Seaports as Nodal Points of Circular Supply Chains: the port of Szczecin

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THE MAIN TOPICS:

1. The circular economy (CE) and the circular supply chain (CSC) concept in seaports strategies
2. The CSC: opportunities and challenges for secondary ports
3. The case study of CSCs via port in Szczecin
4. Recommendations for secondary port authorities and stevedores
1. There are different ways of seaport transition towards a CE model (Notteboom et al. 2020):
   - the promotion of industrial ecology
   - the use of renewable energy sources
   - the development of seaports as hubs for recycle flows (CSCs)

2. In the CSC cargo flows, involved waste or by-products, are delivered, transformed into new products, and re-exported around the world
THE CSCs AND SUSTAINABLE DEVELOPMENT OF SECONDARY PORTS

Opportunities, in the context of:

• decrease in traditional bulk cargo groups in port transshipment
• limited competitiveness vs major ports

Challenges (Bressanelli et al. 2019), related to:

• return-flow uncertainty
• transportation and infrastructure
• availability of suitable supply chain partners

• coordination and information sharing
• product traceability
• cultural issues
THE CASE STUDY OF SECONDARY PORT IN SZCZECIN
PORT OF SZCZECIN AS A PART OF THE E WATERWAY NETWORK

E40: Baltic Sea (Gdańsk) - Black Sea (Odessa)
E30: Baltic Sea (Świnoujście) - Danubee (Bratysława)
E70: North Sea (Rotterdam) - Baltic Sea (Klaipeda)

Source: Global Compact Poland.
CSCs VIA THE PORT OF SZCZECIN

Changes in the port transshipment volumes in the analysed sea-land circular chains (‘Other bulk cargo’) compared to the transshipment of coal and ore (k tonnes)
OVERVIEW OF THE STUDY

<table>
<thead>
<tr>
<th>Total number of entities active in the port in Szczecin</th>
<th>Stevedores: 12</th>
<th>Port Industries: 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of entities selected for further study</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Number of entities fully examined (in-depth interview)</td>
<td>4</td>
<td>3</td>
</tr>
</tbody>
</table>

CSCs VIA PORT IN SZCZECIN

1. Copper concentrate-sulphuric acid  
2. Limestone-gypsum  
3. Car tyres-oil, soot  
4 (a,b). Steel products-scrap metal  
5. Wood waste-ground wood waste
1. Copper Concentrate-Sulphuric Acid
2. Limestone-Gypsum
3. Tyres-Oil, Soot, Scrap Metal
4a. Steel Products-Scrap Metal
4b. Steel Products-Scrap Metal
5. Wood waste—ground wood waste

Diagram:

FORELAND — SEA — PORT — HINTERLAND

production company

wood waste

power plant

ground wood waste

port’s stevedoring company

wood waste

wood waste milling company

ground wood waste

INLAND WATERWAY TRANSPORT (CROSS-BORDER)

waste

port’s stevedoring company

waste

product

waste recycling company

product
RECOMMENDATIONS FOR SECONDARY PORT AUTHORITIES

THE MAIN CHALLENGE: THE TRANSITION FROM A LINEAR TO CIRCULAR MINDSET

1. The appropriate policy for investor assessment (besides total turnover):
   • the value of cargo services, or
   • the amount of waste used in the process

2. The utilisation of any available areas within the port premises:
   • synchronization of the port infrastructure development with the providing utilities to undeveloped port areas
   • encouraging CSCs participants to invest in and develop their business in port area

3. The appropriate communication with the external stakeholders (the local environment and the other CSC participants)
RECOMMENDATIONS FOR STEVEDORES

THE MAIN CHALLENGE: DEVELOPMENT OF COMPETITIVE SERVICE OFFERS TO THE CSCs

1. More comprehensive service offers
2. More added-value services
3. Services dedicated to handling hazardous waste (meeting legal requirements)
4. Closer cooperation with the other CSCs participants (dedicated distribution terminals and industrial plants)
Seaports as Nodal Points of Circular Supply Chains: Opportunities and Challenges for Secondary Ports

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