Inconvenient Scales
Landscape Approach Development under Planning Scale Shift in Pearl River Delta, China
Liang Xiong, Delft University of Technology, the Netherlands

Introduction
This study aims to find relation between different scale of spatial planning and its influence towards flood defence and urban sprawl in delta region. It take Pearl River Delta as the case to find out if there is a confliction between each scale in spatial planning, and how the confliction influenced the flood defence and urbanization and urbanization process of the delta region.

Method
I use three scales of the region in fours time stages to illustrate the living pattern and spatial development in the area: local, county and delta scale. Dike administration, settlement strategy and spatial development are illustrated in each scale. I focused on the settlement strategy with elevation and water in section scheme. In county scale, I choose a county named Tan Zhou with both historical settlement and recent urbanization. The insight of settlement strategy reflects in the urbanization and land use change in maps. I also explain the scaled up dike system administration in this scale. The delta scale shows urban development in larger scale as a overall reference of the consequences in county scale. By presenting the historical development among different scales, I use the scale change in dike administration to explain the spatial development mechanism.

1. Landscape dominated (-1279)
Delta scale (above): Cities located in strategic river cross and coast. No settlements in islands.
County scale (right): few dike built to protect lowland in high tide.
Dike to prevent high tide. Dike administration in personal scale because of the low demand on the flood defence.

2. Landscape adapted(1279-1644)
Delta scale (above): settlements grew in more strategic regional positions.
County scale (right): reclamation started in estuary and people begin to settle along dikes.
Dike to reclaim farmland, settlement in natural high land. Dike administration in village scale because of the increasing difficulty of reclamation along river.
Inconvenient Scales
Landscape Approach Development under Planning Scale Shift in Pearl River Delta, China
Liang Xiong, Delft University of Technology, the Netherlands

Conclusion
The inter scale switch of the dike system administration had changed the region flood management in a dramatic sense. Dike construction and management was no longer a county scale issue for villages or families. This management switch resulted into its first application of large scale dike integration, in which the dike systems in the county scale has been connected and upscaled into a more integrated delta-scale dike system.

Unfortunately, the upscal of the dike administration lead to an unexpected situation in the spatial planning and urbanization that has been ignored for long times. A noticeable rural urbanization has had a better chance to spread throughout the Pearl River Delta in the reclaimed area since 1979. Large areas inside the polders had been transfer from farmland into urbanized area. This means the dike administration shifting from lower scale has gradually changed the settlement pattern. The delta-scaled dike has changed the local behaviour, which lead to a new, and more infrastructure depended urbanization pattern in the delta scales. The large-scaled dike system has hidden the flood threaten to most people: they decided to convert their farmland into manufactory, and later a new town. During the process, it is hard for the local citizen to realize their change in their farmland can lead to a totally change of urban pattern in the delta scale which heavily dependent on the delta-scaled dike system instead of the landscape dependent system in the Pearl River Delta. In other words, the problematic connection between delta scale and local scale of the dike system lead to the increasing flood venerability in urbanization process both from bottom- up and top-down in the Pearl River Delta.

Liang Xiong, PhD Candidate Email: L.Xiong@tudelft.nl

This study is one subject in Delta Urbanism, ULab, Department of Urbanism, Delft University of Technology. It is funded by Chinese Scholarship Council.