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PREFACE

The University of Southern California, School of Policy, Planning, and Development, International Laboratory: China is participating in the preliminary preparations for the 19th annual forum of the Pacific Rim Council on Urban Development to be held on November 9, 2009. Twelve SPPD graduate students traveled to Foshan Municipality in Guangdong Province, China to conduct field analysis and provide recommendations based on international examples applicable to the Fenjiang River Basin.

On June 9, 2009 Foshan Municipality and the PRCUD will sign a Memorandum of Understanding formalizing the collaborative effort addressing the urban transformation occurring along the Fenjiang River. In order to provide Foshan Municipality with valuable international examples to discuss at the PRCUD Roundtable forum, SPPD students have compiled profiles briefly outlining best practices and approaches used in respective urban river transformations.

This particular group of students exemplifies the diversity of academic background in SPPD graduate programs. The following report has been compiled through the perspective of Urban Planning (MPL), Public Administration (MPA), Public Policy (MPP), and International Public Policy and Management (IPPAM). This academic exercise is intended to build the professional development curriculum as well as strengthen the international relationships for SPPD.
INTRODUCTION

The complex river system of the Pearl River Delta extends beyond provincial borders to complicate regional and local river restoration efforts. The Fenjiang River Basin located in the Foshan Municipality of Guangdong Province is in the midst of a dramatic urban transformation. Water quality improvement, carbon emission reduction and removal of industrial polluters have grown Foshan into a model for ecological remediation in China.

Environmental restoration however does not occur in a vacuum, and it is critical to anticipate the implications of socio-economic byproducts as well as outcomes of industrial restructuring. The achievements in Foshan are likewise broad reaching and this report offers recommendations based on international development projects to implement sustainable development strategies.

Although this urban waterway is not isolated from the larger Pearl River Delta system, it is geographically contained by the West River to the west and the North River to the east. Foshan is home to approximately 6 million people in an area of 3,848 square kilometers and shares the Pearl River Delta Economic Zone with nearby Guangzhou to form the dynamic intersection of East Asia and Southeast Asia.

To present relevant and applicable strategies for the Fenjiang River, brief profiles were compiled to highlight rivers around the globe addressing similar issues of urban transformation. The important lessons to be drawn from the examples include cultural preservation, ecological stewardship, socio-economic sustainability, and land value appreciation. Many of the rivers used developed innovative revitalization plans to transform industrial landscapes. As Foshan continues its own industrial revolution we offer nine rivers to serve as guidance toward achieving a sustainable plan for the next generation.
Appendix

Profiled Rivers with Project Objectives

The context of each river revitalization plan is as unique as the rivers themselves. Assessing lessons learned from relevant riverfront projects is a valuable tool for comprehensive planning. The following rivers are listed in alphabetical order and include the applicable project objectives cited in the profile. For complete text, refer to the Appendix. The profiles can be a valuable resource for collaboration.

Cheonggyecheon River; Seoul, South Korea

- Restore natural habitat of the river and through human-scale design and environmental-friendly urban space. Remove concrete highway paved over the water way and ensure maximum flood capacity.
- Balance development between the northern and southern parts of the city in order to become the financial and commercial hub in East Asia.
- Revive cultural and historical richness of the area.

Kai Tak River, Hong Kong SAR

- Link historical and cultural heritage of the surrounding area to the river.
- Develop an integral community used for commercial, residential, and leisure purposes.
- Strengthen ecological and greening measures to convert the river into an urban ecological wetland.

Los Angeles River; Los Angeles, California, USA

- Restore a functional ecosystem through creation of a continuous riparian habitat corridor.
- Develop a River Greenway that acts as the centerpiece of the city’s green space system.
- Capture community opportunities by helping to foster civic pride and citizen participation.

Mississippi River; Minneapolis, Minnesota, USA

- Remove barriers to redevelopment.
- Convert the riverfront from practical utility to public use.
- Preserve and interpret the area’s history.
- Enhance the ecological function of the river.

Pittsburgh River Delta; Pittsburgh, Pennsylvania, USA

- Create synergy between office, retail, residential, and recreational use at key waterfront sites.
• Restore brownfields left by defunct coal and steel industries.
• Raise public expectations of riverfront opportunity.

Sacramento River; Sacramento, California, USA
• Restore the natural ecological environment.
• Protect the rich history rooted along the Sacramento River.

San Antonio River; San Antonio, Texas, USA
• Expand the popular tourist attraction, the River Walk from 1.3 miles to 13 miles.
• Engage the community in order to connect the city to additional museums, restaurants and tourist attractions.

Singapore River; Singapore
• Dredge, clean, and repopulate waterways with wildlife and natural habitat.
• Phase out polluting activities.
• Relocate polluting entities.
• Develop modern infrastructure.

Thames River; London, UK
• Remove toxic sediment from water to improve downstream water quality.
• Rehabilitate Docklands into mixed-use development.
CULTURAL PRESERVATION AND CITY RENOVATION

Cultural preservation is a key component of the development plan for the Fenjiang River Restoration project. With a robust inventory of cultural assets, the need for strategic implementation of preservation policy in Foshan is necessary for sustainable transformation as well as for responsible city renovation. International examples of adaptive re-use policy, tourism, and community engagement measures offer useful practices from which the city of Foshan may draw.

Adaptive Re-Use

As Foshan municipality continues to undergo economic transformation and industrial restructuring, the remnants of the harsh industrial past remain. Vacant factories and disconnected cultural icons struggle to find their function in the burgeoning economy. Within the international context of riverfront revitalization, a common trend with respect to city renovation and cultural preservation is the successful implementation of adaptive re-use policy. The built environment provides the structural narrative of a place and endures social changes to transcend culture into ages of modernity. Adaptive re-use policy implemented to preserve cultural assets strengthens the core of urban transformation.

Strict preservation, however, is not enough. The transformation of an existing building into a functioning element of the newly-renovated city must be comprehensive. This means that a connection must be made between incorporating a new, more compatible use, and maintaining the cultural integrity of the physical structure. The following three rivers serve as valuable examples of riverfront revitalization projects with effective adaptive re-use policy.

Collaboration Achieves Connectivity: Mississippi River

The Mississippi River is one of North America’s most famous waterways. Like Foshan, Minneapolis served as the economic driver for the region; however, industrial demand elsewhere during the mid-twentieth century required the local government to develop a new identity. In order to restore the waterfront to the people and revitalize the local economy, a Riverfront Coordination Board was formed to manage all development interests. This enabled organizations such as the Minneapolis Historical Society and the Cultural Preservation Commission in the municipal office to have an equal voice at all planning stages. As a result of this holistic approach, several unique examples of adaptive re-use were developed.

Cultural Assets Anchor Redevelopment: Mill City Museum

This museum houses the story of the cultural history of Minneapolis as well as the history of the river. The development itself remained to serve as an anchor for future redevelopment along the water. Once private investors witnessed the
public investment of regenerative activity in the newly-designated “Mill District”, the perception of financial risk was minimized. The exceptional part of this reformation is the creative re-use of the factory shell. Despite the rundown crumbling walls, the museum was built to complement the structural remains. Because of the structural integrity required by the Coordination Board, an intersection between industrial heritage and contemporary culture emerged.

**Designated Links: St. Anthony Falls Heritage Trail**

This designated trail connects the many cultural and historical sites through interpretive signage and way-finding mechanisms such as uniform lighting and identifiable paths. Many cities struggle with historically significant sites that are scattered throughout the district. Defining a coherent and comprehensive path creates connectivity within the sites, which can direct future development.

**Regenerative Purpose: Singapore River**

The Singapore River struggled with severe ecological concerns, but equally important in the restoration process was the reunification of the community with the river. Because Singapore grew around the river mouth, it became the financial center of trade, commerce, and culture, developing into the first Port of Singapore. Consequently, this section of the river emerged as the lifeblood of the founding colonies and a fundamental element of life in Singapore. As the river clean-up process took place, creative insight of land use not only preserved a piece of history, but also facilitated additional economic development.

**Appropriate Use Offers Sustainability: Boat Quay**

The quays were originally home to local warehouses and boat houses. In 1860, the Boat Quay handled three quarters of the shipping services for the region. Instead of removing the dilapidated structures during the environmental clean-up process, the boat houses were transformed into bars, pubs, restaurants, shops and antique stores. This created an immediate tourist destination. The new life along the river not only connected the colonial past with the citizens of today, it revived the riverfront with a new identity. Thus, the groundwork for sustainability was laid by establishing
Cultural Preservation and City Renovation

appropriate use of the land.

**Competitive Bidding: Thames River**

The city of London is an excellent example of a post-industrialized economy that reclaimed the river on which it was built. The Thames river redevelopment process portrays a balance between cultural preservation and innovation achieved through adaptive re-use.

**Re-use Creates Iconic Architecture: The Tate Museum of Modern Art**

The Gallery of Modern Art for the Tate Museum in London was designed by prize-winning architects, and stands today as an architectural icon as well as a flagship to represent the convergence of the past and the future. The original structure was the Bankside Power Plant built in 1947. As the river underwent an ecological transformation, the power station along the south bank of the river became irrelevant to the adjacent residential and commercial development.

A competitive bidding process took place for the design of a new museum. Because a defined vision of cultural preservation had been explicitly recommended, the architects whose design included the existing structure won the bid. Rather than demolishing the massive brick and steel structure, they adaptively re-used the power plant to create an epicenter of modern culture, simultaneously designing iconic architectural artwork.

At the core of city renovation is the need to balance cultural preservation with transformative growth. Adaptive re-use policy can be implemented through consistent construction requirements and the formation of coordination boards to specifically oversee cultural assets. Preservation of cultural heritage is an essential component of any master plan, and should, therefore, be considered as an investment paramount to urban revitalization.

**Tourism**

Cultural tourism is a sustainable way for Foshan to attract visitors as well as stimulate economic growth. Tourism, particularly cultural heritage tourism, to a region helps to distinguish identity, and best practices learned from various cities can set Foshan apart from neighboring urban centers in the region.
Preserving the Past Creates Future Tourists: Old Town Sacramento & Sacramento River

Sacramento is the gold rush capital of California. Potential “Gold Miners” traveled by sea to San Francisco and then through the Sacramento River Delta in order to reach the new “boomtown” for gold. Although there is no longer gold to mine, Sacramento is a frequent tourist destination for primary school students learning about the once infamous “Wild West” culture. Similar to Foshan, Sacramento is also close to a larger city, San Francisco. Capitalizing on regional access and proximity to another economic center to help attract new visitors bolstered the positive effects of Sacramento’s efforts on cultural preservation.

This unique, 28-acre national historical site provides shopping, dining and entertainment along the Sacramento River. “Old” Sacramento was restored to its original state with cobblestone streets, wooden plank sidewalks and railroad ties playing the role of parking dividers. Tourists may take a horse drawn carriage ride around the city or enjoy cultural events and historical re-enactments throughout the year.

The Delta King steamboat was formerly used to transport visitors to and from San Francisco in the 1800s. Today, the carefully restored vessel is a restaurant and hotel permanently docked along Old Sacramento’s riverfront.

Old Sacramento’s comprehensive nature makes it a unique draw, allowing visitors to spend several days in the town as they re-create their individual impressions of “Wild West” culture.

River as a Tour Guide: San Antonio, TX

San Antonio is a riverfront city with many historical sites attractive to visitors. The “Famed River Walk” is one best practice that will be particularly beneficial to Foshan. The River Walk, also known as Paseo del Río, is a 13-mile walkway along the banks of the San Antonio River. The walkway is lined with bars, shops, hotels, and restaurants, and is an important part of the city’s urban framework as a tourist destination. The lush landscapes, quaint pathways, tinkling waterfalls, quiet pools, outdoor art, and relaxing outdoor patios evoke the renowned public spaces of Europe.
The pedestrian walkway, which is located one level under the street, winds and loops under bridges and storefronts. Pedestrians have access to buildings at either street level or at walkway level. Originally designed in 1920’s as an alternative to paving over the river, it is now a tourist destination. Currently, San Antonio is extending the walkway to the originally-planned 13 miles in order to incorporate various museums and historical and cultural monuments. Tourists can either take a river taxi or cruise at any one of 19 stops along the river.

Branding and Marketing: Livermore, CA

Livermore is a quaint city located one hour east of the major commerce hub of San Francisco, California. Livermore is home to the renowned science and technology centers, Sandia National Laboratory and Lawrence Livermore National Laboratory.

Livermore launched an excellent marketing campaign that not only highlighted the city’s cultural activities, but also capitalized its short distance from one of the most famous cities in the world. The campaign brands Livermore as being a great day visit or weekend getaway from San Francisco. Livermore’s campaign “You can be here in one-hour,” shows various convenient ways that tourists can get to Livermore, whether by public transportation or car. In addition proximity advertising includes a list of supplementing tourist attraction such as a number of wineries, museums, and performing arts centers.

Community Engagement

Community engagement plays an important role in urban revitalization and cultural preservation. While it is in the best interest of governing authorities to promote the preservation of cultural heritage, it is community buy-in that ultimately determines the success and sustainability of preservation efforts. Avenues of participation in revitalization and preservation projects are essential to building or repairing community relationships with the heritage that is being preserved, and are necessary to create a sense of membership in the community. A feeling of belonging within the community drives community improvement efforts, including cultural preservation.

Community engagement in this context is broadly defined as the process of working with groups of people with similar special interests (such as cultural heritage) to
address issues faced by the same people. It can serve as a catalyst for environmental and behavioral changes in the community, as well as influencing policy, programs, and practices. In developing engagement efforts to preserve tangible cultural heritage of the community, it is best to maintain a focus on cultural identity to produce appropriate and relevant engagement activities. Nevertheless, there is much to learn from successful community-based cultural preservation projects around the world. Two community engagement programs addressing cultural heritage are highlighted below.

Rediscovery of the Human Landscape: Kai Tak River

The plan for the cultural and economic development of the Kai Tak River, formerly Kai Tak Nullah, calls for innovative community participation efforts. Clean-up and restoration of the river, which is situated alongside the old Kai Tak Airport and the centuries-old village of Nga Tsin Wai, has become an issue around which community leaders have rallied. The lost cultural landscape surrounding the river of the farmer as scholar and teacher and of the river as a place of communal gathering and historical value is slowly being revived as the community engages in a quest for cultural preservation. With the motto of “design together, construct together, enjoy together,” those who are leading efforts to transform the river and its surrounding areas emphasize the importance of community engagement in all steps toward revitalization.

Public art venues have been developed along the river as well a heritage trail project highlighting the area’s long history prior to the Qing Dynasty, the 1911 “Hundred-Year Treaty” historical district, the contemporary art and culture that has developed in modern Kowloon, and the aviation history of the Kai Tak Airport. A bridge from 19th-century Nga Tsin Wai uncovered during construction is being restored and incorporated into the trail. A creative artist village is planned, as well as a grassroots market along the Kai Tak. Public art days along the river that enable community members to create art along the river have also begun in an effort to transform the community’s collective memory of the Kai Tak from a wastewater collection nullah to a river of cultural and communal value. Additionally, efforts are under way to incorporate the cultural history and importance of the river into the local public school curriculum. The Kai Tak River restoration project elevates water as an urban asset to elevate the quality of life of community residents, as well as to preserve cultural heritage of the surrounding area, as Foshan aims to do.

Public Art to Facilitate River/Community Interactions: San Antonio River, TX USA

The San Antonio River’s 30-year comprehensive river-improvement project focuses on increased economic development, cultural resources, and recreational
opportunities. *A Public Art Master Plan* has been created in conjunction with a development plan to ensure that the river’s rich heritage remains an integral part of the city’s culture. The plan conceives of the river as a natural path that provides unexpected and changing experiences for the community and visitors, allowing them to develop personal memories and connections with the river.

Public art is viewed as an important element that creates unique experiences and helps to preserve the historical landscape. Existing and planned pathways along the river will link to heritage sites and park spaces also on the riverfront. The San Antonio River Walk serves as a center for cultural tourism, as well as a space for community festivals, parades, performances, and other cultural activities. The new plan nearly doubles the size of the existing river walk and allows for greater access to art and cultural sites, including museums accessible by river and land. Art educational programs, including mural/public art training, production skills, and mosaic tiling, all serve cultural preservation purposes and often have ties to the river. San Antonio has also established a Design Enhancement Office to foster public art programming and promote the vitality of the arts and the community.

The *Master Plan’s* focus on river/community interaction is an illustration of the value in creating positive communal memories of the river to promote its preservation, as well as the cultural heritage that surrounds it. After decades of sustaining heavy pollution, the Fenjiang River’s relationship with the community that surrounds it is strained. Public art can serve as an important piece in repairing the delicate and ancient relationship between the river and the cultures that have developed around it.

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<td>• Link cultural asset by designating a heritage trail</td>
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<td>• Adaptively reuse vacant factories to transform industrial land for commercial use</td>
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<td>• Brand and market Foshan as a viable weekend getaway by capitalizing on regional proximity</td>
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<td>• Use public art activities and exhibits to draw community attention to river restoration efforts</td>
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ECOLOGICAL STEWARDSHIP

The Fenjiang River Comprehensive Remediation Management Office has developed a significant amount of ecological restoration projects since 2001. Industries along the river have begun to be relocated, polluting elements have been curbed, and planned infrastructure redevelopment along the growing green belt is in place. But the restoration accomplishments must be sustained through long term planning beyond the technical bench marks of remediation. It is imperative to look beyond 2010 in order to maintain the water quality improvements already achieved, as well as to foster a stronger environmentally conscious society.

Ecological restoration is inherently intertwined with socio-economic development, land value, and the overall cultural health of Foshan. In order to continue building Foshan into a model city for environmental protection and creating a more balanced and renewable eco-system, three components of long range planning should be included. First, establish a vision beyond 2010. Next, develop community stewardship to assume social responsibility for the maintenance. And lastly, engage non-governmental organizations to facilitate awareness and education.

Beyond 2010

Many rivers have encountered the same challenges as the Fenjiang River while removing harmful toxins and polluters to make way for new development. (See Appendix) Designing a plan beyond the target completion date is equally complex because it must include a multi-dimensional approach including ecologically-sustainable processes as well as creative social policies to optimize recently achieved remediation.

Construct a Multi-Dimensional Vision

The water quality treatment plan for the Los Angeles River introduces an example of multi-scaled facilities including regional, local and site-level surface drainage. This treatment process occurs in conjunction with the 25-year Master Plan in two major phases of development. Long term and short term plans include waterfront promenades, open parks, and recreational facilities, which help to add physical focus to the water further enforcing the relationship between man and nature. In Foshan, periodic signs posted along the water advertising benchmarks achieved and future development plans could help to continue the vision beyond 2010. Guidelines with both technical directives as well as social policy must be explicit. (See Appendix)

Thinking beyond the removal of symptomatic agents is also necessary for the Fenjiang River. As seen in Singapore, after dredging the river and cleaning the water, fresh sediment replaced the pollutants that had been removed during dredging. Artificial sea grass was introduced into the river to provide a habitat for returning species and to increase biological diversity. To control pollution, vertical gratings and float booms
were installed in the canals and rivers to trap litter and debris that managed to reach the river. Equally important to the eradication process are the measures in place to manage future use.

**Restore a Functional Riparian Ecosystem**

Over the past several decades, the Los Angeles River has lost a vast majority of its natural state from the concrete paved channel. To reestablish the greenery that once existed in the River, several remediation items are planned that are useful tools for the Fenjiang River Project. Firstly, create a continuous functional riparian corridor to maximize habitat value and create habitat zones that are well-buffered from active recreation zones. Secondly, connecting this corridor to other significant habitat and migration routes along the tributaries and into the mountains reconnecting other significant habitat areas is another essential focus. While the tributaries themselves are beyond the scope of the Fenjiang River Plan, follow-up studies that would develop a more integrated, comprehensive strategy for strengthening ecological connections between the River and its tributaries are recommended. Thirdly, bio-engineering the River’s edge, where feasible, to create and restore wildlife habitat along the upper reaches, would be beneficial to increasing native wildlife.

Aside from revitalizing the corridors, emphasis should also be placed on multiple-benefit landscape treatments and “green infrastructure” improvements. Landscape-based treatment can be especially effective in addressing nutrients, which is also a concern for the Fenjiang River. These areas may be used in conjunction with other landscape features to provide additional aesthetic value to habitat and recreational spaces.

**Developing Ecological Stewardship**

Developing ecological stewardship builds a sustainable river culture. In order to achieve sustainable environmental remediation, unlikely sources can be tapped to support the river rebirth. This means that policy must also address stakeholder outreach and develop public education campaigns to regenerate citizen attitudes.
Expanding Amenities: Los Angeles River

Because Los Angeles is such a vastly-built landscape, large areas of open space are difficult to create. Consequently, “Pocket Parks” began sprinkling the downtown urban centers to make up for the lost amenity. First placed in neighborhoods most deficient in usable park space, Pocket parks are now a common way to fill in an oddly-sized corner of an alley or a small walk space between buildings. This added amenity carries out the “greening” process occurring along the river, visibly connecting the built environment with the natural environment.

Illustrating Greenness: Kai Tak River, Hong Kong

Local primary school students participated in an art project conducted in the classroom that was exhibited on the river. Rainbow-colored pinwheels floated on the water’s surface to publically convey the transformation of the Kai Tak waterway. The “Rainbow Project” symbolized the former colors of various pollutants often found in the water while the shapes represented the clean-up process literally coming “full circle”.

Citizen Accountability: Pittsburgh River Delta

In the Pennsylvania River Region, the Pittsburgh Delta found that removing rocks and clearing embankments and trails were expensive and labor intensive. The “Adopt-A-Mile” program rallied community organizations, businesses, families and individuals to each assume responsibility for a mile-long section of the river (approximately 1.6 km). This assumption of individual accountability increased awareness of the ecological needs along the river and lightened the heavy burden of maintenance for the local management authority.

Utilizing Non-Governmental Organizations

It is important to consider how the Fenjiang River arrived at its polluted state prior to the initiation of Foshan’s ecological restoration efforts. Pollution can partly be attributed to a lack of public education or awareness of environmental responsibility. While government agencies have made drastic improvements in ecological restoration, Non-Governmental Organizations (NGOs) play an essential role. NGOs are able to carry out functions beyond the expertise or community influence of many government offices and can often maintain and facilitate programs in a more consistent manner.

Los Angeles has implemented year-round living laboratories for schools to integrate an outdoor classroom curriculum. Regional River Learning Centers operated by NGOs are being created to hold exhibits and provide facilities for public gatherings,
Friends of the Los Angeles River (FOLAR) is an NGO founded to advocate for children’s environmental education. Their mission is to protect and restore the natural and historic heritage of the Los Angeles River and its riparian habitat through inclusive planning, education and wise stewardship. In order to expand their message and outreach programs, they provide hands-on educational experiences for 4th - 12th grade students along the banks of the Los Angeles River. Through a comprehensive curriculum that includes in-class presentations and River field trips, this program promotes awareness for the River’s scientific, historic and cultural significance and the need for protection and preservation of this natural resource running through the heart of the city.

RECOMMENDATIONS
ECOLOGICAL STEWARDSHIP

- Expand greenspace amenities through “Pocket Parks”
- Develop citizen accountability to offset river maintenance costs
- Collaborate with unlikely sources to achieve mutual goals

FOLAR Student Field Trip
SUSTAINABLE SOCIO-ECONOMIC TRANSFORMATION

The economics of social capital transports physical development onto the threshold of sustainability. The socio-economic criteria on which master plans are built outlines this framework. A people, a community and general social welfare are at the foundation of economic achievements. Before ecological stewardship, cultural preservation or land value appreciation is implementable, comprehensive socio-economic planning must be established. Issues regarding relocation and displacement, civic engagement and governance structure must be addressed for a sustainable socio-economic transformation to take place.

Relocation Challenges in Redevelopment

Land acquisition is often a major component to river restoration projects. Involuntary relocation of existing residents and industries however does not always develop into a positive byproduct of revitalization. Within the Fenjiang River Restoration Project involuntary resettlement has encountered strong resistance from displaced groups eventually evolving into deeper social issues that hinder a project’s momentum. The lessons and challenges offered by various international cases indicate that considerations for involuntary relocation constitute an integral part of the overall project design. Such considerations have best been addressed by applying early attention to the challenge of minimizing inequity. The Cheonggyecheon River and the Singapore River are two lesson-yielding examples of projects which encountered issues of displacement and resettlement, both of which elected to mitigate the effects of future displacement early in the redevelopment planning process.

Institutionalized Outreach: Cheonggyecheon River

The paved Cheonggyecheon Road and the elevated highway over the Cheonggyecheon River stretched through a dense commercial district. The city’s audacious scheme to replace the elevated highway and its deprived neighborhoods with water streams and human-friendly green spaces is similar to Foshan’s goal to implement environment-improving measures to stimulate economic growth. Furthermore, the project’s objective was not only to resolve inner-city environmental problems, but also to diminish the socio-economic disparities between the northern and southern regions of Seoul.

The city government faced a major challenge with respect to building consensus among multiple, resisting stakeholders while mitigating the negative impacts generated by the project. The city implemented several measures to resolve conflicting interests between the government, citizens, and businesses.

To maximize efficient communication among stakeholders, consultation offices were installed at the open-air markets housing the most-affected merchants, where regular meetings were held with representatives from the Residents and Merchants Council.
Detailed surveys and interviews were conducted with merchants prior to demolition and throughout the construction process in order to address their main concerns. By establishing a *multi-level relocation mechanism*, the government was able to gain local, grassroots expertise on infrastructure needs to avoid further community hardship.

One of the most controversial issues in Seoul was the replacement of unplanned clusters of shops that had been built alongside new industrial clusters. Relocation is inevitable but mitigating hardships should be a priority. The government provided *various forms of compensation* to the merchants, including the distribution complex built in Munjeong-dong in the southeastern part of Seoul. The complex accommodated wholesalers and retail shops, supported facilities such as a distribution center, a large-scale discount store, and a multiplex movie theater. Today, the complex continues to increase the economic development of the region.

Cheonggyecheon River further provides an illustration of how government-conducted interviews can identify and address concerns unknown to industry outsiders. For example, high-tech construction equipment designed to create less noise and dust was employed to minimize the impact of construction on businesses. When roads were closed or jammed due to construction, the government made *shuttles available to the public* so that the area remained accessible throughout the construction. Also, after the project ended, the government provided low-interest loans to merchants whose businesses did not fit into the revitalized area in order to upgrade their businesses or move to other areas of the city where they would be able to prosper. A collaborative discussion process is vital for sustainable development.

By conducting a broad outreach campaign the economic vitality of the street vendors was realized. Maintaining a sense of community was important for the vendors but a successful transplant was imperative for the governing body.

**Strategically Customized Relocation: Singapore River**

The Singapore River Project aimed at eliminating all sources of pollution along the riverbanks, not only for cleaning the water but also adding infrastructure that would support the nation’s rapid economic growth. The project required large-scale relocation of the existing commercial activities. This included hundreds of farms and thousands of squatters, street hawkers, and vegetable wholesalers. A strategic resettlement plan was implemented by the Ministry of the Environment to address 16,000 families in the nearby squatter colonies. In addition, 2,800 backyard trade industries were relocated to new industrial workshops and warehouses equipped
Sustainable Socio-Economic Transformation

with proper pollution control facilities. The international experiences of Seoul and Singapore illustrate suggestions that Foshan might apply to its own plans to phase out certain industry clusters.

Civic Engagement

The inclusion of all stakeholders as part of the decision making process is another important element for river revitalization efforts. Public engagement assures that the affected parties are not only notified passively but also invited to contribute actively in the policy making process. More importantly, such effort enhances popular support for government policies -- When people have participated in the decision making process, they are more willing to accept decisions even if those decisions are not what they would have preferred. Including stakeholders in all stages of a project, while difficult, ultimately leads to sustainable public policy.

Individuals as Stakeholders: Los Angeles River

An excellent, ongoing example of public engagement is found in the Los Angeles River Revitalization Project. The City of Los Angeles made public outreach a central component of creating the Master Plan. It held 18 public workshops and numerous other directed meetings with stakeholders as they began their work. These included meetings in specific communities in which citizens were invited and encouraged to ask questions and make comments about their future vision for the River.

Through these community meetings, the City was able to receive public feedback about how people preferred the River to look as well as concerns that they had about the restoration project. These meetings not only gave the citizens a voice, but also helped the City understand the types of issues that needed to be addressed in order to make the project work. Community meetings were well publicized and designed to be accessible to the public in both location and timing so that the maximum number of people could attend. The City continues to hold quarterly update meetings. As the LA River Restoration Project still expects an approximately 25-year timetable until completion, the public support gained through continued outreach efforts will be essential to the ultimate success of the project.

Citizen Oversight of Project Management: San Antonio River

Another example of citizen engagement is taking place in the San Antonio River Improvement Project. Although the city and county governments took the first steps in moving towards river restoration, a 22-member citizen committee composed of community leaders was appointed to guide the design and implementation of the project. In this case government planning become a product of citizen involvement that included project management, construction, and fundraising.
Among the innumerable types of non-governmental organizations (NGOs) are those groups addressing the needs of the environment, culture, minority rights, poverty, and many others that fill the voids left by both the governmental and private sectors. As suggested previously to engage ecological stewardship, NGOs bring the expertise and motivation needed to advocate on behalf of certain issues or populations, and therefore serve as important stakeholders in the decision-making process for public policy.

NGOs continue to play an important role in the design and implementation of the ongoing Los Angeles River project. The City of Los Angeles established partnerships with these organizations in order to utilize their knowledge of the communities surrounding the River to gather public support and feedback on the project and advocate specific River issues. Other partnerships coordinate restoration-related activities. NGOs are not foreign to Foshan. Cultivating well-defined relationships with such groups is a means to relieving the great administrative burden increasingly faced by Chinese municipalities. The shortage of funds and operational capacity can be mitigated by strategic channeling existing NGO capacities toward operating, consulting, and financing functions.

Private sector businesses are essential stakeholders to include because they are often affected by large-scale redevelopment projects. The factories in the Fenjiang River Basin are at particular risk of closure and/or relocation as emphasis shifts to improved water quality and space for new development. Although the priorities of private enterprise often clash with those of other NGO or community stakeholders, which include more aesthetic or quality-of-life concerns, governments count a significant portion of revenue from what is paid as corporate income tax. Thus, the government must balance their maintaining public support with their sustaining basic business interests.

International Collaboration: Los Angeles River & Cheonggyecheon River

Just like the “sister city” relations between Foshan and other international cities, a number of river revitalization projects have established “sister river” relationships with other cities with whom they share knowledge and expertise. This is another strategy available to Foshan that could help raise awareness around the world about the project as well as provide valuable assistance as the project continues. Los Angeles has signed “Sister River” agreements with the Isar River in Germany, the Yargon River in Israel, and the Cheonggyecheon River in South Korea. These partnerships allow for a consistent exchange of information between cities and projects from which all parties are able to benefit. It also creates a medium for cultural exchange and understanding that provides benefits beyond the river restoration project. Seoul, South Korea has not only formed a partnership with the LA River, but they have
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joined an organization of cities called CITYNET that allows them to forge links and initiate cooperation with cities around the world to help solve problems they have in common. While Foshan has obviously reached out to outside organizations such as USC and PRUCD, this type of international cooperation could further improve the Fenjiang project.

**Governance Structure**

The Foshan city government is currently coordinating its river-cleaning and riverfront development efforts through adoption of a three-layer administrative structure. As the Fenjiang River runs across two administrative districts – the Chancheng and Nanhai districts; the Chancheng and Nanhai Regional Offices share their status as members of the second administrative layer. However, each has assumed functions quite different from the other. The Chancheng District office receives direct funding from the Mayor’s office and implements river-related policy stipulated by various bureaus. The Nanhai District office, on the other hand, mainly coordinates various township-level governmental cleaning efforts. The current structure is designed around facilitating river-specific efforts. This segment of our discussion moves into various international perspective with respect to how rivers are governed and managed worldwide.

**Evolving with Intended Functions: Mississippi River**

A major achievement in the redevelopment of the Mississippi riverfront was the establishment of the governance structure commissioned to maintain it. The noteworthy characteristic of that effort was the governing body’s ability to evolve and adapt its structure to the shifting focus through the project’s life. The initial stage of redevelopment in the early 1970s saw the Riverfront Development Coordination Board established itself as a joint-power organization to coordinate efforts from the Park and Recreation Board, the Minneapolis Housing and Redevelopment Authority, and Planning and Public Works departments. The key concern for this Board was to develop and hence revitalize the riverfront.

With maturation of the redevelopment project by 1982, the Board was dissolved. Replacing it was the Technical Advisory Committee (TAC). On one hand, TAC continued to coordinate redevelopment efforts, incorporating representatives from elected and administrative governmental offices (Mayor and affected Council Members’ offices, city departments, Minnesota Department of Natural Resources, Corps of Engineers, and National Park Services). On the other hand, its membership had been expanded to reflect its shifting focus to cultural and historical heritage preservation – TAC had appointed members from various cultures- and community-related associations (Heritage Preservation Commission, Citizens Environmental Advisory Committee, St. Anthony Falls Heritage Board/Minnesota Historical Society, Hennepin County State Historic Preservation Office, and University of Minnesota) (River Revive 2004). The Mississippi experience has shown that as the policy objectives change throughout different implementation stages, the governing structure should adapt appropriately.
Broadening the Scope of Contribution: Los Angeles River

If the Mississippi experience teaches us how river-specific governance structures can mature vertically, the experience from Los Angles River represents a lesson on how a governing structure can widen its scope of participation horizontally. A central goal of the Los Angeles River Revitalization Master Plan is to reconnect the river to the community. It includes enhancing the health of the river water and the quality of the surrounding environment and improving public access to the river. As a plan to achieve these objectives, the Plan identified areas of effective coordination among government agencies and examples of successfully incorporated public participation as the most crucial elements. To ensure comprehensive yet flexible governance, the Plan recommends a separate river governing structure, divided into three parts:

1) The Los Angeles River Authority, established in the form of a Joint Powers Authority, consists of the LA City, the LA County, and the U.S. Army Corps of Engineers (the latter through a Memorandum of Understanding). It maintains the ultimate regulating authority over water-related and habitat management issues (e.g. flood control, quality improvement and monitoring), and the use of the right-of-way channel and other infrastructural facilities. It is also responsible for planning, constructing, and maintaining these facilities. Staffed by the officials from the City and the County, the Authority is the principal organization for seeking State and Federal Government funds.

2) The Los Angeles River Revitalization Corporation is to be established as a not-for-profit body that has a board of directors appointed by the elected officials. It will be independent in nature, endowed with seed funding, and empowered with land ownership and development rights. These measures will allow for transformative revitalization. The body is expected to operate with an entrepreneurial spirit and a civic commitment to advocate for the Plan. While it can engage in private development partnerships, and acquire, plan and apply for rezoning, the profit it generates has to be retained (not distributed) for the Corporation, and it will focus on achieving larger community goals.

3) The Los Angeles River Foundation, to be set up as a not-for-profit organization, will aim at furthering “environmental, educational, cultural, social justice, and sustainability issues for the River and related communities”. Funding will be sought from donations and partnerships with the private sector. It will be directly responsive to community needs and opportunities by supporting programs promoting environmental education and developing capacity in minority communities.

This three-tier governing structure allows the Los Angeles River to receive contributions comprehensively from all sectors in the society. The Plan does not limit river-management power to related government authorities only. Private citizens, community groups, public schools, non-governmental organizations, for-profit
The existing context of city planning and zoning consists of three levels (general/community/specific). Apart from suggestions to update plans at the community level related to the river, the plan recommends the Department of City Planning to establish a River Improvement Overlay (RIO) district for a more refined approach to complement Community Plans and to achieve revitalization goals. Input from members of the community is crucial at this point in the framework: the community determines the RIO district’s boundaries, provides detailed contents of arrangements such as “building orientation, parking location, landscape design, and storm water mitigation”, and helps set quality criteria with respect to, for example, aesthetic characteristics, lighting appropriateness, and a “sense of human scale in design elements”, from the angle of community users. Introducing the community into the framework at this juncture represents a timely fine-tuning of the Community Plan. Finally, a unified Green Street standard is also suggested, which is to be formulated by the Department of City Planning, Street Services, Engineering, and Transportation, for the development of a “citywide transportation system” in the future. (See Appendix)

Within the Foshan context, this proposal, while incorporating professional planning considerations and practices, allows the community to contribute directly to the construction of the environment surrounding the Fenjiang River. Refinement of an existing plan according to the input and will of individual citizens can substantially enhance the community’s sense of belonging to the river and reinforce its identity as being a part of the Foshan community as a whole.

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A Community-Based Planning Framework: Los Angeles River

Cultural Preservation

Ecological Stewardship

Socio-Economic Transformation

Land Value Appreciation

Appendix
LAND VALUE APPRECIATION

As development continues, effective land use planning is essential to ensure ample housing, employment, and leisure space for the growing population. As the Foshan government moves forward with the revitalization plan, special attention should be paid to issues related to land use and land use rights.

Land-use rights promote the development of markets, in which land prices and market mechanisms begin to affect land use and land allocation decisions. More importantly however, is the way land use rights create an institutional capacity for local governments to raise much-needed revenue to finance urban redevelopment and economic reforms.

Land Value Appreciation

Riverfront revitalization cases around the world have provided us with important lessons on how to maximize the value of riverfront land. In general, land prices tend to increase after river restoration, ecological and cultural preservation have taken place. Also crucial to land value appreciation is the choice of appropriate businesses that help the riverfront area flourish. Korea’s Cheonggyecheon and Pennsylvania’s Pittsburgh River Delta are both good examples in which businesses play a great role in land appreciation over time. In both cases, retail shops, restaurants and residential buildings appealed the most to property buyers. And, while retail shops and restaurants attract residents and tourists; residents also patronize businesses during non-tourist seasons. As a positive byproduct, these increasingly vibrant economic activities raise the land and property value of surrounding areas, which further increases tax revenue for city governments.

Land Value Inflation Through Zoning: Cheonggyecheon River

Before revitalization, the dilapidated waterfronts along the Cheonggyecheon River were tattered industrial areas, filled with vendors and shops that sold low-value products like tools, lighting fixtures and used books. Rather than relocating the business owners, the Seoul city government introduced zoning measures to regulate the use of land. This institutional measure was employed to artificially inflate land prices along the riverfront. Also, businesses generating high revenue such as high-end retail shops and restaurants marketed toward attracting tourists increased land value and generated revenue for surrounding businesses. Due to the synergistic success of shops, office buildings and residential apartments, in addition to the tourism and community use spurred by cultural cultivation and ecological restoration, the real-estate market around the river is now booming, with land prices continuously increasing. The vacancy rate in the area is the lowest in the city. Seoul’s Development Institute estimated that the return of the initial investment of 23 trillion won can...

eventually reach 59 times its original value.

While the Foshan government has already been relocating polluting factories along the Fenjiang River, its next step will be to introduce institutional measures that are conducive to the healthy increase of land prices, and to determine which businesses will be the most successful along the river. Seoul’s experience has shown us that high-end residential buildings and retail shops/restaurants complement each other, attracting the most people and capital to the area.

Development Through Preserving and Rediscovering History: Pittsburgh Delta

The Pittsburgh delta shares historical importance and background similar to that of the Fenjiang River. (See Appendix) Due to untamed pollution and unsustainable development, the steel and coal industries, which were the major industry of the delta left behind idle industrial and commercial sites. But the area was soon able to revitalize itself. Giant mills abandoned for more than two decades were brought back to life in the form of hundreds of small businesses. Some old steel mills along the riverfront were re-used for research and development (R&D) laboratories that studied what was once the most hallowed soil in the Pennsylvania area. Foshan, too, could take advantage of this type of R&D to study the Fenjiang River and the history of the Lingnan Culture. Such research efforts may contribute even more to understanding the history and landscape of the local area as well as archeology in the global intellectual community.

Furthermore, Pittsburgh’s Nine Mile Run, which runs along the river, correlates to what Foshan is looking to achieve with the Lake of a Thousand Lanterns. The industry wasteland was in the past a depository for millions of yards of industrial waste. As one of the Pittsburgh’s greatest transformations, Nine Mile Run has now become a hundred acres of public open space, connecting to one of Pittsburgh’s largest parks as well as upscale housing complex. This preserved area has not only exemplified Pittsburgh’s historical evolution, but also the community’s commitment in reclaiming the once dilapidated industrial riverfront.

Since Foshan sees the Lake of a Thousand Lanterns as a central component to the success of the Fenjiang River Revitalization, it would be beneficial for them to observe Pittsburgh’s steps of developing dialogue with local community members and potential investors, so as to see what would best attract the most diverse groups of local communities, as well as domestic and foreign investors. But most importantly, it is essential to be aware of the consequence of rapid and untamed land appreciation, which could quickly and easily turn into land inflation and thereby cause such side effects as retail bubbles.

Land Development Process

The 1999 Land Administration Law and the Constitution of China allowed the
Land Value Appreciation

acquisition of land by collectives for the public interest. Today, a major issue is social equity in relocation and compensation. A key problem in this section regards how to ensure adequate financial resources for compensation. Also, given that one of Foshan’s priorities is to recruit international and multicultural businesses, the development’s success depends mostly on its ability to raise sufficient investment from different sectors, both domestically and abroad. In the following section, various ways of fundraising are discussed.

Harnessing Public Entrepreneurship: Los Angeles River

The Los Angeles River Corporation is designed to be the principal not-for-profit, non-governmental organization for the Los Angeles River with the responsibility of directing the financing of development projects related to neighborhood revitalization projects. The new oversight structure will be run by a board of directors appointed by elected government officials. Given seed money to sustain its own operation, the body is expected to run independently, adopting private professional practices with public spirits and community consciousness. Open meetings, an annual disclosure of financial performance, international accounting standards and similar practices will be adopted to enhance transparency and accountability. To Foshan, this institutional structure from the LA River serves as a good tool for attracting foreign investment.

Development Through Public-Private-Partnership

In recent decades, public-private-partnerships (PPP) have been increasingly recognized as efficient means of leveraging private capital and practices for development projects. PPPs are partnerships between the public and private sectors for the purpose of developing, financing, and operating projects that traditionally fall within the realm of the public sector. This collaboration allows private sector dollars to be leveraged, preventing the stalling of projects due to the lack of funds. Managed properly, PPPs benefit both the public and private sectors. Focusing on acquiring services at a cost-effective basis, the public sector can avoid having to pay a high interest for loans from bank lenders. Long term contracts with the government also ensure a stable revenue stream for the private investor over a long period of time.

PPPs can also serve as a means to integrating the public and private components of a community. Combining the contributions from the government, non-profit organizations, volunteer groups, and the community at large is comprehensive planning.
Land Market Financing

Foshan has a well-established market for alternative financing instruments. We recognize that municipalities are limited to a certain extent by state-level tax structures, investment guidelines, and related policies. That said, China’s move toward the capitalistic market economy is driven in part by an increasing transfer of autonomy to the local governments. While this is a necessary concession to effect such a drastic transition, it is also a great opportunity to bring about new types and increased levels of financing to meet local government needs. This is crucial to Foshan’s rapid yet controlled infrastructure growth and its positioning as an internationally-recognized player. The potential described here is opportune given the prevailing trend of consistent shortfalls in allocations by the central government’s part toward governments at the municipal level.

Alternative Financing: Special Assessment Taxes

The Special Assessment Tax is an alternative mode of financing employed frequently by almost every municipality in the United States. Assessment taxes are applied to a specific population of individuals or enterprises based on the participants’ collective agreement. Foshan may issue municipal bonds or exercise buyer power to secure commercial loans on terms more attractive than those faced by individual parties. The debt service on such bonds or loans, then, are structured around and met based on the future expected revenue streams from consistently collected assessments. The enterprises themselves assume such obligations based on the expected increases in land markets promoted by the various funded projects.

Special assessments fit well into Foshan’s economic plan for several reasons. Assuming an efficient bond market, they are easy to implement. They supplement Foshan’s fiscal needs by transferring a portion of infrastructure outlays to the best-positioned private enterprises and with the most incentive to assume the burden. The improvements to Foshan’s infrastructure appreciate land markets, further supplementing the municipality’s finances upon the future transfer of land-use rights and when property taxes are implemented and collected efficiently in the future. The presence of such a system complemented by a clear, uniform policy will not
only create an environment attractive to foreign direct investment (FDI) looking for stable investments, but also minimize much of the corruption common to the land development process. Finally, special assessments fit well into the industry-cluster structure enjoyed and cultivated by Foshan. The metal manufacturing industry cluster, for example, may elect to raise funds to drive technological advancement that alters the industry, bringing the international spotlight to Foshan.

Alternative Financing: Property Tax Implementation and Enforcement

Property taxes are one of the primary sources of revenue for local governments in much of the world. The current China tax code contains measures for collection of property taxes. Foshan itself lists property tax as one of its twenty-four tax bases. However, these taxes are not currently collected in full due to lack of familiarity with such system and shortage of administrative capacity. Like most of China’s municipalities, much of Foshan’s revenue base is sourced in one-time land transfer taxes from land bought cheaply, held in reserve, and sold at appreciated levels. Such a source is likely not sustainable in light of the rapidly dwindling supply of land reserves and blighted land for sale.

Consistent application of property taxes would add to Foshan’s fiscal power and long-term sustainability. It would also greatly improve financial health, as consistent, expected revenue would increase short-term solvency. Implementation sharpens Foshan’s understanding of its land markets, in that consistent and accurate appraisals of property value must be made for purposes of applying fair, uniform taxes. This is important because appraisal figures immediately and accurately reflect true land values. With such information Foshan can determine whether land markets are slowing or heating too rapidly. Only with such information can Foshan attain levels of confidence by investors for municipal bonds such as discussed earlier.

Cultivating Market Confidence

Issuance of municipal bonds is the most potent and sustainable form of financing available. The potential rate of land markets development, generally considered as all improvements whether to tourism, transportation, housing developments for relocation, commercial structures, the environment etc., can immediately be affected by leveraging existing resources multiple times.
The municipal bond market in China is already in place. While vast sums have been issued with the opening of markets to international investment banks since 2001 (111 billion Yuan available through the secondary bond market as of June 1, 2009), the market is still immature. This is reflected by the fact that over half of issued funds remain unsold. The primary hindrance to the sale of these bonds is lack of investor confidence by the international community in Chinese municipalities’ ability to meet debt service.

Confidence is created by strong credit ratings. Credit ratings, in turn, are only reliable if based on comprehensive financial data that is made transparent and guaranteed by internationally-accepted accounting standards. Foshan wishes to become an international hub as member of the Guangdong-Foshan Economic Sphere and is also concerned with attracting increased FDI; it possesses the opportunity to realize those goals by taking advantage of the current global downturn characterized by vastly increased interest in more stable investments, i.e. the bond market.

To do so, timely and relevant financial data must be compiled and made available to the public in a transparent manner. It is also international practice to guarantee the validity of such data by international accounting firms. Foshan may consider building such a model for purposes of establishing credit ratings and serving as an example for all of China’s municipalities and even provincial governments. The banking, accounting, and secondary market resources are already in place to build such a model. Foshan may also consider developing relationships with key, large institutional investors by establishing dialogue as well as tapping into its resources such as the Foshan cultural and planning exhibition centers. Tours of facilities and explanations of city plans through presentations and discussions will likely further promote the confidence of investors abroad.

### RECOMMENDATIONS

**LAND VALUE APPRECIATION**

- Drive up land price through land use zoning changes
- Harness public entrepreneurship
- Draw on specific tax base reserves
RECOMMENDATIONS

CITY RENOVATION AND CULTURAL PRESERVATION

Link cultural assets by designating a Heritage Trail
Designating a trail connects the many cultural and historical sites through interpretive signage and way-finding mechanisms such as uniform lighting, multi-lingual signs and maps.

Adaptively reuse vacant factories to transform industrial land into commercial use
Although the current status of vacant property is slated for demolition, several buildings should be rehabilitated into more appropriate uses in order to transcend the industrial past into the more commercial attitudes of today. Investing in infrastructure upgrades like energy efficient windows or solar panel roofs will also serve as an anchor to attract additional redevelopment.

Brand and market Foshan as a viable weekend getaway by capitalizing on proximity
Using the Fenjiang River to set the city apart from surrounding destinations like Guangzhou and Hong Kong is not enough to elevate tourism. Marketing the city as a retreat location to those places will re-introduce the relationship of the river to future tourists but also to the residents.

Use public art activits and exhibits to draw community attention to river restoration efforts
Because the Fenjiang River has a meaningful history of ceramic and textile arts, modern day exhibits can be used to educate the public on community history as well as future river needs.

ECOLOGICAL STEWARDSHIP

Expand green space amenities through “Pocket Parks”
Green space is limited in large urban centers and strategically located green space that gradually builds toward one direction can give the illusion of more parks while also reinforcing Foshan’s greenness initiative.

Develop citizen accountability to offset river maintenance cost
Implementing an adopt-a-river initiative engages the community to be mindful of overall river health. The program also creates and instant interest group for management authorities to collaborate on future development.

Collaborate with unlikely sources to achieve mutual goals
NGOs are able to carry out functions beyond the expertise and community influence of many government offices and can often maintain and facilitate programs in a more
consistent manner.

**SUSTAINABLE SOCIO-ECONOMIC TRANSFORMATION**

Comprehensively institutionalize the government outreach efforts
Holding regular public feedback meetings at convenient times and locations and widely publicizing these meetings will improve public engagement. Also, encouraging comments and making sure citizens feel like their concerns are addressed will help people feel like their opinions really matter.

Strategically customize relocation
By establishing a multi-level relocation system, the government was able to gain local, grassroots expertise on infrastructure needs to avoid further community hardship.

Broadening the Scope of Contribution
By establishing a Joint Powers Authority and a not-for-profit body with an appointed board of directors, funding can be sought from donations and partnerships within the private sector.

Establish a “Sister River” partnership
A sister river, like a “sister city” creates avenues for cooperation and raises awareness around the world about projects along the Fenjiang River. It also creates a medium for cultural exchange and understanding that provides benefits beyond the river restoration project.

**LAND VALUE APPRECIATION**

Drive up land price through land use and zoning changes
A general zoning guide to anticipate growth and determine maximum use for future development can help to naturally increase of land prices for a sustainable market.

Harness public entrepreneurship
Open meetings, annual disclosure of financial performance, international accounting standards should be adopted to enhance transparency and accountability. These practices establish private sector trust in public sector operations. The entrepreneurial spirit building through the development of industrial clusters and technology parks should be maximized.

Draw on specific tax base reserves
Assessment taxes are applied to a specific population of individuals or enterprises based on the participants’ collective agreement. Foshan may issue municipal bonds or exercise buyer power to secure commercial loans on terms more attractive than those faced by individual parties.
CONCLUSION

The implications of urban transformation will inevitably reach beyond administrative borders. Analysis on the international experience of river revitalization projects offers valuable lessons for Foshan and builds a more comprehensive framework for long term success. Addressing broad topics such as Cultural Preservation, Ecological Stewardship, Sustainable Socio-Economic Transformation and Land Value Appreciation ensures that all aspects of development will be considered.

Based on lessons learned from the profiled rivers and a brief analysis of Foshan Municipality, recommendations for implementing strategies to achieve sustainability have been made. By applying a comprehensive approach Foshan will not only transform but will also transcend the Fenjiang River Basin into the culturally vibrant and economically sustainable home of the “Mother River”.
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Profile: Cheonggyecheon River; Seoul, South Korea

Background
The Cheonggyecheon is a relatively small inner-city river, which flows through the northern half of South Korea’s capital city, Seoul. It flows westward, where it eventually meets with the Han, a major river, which empties into the Yellow Sea. During the Joseon Dynasty (1300’s) under King Sejong, the river was utilized as a sewer in order to accommodate the city’s growing population. By the beginning of the 20th century, however, Seoul’s increasingly-concentrated population had caused the area near the river to become overcrowded, resulting in severe sanitation problems. As a countermeasure to this problem, the once-flowing river – length, 13.7km and width, 20-85 meters – was covered over with concrete in 1937, followed by the construction of Cheonggye Road which stretched along approximately 6km of the river’s length. During the years of economic development between 1967 and 1976, the four-lane Cheonggye Elevated Highway was built above the road. Over time, the modern stores and industrial centers that replaced the previously residential areas came to symbolize the modernization and industrialization of post-war Korea.

Throughout the nearly 30 years until the projects completion, the highway underwent several phases of repair work. However, the continuous repair efforts failed to secure the long-term stability of the highway structure, raising critical questions regarding its safety and spurring many years of controversial debate. In 2003, under the then-Seoul mayor and current President Lee Myeong Bak, the Cheonggyechon Restoration Project was formulated in order to address the stability and safety concerns of the highway, revive the downtown economy, and restore the history, culture, and ecosystem in the heart of Seoul. With a final cost of 386 billion won (281 million U.S dollars) the project was one of the most controversial yet ambitious initiatives ever implemented by the city. Not only did it require the dismantling of the highway and revitalization of the river area, nearly 120,000 tons of water had to be pumped in daily in order to make the river flow again. It had been left nearly completely dry over the 30 years of neglect. After 2 years of mass construction, the stream was reopened to the public in September 2005. The following is a discussion of some of the praises and criticisms of the project, as well as important lessons learned from this incredible revitalization effort.

Project Objectives
1. Redesign as a human-oriented and environmental-friendly urban space while ensuring maximum flood capacity sufficient to handle the frequent heavy rains during the summer.
2. Balance development between the northern and southern parts of the city as well as contribute to Seoul’s goal of becoming a major financial and commercial hub in East Asia.
3. Instill in the Korean people a strong tie to their heritage and to bring
emphasis back to the cultural and historical richness of the area.

**Issues & Action Taken**

**ISSUE: Maximizing ecological value of an urban river.**

Action Taken:
- Heat emitted by the lights was designed to enhance plant growth while emitting the degree of illumination appropriate for fish and insect life.
- In order to encourage fish habitat, irregular curves were designed into the accompanying swamps along the lower reaches downstream for wildlife.
- Covering structures complement the sewage improvement to guarantee wastewater from flowing into the river during periods of torrential rain.

**ISSUE: Attracting businesses and consumers to revitalize dilapidated downtown economy.**

Action Taken:
- Project planners were careful to make the area easy to access and pedestrian friendly. A two-lane road on each side of the river still allows transportation through the area, and additional space was left for stores and parking. Sidewalks were constructed for the stores while bridges and waterfront roads provide access to the river at 17 different locations.
- Encouraged a shift from street vendors and outlets to restaurants and higher-end retailers which has increased retail rental rates that complement already-appreciated land and the capacity for catering to a now predominantly tourist/shopper demographic.
- Seoul City held public hearings and conducted more than 4,000 interviews with merchants to collect their opinions about the project’s impact.

**ISSUE: Balancing cultural preservation and economic development.**

Action Taken:
- Dismantled and relocated historical bridges and reconstructed them once the foundation to the project had been laid.
- The government built a cultural center and sponsored cultural events such as tours, museums, and street exhibitions, and created a means to finance these activities by offering the Cultural Center Bridge Fund.
- Utilized the River to link historical sites and create a place for people to come and experience Korean culture.
Profile: Kai Tak River; Hong Kong SAR

Background
The Kai Tak River is a 1.5 km waterway found in the Eastern Kowloon District of Hong Kong near the old Kai Tak Airport. Originally known as the Long Jin River, it was built into the Kai Tak Nullah during the Japanese occupation of WWII as a rainwater runoff channel. Over time, the Nullah became extremely polluted due to illegal discharge from factories and domestic sewage from squatter huts. Authorities’ efforts to clean the Nullah were largely unsuccessful until the 1990’s when the government made a concerted effort to improve water quality and remove unsanctioned squatter settlements from the area surrounding the Nullah. Still, many stakeholders called for the Nullah to be paved over as a solution to the problem which was considered by the government to be the best option until 2005. As the major redevelopment effort of the old airport began to take shape, a few community members realized the potential value to restoring the waterway and initiated a community-based planning exercise that became the beginning of the restoration project and led to further community outreach and government lobbying.

Project Objectives
1. Link historical and cultural heritage of the surrounding area to the River
2. Develop an integral community used for commercial, residential, and leisure purposes
3. Strengthen ecological and greening measures to convert the River into an urban ecological wetland

Issues & Action Taken
ISSUE: Negative Public Attitude

Action Taken:
• In 2007, the Nullah was renamed the Kai Tak River in an effort to change people’s attitudes about its future possibilities.
• An alliance was formed with 20 local schools and an education effort began in order to teach students about the importance of an ecologically sound river.
• Students, government officials, and the public are invited to tour the River and engage in dialogue about its future.
• Promotional pamphlets, public exhibitions, and websites were created to reach additional community groups.
• Public art spaces were added to the River to introduce a theme of “water, green, and heritage” to the River design.

ISSUE: Transformation of Polluted Urban River Into Public Green Space

Action Taken:
Those involved in the River restoration project reached out to environmental organizations such as the Conservancy Association, Friends of the Earth, and the World Wildlife Fund who have acted as environmental consultants on the project.

- Plan to connect old and new districts with a cycling trail.
- Some areas have been designated for use as a marketplace while others have been reserved for living water gardens.
- Connect different areas around the river with a green corridor.
Profile: City of Livermore; California, USA

Background
The City of Livermore encompasses twenty-two square miles and is the easternmost city in the San Francisco Bay Area; the gateway to the Central Valley. Livermore is surrounded by the coastal range provides the Livermore Valley with a mild climate that enhances the pursuit of a more relaxed, less congested lifestyle. Livermore is home to renowned science and technology centers, Lawrence Livermore National Laboratory and Sandia National Laboratory and is a technological hub and an academically engaged community. It has become an integral part of the San Francisco Bay Area, successfully competing in the global market powered by its wealth of research, technology and innovation.

Project Objectives
1. Redevelopment of a downtown district that is essential for business retention, expansion and new business.
2. Top destination for business, tourism, technology and education.

Issues & Actions Taken
ISSUE: Create a vibrant downtown district serving the living, dining, shopping, and cultural and entertainment needs.

Action Taken:
- A Downtown Specific Plan was adopted, targeting downtown Livermore for additional revitalization efforts, which are designed to draw more people and new businesses and to establish downtown as the City’s preeminent shopping, dining, entertainment and cultural district
- The City simplified the permitting process for new downtown processes
- Planned for commercial uses in the downtown core bringing new businesses
- Created an “Arts District” to attract tourists and new businesses
- Created Live/Work artists’ lofts
- Created “Golden Triangle” Complex with a 10-screen movie theater and a 500 small performing arts theater
- Established Livermore marketing plan disclosing top tourist destination in the region
Background
Before the Los Angeles River was covered by a concrete shell, it was first discovered by Mexican farmers prior to European settlement in 1781 as the fundamental water source. The population grew rapidly and settlements were built along the river where the natural ecological system lost the capacity to control itself. As a result, Los Angeles experienced a number of catastrophic floods between 1850 and 1938, where the federal government took action to construct a flood control system that artificially encased almost 51 miles of the river that we see today. Due to the miles of concrete-lined channel that stretches from the San Fernando Valley to the Long Beach Harbor, the Los Angeles River is perceived as an unwelcoming site to many. Now with the rail tracks and gated fences blocking the view toward the river the area is abandoned and underutilized which generates more trash, security issues and blight. In 2002, members of the City Council formed an Ad Hoc River Committee and spearheaded an effort to start raising support for the project. Five years later the Los Angeles River Revitalization Master Plan was completed and is currently in the first stages of implementation.

Project Objectives
1. Restored a functional ecosystem through creation of a continuous riparian habitat corridor.
2. Developed a river greenway that acts as the centerpiece of the cities green space system.
3. Captured community opportunities by helping to foster civic pride and citizen participation
4. Created a broad range of benefits that enhance Los Angeles’ livability and economic prosperity.

Issues & Action Taken
ISSUE: Maintain existing flood capacity while slowing down flow velocity to reestablish a riparian corridor.

Action Planned:
• Storage of flood flows in basins outside the main channel
• Provision of additional underground box culverts to transport flows
• Land acquisition allowing channel widening

ISSUE: Address poor water quality due to storm water runoff.

Action Planned:
• Reduce and reuse storm water runoff from developed areas
• Capture and treat remaining storm water runoff from developed areas
• Treat runoff on-site on both public and private sites, and using public properties including parks, schools, and civic sites as treatment facilities

ISSUE: Since public access to the River is limited for safety reasons the River has become a destination for homeless encampments and gang activity.

Action Planned:
• Encourage more beneficial use, while ensuring public health and safety through a variety of measures
• Jurisdictional partners (the City, the County, and the Corps) work actively to develop strategies and design standards for safe access to the River
• Make the River an amenity for all residents of Los Angeles with bike paths, urban plazas, recreational facilities, and civic space so it will be well-used.
Profile: Mississippi River; Minneapolis, Minnesota, USA

Background
The City of Minneapolis extends 11.5 miles along the Mississippi River resting on the banks of the river’s only waterfall. Between 1880 and 1930 Minneapolis, or “Waterfall City”, became the country’s foremost lumber center. After the plains were planted with wheat and the railroads were built, the flour milling economy boomed with the hydropower infrastructure built around the 50-ft St. Anthony Falls. The river served as a natural resource for the economy and a powerful engine providing food for the nation’s bread basket. After World War I, depression-era freight costs and tariffs forced flower mills to relocate eastward to coastal ports, leaving abandoned mills and an industrial wasteland of warehouses and unused railroads to define the landscape. As the industry continued to transform, the riverfront lost its economic necessity and was soon designated as abandoned, blighted property. In 1970 the Riverfront Development Coordination Board was established, and in 1972 subsequently published the *Mississippi Minneapolis Plan* which served as the cornerstone for revitalization in the area. Over the course of one hundred years the City of Minneapolis’ relationship with the river transitioned from functioning as a utility of an industrial economic driver to becoming stewards of a cultural asset.

Project Objectives
1. Removed barriers to redevelopment
2. Converted the riverfront from practical utility to public use
3. Preserved and interpret the area’s history
4. Enhanced the ecological function of the river
5. Developed a mixed-use community within residential neighborhoods

Issues & Action Taken
ISSUE: Disconnected Cultural Assets

Action Taken:
- In 1983, the *Mill District Plan* was published and in 1998 the *Historic Mills District Plan* was released designating the area a historic quarter.
- Warehouses and mills were converted into residential lofts or commercial office space. Riverbanks were re-vegetated to reduce erosion and filter storm water.
- The *St. Anthony Falls Heritage Trail* connects the areas neighborhoods to the river and the Mill City Museum in the once-abandoned Washburn/Crosby Complex introduces visitors to the areas industrial history while serving as a place of community centrality.
- Designation of a historic district improved surrounding property values and offers finance incentives. More than 60 historic buildings have been adaptively reused or rehabilitated with interpretative signage. A designated...
path, St. Anthony Trail, reinforces the historically significant region

- Branding the Central Riverfront District created cultural identity and allowed cultural tourism a sense of centrality.
- Name designation offers distinguishable identification useful to all ramifications of economic development.

**ISSUE: Fragmented Governance Structure**

**Action Taken:**

- The Riverfront Development Coordination Board (RDCB) was established in the early 1970s as the initial joint powers organization to coordinate the Central Riverfront efforts of the Park and Recreation Board, the Planning and Public Works departments, and the Minneapolis Housing and Redevelopment Authority.
- When the RDCB was disbanded in 1982, the staff Technical Advisory Committee (TAC) was formed to continue coordinating various redevelopment efforts. The TAC includes representatives from city departments, the Heritage Preservation Commission, Citizens Environmental Advisory Committee (CEAC), St. Anthony Falls Heritage Board/Minnesota Historical Society, Hennepin County State Historic Preservation Office, Mayor and affected Council Members’ offices, Minnesota Department of Natural Resources, University of Minnesota, and the Corps of Engineers and National Park Service (River Revive, 2004). Without the collaboration of inter-agency activities and a central governing body for oversight, comprehensive planning would not have been achieved.
- While TAC still exists today, in 2008, the non-profit Minneapolis Riverfront Corporation was formed to formally manage revitalization efforts and the various plans for all three districts.
Profile: Pittsburgh River Delta; Pittsburgh, Pennsylvania, USA

Background
Downtown Pittsburgh is surrounded by three rivers: the Allegheny, Monongahela and Ohio Rivers; these rivers form the Ohio River Basin, home to more than 25 million people. The rivers have always been a vital part of Pittsburgh’s economy, from the fur trade to the steel mills they have received their share of use and sometimes abuse. Pittsburgh was one of the world’s most industrialized cities from 1850 to 1980. Unfortunately, this was to the detriment of the city’s water supply, as sewage from the industrial sector was disposed into the city’s rivers. Furthermore, as the city grew, it extended its sewer system, building a combined system that carried both household wastes and storm water into the rivers. In 1958 the Allegheny County Sanitary Authority was formed, which considerably improved water quality, while the collapse of the steel industry also removed a major source of Pittsburgh’s pollution. Then, in the 1980’s, there was a shift away from the river-based economy that caused stretches of the riverfront to be abandoned, underused and environmentally compromised. Since the 1990’s the river has been undergoing a redevelopment. Although the redevelopment is yet to be fully completed, there has been an abundance of work completed and even more planned for the three rivers, the 35-mile stretch of riverfront, and the surrounding ecology affected by past pollution.

Project Objectives
The overarching goal of the river revitalization project was to create synergy between office, retail, residential, and recreational use of key water front sites.

Issues & Action Taken
ISSUE: Create an aesthetic appeal, by implementing a coherent and visually appealing order to the water’s edge was important to the city.

Action Taken:
• Selected the most imaginative development concepts and architectural designs.
• Created open spaces and visual access to the riverfront, which would allow a connection between the riverfront and a large segment of the population, who would commute on the nearby roadways.

ISSUE: Focus on protecting and enhancing the natural riverfront environment. Preventing and eliminating (if possible) inappropriate uses and practices on the river’s edge.

Action Taken:
• Protected existing natural areas from development and preserving wildlife habitats.
• Reduced the need for fertilizers, herbicides, pesticides and watering, which in return benefits the environment and reduces maintenance cost.

ISSUE: Reclaim the city as one of the world’s great river cities. The following include ways that Foshan can mirror Pittsburgh’s in their socio-economic transformation.

Action Taken:
• Raised public expectations of what the riverfront has to offer.
• Attracted community members, investors and tourist by bringing the best aspects of urban living to the riverfront. This would include a combination of housing, recreation, commerce, and transportation along the river’s edge (pittsburghsagreenstory.org.)
• Facilitated an open forum that invites discussion among local neighborhood, environmental groups, the development and design communities, and government agencies.
• Established zoning, which helped the city in guiding the use of land, the height and design of structures and promote public access to community members.
Profile: Sacramento River; Sacramento, California, USA

Background
The Sacramento River is longest river in the State of California at 380 miles in distance. The river spreads from the foot of Mt. Shasta through the California Central Valley to the San Francisco Bay Area, where it forms a large delta with the San Joaquin River. The river is said to also be California’s most important, providing water to California’s farms in a state where agriculture is the driving force of the economy. California has struggled to plan and preserve its “harmonious relationship” between urban society and its natural environment along the Sacramento River as it has been subject to urban transformation. Fewer than fifty years ago the river was home to millions of acres of riparian forest, by the end of the 1980’s the acres only spread a few thousand, as well as saw a steady decrease in the population of certain species to the point of near extinction. The Sacramento River has a wealth of importance to California dating back to its history with Native American tribes, being mined during the California Gold Rush, and has and will continue to be a significant resource that supports the economy, provides recreational activities, and a home for the many wildlife species that inhabit it.

Project Objectives

1. Restore the natural ecological environment
2. Protect the rich culture and historical roots along the riverfront

Issues & Action Taken

ISSUE: Restore the ecological environment and natural habitats for species

Action Taken:

- The US and California governments formed a public-private partnership with the not for profit corporation, the Nature Conservancy. Together they formed a plan to restore a 100 miles of riparian forest to the flood lands along the river. The plan also includes the return of more than 200 mammal, amphibian, and bird species along the river banks.
- The State of California formed the Central Valley Project and the State Water Project to treat water along different segments of the Sacramento River.
- In 2008, the government passed the Central Valley Project Improvement Act which provided monies to restore the Chinook salmon population.

ISSUE: Cultural Preservation

Action Taken:

- The California State Legislature passed into law SB 1086, which called for development of a management plan for the Sacramento River, a law that
intended to “protect, restore, and enhance fisheries and riparian habitat.”

- An advisory council comprising of federal, state, and local partners was formed that were tasked with developing a management plan for the area.
Profile: San Antonio River; San Antonio, Texas, USA

Background
The San Antonio River is a waterway that originates from Central Texas near San Antonio and it flows into the Guadalupe River about 10 miles from San Antonio Bay. The river is 240 miles long and is at the heart of the City of San Antonio. The river was and still is a vital to the community, and it has long been engineered to meet human needs. San Antonio has a rich cultural history with many historical sites that drives tourism in the area. The most famous attraction is the Alamo, a historical landmark, where 189 defenders protected the mission from over 5000 Mexican troops for 13 days. The Alamo is now a museum and a shrine and can be accessed by what is known as the jewel of San Antonio, it’s “River Walk.” The River Walk was created in the 1920’s as an alternative paving over the San Antonio River and allowed for flood protection and commercial development. This 1.3-mile walkway aligns the river and leads visitors to various museums, restaurants, shopping, and historical sites including the Alamo. However, the city of San Antonio wanted to expand this attraction, thus they embarked on a plan to expand the River Walk in order to reach various museums throughout the city.

Project Objectives
1. Expand popular tourist attraction, the River Walk from 1.3 miles to 13 miles in order to connect the city to additional museums, restaurants and tourist attractions.

Issues & Actions Taken
ISSUE: Due to an increase growth of population and popularity of attraction, San Antonio planned to expand its River Walk to reach museums and other attractions in the city.

Action Taken:
- Expanded the River Walk to 13 miles in order to reach Museums. This project took decades to plan, but only 2 years to implement.
- Created a lock and dam feature, similar to the Panama canal, to raise parts of river 9 feet for easier access to sites
- Allowed for additional restaurants, bars, shopping and commercial sites to adorn river.
- Museums created night attraction, to have artwork glow for night visitors.
Profile: Singapore River; Singapore

Background
The Singapore River, which runs through the heart of Singapore and covers a land area of 96 hectares, was discovered in 1819 by Sir Stamford Raffles and colonized by the British for its potential as a strategic port of trade. The British government had laid claim to the north bank while it allocated regions of the south bank to house warehouses for trade merchants. Not long after the colony’s establishment, barges soon congested the port and restricted movement due to a finite amount of available space. The condition of the port only worsened with the advent of steamships and the opening of the Suez Canal in the 1840s.

Singapore’s economy blossomed as trade volume continued to increase and the Singapore River became an important commercial nexus with various commercial activities concentrated along its riverbanks. These activities included seaweed processing plants, boat building and repairing, and farming. Food vendors, known as hawkers, easily found a rich market along these sites of activities. Squatter colonies were established along the river all drawing upon its use. Pollution soon became a problem as sewage, garbage and industrial waste were dumped untreated into the river. The River that was once the lifeblood of Singapore had degenerated into a foul-smelling open sewer where waste was discharged indiscriminately. By the mid-1970s, it had become clear that the pollution of the Singapore River had to be addressed. By 1977, the River and the Kallang Basin that it emptied into was practically devoid of marine life due to the extent of the pollution of organic and inorganic waste.

In February of 1977, Prime Minister Lee Kuan Yew expressed in the opening ceremony of the Upper Peirce Reservoir the need for water conservation due to limited and polluted water sources. Lee Kuan Yew put forth an ambitious directive to clean the Singapore River and the Kallang Basin:

“It should be a way of life to keep the river clean, to keep every culet, rivulet, free from unnecessary pollution. In ten years, let us have fishing in the Singapore River and the Kallang River. It can be done.” - Lee Kuan Yew, Prime Minister (1977)

Project Objectives

1. Develop modern infrastructure
2. Phase out polluting activities
3. Relocate polluting entities
4. Dredge, clean, and repopulate waterway

Issues & Action Taken
ISSUE: Clean the River and Prevent Unnecessary Pollution
Action Taken:
- Identify the point and diffuse sources of pollution.
- River dredge to remove existing pollutants
- Initiated the “Clean River Project”
- Created educational material to enlighten the residents of Singapore of the affects of their actions and their greater role in maintaining the River.

ISSUE: Restore the aesthetic nature of the Singapore Riverfront
Action Taken:
- Built new infrastructure for relocation efforts
- Removed old infrastructure and polluting elements
- Created waterfront promenades, open parks, and recreational facilities in both residential and commercial developments surrounding the riverfront.

Singapore transformed their river into a location for several different water sports such as water skiing, canoeing, and like Foshan, dragon-boat racing!

ISSUE: Bring wildlife back to the Singapore River and be able to fish in ten years’ time.
Action Taken:
- Created a shared vision to be integrated with Singapore’s long-term strategic plan to convince all the different agencies involved to accept change and a need for the directive not be carried out in isolation.
- Created a comprehensive strategy with long and short-term benchmarks.
- Quarterly meetings with all agencies involved to monitor progress and have centralized coordination.
- Artificial sea grass was introduced into the river to provide a habitat and attract higher biological diversity to return to the river.
Profile: Thames River; London, UK

Background
The Thames Valley was historically used for farming, fishing, and milling. Since then, the banks of the Thames became the favored location for different kinds of buildings from monastic abbeys to gorgeous palaces. However, the 18th-century expansion in trade made the Thames the focal point for trade and commerce, especially along London, which became the world’s busiest port dealing with commodities within the whole of the British Empire. Thames River has a long history of flooding. High tides and strong winds would push the sea up the estuary, flooding low-lying areas alongside the river. During Victorian times and through 1937, the city of London was the greatest port in the world with thousands of vessels used to travel along the Thames. The Victorian Era was the period to see the effects of land use such as building docks as well as huge warehouses. However, the 20th-century marked a remarkable decline in the use of the river for trade activities with decline of the industrial sector and the rise of the global financial revolution. More reliance shifted toward land and air trade as well as container sea shipments, requiring deepwater anchorage. This led to closure of the London docks along the Thames. Moreover, the major shift in the shipment industry to container sea shipment, which requires deepwater anchorage, eventually lead to closure of the London docks along the Thames.

Project Objectives
1. Solve flood problems
2. Create an alternative use of the docklands
3. Construct sewers

Issues & Actions Taken
ISSUE: Solve flood problems
Action taken:
• Create Lower Thames Valley Conservation Authority (LTVCA) to provide a coordinated response to flood problems.
• Create Federal/Provincial Dyking Program and construct 58 km of dyking.
• Complete Indian/McGregor Creek Flood Control Project

ISSUE: Create alternative use of the docklands after shift away from shipment industry
Actions taken:
• Constructed London City Airport on a dilapidated dock
• Created leisure and tourist attractions on docks to substitute previous docklands
• Built museum around docklands
ISSUE: Build sewers along the Thames to collect and divert the sewage

Actions taken:

- Created new habitat for flora and fauna.
- Installed community waterside art,
- Promoted safe public access to watersides and foreshores
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