“UNDERSTANDING THE GLOBAL IMPACT OF INCREASED WATERWAY COMMERCE”
Does Waterway Commerce:

- Improve system efficiency
- Encourage freight mobility
- Support economic growth
- Connect to other modes
- Support future cargo or vessels
Outline

- Worldwide Navigation
- Waterways in Supply Chains
- Kentucky Maritime System
- Where Do We Go From Here?
- What Do People Know About Transportation?
Trends in World Inland Navigation
Water Transport in Europe
Asian Waterways
South American Waterways

- Seen as export corridors
- More public private partnerships
- Modal pressures exist
Waterway Usage - Russia, Europe and U.S., 1970-2006

<table>
<thead>
<tr>
<th>Country</th>
<th>Kilometers</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>110,000</td>
<td>18%</td>
</tr>
<tr>
<td>Russia</td>
<td>102,000</td>
<td>16%</td>
</tr>
<tr>
<td>Brazil</td>
<td>50,000</td>
<td>8%</td>
</tr>
<tr>
<td>United States</td>
<td>41,009</td>
<td>7%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>21,579</td>
<td>3%</td>
</tr>
<tr>
<td>Colombia</td>
<td>18,000</td>
<td>3%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>17,702</td>
<td>3%</td>
</tr>
<tr>
<td>European Average</td>
<td>52,332</td>
<td>8%</td>
</tr>
</tbody>
</table>

Thousand Million Tonne-Kilometers

- Russia
- U.S.
- EU 26
<table>
<thead>
<tr>
<th>Region</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>Seen as policy alternative</td>
</tr>
<tr>
<td>Asia</td>
<td>Seen as expanding natural corridors</td>
</tr>
<tr>
<td>Latin America</td>
<td>Export gateway</td>
</tr>
</tbody>
</table>
Waterways in Supply Chains
Modal, Commodity Relationship

- Timeliness
- Size of Shipment
- Per Unit Costs

- Inland Water
- Pipeline
- Railroads
- Trucking
- Air Service
Dry Cargo Capacity

Source: Texas Transportation Institute Center for Ports and Waterways
Firms See Transportation as Critical

Site Selection Magazine-2010

- 90% stated - transportation directly influences their business.
- 77% stated - infrastructure:
  - Becomes more important over the next five years
  - But system will remain inadequate without new investment

KPMG – 2007
The Shipper

- Demands low-cost, reliable service
- Mode and geographically neutrality
- Wants “just in time” services – does not want or care about your “problems” (carrier or infrastructure)
- Firms outsourcing the “Headaches” of logistics
- No one believes congestion will go away
- Often ignore primarily “freight” infrastructure beyond immediate facility
Comparability of transport modes
Areas of Application - PIANC Report 111-2010

- Infrastructure
- Ports
- Environment
- Fleet and Vehicles
- Cargo and Passengers
- Information and Communication
- Economic Development
- Safety
- Security
## Infrastructure

### P.1.1 Availability of Locks

<table>
<thead>
<tr>
<th>P.1.1.a</th>
<th>Total availability for service of lock</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.1.1.a.1</td>
<td>Availability for service of a lock considering downtimes due to weather conditions</td>
<td>Percent</td>
</tr>
<tr>
<td>P.1.1.b</td>
<td>Total stop of lockage</td>
<td>Percent</td>
</tr>
<tr>
<td>P.1.1.b.1</td>
<td>Stop of lockage considering downtimes due to weather conditions</td>
<td>Percent</td>
</tr>
</tbody>
</table>

### P.1.2 Lock Utilisation

<table>
<thead>
<tr>
<th>P.1.2.1</th>
<th>Average number of lock activations per operation hours</th>
<th>Lock activations</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.1.2.2</td>
<td>Average Utilisation of lock capacity per lockage</td>
<td>m² utilisation</td>
</tr>
<tr>
<td>P.1.2.3</td>
<td>Average waiting time in front of lock</td>
<td>...</td>
</tr>
</tbody>
</table>

### P.1.3 Availability of Core Waterway Infrastructure

<table>
<thead>
<tr>
<th>P.1.3</th>
<th>Availability of core waterway</th>
<th>Change over time</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.1.3.1</td>
<td>Stop of navigation due to high water</td>
<td>Change over time</td>
</tr>
<tr>
<td>P.1.3.2</td>
<td>Stop of navigation due to icing</td>
<td>Change over time</td>
</tr>
<tr>
<td>P.1.3.3</td>
<td>Stop of navigation due to accidents</td>
<td>Change over time</td>
</tr>
<tr>
<td>P.1.3.4</td>
<td>Navigable days below waterway design value</td>
<td>Percent</td>
</tr>
</tbody>
</table>

### P.1.4 Capacity of Waterway Section

| P.1.4.1 | Capacity of waterway section                        | ...              |

### P.1.5 Dredging | Maintenance of Waterway

<table>
<thead>
<tr>
<th>P.1.5.1</th>
<th>Total costs of maintenance per network kilometre</th>
<th>Currency</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.1.5.2</td>
<td>Total costs of maintenance per network ton-kilometre</td>
<td>Currency</td>
</tr>
<tr>
<td>P.1.5.3</td>
<td>Volume of polluted dredged material</td>
<td>Cubic Metres</td>
</tr>
</tbody>
</table>
Closures Cost Money!

NETS (IWR-USACE)

- Greenup 2003 Closure (52 days)- $42 Million
- Hannibal Locks 2005 Closure (5 days)-$5 Million
- Lock 27 Closures
  - (August 2007)-$3.9 Million
  - (Oct 2005-Feb 2006)- $2.7 Million
- McAlpine (August 2004)-$6.3 million

GLOBAL Insight – Upper Miss 90 Day Closure
- $118.6 million for Waterway freight
- $482.8 million by rail
- $1.50 billion by truck
Summary

- Global Supply Chains: Water used in other markets
- Modal Choice: Shipper Awareness
- Site Choice: Transportation Seen as Critical
Should we incorporate waterways into our thinking?
Let’s Think About Who Uses Waterways in KY (tons)
KY Waterway State Partners, 2010

**Outbound Flows**
- OH 12%
- TN 17%
- LA 21%
- WV 6%
- KY 29%
- AL 9%
- Others 9%

**Inbound Flows**
- KY 41%
- WV 14%
- LA 12%
- IN 9%
- OH 8%
- IL 8%
- Other 8%
- Others 8%
Coal is King

US Exports of Coal, $billion

Intrastate Coal
Inbound Coal
Outbound Coal
All other Cargos
Other top commodities

Sand, Gravel, Aggregate
- Intrastate
- Inbound
- Outbound

Petroleum Products
- Intrastate
- Inbound
- Outbound

All Other Cargos

Other Cargos
Wages Paid, Maritime Sector in KY, 1997-2010
Tenn-Tom Waterways Economic Benefit

### Economic Impact 1996-2008 (in Millions)

<table>
<thead>
<tr>
<th>State</th>
<th>Direct</th>
<th>Indirect</th>
<th>Induced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>$15,217.1</td>
<td>$550.3</td>
<td>$718.8</td>
<td>$16,486.2</td>
</tr>
<tr>
<td>Kentucky</td>
<td>$867.2</td>
<td>$163.1</td>
<td>$559.1</td>
<td>$1,609.4</td>
</tr>
<tr>
<td>Mississippi</td>
<td>$6,854.7</td>
<td>$1,333.0</td>
<td>$1,276.6</td>
<td>$9,464.3</td>
</tr>
<tr>
<td>Tennessee</td>
<td>$2,361.6</td>
<td>$38.1</td>
<td>$447.1</td>
<td>$2,446.8</td>
</tr>
<tr>
<td>Regional</td>
<td>$25,320.5</td>
<td>$2,093.3</td>
<td>$2,641.1</td>
<td>$30,054.9</td>
</tr>
<tr>
<td>United States</td>
<td>$25,320.5</td>
<td>$5,822.6</td>
<td>$11,380.6</td>
<td>$42,523.7</td>
</tr>
</tbody>
</table>

This table shows the impact from private investment and ports operating in the Tenn-Tom Waterway region.

### Employment Impact 1996-2008

<table>
<thead>
<tr>
<th>State</th>
<th>Direct</th>
<th>Indirect</th>
<th>Induced</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>8,384</td>
<td>3,879</td>
<td>7,567</td>
<td>19,830</td>
</tr>
<tr>
<td>Kentucky</td>
<td>8,046</td>
<td>1,201</td>
<td>5,850</td>
<td>15,097</td>
</tr>
<tr>
<td>Mississippi</td>
<td>12,145</td>
<td>7,858</td>
<td>13,440</td>
<td>33,443</td>
</tr>
<tr>
<td>Tennessee</td>
<td>507</td>
<td>271</td>
<td>493</td>
<td>1,271</td>
</tr>
<tr>
<td>Regional</td>
<td>29,191</td>
<td>13,292</td>
<td>27,806</td>
<td>70,289</td>
</tr>
<tr>
<td>United States</td>
<td>29,191</td>
<td>29,001</td>
<td>79,471</td>
<td>137,663</td>
</tr>
</tbody>
</table>

This table indicates the number of jobs that were directly and indirectly created based on industry-to-industry transactions, as well as the number of jobs that were created based on employee spending in the local economy.
## Summary

<table>
<thead>
<tr>
<th>Jobs</th>
<th>$400 Million in Wages, Multipliers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Moving Coal, Petroleum, Subsidize other cargos</td>
</tr>
<tr>
<td>Hidden Benefits</td>
<td>construction industry, highway use,</td>
</tr>
</tbody>
</table>
Where do we go from here...
FREIGHT ACCESS AND MOBILITY MAY CREATE TRANSFORMATIVE OPPORTUNITIES
“The Job Creation / Logistics Message”
What may change existing flows or create new markets?

**In 2020?**
- Panama Canal Expansion
- Nearshoring Trends
- Exporting Natural Gas
- European Collapse?
- Domestic Intermodal Grows
- Growth in Latin America Economics
- Dollar Continues to Slide promoting Exports
- Manufacturing Changes
- Price of Fuel
- Distribution Networks
- Exports

**In 2030?**
- Economic Growth – Regional
- Consumer Markets
- Resource Competition
- Demographic Patterns
- Energy Needs
- Housing Stock
- Distribution Networks
- Integration
Changing Hinterlands?

- Faster Transit
- Economies of Scale
- Anything else?
  - Bulk
  - Exports
  - Container availability
Kentucky Shipments by Origin, Trade by Mode, By Value 2001-2011 ($20.1 Billion)
Who is Responsible for What?

Private Sector

- Transportation
- Utilities
- Workforce Development

Public Sector

- Transportation services
- Cargo Density
- Business Clusters
- Intermediaries
- Business Climate
- Incentives
Fuel Costs

Policy Changes

Demand

Shipper Incentives

Maritime as part of the surface transportation system

Supply

Start up funding risk

HMT & Tonnage Tax

Carbon Trading

Fuel Costs
A Focus on States

✓ 36 State DOTs influence America’s Marine Highways
✓ Which State DOT department will consider it?
  ▪ 6 = maritime, ports, waterways or marine (Florida)
  ▪ 8 = planning (Texas)
  ▪ 6 = intermodal (Georgia & Tennessee)
  ▪ 5 = freight (Mississippi)
  ▪ 3 = rail & marine/railroads & harbors
  ▪ 1 = aviation & ports
  ▪ 1 = trade development (Alabama)
  ▪ 6= have no department that addresses maritime
Inland Waterways – Finding the Balance

Navigation
- User Benefits
- Economy – Jobs
- Transportation

Non Navigation
- Hydropower
- Resource Management
- Environment
- Water Supply
## Summary

<table>
<thead>
<tr>
<th>Economic Growth</th>
<th>No guarantees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public-Private Sector</td>
<td>Different roles in supporting maritime investment/operations</td>
</tr>
<tr>
<td>Supply Chains</td>
<td>Help with services, be problem solver</td>
</tr>
</tbody>
</table>
What do people know about transportation?
Does it seem like every water presentation sounds like:

- We are here
- It's falling apart
- We need money
Maybe the new standard waterway presentation?

- We are doing business now
- We represent a modern, innovative partner
- We can help you grow through linkages with other markets and modes
Does Waterway Commerce:

- Improve system efficiency
- Encourage freight mobility
- Support economic growth
- Connect to other modes
Bruce Lambert
Executive Director
Institute for Trade and Transportation Studies
540-455-9882
bruce@ittsresearch.org

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