

都市河川引領的都市文化/風貌再造—

高雄市經驗

**Urban Cultural Renovation Led by River --  
the Kaohsiung experience**

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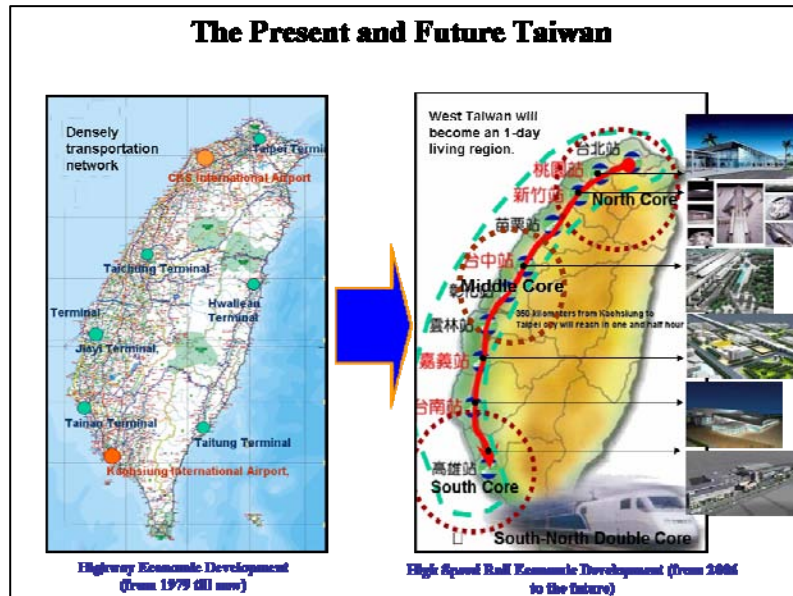
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## Data of Kaohsiung City

- Population : 1.52 million
- Area : 178k m<sup>2</sup>
- Annual rainfall volume : 1780.1mm( Jun, the highest rainfall of 398mm)



## I. Vision and Goal

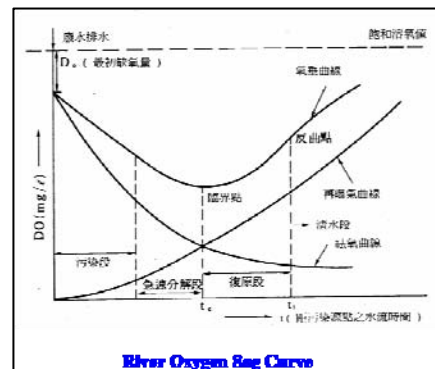
- Clean water and vital ecology.
- Safe and reliable flood control system.
- Water accessible open places for recreational use.
- Cultural industry of the river basin
- Citizen participation in sustainable development of life, production, and ecology.

## II. Plan and Action

### (I) River Management

- **General management plan of the river basin**

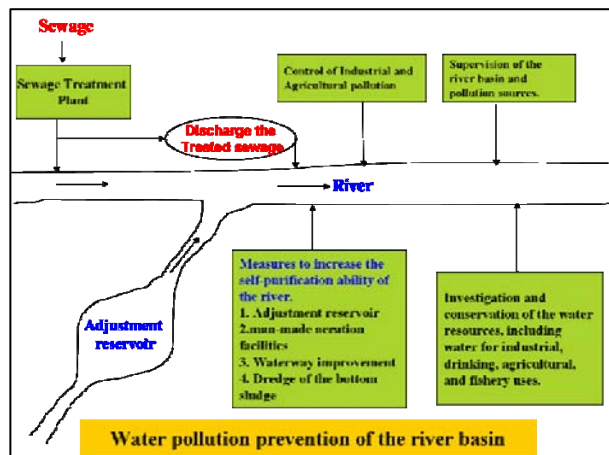
1. To carry out the general management plan of the river basin, the first step is to investigate the natural background, pollutants, and conditions of the pollution. The data obtained will then be induced and calculated by applicable



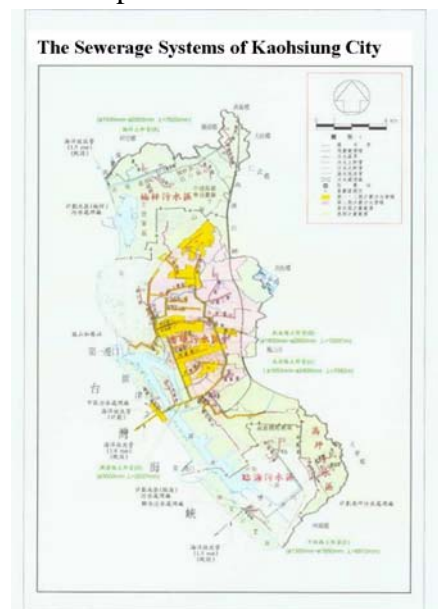
formulas. The results of the calculation will go through quantitative evaluation, and the main pollution and solutions will be figured out.

2. Setting reasonable goals for water quality control of different river basins according to their economy and environmental functions. For example, the urban areas, spaces for recreational use, and the water resources conservation area should have different standard of water quality control. If it has to take a long time to achieve the goal, the plan can be divided into phases.

3. Estimating the environmental capacity of the river basin. Environmental capacity means the ability to carry the pollutions, namely, the allowed sum of the pollutions when maintaining the environmental level. The environmental capacity can be obtained through the research in the expected value, background value, and self-purification ability of the river basin. The environmental capacity of the river basin is the fundamental principle of pollution control.



4. Making plans that take care both ecological development and environmental quality according to the environmental capacity of the river basin, and balancing as much as possible between the river's environmental capacity and the structure and scale of production and consumption.
5. The sewage exceeding the environmental capacity of the river should be excluded. Based on the reasonable use of the self-purification ability, policies such as improvement of production techniques, artificial prevention in industries and the river basin, etc. should be adopted. Reasonably allotting the pollution

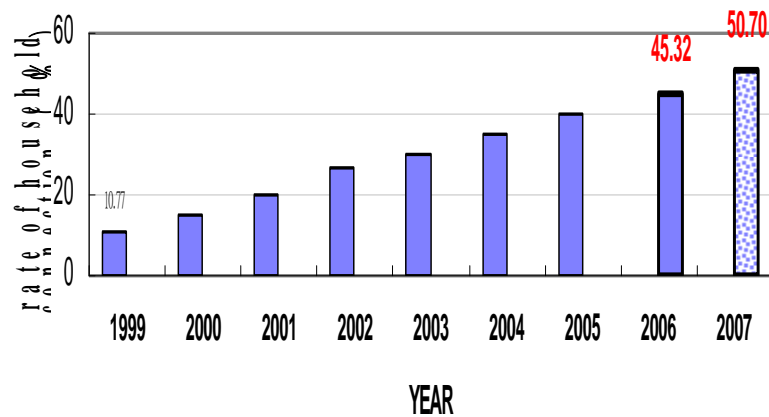


volume that needs to be eliminated to every segment of the cycle. By system analysis, develop the most suitable regional pollution prevention system .

6. Set up the statistic models of the environmental effects and investment cost resulted from pollution prevention, and combine the models to be a system. By applying all kinds of approaches to find out the most applicable and satisfying measures that benefits most and cost last.
7. The general management of the river basin emphasized to exert the integral benefits of the pollution prevention. It is a way meets the needs of efficient effects and cost-saving.

■ **Household Connection & Sewerage System Museum**

1. After the rate of household connection to the sewers raised up to 40.66, the interception facilities retired and transformed to be the sewerage system exhibition group which appeals the public's attention.
2. The rate household connection of Kaohsiung City is 47.%, and it is expected to be 50.7% by the end of 2007.
3. Central District Sewage Treatment Plant to be the Sewerage System Museum.



Sewerage System Museum



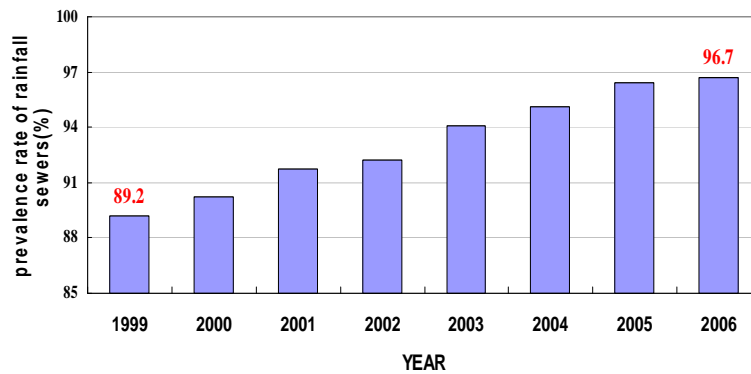
Exhibition wall



Retired facility

■ Effects of Flood Prevention & Management Mechanism

1. Upgrade the efficiency of flood prevention by river management and increasing the rate of rainfall sewers. By making good use of lakes, wetlands, flood detentions ponds, and permeable surface ecological method to increase the permeable rate of the rainfall and help the efficiency of flood prevention.
2. Adjusting the drainage areas based on the city's real demand. The easily-flooded areas are of highest priority.
3. The restoration covered the 53km of the main trunks and branches of the rivers in Kaohsiung City and 392.5km rainfall sewers, which are 445.5 km in total. The accumulated length of the drain pipes were 339.360km in 1999, 379.57 in 2006, which means 40.21km increase.



4. The prevalence rate of the rainfall sewers were 89.2% in 1999 and 96.7% in 2006. It is 7.50% increase.
5. Establishing interception system in the mountains by increasing plants and greening and constructing silt basin to prevention mudflows and landslides.
6. Before the flood prevention period of every year, the drainage system will be examined. The easily-flooded areas, the communicating drains, tide-affected areas and plain waterway will be checked with more serious standard.
7. Coordinated with the pump station and water gate controlled by specially-assigned staff, Central management system supervises the tide and water level all day long in order to deal with emergency in time.
8. To carefully control the resources of rescue



and recovery after the natural disaster, there is SOP for rescue and recovery. The flood drill is held before the flood prevention period in order to exert the best effect of the rescue mechanism.

## (II) Art and Culture

### ■ Integration plan of the cultural industries and recreational resources of the river basin



### ■ Revitalization of the Historical Spots

#### A- Reuse of the Vacant Spaces in Port Areas- Pier-2 Art District

1. Pier-2, built in 1973, was the former connection pier and warehouse in Dock No. 3 of Kaohsiung Port. When the government was seeking for the place for fireworks show of the National Day, the space was discovered accidentally.
2. It is an unique open space for Art next to the sea. Under the enthusiastic artists' promotion and the project of vacant spaces reuse held by Council of Cultural Affairs, the Pier-2 was opened.
3. Workshop and Creativity Center: The space of art is full of sense of avant-garde, experimental spirit, and creativity. It also records Kaohsiung's history and make new Kaohsiung at the same time.





## **B- Reuse of the Vacant Spaces in Port Areas-True Love Wharf**

1. Past: wharf for cargo ship
2. Now: It is renamed “True Love Wharf” and the former warehouse was transformed to be the tourist service center. It won the FAIBCI Taiwan Real Estate Excellence 2006.
3. Future: Aiming to be a international tourist wharf.



Before the transformation



Present

## **C- Former British consulate**

1. The consulate was appraised as the 2nd-level historical spot in 1987. Since 2003, the Kaohsiung City Government authorized private sector to restore and manage the building.
2. The repair of the consulate was to revitalize the old building but maintain the original appearance. By introducing art activities such as music instrument playing, painting, and dancing, the beautiful building was surrounded by the atmosphere of art.



## **D- Former Tangrong Brick Kiln**

Located in the middle stream, the former Tangrong Kiln, which won the first Hoffmann Chamber Kiln and stopped operation 20 years ago, was now restored by the Kaohsiung City Government. The beauty of the old time was back again.



## **E- Kaohsiung Museum of History**

Kaohsiung Museum of History was built in 1938 and was the “高雄市役所” during the Japanese reign. After Taiwan was turned back to Chinese reign, the

place was called “Kaohsiung City Government.” The New City Hall was completed in 1992, and the government moved to the new city hall.

The old city hall has Imperial-Crown top, and the design of the whole building was “modern style” of early time. Because of the old city hall was a historically-important and unique building, the government announced it as a historical architecture on February 26th, 2003, and was used as the Kaohsiung Museum of History.



### **F- Vision of Kaohsiung**

Vision of Kaohsiung is the former train station of Kaohsiung City. By creative measure, it is transformed to be a museum. The purpose of this museum was to assemble the citizens’ memory of the city and show the future blue to them. Hopefully it can strengthen the citizens’ sense of belonging to the city.



## ■ The Show of the Waterfront Spaces with Culture

### **A- Kaohsiung Lantern Festival**

1. The main lantern of 2001 Lantern Festival taken place in Kaohsiung, “Leaping Dragon-fish,” standing beside Love River is now one of the landmarks of Kaohsiung
2. The main lantern of 2002, “Speed to the World,” is in shape of a speeding horse symbolizing that Kaohsiung has been moving toward the prosperous future.
3. In 2003, Love River itself is the main lantern to show the beauty of the water and the fireworks.
4. The theme of 2004 is to lighten Kaohsiung and show the city to the world.



It symbolized Kaohsiung's vision to be a international city.

5. The theme of 2005 is "the Healthy Kaohsiung," showing the friendliness of Kaohsiung and promoting the World Games 2009 that will be held in Kaoshiung.
6. The theme of 2006 is "Healthy city, fragrant waterfronts" showing the characteristics of Kaohsiung as the maritime capital of Taiwan.
7. The main lantern of 2007, "Eternal Light," is in the shape of an aborigine of Makattao. It symbolizes that Kaohsiung respects the original owners of the city.



### **B- Dragon Boat Racing**

The dragon boat racing of 2006 also introduced the international dragon boat racing. In order to encourage the teams, the government offered the great reward, 2.5 million NT dollars, to the champion.



### **C- Zuoying Wannian Folklore Festival**

1. Wannian Folklore Festival is held in October every year. It has been the sixth time since 2001.
2. Wannian Folklore Festival is an activity full of folkways pleasure. Zouying was Wannian County of old time, and there were lots of temples and religious activities. It is like the place for religion carnival.
3. After the government's restoration during these years, the Lotus Pond reveals new attraction. Combined with the folklore



activities such as chest, firecrackers attack, and fire-lion attack. It is the one and only festival of southern Taiwan.

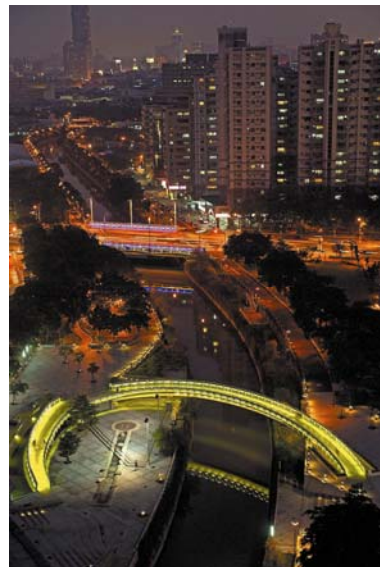
#### D- All Kinds of Cultural Activity

Container Arts Festival, Christmas, New Year's Eve Party, etc. all took place in the waterfronts, showing the vitality of Taiwan's maritime capital, Kaohsiung.



#### ■ Unique Aesthetics of the Waterfronts — the Beauty of the Bridges

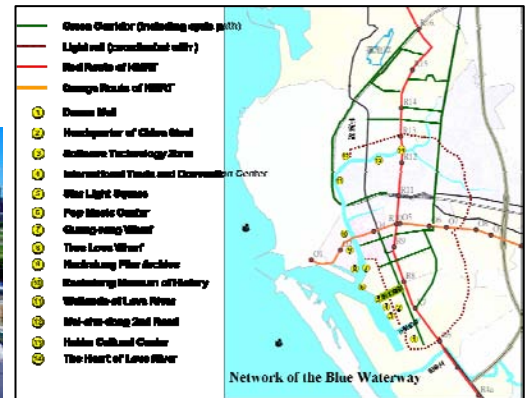
1. Strengthen the characteristics of every bridge.
2. Arrange different lighting according to the variety of every bridges. The combination of the lightings and the railings, the beauty of the bridge and the river is revealed.
3. Create all different kinds of effects by dots, beams, and belt of lights to improve the visual space and beautify the portrait of the city.



#### ■ Where people meet--- natural, ecological and user-friendly route of movement

**A-Blue Waterway--Ru-yi Lake, the Heart of Love River**

Love Boats travel back and forth from Love River basin to Kaohsiung Port, which is 50Km in total. Coordinated with the KMRT, the land and sea transportation is connected.



### B-Green Transport – Cycle Path

There are about 70km of planned cycle paths and boulevards in the city. By connecting with commercial districts, schools, MRT stops, commuting way to schools, the cycle paths are expected to go through every pedestrian spaces. The total length of the cycle paths is expected to be 100 km before the World Games 2009.

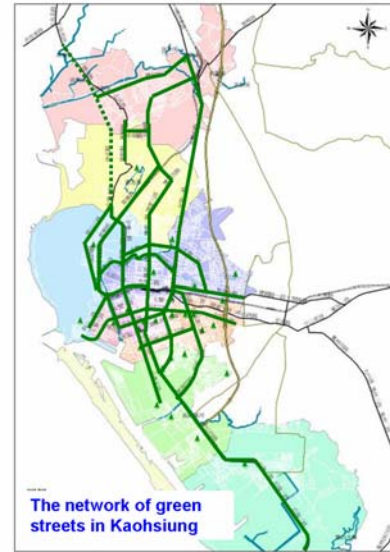


Traveling along the waterfronts--Cycle path connecting Love River and Lotus Pond : Transformed the flood prevention alleys into the 20.5km cycle path. The cycle path goes from Zhong-du Bridge, Zhong-du Wetlands, San-ming Park, He-ti Park, Smile Park, and ended at Sin-jhuang 1st Rd. The wooded path crosses over the water caltrop field and green 7 Park. The cycle path is an green transport obtaining functions of ecology, environmental protection, and sight-seeing.

### C- Plan of Boulevard Connection

The important boulevards (Vertical & Horizontal) of Kaohsiung City.





**D- Dynamic, creative, efficient participation of private sector – authorized management**

**(A) PAST:**

Self-governance of Park management of Kaohsiung City Principles of Park Adoption and Authorized Management of Kaohsiung City. Promotion of Public Use of Open Space Beside the Parks and Roads in Urban Planning.

**(B) NOW:**

Promotions of Private Participation in Public Works. Make use of private sectors' resources to do the maintenance of the parks. In that way the public treasury is greatly saved. Under private sectors' management, the parks became the places providing art activities and recreation to the citizens. Some of the private sectors were given the rights of operation, thus also bloomed the city's economy.



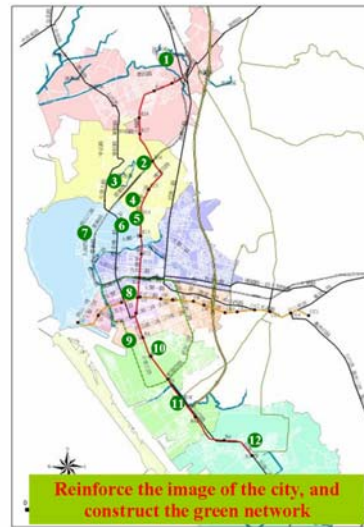
**(III) Natural Ecology**

**A. Fragrant Waterfronts, the symphony of water and green**

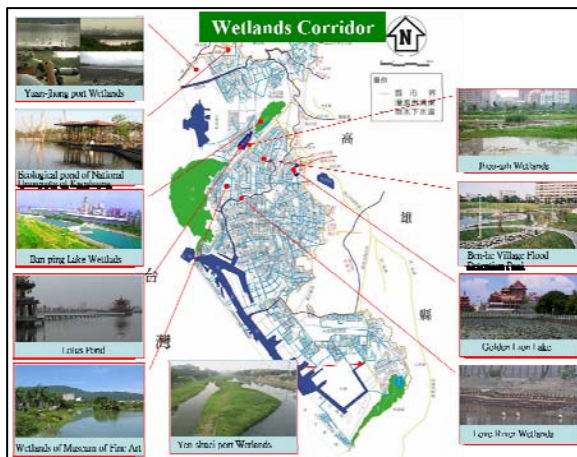
**(A) Fragrant Waterfronts – Plant-growing**

1. Making new appearance for the waterfronts and the wetlands
2. Accelerate the development of green fields in the park.
3. Reinforce the greenings of the streets
4. Decorate special or important spots
5. Reinforce the greening of the vacant spaces
6. Promote the concept of greening to the public sectors and schools

(B) Improvement plans for parks along MRT routes



**B. Ecological Corridor---Wetlands**



| YEAR                                | 2005                         | 2006                                       | 2007 | 2008 |
|-------------------------------------|------------------------------|--|------|------|
| Yuan-jhong port Wetlands            |                              | Completed in 2006                          |      |      |
| Shan-ging Lake Wetlands             |                              | The first phase was completed in July 2006 |      |      |
| Jhuo-shi Wetlands                   |                              | Completed in November 2005                 |      |      |
| Wetlands of Museum of Fine Art      | Completed in the end of 2005 |  |      |      |
| Shu-in Village Flood Detention Pond |                              | Completed in June 2005                     |      |      |
| Jhuang-shi Wetlands                 |                              | Completed in Feb. 2006                     |      |      |
| Yun-shan port Wetlands              |                              | Completed in Oct. 2005                     |      |      |

**1. Yuan-jhong-gang Wetlands**

Under the efforts of the Navy and Kaohsiung City Government, the last mangrove areas of 50-hectare beside Yuan-jhong port was preserved as the

conservation wetlands. The biological diversity was then maintained.

## 2. Ban-ping Lake Wetlands

Without influencing the flood prevention, transformed the silt basin in Ban-Ping Mountain to be the artificial Ban-Ping Lake for ecological conservation. Near THSR Zu-ying Station, connecting Shou-shan, Guei-shan, Lotus Pond, Jhou-zih Wetlands, Indigenous Garden, and Nei-wei-bi to make the green corridor of Kaohsiung.



## 3. Jhou-Zih Wetlands

Established grass swamp, tree swamp, floating-leaved plants, group of *Typha orientalis* Presl, ect. to show the biological diversity. Appealing more kinds of aquatic species by various swamps, making the swamps the favorable habitats of birds. The beauty of the wetlands can be viewed through the Internet where the pictures taken by the cameras in the wetlands were put on-line. The Pheasant-tailed Jacana has returned in 2005.



## 4. Nei-wei-bi Wetlands in the Museum of Fine Art

The 41-hectare wetlands is located in the north-west part of Kaohsiung City. The project had been planned since 1986 and completed in January 2003. It has become one of the important recreational place for the citizens.

## 5. Ban-he Village Flood Detention Pool

Concept of nature and material reductoin. Functions well to adjust the flood level of Golden Lion Lake, K line, and the neighborhoods. It also functions as a ecological wetland.

## 6. Love River Wetlands

The former lands for industrial use in Jhong-du area were reprogrammed to be a wetland of Love River Basin.



Ban-he Village Flood Detention Pool



Love River Wetlands

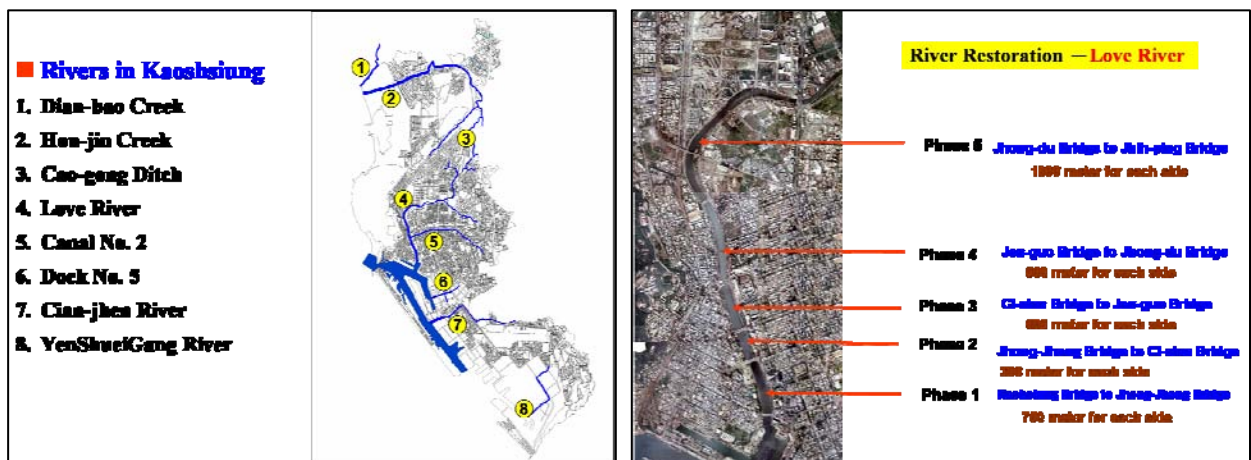


## 7. Yen-shuei Port Wetlands

Goes through Ling-hai Industrial zone. Improve the water quality by ecological method. Increase new sewers to separate the water pollution according to the levels of pollutions. Pebble waterfronts and wooden starlings increase the moisture and aeration of the wetlands.



## C. River management and water accessible environment



### 1. River Restoration-Love River

- (1) There are 11 Km main trunk of the river in the city. The restoration project is separated into flood prevention and sewage interception. The interception rate (including household connection) is 99%. The water quality has reached Standard D for environmental protection, and there have been 51 species of fish migrate in the river.
- (2) Love River been the place for Kaohsiung Lantern Festival since 2001, and has become one of the famous tourist spot of the country.
- (3) Love River Waterfronts Park (phase 1-4) : Waterfront sight-seeing path,

wooden path, water-accessible stairs, artistic street lights, sight-seeing platform. Cultural and water-accessible waterfronts.

- (4) Love River Waterfronts Park (phase 5) : Jhong-du Bridge to Jhih-ping Bridge, 1800m for each side. The landscaping was completed in March 2006, and the concepts of material-reduction, ecological, environmental protection were adopted. The original plants were maintained only in a proper number to give a more beautiful scenery and provide the plants a more suitable environment.



## 2. River Restoration – Cien-jen River

- (1) Cien-jen River was once called “Black River.” Since Feb. 1999, the restoration project was started and was completed in Dec. 2002. The project won the “Architecture Accomplishment Award” of 2003 of Kaohsiung.



- (2) The household and industrial waste water is no longer discharged into the river, and the water quality is greatly improved. There are now many kinds of fishes habitat in the river.
- (3) Connecting with the Dock No. 5, Sin-guang Drainage, Love River, and Kaohsiung Port, the waterway has become the cruise route which is a potential tourism resources.

## 3. River Restoration – Hou-jin Creek

- (1) There is 11km of the main trunk of Hou-jin Creek lies in Kaohsiung City. It is a typical urban river. The restoration plan were divided into 4 phases.



- (2) The 1st phase (De-Huei Bridge to Yi-Chuan Rd.) was about 1400 meters, and was completed in Nov. 2003. The 2nd phase (Yi-Chuan Rd. to the flood prevention water gate) is 80 meter and was complete in Oct. 2005. The project broke through the bottleneck of flood

drainage at the boundary of the city and the county, and the ability of flood prevention has been raised. The 3rd and 4th phases are now under construction.

- (3) Adopting ecological engineering to set up riverside shoals, waterfronts pedestrian path. Coordinating with the plants and greening, the river provides a natural water-accessible place.

#### **4. River Restoration – Dock No. 5**

- (1) From Jhong-shan Rd. to the port area, that is 1300 meters in total. The project was divided into 2 phases and started in 2004.
- (2) The 1st phase, from Cheng-gong Rd. to Jhong-hua Rd. (435m in length and 80 meter in width,) was completed in June 2006. The 2nd phase (Jhong-hua Rd. to Jhong-shang Rd.) was completed, too.
- (3) The goal of the restoration project is to make the area function well in ecological conservation and flood prevention. It is now the new popular recreational waterfront area for the important construction neighborhood, such as Multi-functional Economy and Trade Zone.



#### **5. Link between Water and the Green Ecology**

Drawing the water of the fresh water basins such as Cao-Gong Ditch, Cien-jen River, and Hou-jin Creek to link with Love River, Lotus Pond, Golden Lion Lake, Cycle Paths, and Boulevards. Thus the complete ecological wetlands are constructed.

### **III. Citizen participation & sustainable development**

#### **(I) Environment and Landscapes – New look of the Town**

##### **■ Plan of Communities Style Development :**

1. Through every resources of assistant mechanism, let the citizens reshape the style of their community by themselves.
2. Through the government and the 3rd sector's operation, the "residents-authorized mechanism" was established
3. "Community designer" was assigned to help the community reshape the fashion of their home. The space-design-relative departments of the colleges near by also cooperated in the project. That make the connection between professionals and the community and become the "Partners of Community Development." The concept of "Small

government, Big Community” was adopted to do the regional governance.

4. Through the assistance of experts in administrative practice the regional learning is promoted.

#### ■ **Environmental Protection & Ecology**

1. River restoration and establishment of the complete river basin achieve the goal of water management and water-accessible environment.
2. Build up the ecological corridor, artificial wetlands and lakes to increase the ability of flood prevention and to improve the ecological environment.
3. Combination of boulevards, parks, green fields, and greened vacant spaces make the city a ecological place with water and green.
4. River Pollution Prevention Patrols — reinforces the pollution prevention in the communities.

#### **(II) Environmental Supervision**

Investigate, trace, conserve the plants, insects, birds, fishes living in the rivers, lakes, waters, ecological corridor, parks, green fields, and boulevard.

#### **(III) Industrial development**

Integrate the cultural and tourism-potential industries with the tourism industry of the city. Combine the concepts of customer’s-needs-oriented, material reduction, environmental and ecological protection, international standard, and sustainable development , and integrate the efficient resources



based on the different demands of every community to develop the local industry.

#### **(IV) Community Participation, Schools, Volunteer Patrol and NGO**

1. By developing the citizens’ ability and rights to make them healthier.
2. Make healthy commitment to the citizens, and encourage the citizens to participate the activities initially through cooperation of different departments and sectors
3. Integrated with the resources of communities, the policy of developing healthy communities will go more smoothly and efficiently.

#### **IV. Conclusion**

1. A River is a treasure containing culture, history, ecology, landscapes, and it is also the cradle of civilization and the crucial element of a maritime city. Although it once had hard time, the efforts of the public and private sectors can bring it back to life again.
2. River restoration, water pollution prevention, and water resources conservation cover different and complicated levels. The pollution prevention of different countries are based on different subjective and objective conditions. It is hard to compare one to another. However, the water restorations all over the world share the same goal of sustainable development. It also requires citizens' participation to make the job succeed in improving the living environment and the competition of the country.
3. Clean and beautiful river make our city a vital place rich in life, production, and ecology and a habitat of sustainable development that is suitable for the humans and creatures.