With half of the world's population living in, the delta areas become more vulnerable to the impact of climate change and will face larger pressure to support urban development in the coming century to build upon the specific and unique water-based landscape. This landscape is not only formed by the dynamics of natural forces but also shaped by artificial interventions. As a result of national policies combined with local attempts over the past. Nowadays, many challenges force the delta landscape to adapt to new conditions: rising sea level, changing river discharge, increasing groundwater salinization and subsidence constitute significant and increasing threats to delta cities (Delta competition, 2010). Therefore, it is necessary to develop new approaches, which collaborate among urban design, hydraulic engineering, and water management. Understanding of delta landscape transformation would be a solid foundation for interpreting these new approaches.

Using the Triple- Three- Layers-Approach (Meyer and Nijhuis, 2010), to understand the old approaches of dwelling and water infrastructure in the deltas by demonstrating the landscape morphology, construction strategy, location and section of the dike system throughout centuries, this paper compares the dynamics of two urbanizing deltas throughout centuries: the Mekong River Delta in Vietnam and the Pearl River Delta in China.

rvention and re comparison between the Mekong River Delta and the Pearl River Delta



1. Natura and tide dominated landscape: Canal to protect land (From Khmer Empire period to pre-colonization era, before 1800)



Adapted landscape: Canal to 'open up' delta (From pre-coloniz







2. Adapted landscape: Canal to reclaim and transport (From French co-Ionial period to the End of Vietnam War 1876 - 1975)



 Advanced irrigation tools and technology in agriculture brought in by the Southern immigrates Start pre-colonizatin The first recorded canal constructtion 1818 building Southern Vietnam became colony 1867 Introduction of steam dredging -1875of

1900-

The

rier

Increasing of land reclamation

because of advances in dredging

The first dikes and salwater dam were built 1930

End of French colony 1954

End of Vietnam War 1975

Open door 1986

1990

1800 1911 End of imperial and start of modern era 1927 Civil and anti-colony War ogy 1950 1979 Open door -2000

• Restriction of land reclamation because of over ille-

gal reclamation and increasing flood



3. Landscape independent: Dike to guard cities

. Landscape adapted: [



3. Landscape independent: Dike to guard cities

The result shows the historical interventions tended to change inter-relationship among the layers of landscape, infrastructure and human occupation. These different interventions impacted on delta landscape as .0 S well as offered better conditions for urbanization over times. 5 ncl The Mekong River Delta, in which exhibits a spread out pattern of urban development by the cities along the watercourse, indicating the need to emphasize the role of canal system. However, the Pearl River Delta, with 0 emerging new reclamation areas and high population density, illustrates the importance of re-organizing the Q dike system built through long history. Both two cases show the urbanizing delta landscape as a result of the combination of resistant and resilient

Building new hydraulic works

for controling water flows.

approaches. The trends from Landscape adapted to Landscape independent contribute to increasing flood S threaten. These experiences are not only essential in each delta to introduce delta-specific strategies for sus- \mathbf{O} tainable urban development, but also can help other deltas in the world to generate their own approaches in the future.

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