

Y Li *Conceptual design of inland terminals for the Yang-Tse River region*
Masters thesis, Report 2005.TL.6952, Transport Engineering and Logistics.

The Yangtze River is the third largest river in the world and the longest river in China. It has a navigable length of 57,477 kilometers (including its tributaries), or 52.6% of the national total. It and Beijing-Hangzhou canal (the Grand Canal) constitute the biggest inland waterways network. The Yangtze River has over 700 tributary waterways and 50 of them are relatively important for transportation. The trunk of Yangtze has formed three groups of ports that include Yibin, Yibin, Luzhou, Chongqing, Yichang, Wuhan, Jiujiang, Anqing, Wuhu, Nanjing, Zhenjiang, Yangzhou, ZhangJiaGang, Nantong, Shanghai and there are 14 ports that are ports open for the foreign trade. Being the largest east-west economic passage of China, the Yangtze River Basin is one of the main corridors to connect the coastal area to the hinterland. Therefore, it is of great significance to make study on how to make full use of the existing resources and the advantages of the Yangtze 'golden waterway' to establish a modernized and efficient system of container intermodal transport, which is based on the port of Shanghai as the center of the whole intermodal system within the Yangtze river region. The inland container terminal plays an important role in the whole container intermodal transport system in the specific Yangtze River Basin, because it is the interface between the waterway container transport and the hinterland container transport and it is also a key factor to decide whether the whole container transport system is reasonable.

The objective of this master thesis is to select a favorable place to discuss the conceptual designs of container terminals for scenarios of 200,000 TEU/year and 500,000 TEU/Year based on the analysis of the geographic characteristic, the navigational conditions, the region economy, barges and small vessels classification and container flow within the Yangtze River Basin.

The design step of this report consists of the following elements:

- Select a favorable place to design a container terminal
- Evaluate different handling systems for the terminal
- Compare alternatives and select the most suitable handling systems.
- Design a final layout

First based on the analysis of the geographic characteristic, the navigational conditions, the region economy, container generation and distribution and container transport flows within the Yangtze River Basin. Jiujiang is selected as a very interesting place to local a modern container terminal in this research. Assumptions are made as the container throughput of 200,000 TEU/year, and 500,000 TEU/Year in future at the Jiujiang container terminal.

Next the assumptions on the characteristics of container flows, waterside connections, container storage, landside connections and working hours for the container terminal are given. The reach stacker, straddle carrier and RTG handling systems are discussed and compared in detail.

Finally, the main characteristics of the design are given in the next table.

	200,000 TEU/year	500,000 TEU/year
Handling system	Reach stacker	RTG
Quay length (m)	500	500
Depth (m)	340	454
Area of the terminal (ha)	17.0	22.1
Total initial investment (€)	35,450,000	71,460,000
Total fixed cost for operation and control (€)	404,400	1,553,400
Total cost per move (€)	13.08	16.27