The role of dry ports in logistics: towards a terminalization of supply chains.

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The logistics environment

- Transport costs have increased from 30-40% of total logistics cost up towards 60% in the last two decades

- Delivery within 24h will become the rule: inventory!
  - 27% of logistics service providers comply today
  - 44% will comply in 3 years time (Prologis-CapGemini, 2006)

- Pressure on (infrastructural) capacity (current crisis = reflection moment), reliability and rate stability

- Environmental and security issues are omnipresent
The logistics environment
Chains become networks

From
Shipper ➔ DC ➔ Consumer

To
Shipper ➔ EDC ➔ RDC ➔ Rapid fulfillment center ➔ Consumer
Cross Dock

source: BCI
Distribution based on RDCs

Distribution based on one EDC

Distribution based on tiered system (EDC+RDCs)

Distribution based on local DCs
The logistics environment
Logistics sites group to become logistics zones

Places which combine central location with gateway function are likely to be chosen

The logistics environment
Logistics sites group to become logistics zones

Seaport in Extended Rhine-Scheldt Delta
Inland Container Terminal (barge or multimodal)
Growth region European Distribution (outside seaport system)
Logistics corridors

Bron: Notteboom & Rodrigue (2005)
The logistics environment

Source: Cushman & Wakefield, Healey & Baker
Increased interest in hinterland issues

- Market players:

  - Cost balance is shifting to inland costs
  - Competition carrier haulage/merchant haulage
  - Vertical integration by market players in view of revenue-making, cost savings and creation of value-added to customers
  - Coordination actions among market players and port authorities to streamline inland logistics
The ‘terminalization’ concept

- **Terminalization**
  - Growing influence of transport terminals in the setting and operation of supply chains in terms of location, capacity and reliability.

<table>
<thead>
<tr>
<th>Type</th>
<th>Bottleneck-derived</th>
<th>Warehousing-derived</th>
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</thead>
<tbody>
<tr>
<td>Nature</td>
<td>Terminal as a constraint</td>
<td>Terminal as a buffer</td>
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<tr>
<td>Concept</td>
<td>Rational use of facilities to maintain operational</td>
<td>Incorporating the terminal as a storage unit</td>
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<td></td>
<td>conditions</td>
<td></td>
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<tr>
<td>Challenge</td>
<td>Storage space, port call frequency, gate access</td>
<td>“Inventory in transit” with “inventory at terminal”</td>
</tr>
<tr>
<td>Outcome</td>
<td>Volume, frequency and scheduling changes</td>
<td>Reduce warehousing requirements at distribution centers</td>
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</tbody>
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• Fight ‘atomization’ with inland ports:

vessel = direct truck
vessel = endhaul truck
vessel = barge/rail shuttle
The ‘terminalization’ concept
Warehouse-derived terminalization

Gateway Port

Inland corridor

Inland Terminal

Satellite Terminal

On call delivery

Extended Distribution Center

Low dwell time

High dwell time

Degree of Gateways Synchronization

High

Low
The concept of logistics zones in the hinterland is now well-advanced in Europe:

- ‘platformes logistiques’ in France
- Güterverkehrszentren (GVZ) in Germany
- Interporti in Italy
- Freight Villages in the UK
- Zonas de Actividades Logisticas (ZAL) in Spain
Policy development

- Logistics network development:
  - Strong focus on link between gateways and logistics
Site selection

- Focus on costs, quality and transit time
- Personal factors and amenities

**Cost factors**
- Labor costs
- Transportation costs
- Occupancy costs
- Incentives (government)

**Quality factors**
- Labor quality/flexib.
- Labor regulations
- Customs
- Transport situation
- Facilities & utilities
- Sites (prime location, high accessibility)

**Time factors**
- Inbound transit time
- Outbound transit time
- Buffering at terminals

source: BCI
Supply chains differ

- Product and firm characteristics influence logistics attractiveness of port and inland sites (Kuipers and Eenhuizen, 2004)
  - Value density
  - Delivery frequency
  - Economies of scale and scope in production
  - Country-specific product or packaging requirements
  - Service-oriented distribution (versus cost-orientation)
  - Share of transport costs in total distribution costs
  - Share of distribution costs in total production costs
  - Technological dynamism related to product
The following logistics activities typically find a good habitat in ports:

- High dependency on short-sea shipping.
- Considerable reduction in the transported volume;
- Big volumes of bulk cargoes, suitable for inland navigation and rail;
- Companies which have a site in the port area;
- Cargo that needs flexible storage to create a buffer (products subject to season dependent fluctuations or irregular supply);
- Distribution centers in a multiple import structure (tiered) and as a consolidation centre for export cargo.
Concluding remarks

• Inland terminals and dry ports have become indispensable in accommodating supply chains

• New dynamics in port/hinterland relations:
  - Competition but also complementarity
  - Creation of large logistics pole
  - Terminalization process is unfolding

• A sound approach to location issues:
  - Avoid an imperious approach: cargo flows can not be forced to opt for certain routes/locations
  - Aim for a ‘flexible’ approach: routing alternatives build upon network qualities
Thank you for your attention!

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