storms.

Major planning projects, such as The East River Waterfront and Brooklyn Bridge Park, are transforming New York City's waterfront. Because the city's population is growing, there is a need to develop opportunities for recreation. Enabling informal use of the waterfront can support civic stewardship and collaboration. In addition to offering new urban experiences, the waterfront projects are responding to the need to adapt to the impacts of climate change by building protection against natural disasters and preparing to bounce back.

This paper has identified ten approaches for revitalizing the waterfront and creating urban experiences: (1) urban design, (2) programming, (3) participation and inclusion, (4) art and temporary use, (5) preservation, (6) reuse, (7) accessibility, (8) mobility, (9) ecology and biodiversity and (10) resiliency. These approaches can be adapted to waterfronts in many different locations. While development should naturally always be site specific and the characteristics of a site should define the future possibilities, ideas can serve as a platform for creating new models - based on the specific needs of each waterfront location.

In this paper, two cases, Brooklyn Bridge Park and East River Waterfront Esplanade, have been analyzed. Future research topics could include expanding the study to other parts of New York - for example - the western coastline including High Line, the Chelsea Gallery District, and the Meatpacking District, and projects like the SuperPier, Pier 55, and Whitney Museum of American Art. Another interesting future research could include studying some of the approaches deeper, and find different ways in different districts and cities for implementing them. For example, resiliency and adaptive strategies will gain increasing importance in the future.

Reinventing and rethinking the shoreline to create a new sustainable vision strengthens the resiliency of the coastline as new ways are found to open it up while protecting it from future storms. The long term work to transform the waterfront by creating access and reclaiming the area for the public focuses on bringing new life to the waterfront and creating new urban experiences. A living waterfront and thriving communities strengthen cultural identity and help to develop sense of community. As a well-designed and maintained edge of the city, a vibrant waterfront can generate activity that encourages people to use it all year round.

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