Figure 7-1 Urban forms of waterway and 18 cities in the early 20th century.
Figure 7-2 Prototypes of waterway and 18 cities in the early 20th century.
Chapter 7  Regions of Waterway

7.1 Introduction

Waterway is a corridor working on the spatial regional and metropolitan plan.

This chapter described the historical and modern Grand Canal in its cities, how the waterway working as one articulation part in ancient city and modern metropolis areas, even though some of the waterways have lost navigable capacity.

City of canal has always kept growing its urban area, however, the Grand Canal also plays an important role in economic activity and transportation. Grand Canal has experienced from an official waterway controlled by one empire, become a regional waterway string those different natural and cultural characters together were administered by modern metropolitan area.

The waterway has changed its size, location, and function in recent years, it has developed to dozens of kilometres length regional rivers, which has different water values for cities, such as ecological, recreational, transportation, etc.

Compare representative 18 cities of canal, we could understand the way how the city was treating its waterway. I analyzed that a pre-industrial walled city could have five typical relationships to the waterway, and now it would leave only one simple pattern.

A diachronic analysis tries to explain regions of waterway by two periods: the first period is when the Grand Canal belonged to the empire, but none of the walled cities could open their door to this waterway excepted the capital Beijing; the second period is when cities have expanded to a larger urban area after industrial revolution, the Grand Canal was involved dozens of kilometres into rapid urban expansion. From this two periods, waterway and urban boundary are two references to consider their relationship, and then concern about the changing contents of the cultural landscape of Grand Canal.

From 19th century ancient maps and earlier 20th century military cartography, the earliest urban expanding area could redraw when the city wall still existed in that time. The other side, nowadays, the 18 cities of canal have their new defined new boundaries in metropolitan plans that are developed under a
background of regional development, most of them come up to 2020, present that how the waterway passing through the old city, central city, urban clusters and new urban district, to combined with urban structure.

The obvious values of cultural landscapes existed in some places between 18 cities and their waterways. The waterway is not only completely 1800 kilometres national water transport line, it made an effort to strongly linking the region of waterway again. The cultural landscape of Grand Canal has combined the natural and cultural elements again which inherited the identity of this great waterway.
7.2 Five traditional patterns of the waterway's relation to walled cities during the imperial time.

Grand Canal was used as a royal waterway transport goods to capital Beijing from many other cities of canal. We could read more cartographical information about this situation from historical records, such as the Map of Grand Canal and its Cities made by 18-19th century, which described the water route of Grand Canal never entered these cities, except to Beijing city, because the Grand Canal was an imperial water route in that time. However, the waterway and the 18 cities of canal had five typical relations to each other, when the water route also severed as regional transporting line for its riverside cities: waterway was crossing city in Beijing; waterway was encircling city in Su Zhou, Changzhou, Wu Xi, Jia Xing; waterway was semi-circle around city in Yangzhou, Zhen Jiang, Hangzhou; waterway was tangent to city in Tongzhou, Lin Qing, Ji Ning, Tai’er Zhuang, Xu Zhou, Su Qian, Huai An; and last situation, the waterway was separate away from city, Cangzhou, De Zhou, Liao Cheng.

The ancient maps of city and waterway recorded more detail information that have shown us nodal and sectional elements of the waterway, such as the water gate and wall gate on the walled city, where the principal road connected or parallel to the waterway: urban expanding on the riverbank with commercial streets inside and outside of city.

This part concludes that city of the canal have five basic types when the Grand Canal was used as an imperial waterway. They are explaining how the regional waterway influenced local city growing, and how the urban area developed articulation for waterway working well.

7.2.1 The waterway crossing the capital city, a case study of Beijing.

Shi Cha Hai was an artificial lake as ended node of waterway in Beijing, the capital city, it was the last transport station to collect the treasure from other provinces, and the end of Grand Canal. Inside Beijing city, after crossing the walled area, the waterway flew into a northern artificial lake, Shi Cha Hai\footnote{Shi Cha Hai, is a ancient artificial lake built in 13th century, it was one natural reference when the empire constructed the Beijing capital. The lake even defined the urban axis line, the central axis line closed to the lake area, and surround wall were positioned by this lake. In a sense, people say that Shi Cha lake was born earlier than its city, Beijing.}, here was a large inner port for imperial fleets, earlier transported construction materials for building the capital. After the royal family moved to Beijing, this
lake had become an important trading area inner city. Waterfront had the fair market to sell living materials and commodities, such as the coal, silk, grain from southern China. Shi Cha Hai lake was a commercial centre surrounded by the main street follow the shape of waterline, very different to the ancient orthogonal streets system.

The imperial city section of waterway was cut by into palace area, in the south area of Shi Cha Hai lake. This section has 3 kilometres long and next to palace eastern wall. This waterway only offered goods for royal family, because the different kinds of a warehouse located close to the waterline, separated in a different storehouse, such as silks and textiles, the utensils of porcelain and ceramics, liquid drink of alcoholic or vintage, etc. This section was transport line without any commercial activity, aesthetic landscape, just a waterway served for warehouse area inner imperial palace.

The other inner section of waterway was another public trade area, but used more for common people who lived in the capital, not royal or nobleman. In 1553, Ming dynasty, the Beijing city has expanded to south area, had one more outer city which protected by 14 kilometres length and almost 8 meter height brick city wall. This wall involved the previous market area along the Grand Canal.

In this waterline, Beijing city has some more nodes: the land gate on the central axis of Beijing, Zheng Yang gate, it was crossing waterway in outer city, was an entrance to the large market areas, where included the water gate less than 1000 metres away from Zheng Yang gate; the other node of waterline, was the port at Dong Bian gate on the northeast corner of outer city, it was located the national tax house, also a station for transferring grain from imperial fleets to national grain depots, which expanded 2 kilometres long outside the city.

When Grand Canal was crossing the capital city, Beijing, the urban nodes generated by waterway, had different urban function, the commercial and trade centre for civic life, the warehouse area for royal family, tax house and national grain depot station. The section of this waterway also participated developing the urban functions.

7.2.2 The waterway encircling the city, a case study of Su Zhou

Originally the Beijing city had seven official grain depots located in the eastern urban area, closed to city gate Chao Yang. They were grain reserves for whole Beijing city, most of grain were transported by Grand Canal. In 1796-1820, two more grain depots constructed 2 kilometres outside of city gate Chao Yang, and southern connected to another gate Dong Bian, where it was the first water gate and port near the city port.
Chart 7-1 Waterway entered Bei Jing walled city.
Four cities, Su Zhou, Chang Zhou, Wu Xi, and Jia Xing, they have giant waterway ring encircled walled cities. The ancient maps recorded this situation, even well-kept until now.

Except to Beijing, Su Zhou is one of the biggest walled city along the grand Canal, it was a political and economic centre in the south-east area of Tai Lake. Su Zhou conserved part of 18th century city wall, once had 15 kilometres perimeter and 14.2 square kilometre. Water ring encircled this city and directly connected to Grand Canal, it was similar urban structure as Wu Xi, Chang Zhou and Jia Xing, but Su Zhou had twice more area.

Waterway ring is one character in transport circle surround city. This ring could connect another smaller urban rivers inside city and regional river to surround towns and villages. Cities of canal like Su Zhou, Wu Xi, Chang Zhou and Jia Xing, they are located in the eastern flat and lowland area of China, so that many water network spreading in their regions. Urban planning has already developed hydraulic dredging and flood protects projects, Su Zhou earlier planners integrated water transport line into urban structures, which used in draining off water in the flood, and public transport way for residents of city and merchants from outside towns and villages.

Water gate is a regional node to link waterway network between the city and its suburban area. Thus, due to the urban river link to Grand Canal, the local market could join in the wider regional economic event. Water gate is a very complex regional node. Su Zhou had five water gates of total wall gate. The Chang gate in the north-east of Su Zhou, where is the closest access to Grand Canal, gathered abundant urban facilities adapted to regional influences. After earlier national grain depots located near water gate and its port, the administer built the other facility, the custom house to collect tax and tributes, the water army camps to protect transport route. Other
Part II  Waterway Scaling on Regions

Chart 7-2  Waterway encircled Su Zhou walled city

Node:  
- entrance to inner city
- exit to suburban area
- distribution center, port, warehouse, market, tax house
- public space, temple and pagoda, etc

Inner City Sub-section:  
- commercial district, fair place
- warehouse area, handicrafts and agricultural markets

Outer City Sub-section:  
- expanding urban area along waterway, hotels, warehouse, shipyard, tax house

Su Zhou (19th century)  
walled city 14.2 km²

Grand Canal in Su Zhou Section

Sub-section  
-Outer City

Node Sz-05  
Node Sz-04  
Node Sz-03  
Node Sz-02  
Node Sz-01  

Sub-section  
-Inner City

Type 02: Waterway Encirling City

Node of Grand Canal in Beijing City  
Suburban area  
Urban area  
Suburban areas expanding  
City Wall  
Waterway  
Primary road
buildings like temples are spiritual sustenance, people would like to pray for blessing here after seeing off their friends or relatives at the port. The provincial guilds were new urban functions related to outlander or immigrants from other regions. The area of water gate gathered immigrants who worked in Su Zhou, as shipmen, porter, merchants, handicraftsmen, etc. The water gates were like a transport hub on urban water ring, where promoted urban expansion from this point.

The outer section of waterway could consider as a sub section where expanded along the waterway to Grand Canal. Earlier expanding followed the riverfront with a parallel land road. This section was a dynamic suburban belt, gathered roadhouse and hotels as service stations, provincial guilds and commerce chambers for business activities, the religious and public spaces for popular belief and outdoor recreation. People migrated to Su Zhou who firstly join in this expanded area, they built residences, stores, warehouse, handcraft workshop, served the inner urban living. The outer section of the waterway was an area of storage and produce to serve the inner city because the Grand Canal provided an opportunity to link the local city to further regions.

The inner section of waterway was a commercial belt combined land road and waterway. Su Zhou developed its urban river as a main transport network. Begin from the water gates, boats carried goods and products sailed into a city, which was sold to commercial streets along an urban river. Su Zhou waterway network was an ancient drainage system constructed in 10th century, which left the city plan on the stone monument. Urban blocks were separated by water channels as many quadratic polders, where people lived on them to build government office, dwellings, shops, and school, etc. Some of the polders also had handcraft workshops to produce consumer goods to local people, meanwhile, it developed many famous local commodities. For example, the silk-making industry developed well inner Su Zhou city, because small raising household could transfer small lot junior silk from rural area silk worm farming, the various professionals artisans would work on different procedures to produce silk products, the cloth, beddings, etc. Moreover, the products of liquor, foodstuffs, they were like silk produced on the urban polders of Su Zhou which depended on the waterway to transfer raw materials. Conversely, all of the local products closed to the big consumer market inner city, the centre of this region, collecting raw materials and selling them, even transferring to another regional market by shipping,
Part II  Waterway Scaling on Regions

Chart 7-3  Waterway is tangent to Tong Zhou walled city

Node TZ-01
Landmark:
Wallgate, Tax House, Bridge, market

Node TZ-02
Landmark:
Pagoda, Wallgate, Tax House, Bridge, market

Suburban area

Inner City

Expanding urban area

Type 03: Waterway is tangent to City

Tong Zhou (19th century)
walled city 5.00 km²

Grand Canal in Tongzhou Section

Node TZ-01
- Outer City

Node TZ-01
- Inner City

Sub-section

Sub-section

Inner City Sub-section:
- commercial district, fair place
- warehouse area, handicrafts and agricultural markets

Outer City Sub-section:
- expanding urban area along waterway, hotels, warehouse, shipyard, tax house

Node of Grand Canal in Beijing City
- Suburban area
- Urban area
- Suburban areas expanding
- City Wall
- Waterway
- Primary road
like Beijing, the end of Grand Canal. The inner section of waterway was a belt to organise produce, consume, and transport local commodities.

In the cities of canal, Su Zhou, Chang Zhou, Wu Xi, and Jia Xing, they are the second pattern that presents the relation between city and waterway system. Waterway is a ring encircling the walled city and stringing together urban nodes, then linking economic activities between a region and local area.

### 7.2.3 The waterway is tangential to the walled city, a case study of Tong Zhou

There is also a pattern that the waterway is tangent to the walled city on one node between land and water, from this point, the waterway linking to the inner-river or primary road. Tong Zhou is one case study with this pattern.

There are two canals met on Tong Zhou, the North Canal flow south to Tian Jin city, and from Tong Hui Canal go to last stop in capital city, Beijing. Therefore Tong Zhou had two nodes where the waterway touched the walled ancient city. One was the area of eastern city gate, here closed to official port moored most fleets from the southern waterway; the other was the area of the northern city gate, the start point of last part of Grand Canal.

Eastern gate habitually was called Dong Guan. It was a city gate to collect tax from the public transports and commodity, and then the merchants and their goods could sell in the city's market. The other side, Tong Zhou eastern gate is one special node of transhipping tributes to Beijing, because the last Tong Hui was a seasonal canal. The Tong Hui Canal, its waterway from Tong Zhou to Beijing didn't have guaranteed water supply, that caused low waterline and limited transport capacity. Therefore, most of goods and merchants would take last 20 kilometres land road to Bei Jing instead of waterway. In 1729, the royal government built a stone road from Chao Yang city gate of Bei Jing to Tong Zhou, this was largely convenient to transportation between this two canal cities.

The outer city section of waterway, from eastern gate to city port was an expanding area outer of city, parallel to waterway. People called it Dong Guan street. Through rapid growing capacity of transport from Grand Canal and much demand from capital, this street stored more and more goods and then stimulated people gathering and urban growing outer of the wall. The street is the main traffic line in the public port area, surround it were built residences,
Part II  Waterway Scaling on Regions

Chart 7-4  Waterway semi-circled Yang Zhou walled city.

- Node YZ-01
  - Landmark: Wallgate, Watergate, Bridge, market

- Node YZ-02
  - Landmark: Wallgate, Tax House, Bridge, market, Temple

Suburban area

Inner City

Node:
- entrance to inner city
- exit to suburban area
- distribution center, port, warehouse, market, tax house
- public space, temple and pagoda, etc

Inner City Sub-section:
- commercial district, fair place
- warehouse area, handicrafts and agricultural markets

Outer City Sub-section:
- expanding urban area along waterway, hotels, warehouse, shipyard, tax house

Grand Canal in Yang Zhou Section

Type 04: Waterway Half Surround City

Node of Grand Canal in Beijing City
Suburban area
Urban area
Suburban areas expanding
City Wall
Waterway
Primary road

Yang Zhou (19th century)
walled city 5.09 km²
warehouses, retail shops, hotels and restaurants for boatmen, merchants, travellers.

Compared to other cities of canal, Tong Zhou took the pattern that the waterway integrated the urban transport line in the walled city. From this way, Tong Zhou acted as the tranship centre linked the national water route to local economic activity. Other cities were the similar situation, come down to a pattern of Tong Zhou, Lin Qing, Ji Ning, Tai'er Zhuang, Xu Zhou, Su Qian and Huai An.

### 7.2.4 The semi-circular waterway around the walled city, a case study of Yang Zhou

Yang Zhou, Zhen Jiang and Hang Zhou, the three cities of canal are semi-circled by waterways. A case study from Yang Zhou, it walled area decreased to almost 5 square kilometres, and separated by one urban river, Wen river.

This pattern of waterway semi-circle around walled city, at least had two nodes touched the Grand Canal on the sides of a city Wen river was a north-south waterway connecting north wall gate to south water gate.

The two nodes were boundary points on city wall where to join in the national waterway. The south node was a cross point, in which the main road, two urban rivers and Grand Canal met here. The other node was the eastern gate, from which linked to the urban west-east street and city port. The two nodes gathered many ships, warehouses, they are places between urban and quayside areas.

In this semi-circle waterway pattern, cities could have one more inner waterway allowed boats enter the city through water gate. This waterway main functions were urban drainage and transportation. In Yang Zhou, Wen river was one official water route provided living materials only for local authorities, also under control of water transport office. But the other urban river, Cheng river was nearly one kilometre away and parallel to Wen river, it served for many citizens in the eastern district. Because of Yang Zhou is a famous city living most of the salt merchants, Cheng river became the most prosperous commercial and recreational street in Yang Zhou, an enjoyable place for a wealthy merchant, scholar, handicraftsman, and artist. On the two sides of Cheng river, there were clothes shops, gallery, traditional theatres, library and academy, teahouse and hotels, etc. The 2 kilometres long waterway brought a lot of commodities to this consume city from other regions.

The outer city section was the suburban public lake, named Slim West Lake, where people would...
Part II: Waterway Scaling on Regions

Chart 7-5: Waterway is far from De Zhou walled city

Node DZ-01
Landmark: Wall gate, Tax House, Pagoda, market

Inner City

Suburban area

Expanding urban area

Node:
- entrance to inner city
- exit to suburban area
- distribution center, port, warehouse, market, tax house
- public space, temple and pagoda, etc.

Inner City Sub-section:
- commercial district, fair place
- warehouse area, handicrafts and agricultural markets

Outer City Sub-section:
- expanding urban area along waterway, hotels, warehouse, shipyard, tax house

De Zhou (19th century)
Walled city 3.2 km2
Grand Canal in De Zhou Section

Sub-section
Outer City

Type 05: Grand Canal is separate from City

Node of Grand Canal in Beijing City
- Suburban area
- Urban area
- Suburban areas expanding
- City Wall
- Waterway
- Primary road
like to go on festival day. Lake was not on the main route of Grand Canal, but it was a high relation to it, this section used to be a branch of Grand Canal in the 9th century. Until the 18th century, local water authority dug new water channel outer of a city to join the regional water network by Grand Canal, urban expanded on the waterfront of lake and waterways, constructed temples, private gardens and pavilions. Finally, it was developed as one beautiful natural landscape near the north area of Yang Zhou, even had attracted the emperors to visit when they did an inspection tour on Grand Canal. Then, people considered it like the famous West Lake in Hang Zhou, honoured it Slim West Lake by its small size but same attractive.

Zhen Jiang, Hang Zhou is similar water structure in the walled city. Waterway connected points on the route of Grand Canal, from the points urban transport line and other expanding areas could obtain benefits from the national waterway, collect living materials, develop consume markets, build the public garden to improve urban life.

7.2.5 Separation of the waterway from the walled city, a case study of De Zhou

De Zhou, Liao Cheng and Cang Zhou, the three cities of canal show patterns that in the waterway are separating from walled city. These cities built in the flood area of northern China plain, where the rivers were always blocked by high silt sediment and causing the flooding, destroyed farming land and towns. Therefore, cities had to keep a safe distance to the waterway.

The node in De Zhou was a regional centre of grain depots. De Zhou used to be one of twelve imperial forts to protect the grain depots, in the Shang Dong section of Grand Canal. In 1376, De Zhou fort was upgraded to a military town, that had the urban functions in defend, administer, waterway control, protect grain carrier and depots, etc. Until 1399, after the Ming empire sent much more army to De Zhou on defending mission, large amount of grain depots built for military demand. From 1403 to 1424, the area of grain depot expanded again, De Zhou was upgraded as one of four largest royal grain depot on Grand Canal. In the early stage, officers and soldiers needed to protect the grain, but also administered and maintained the waterway, built flood buildings, and prevented river pirates.

The inner section of De Zhou, two cross streets connected the port from wall gates. In 1411, De Zhou was allowed to build a walled city in three square

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93 Waterway semi-circled Yang Zhou walled city.
kilometres to develop the local economy, not only a military town. It was the first time that did urban plan for the small city of canal. The central government was calling for merchants and immigrants come to De Zhou, lived on districts designated for their business activities94. Like other traditional walled cities, De Zhou developed the cross streets as main traffic line, the north-south and west-east street, where rapidly forming the manufacture centre inner city, filled with handcrafts workshops, retail shops, banking houses, etc. It is recorded that amount of new businesses greatly increased in the 18th century, as much as two hundred handicrafts workshops, four hundred business houses, even emerged famous brand and products, the tobacco well selling to Tian Jin and Ji Nan, classical salve from Yi Shou pharmacy trusted in market of capital Bei Jing, and straw rope sold to southern provinces of China. Thanks to the national water route, De Zhou turned into one of northern products centre from a military fort.

The outer city section was a crucial suburban belt between the north grain depot and wall gate of De Zhou. In the earlier stage, north grain depot had a land road, which used to transfer grain and goods to the inner city. In the period of water transport developed, this road built many grain shops and other stores to sell goods from Grand Canal. Most of the merchants also moved here bought land for setting up houses, provincial guilds, handcraft workshops. Actually, the waterway did affects establishing a city, then stimulating urban expanding out of a wall. There was a commercial belt, which was growing from two nodes, the grain depots of port area and the entrance of walled city, where suburban naturally expanded in a natural course.

From above original patterns, waterways are spatial corridor highly linked the walled cities but existed earlier urban expansion which opened the cities of canal to the regional trade markets by national water transport. The waterway was combined into civil life and regional economy, even cultural events. From a cultural landscape view, the context of Grand Canal could understand under a process of regional development.

7.3 New patterns: the waterway completely encircled by new urban edges

Grand Canal was once a regional economic corridor connected north capital, political centre, and south economic regions. Now, it also exerts
In early 21st century, the 18 cities of canal and other towns are exploring regional cooperation under the metropolitan plans. The practice of metropolitan plan has primary objective to improve the economic integration among villages, towns, cities through the infrastructure development, which could enhance the competitiveness of certain region, such as the national capital plan (include cities of canal, Bei Jing, Tian Jin, Cang Zhou, etc), the economic circle of Yangtze River Delta (include cities of canal, Hang Zhou, Jia Xing, Su Zhou, etc).

All of the cities along the Grand Canal economic belt have developed their updated Urban General Planning under the metropolitan regional strategy. The Grand Canal has been integrated into most of Urban General Plan because its cross-regional waterway considered as one significant infrastructure. In the most metropolitan regional strategy, the waterway has various functions for urban and rural economic development, defined as a blue ribbon, green corridor, transport line, heritage route, and economic belt, it once again combined the work of nature and culture.
If judging from the distance and location, waterway only left one pattern of spatial relationship under those largely expanded water cities, that almost all the cities of canal accept the waterway as their urban inner rivers. It is a pattern that waterway is surrounded by urban constructed area like hundreds years ago the waterway flew into ancient capital and passed city gates in Beijing. So that the waterway has a more complex situation to work as a new route in regional structure, this concludes that the cultural landscape of Grand Canal would widely intervene in region development again.

Nodes, axial water route, urban blocks as articulations are evaluated again, they are three references related to regional scale. From this method, it could well discover the significant regional intervention affected by the cultural landscape corridor, that is the identity of Grand Canal regeneration and reformation.

In 2004, Bei Jing, Tian Jin, He Bei Province started to edit a Regional Plan among the three metropolitan regions\(^95\), where included three section of Grand Canal, the Tong Hui canal, North canal, and South canal. When the plan was submitted to state council in 2010, these three main water routes are mentioned as a spatial corridor, they have developed and planned upgraded this arterial transport line along the original water route, the national railway, high-speed rail and highway, though waterway has lost navigational function. In 2015, the central government pointed out that, the three metropolitan regions should have core strategies on orderly dispersal urban functions in Beijing central area, and searching urban models for high population density and intensive economy areas to promote new regional development\(^96\).

Yangtze River Delt Economic Circle Regional Plan was firstly signed by Chinese state council in

\(^{95}\) October, 2001, Wu Liang Yong, academician of Chinese Academy of Science, he led the research project in "Urban and Rural Spatial Development in Bei Jing, Tian Jin and He Bei province" urban planning department of Tsinghua University, Ministry of Construction and hundred scholars argued it finally proposed to set two regional cores, capital Bei Jing and north biggest port city Tian Jin.

\(^{96}\) The central government proposed a outline to define the overall positioning integrated economic region of Beijing, Tianjin and He Bei province, is "a world-class city cluster surround the capital, the overall regional coordinated development and reform leading region, national innovation-driven economic growth in the new engine, improve the ecological environment restoration demonstration zone", also gave three specific functions to three regions:
The capital, Beijing is the political and cultural centre, international exchange centre and scientific innovation center.
The municipality, Tianjin is a national advanced manufacturing Research & Development base, the core area of northern international shipping, financial reform and innovation demonstration area.
The province, He Bei is a modern logistics base for the country, an industrial transformation and upgrading test area, new urbanization demonstration of urban and rural area, and ecological support areas.
2010\textsuperscript{\textdagger}. Yangtze River Delta is a large area alluvial plains in eastern China, this land involved the largest economic circle where has the centre international port city, Shang Hai, but more cities of canal like Hang Zhou, Su Zhou, Zhen Jiang, they have been defined as sub-centre cities in the regional cooperation development. In the future plan, they will up-graded old water channels into second level navigation level. Cities will develop by constructing more inner modern port area.

The first decade of 21st century, ancient Grand Canal has a rare opportunity to link two most important economic circles again under social, economy, and ecology strategies. Cities

Many cities of canal also started the metropolitan plan years ago, some of them have been performed very well under or cross provinces. Until now at least regions of Grand Canal have seven metropolitan plans, which involved all 18 cities in the study.

Two conditions of infrastructure:

One condition is a shipping function, and would be integrated with other modes of transport channel in the metropolitan plan. For example, the north entrance of the city of Hangzhou, it has been upgraded into a complex entrance includes railway stops, highway station and shipping terminal.

The other is the water route still defined as a transportation corridor, even if it has lost capacity in regional shipping. The corridor would form a regional bond to link urban centre and urban cluster outside. Such as the North Canal in Tian Jin municipality, it has developed warehouse and industrial area, where transferred the products between suburban and central city. Through the population growth, the warehouse and industrial area of canal has been established a new periphery urban cluster compared to a city centre, where focusing on improving its manufacturing capacity and residential expansion.

When drawing the new positional relationship between Grand Canal and cities, I think that it shows one simple pattern compared to the traditional waterway and walled cities, as I have studied. Probably this one pattern would give more significant elements under modern regional cooperation, could the Grand Canal works again on the north-south continent?

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{97} Yangtze River Delta Economic Circle is internationally recognized as one of six world-wide largest cities cluster. The economic circle has a clear definition under global background, such as the entrance of Asia-Pacific region, modern service industry, advanced manufacture centre, and stronger world class city cluster.
\end{itemize}
\end{footnotesize}
7.3.1 Nodal point connecting the waterway to a wider region

Green nodes fix on waterway

Part of the canal cities have the metropolitan plan that will implement the green regional system, it defines green references, such as urban green area, green nodes, green wedges or block and the green belt, they are a macro scope concept.

Beijing and Tong Zhou, for example, have built a large-scale green node, Grand Canal Forest Park, it is a protected forest area built on the outer edge of the city. This is also the hydrological junction of two canals, the Tong Hui and North Canal, where will practice regional green system plan. From here a green belt will south spread along the Grand Canal on both riversides arrive in Tianjin. Beijing and Tianjin, two regional cores will expect to build the large-scale green corridor in the future.

The green node has a function in water treatment and ecology restoration. The forest park provides wetland and various plants to restore water environment. In the view of urban boundary of Beijing and Tong Zhou, Grand Canal Forest Park is a public park, but also this green node is a major
symbol to stop urban sprawl, which marks that Beijing will control its disorderly urban expanding in the 2020 General Plan.

Back to the situation of Tong Hui Canal, it became an urban river has been completely surrounding by a concreted city in the rapidly local urbanization. But a vision of the future, waterway must be used as an instrument to prevent the hardening urban landscape. Under regional development, the waterway could recover ecological value. North canal, it began to challenge in practice large scale and continuous ecological corridor by gradually set green nodes. Bei Jing and Tian Jin have worked out a part in their metropolitan plan.

**Urban node is transforming on waterway**

Normally the metropolitan plan will set out a boundary of the central area so that urban expansion has to select new sub-centre. For example, Tian Jin municipality upgrades its Xi Qing town as a new sub-centre; Xu Zhou city, the government selected site to build a new city as a political centre in the east of ancient walled city area; Su Qian, has decided to build a new residential cluster on the north side of Grand Canal.

Urban nodes are transforming on waterway due to the regional communication. Tian Jin planned to realize transforming the central area to move out industrial functions instead of developing urban service industry, meanwhile defining some sub-centre, like the Xi Qing new city to accept advanced industry and manufacture on the starting point of South Canal.

This new urban sub-centre has transformed from a traditional warehouse area, extended the regional influence by developed transport infrastructure. In the general plan of Tian Jin, Xi Qing will become a large distribution centre in northern China. Here the biggest flower and plant market located on the cross node of a historical waterway and the urban outer ring expressway. Near the plant market, another large scale botanic garden serves for inner and outer city residents, an important urban leisure facility. Xi Qing sub-centre has a long term planning that will carry out multi-function land development, a modern urban living centre will be situated on the waterfront to create a northern water commercial and leisure district.
Sub-urban centre: Xi Qing new town project (in processing)

City: Tian Jin Metropolitan Area

Urban Function: business buildings, commercial market, high-tech industry office, waterfront public facility, museum, cultural centre.

Tian Jin, Xu Zhou, Su Qian, they are three cities of canal which depend on the spatial corridor of an ancient waterway to build or upgrade new sub-centre. This kind of urban expansion highly linked other urban nodes both serve the local and regional development.

Transportation node integrated with waterway.

Hang Zhou metropolitan plan takes the lead in integrating transport infrastructure, aims to make reasonable model if urban and region transportation. Certainly, this integrated model is prior to planning in a southern waterway, which already has developed navigational capacity, like Hang Zhou, Zhen Jiang.

Hang Zhou planned a transport hub in north node belongs to three traffic types, urban ring expressway, canal, and railway. The express ring road benefits on transporting the everyday life materials to the inner city, for example, the agricultural products and food supply need the high speed and most wide traffic network in the city. The railway is a crucial line to transport fuel and raw material for the inner city. The inner port, a more stable and low-cost way occasionally could do more capacity than railway, moreover, it still well connected to another navigational water route in the southern network of
Zhen Jiang earlier developed the inner port along the Yangtze River where the branch of Grand Canal, railway and the national road could connect to the port and tranship goods from inland to coastal area. The port area is a sub-centre of Zhen Jiang, it is a node connects Yangtze River and Grand Canal. After the expanding warehouse area and industry land, the port could develop a professional heavy industry and manufacture district. Large scale industry relying on coal and oil for energy production, waterfront large coal plant establish on this sub-centre outer of city, energy resources are particularly contributed from northern province even overseas.

The sub-centre of Zhen Jiang is an industry district improve local industrial productivity, but also is a high level and large scale regional industrial division based on infrastructure network, the modern integrated transportation of national waterway, railway and highway.

**Industrial node is producing on water corridor.**

Chang Zhou has two waterways crossing urban central area, one is the ancient route of Grand Canal, and the other modern one is the upgraded navigational waterway. Ancient water route crossed the provincial road on one node, which is the traditional industrial basement, to produce the steel products, and construction materials. Normally, the power station set up closed to the scope of industrial area supplying energy. The other modern waterway flows into the southern area of Chang Zhou which crosses the national road system in two nodes, one node is national level electrical manufacturing base, and the other is large advanced energy and industrial district, they both serve as important industrial bases for Yangtze Economic Circle.

In 1957, Su Zhou built 2.3 square kilometres heavy industry in the northern area of city, the iron and steel company covered 500 metres waterfront platform and 2.43 kilometres railway to transport ironstones. It was a regional node of steel and metallurgical industry. In the early 20th century it moved to the western waterfront of Grand Canal where had an advanced industrial land project to build an intensive base after upgraded technical equipment, the richer
Transportation integration hub:

North transportation hub

City: Hang Zhou Metropolitan Area

Urban Function: freight train station, inner river port, express way entrance.

Productions in metal fabrication and machining industry. Therefore the north industrial node of Su Zhou is born o waterway and then regenerated again in contemporary regional industrial cooperation.

Wu Xi works the similar urban project on industrial location, which closed to water route and railway, the industrial node collects the basic source of energy, coal, oil and natural gas. Some of the local steel factories, cement factories, power plants, they gathered together working to produce physical materials to improving the inner living city, also selling their competitive products to all the countrywide and worldwide.

Jia Xing is another smaller scale industry city without freight railway, but it plans industrial node at north-west area outer of a city, where passing waterway, aims to promote new high-tech and advanced industrial basement. The large building materials and ceramic factories, they will have to improve technology and control low pollution. It will build a node of high-tech industrial development district, such as the photovoltaic production required by international green energy market.

More cities like Liao Chang and Lin Qing, where
Industrial Node:
- Power plants and coal transport station (constructed)
- City: Chang Zhou

Urban Function: industrial area, energy production, coal transferring

The waterway has lost navigational function, but cities make use of the developed transport infrastructure along an original waterway. The urban area of Industrial and warehouse functions spread follow north-south water route, which would implement the regional industry belt project from the metropolitan plan.

*Cultural heritage node is explored on historical waterway.*

Before Grand Canal became the World Heritage Site in 2014, only De Zhou and Tai'er Zhuang these two cities of canal proposed to build the cultural heritage system in their metropolitan plan, they were born to Grand Canal.

After building the new eastern urban centre with infrastructure high-speed railway station, the old urban area of De Zhou will be conserved as a cultural heritages corridor. De Zhou Metropolitan Plan(2011-2020) plans to rediscover the values of heritages from heritages of waterway, monuments, industrial landscape, etc. Especially the historical events once was happened on this site, for example, the international communication in 1417, the Philippines king and its royal family visited to Bei Jing through shipping on Grand Canal. Unfortunately, the king
Cultural heritage node:
- Tai'er Zhuang ancient city

City: Zao Zhuang Metropolitan Area
Urban Function: historical urban area, monument, waterfront landscape, tourism site

Died of illness in De Zhou, members of royal family buried him near water route, they left to guard the royal tomb. Now a village lived the subsequent Philippians generations guarding the ancient tomb, which also protected by the government as a national cultural heritage site. De Zhou has discovered more nodes on the water route which explaining the history of the city, recording its memory in different periods. Such as historical grain depots, the modern industrial heritage of machine tool factory, and water supply plants, they all have worked for improving urban life which relied on the ancient waterway.

Tai'er Zhuang is defined as one of town clusters in Zao Zhuang Metropolitan Plan, which has less than 200 thousand resident population. Tai'er Zhuang is famous at the conserved traditional water streets. It was a 3 kilometres historical section formed by original meandering street and original waterway, which was conserved as cultural heritage after expanded another modern waterway in the southern area. Due to the authenticity of cultural heritage, the perfect conserved urban form and architectural monuments, local living atmosphere with waterway, Tai'er Zhuang was honoured identified as canal city because its historical waterway is still in a dynamic situation.

Much more nodes of cultural heritage would...
be explored after Grand Canal bidding for World Heritage because heritage authorities have proposed a magnificent goal in the future, which is creating the China Grand Canal National Park to protect heritages, administer cultural resources, provide an educational facility, build explanation system.

7.3.2 Axial waterway renewing regional communication.

The modern metropolitan plan limited the boundary of the central urban area, where the urban waterway considered as a crucial spatial axis in renewal urban structure. The axial waterway experienced rapid urbanization, and recently it works as inner city spatial corridor or extends as a transport line to communicate with outer urban sub-centre.

Extending functional axis from urban centre to outer zone.

Some of Metropolitan Plan has carried out axial spatial structure which relying on the linear character of a waterway. The axial urban space acted as one tool to reorganize urban elements.

Take Bei Jing as an example, which has a 20 kilometres length of Tong Hui canal connected capital Bei Jing and another end point city Tong Zhou, but now this waterway has totally become an urban river inner city. In the Bei Jing latest metropolitan plan, it emphasized the cross axis, the central north-south historical line signified the capital cultural function; the other west-east axis is Chang An Street and its extension which include the section of waterway, this is an important axis highlight the political and financial role for Bei Jing, on this axis will develop two priorities along the waterway, the central historical area and central business district. West-east axis extends to Tong Zhou, it is the start point from eastern to the central city, will develop to be an advanced satellite city to support the political and financial functions for Bei Jing, in order to lower population inner city, part of municipal administration will move to here in the future. On the east axis also passes through the urban cluster, such as Ding Fu Zhuan is characterized as international media centre, because existed China Communication University and a large area of innovating media centres in this district.

Moreover, waterway like Tong Hui canal in Beijing never works again completed replaced by land road or subway. Transportation function well developed
Urban expanding axis: 
Bei Jing West-East urban axis 
City: Bei Jing Metropolitan Area 
Urban Function: central business district, media creation district, urban residence cluster.

Parallel to original water corridor, extended subway line between cities, conserved the railway as a freight line, constructed the Bei Jing- Tong Zhou urban highway. National road connects the outer beltway of Bei Jing then passes Tong Zhou to other cities. On the arterial west-east axis, there are five main entrances of beltways of Bei Jing, one has formed the financial centre, the Bei Jing CBD, no doubt that others are large scale multiple overpasses of a highway which disperse traffic capacity to the both side of the corridor. More urban secondary roads pass along the west-east water route, that serves for local communities.

Xu Zhou planned to build a new political centre meanwhile leave the old urban area developing the commercial industry. Old and new city are two endpoints on the axial corridor if the old city is thought as an inner city centre with a high capacity of population, the new city locates 10 kilometres away in eastern area is a regional centre which mainly provides land development to integrated other areas in Xu Zhou metropolis.

Structuring green axis in regional ecological network.
The earliest Su Zhou, Wu Xi, Chang Zhou Metropolitan Coordination Regional Plan set up the green structure in three cities to implement a green land plan, in 2003. They are three neighbouring metropolis on the Grand Canal, the traditional waterway was one of many green axes to form a large scale green corridor between them. The green corridor is a cross-regional arterial green axis connect the Shang Hai municipality and provincial capital Nan Jing, which is composed by most artificial forest belt, the 100 metres width green protected area of high-speed railway, the grassland buffer belt along a highway, also the waterfront avenue beside the Grand Canal. The metropolitan area in the three cities of canal planned to 18 forest park in the future.

Some modern metropolitan plan implements the tool of ventilation by using green axes. Urban environment makes advantage of the green axis of waterway, because it hundred metres width open space in water channel, this north-south water channel is planned to ventilate the central urban area with another urban wind corridor, especially for the cities under high-density population and heavy industrial development, such as Cang Zhou, De Zhou, Hang Zhou.
Urban landscape axis:
Hang Zhou cultural landscape of Grand Canal
City: Hang Zhou Metropolitan Area

Urban Function: a axial space to present the urban heritages from different periods, the historical monument, industrial heritage, water streets, traditional commercial space, cultural centres, etc, which all are significant to Grand Canal.

City of canal like Ji Ning, it has planned the blue line strategy, which will integrate more urban functions relate to this water route. The blue line has two main axes in the central urban area, one is the modern waterway in 340 metres widths recently is the northern navigational section of Grand Canal, where has 180 width metres green buffer zone; the other is a blue line follows ancient waterway passing through city centre to the southern residential area near inner lake and port. Under the water structure, the two blue lines would join with others water channels, to build a regional green network as circular green path surround city, with a ancient urban river, groups of wetland, a series of natural lakes.

More cities of the canal have described the green axes in their metropolitan plans, which make use of the waterway, to improve a concept of the ecological city. Hang Zhou is a famous water city set schedule to build an ecological axis on Grand Canal, firstly to clean water to better quality, second integrate different water elements in the metropolitan network, the river, canal, lake, mountain, farmland, town and city. Grand Canal in Hang Zhou is an ecological axis passes through the inner city but also connects the outer green patches, that could control disorder urban sprawl and protect natural resources.
Narrating a thematic axis in history of Grand Canal.

Hang Zhou metropolitan area includes one core, Hang Zhou, and three cities Hu Zhou, Jia Xing, Shao Xing, are a sub-central city, five towns which locate surround the Hang Zhou. Almost all of the cities have a high relationship with the traditional waterway, Grand Canal. After bidding for the World Heritage, Hang Zhou determined to protect the historical waterway under large scale region:

- the ancient Grand Canal and its water system;
- the city moat, ancient wall and gate of city;
- traditional buildings, architectural heritages;
- classical waterfront road systems, ancient urban texture;
- folk art, traditional handicraft, literature and music, other intangible heritages.

Hang Zhou had the cultural heritages protection projects, meanwhile, it planned the narrative axis to explain the history of city and waterway under a theme of great Grand Canal. On the section of waterway, it has eleven world heritage sites, which will be stringed by a regional landscape axis. On this axis, an administrative authority will do the effort to maintain the natural and cultural landscape, controlling the height of building to give a pleasant view, designing a suitable architectural style, colour and volume on the waterfront area. A cycle route and pedestrian system also will build on the waterfront as a linear recreational route which connects other urban service and facilities, public parks and gardens.

The historical section of Grand Canal is considered as the axial urban element in urban design. Yang Zhou emphasized to developing axes of the cultural landscape in the central area, old route of Grand Canal which famous in outstanding water landscape and elegant classical Chinese gardens. Zhen Jiang proposed to plan the urban landscape narrate the story of the river when it was used as most busy grain transport line. Huai An conserved the historical waterway to build a group of museums, which will combine the heritage sites and modern cultural facilities to present modern cultural landscape of the waterway.

7.3.3 Urban block regenerated by diversifying water values

In the modern metropolitan plan, a city has to renewal the old district, at the same time to construct the new urban project. Many urban projects priors to
be built on the waterway due to its influences could affect the local urban structure, also are set up as regional elements by the values of the large scale waterway.

Public Plaza & Waterway.

Cang Zhou defines various urban planning districts in Cang Zhou Urban General Plan, one of the districts is the ancient city, named as Yun He District (area of canal), it locates in the western part of whole Cang Zhou city, has 137.7 square kilometres. First phrase or urban renewal project implements on the ancient waterway, it includes dredging water channel, restoring water ecological wetland and natural bank, beautifying waterfront landscape, then a largest commercial and leisure project constructed in this water block. Cang Zhou urban district of canal, has planned to build the green core on the ancient waterway, people expect that the waterway would be an urban ecological belt to improve the living condition.

Tai'er Zhuang, the local authority implemented the regional core of historical city plan, it has left only 3 kilometres long ancient waterway which submitted as one of the Grand Canal World Heritage Site. The old town of Tai'er Zhuang was considered as one protected area in 2 square kilometres. The historical area well protected to respect the urban block and water network, recovered characterized landscapes of original water town.

Ji Ning and Huai'an, two cities had the most important water administered offices which were installed by a central government in ancient time. The water policymakers and water officials once stayed in this two cities, conserved the highest administrative institutions. The cities both developed the tourist core water block in the central commercial area, a new thematic plaza of canal, designed as spirit of space, here emphasize the dynamic centre of a region, but also identify the context of Grand Canal. Huai An did the similar project to reopen the public space as a Plaza of Canal, in addition, established a group of thematic museums on a small river islet, where defined as a cultural centre on the waterway.

Urban Regeneration Project & Waterway.

Tian Jin has begun to waterfront urban renewal projects in the early 21st century. San Cha Kou is a confluence site where three rivers meet here, it is thought as a born place of Tian Jin city. The urban project began to renewal this ancient district to give
Cultural plaza:
Museums cluster
City: Huai’an Metropolitan Area
Urban Function: different thematic museums, waterfront landscape.

Cultural plaza:
Cultural square
City: Ji Ning Metropolitan Area
Urban Function: public plaza, cultural facility, waterfront landscape.

Cultural plaza:
Residential and commercial complex
City: Cang Zhou Metropolitan Area
Urban Function: commercial district, residence, cultural facility, recreation.

Chart 7-14 Waterway opened new public plaza in cities of canal, Huai’an, Ji Ning, Cang Zhou.
it a role of a new economic engine which contained the development of commerce, cultural landscape and public facility.

After discovering the values of the waterway, a long-dated urban development will implement surround the sections of waterway, such as the northern district of San Cha Kou which will build one of a large luxury residential area of Tian Jin. The first phrase has completed Tai Da real estate project, build 150 million square metres total floor area covered 85.1 hectares.

San Cha Kou has kept its water block as one of focal point inner city by new projects. Tian Jin modern industrial museum is a cultural facility explaining city transforming in history, the is designed in an extraordinary façade; on the triangular site of museum, a public plaza opens to citizen which spread its waterfront accessible walkway to ancient ferry harbor, now has rebuilt to be commercial shop and urban landscape attract more and more visitors; on the section of waterway, it shows us a very beautiful urban water landscape, where constructs the Tian Jin Eye, a urban creation project combined the giant Ferris wheel and bridge, other two more bridges also characterized their structure, a white and graceful stay cable bridge, another red arch bridge, they have been landmarks of city.

Zhong Bei district is another urban renewal project in the western outer city of Tian Jin, belongs to the Xi Qing municipality, will develop two banks of South Canal as the central recreation district for Tian Jin metropolis. In recent 10 years, it aims to upgrade traditional forestry economy and manufacturing function, build the high quality living environment. When the metropolitan plan supports advanced industry, shopping mall, and new residential project set on the two bank of waterway in Zhong Bei, which rapidly replaced the old and poor houses. South Canal, 6 kilometres long riverside is considered as a cultural resource to reorganized new urban water blocks. Latest urban regulatory design submits to establish a water block, which creates the water-loving circumstance for the international commercial centre, one skyscraper of business offices, and groups of building for innovation industry offices. Even more, the waterway could use as tourist line which provides a short time journey to enjoy future water landscape. Another Grand Canal Museum will build on the bank of a river which served as the local cultural facility, and one explanation centre of Grand Canal heritage network. Zhong Bei district concluded that the central water block is the city hall public
Urban regeneration:
Urban landmark
City: Tian Jin Metropolitan Area
Urban Function: post-industrial museum, ferris wheel, waterfront landscape.

Urban regeneration:
International exhibition
City: Yang Zhou Metropolitan Area
Urban Function: exhibition centre, commercial street, hotel, inner sport port, tourism site.

Urban regeneration:
Commercial market
City: Hang Zhou Metropolitan Area
Urban Function: commercial district, residence, cultural facility, recreation.

Chart 7-15 Waterway provides space for urban regeneration projects, Tian Jin, Yang Zhou, Hang Zhou.
opening in Xi Qing sub-centre city.

Yang Zhou 2012-2020 Urban Master Plan, gives a guideline to build two central units in the waterway, one is the traditional commercial area in ancient city, with a landmark Wen Chang Pavilion; the other modern business district is under construct, will complete a international exhibition hall on the bank of Grand Canal, where will hold the annual World Canal Cities Forum. The water block will be structured by the artificial lake conduct water from Grand Canal, a port to parking yachts, from this open urban lake design a water commercial street for local tourism and leisure. This water block named the Heart of Bei Jing-Hang Zhou Canal.

Other cities like Su Qian, has built two city halls for municipalities closed the bank of original waterway, the water bank is one flooding protect buffer zone, where are designed as public space merge into the local political areas and plazas; Huai An, is building cultural cluster in water block by conserving historical building and constructing modern museums.

A few cities of Canal treated two sides of waterway only like two edges of an urban community. This is one way to improve the living environment of a city, because it is hard to find any more cultural heritage along the waterway, and real estate has highly developed on the margin of waterway, even demolished the only historical relics. Under this background, local authorities in Bei Jing, Zhen Jiang, expect to reuse the section of waterway as green walkway, leisure place, in the high-density area.

Bei Jing plans to improve the whole line of Tong Hui canal, the 20 kilometres waterway with two margins as an accessible walkway for a local resident. The first project has finished which integrated protecting only relics of ancient city wall of the capital. It was one short distance section on the south edge of financial centre (Chao Yang CBD). A public lineal park, Qing Feng Garden has built on the two margins of Tong Hui Canal where once located an ancient water gate, had a length of 1700 metres and 70 to 260 metres width. The urban renewal project aims to create one possible leisure place for the CBD district, which governed by the local district government. The garden has to take up a compromising attitude that sets entrances of a garden area near the principal roads, this section
Chart 7-16 Waterway created the waterfront landscape as urban lineal space, Bei Jing, Su Zhou, Hang Zhou.
keeps a clear position as the southern edge of the business area, and the northern edge of urban infrastructure area. The two sides of the principal road and constructed urban area strengthened the linear form to the margin of waterway, the waterway is like a hardened and cold linear space, but local communities will do more effort to transform the water banks to be a flexible and dynamic urban public spaces. Zhen Jiang also takes the plan to construct the water landscape along the old waterway to improve urban life.

Cities like Su Zhou, Wu Xi, Chang Zhou, have conserved well the various urban form in different periods, the old narrow waterside streets, the warehouse building, the industrial factories in modern time, they are now used as cultural resources to give more creation urban project. Su Zhou plans the water belt which could link different urban blocks by landmarks from different times; Wu Xi, focus on protecting and rebuilding ancient streets and water landscape, a harmony environment combined urban life and natural environment; in spite of Chang Zhou has lost most historical streets, it makes effort to build a walkway along ancient Grand Canal, which stringing the central city and surrounding communities. Compared to Bei Jing and Zhen Jiang, the three cities has practised the water bus, recently building water station to ship tourists, a further transportation plan is going to develop the long distance water transport among the three cities, to form a tourism water route.

7.4 Conclusion: Undefined, difficult for developing urban block on the waterway.

Two cities, Liao Cheng and Lin Qing, has most well and large-scale conserved historical district, Liao Cheng is very special in urban structure, the quadratic walled city surrounded by big lake which has rebuilt all the building but maintained the urban texture, small streets and antique architecture made the walled city as tourism site, this is the only urban renewal project for this prefecture city, but there is a argue about its urban reality, if it was a logic method in urban renewal which didn't have more relation with waterway and surround communities.

Lin Qing, a city left its historical area 4.5 square kilometres in which kept an old and large amount of communities, they are almost kept the backward position in rapid urban development after sprawling to eastern land. The ancient waterway passing from south to north but without sufficient water, it just maintains as one flood drainage channel. The local government actually knows that the whole ancient
city has value in cultural heritage, an economy of tourism, an urban leisure site, or ecological function, etc. But for the less developed city Lin Qing, local authority doesn't have budget for renewal projects, they have to look for investment to cooperate stimulating the dynamic.

Many water and urban blocks have been completed or planned on the waterway, however, they are developing the theme of Grand Canal, and the have already a possibility to strengthen values of waterway under the regional view. Certainly, there are much more difficulties when we see that some cities of canal still expecting discovering cultural values. People is still on making an effort to changing urban block on the ancient waterway, never give up.