Promote Inland Waterway Shipping, to Realize Energy Efficiency and Sustainability, through Model shift and Emerging Technology Application

Lu Cheng, China Waterborne Transport Research Institute, clu@wti.ac.cn
Overview of China Inland Waterway Shipping
Model Shift, Anji port
Emerging Technology Application, Anhui lock passing
Long-term planning with dedicated incentive programs

- “2-1-2-18 network” 两横一纵两网十八线
- Blueprint and roadmap for the development of IWT in China 中国内河水运发展的总体规划和实施路线图
- Classification of waterways was an important first step, followed by synchronizing fleet and ports 航道等级划分是重要的第一步，其后是内河船队和港口建设
**Largest IWT in the World**

**IWT worldwide:** IWT Volume China: 3.7 bln tons,
Other IWT systems >500 million tons: EU and US

**Transport volumes of world’s busiest inland waterways, 2017**

<table>
<thead>
<tr>
<th>WATERWAY</th>
<th>VOLUME OF TRANSPORTED GOODS (MILLION TONS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yangtze River</td>
<td>2,200</td>
</tr>
<tr>
<td>Pearl River</td>
<td>662</td>
</tr>
<tr>
<td>Grand Canal</td>
<td>354</td>
</tr>
<tr>
<td>Rhine River</td>
<td>330</td>
</tr>
<tr>
<td>Mississippi River</td>
<td>285</td>
</tr>
<tr>
<td>Mekong River</td>
<td>132 (in Vietnam only)</td>
</tr>
</tbody>
</table>

Sources: Data from the China Waterborne Transport Research Institute; CCNR 2018; US Army Corps of Engineers 2017; Vietnam News Agency 2018.
High-level commitment, Central & Local implementation

16 specific policy measures that led to dramatic increases in cargo volumes

Year | IWT Cargo volume [Mln tons] | Time to achieve dramatic increase |
--- | --- | --- |
1978 | 358 | X2 |
2000 | 687 | X3 |
2010 | 1,886 | X2 |
2018 | 3,740 | X2 |

Anji Port, a case of modal shift

Anji is a small city which is 270 kilometers from Shanghai. The Anji container terminal was commenced for business operation on 2010. Containers transported by water to Shanghai Port instead of road was realized.

Anji port realized about 300,000 TEUs in container throughput in 2022. 260,000 TEUs from Jan to Oct of 2023.

The 64 TEUs inland vessel is the major type of vessel deployed from Anji to Shanghai.
Anji Port, better services for the industries

Anji county is rich in industries like equipment manufacturing, new energy, bio-medicine, furniture, and textile, etc. Besides, Anji is the largest producing county in China on Chairs and Couches. Several industries along the waterway of Changhushen line are wooden floor tile, special steel production, and construction materials.

Cargos generated in Anji area accounts to 2 to 3 million Containers per year.
Anji Port, the way out for inland ports

Through various means to facilitate container waterway transport:

--cooperate with Shanghai Port and major shipping companies
--good infrastructure, SIPG set up a dedicated container terminal at Huangpu River for transferring Anji containers, with a 5,200 square meters stacking yard
--strengthened management capability, with good information systems to strengthen efficiency
--facilitated business procedure through support from government agencies include customs.

Benefits: 20-30% logistics cost, GHG emissions 28.6%, 1-1.2% road traffic around Shanghai terminals
Overview of Anhui’s inland shipping

As of the end of 2022, its inland waterways span 6,627 km, with a navigable length of 5,775 km. Notably, 1,831 km of these waterways are categorized as Grade Four or above.

Anhui has 16 operational locks, each lock need to handle passing vessels 30,000 – 50,000 per year in average.

Anhui has 25,000 operational vessels, with a dead weight cargo tonnage of approximately 55.842 million tons and an average tonnage of 2,277.5 tons. There are currently 844 berths, including 454 berths for vessels of 1,000-ton-class and more. Programs to improve channels of tributaries such as the Huai River, Guo River, and Tuohe River are progressing. In 2022, Anhui witnessed a port throughput of approximately 610 million tons and a container throughput of 2.14 million TEUs.
Strengthen ship lock management efficiency by emerging technology

- Inland shipping’s significance on supply chain sustainability
- Inland shipping is a huge system in China
- Passing locks efficiency is challenging for the industry
Strengthen ship lock management efficiency by emerging technology

- Conventional lock passing mechanism, the lock charge paying mechanism, on spot paying system.
- Emerging technologies:
  - GPS/Beidou
  - AIS
  - mobile internet, smart queuing, mobile payment system, automatic credit management system
Mobile APP
for inland vessel owners
Benefits:
- Overall supply chain efficiency
- Lower logistics cost and operational cost, only for Anhui province, 5 million RMB, and 50,000 – 100,000 Liter Fuel can be saved
- Better safety for shipping and lock management
- A fair market
- Better credibility management
- Environmental friendliness
THANKS

Address: No. 8, Xitucheng Road, Haidian District, Beijing 100088, China
Telephone: (8610) 6529 0590
Email: clu@wti.ac.cn