

Developing a petrochemical cluster

The supply chain perspective



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The Port of Antwerp The European Clusters What makes a cluster competitive?

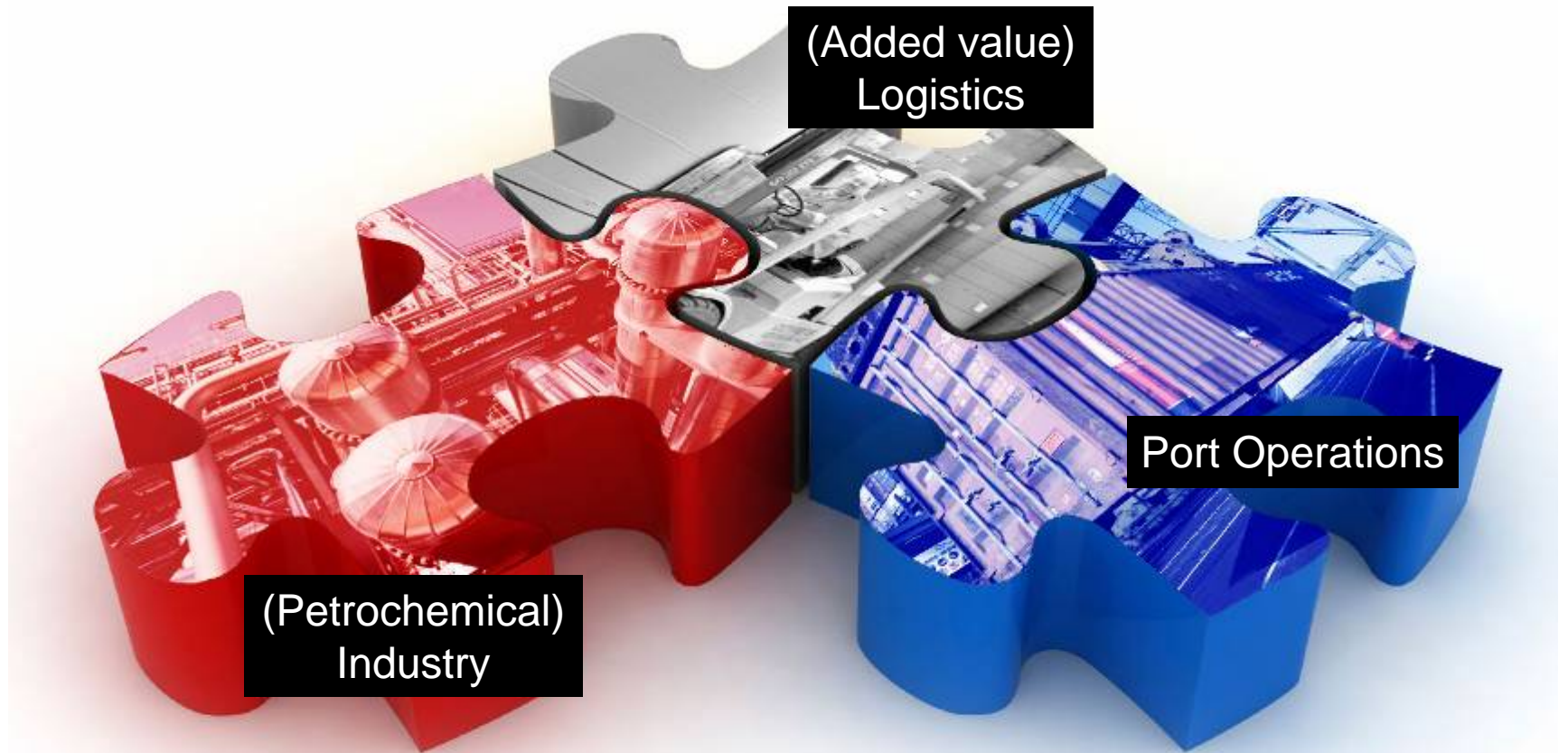
The Port of Antwerp

The fastest route to Europe



**Port of
Antwerp**

Multifunctional



Petrochemical industry

- Largest Petrochemical cluster in Europe
- Most diverse base chemical cluster in the world
- Integrated through the Antwerp Integrated Model
- Largest cracker complex in Europe: nr 1 in ethylene and propylene
- Largest European producer for HD-PE, PP, and PVC*
- Prime HSEQ results
- Continues investments



Added value logistics



- **Best location to set up a European Distribution Centre***
- **More than 700 European Distribution Centres****
- **Largest European distribution hub for plastics and chemicals**
- **More than 1000 silos for plastics on multi-customer terminals**
- **13 independent tank storage terminals**
- **Most stainless steel tanks in the world**
- **5.3 ha (13.1 acres) of covered warehousing facilities**
- **Continues investment**

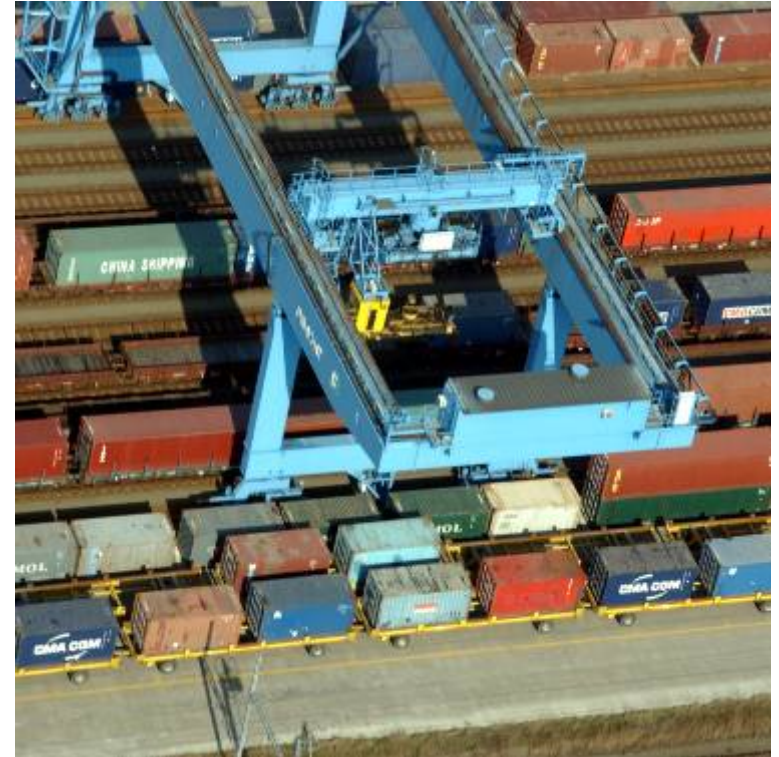
Port Operations

- 190 million tons in 2008
- Most central port in Europe
- Handling all types of cargo:
 - Containers
 - Liquid bulk
 - Dry bulk
 - General Cargo
 - Project Cargo
- Congestion free
- Doubling our available capacity for containers and liquid bulk
- Ongoing investments



Antwerp: A port with a future

- Improving nautical accessibility:
 - construction of the largest lock in the world
 - increasing the capacity of the river
- Multi-modal master plan:
Investing in rail, road and barge infrastructure
- Doubling the capacity for containers and liquid bulk
- Saeftinghe Development Area:
1000 ha (2500 acres) for development of petrochemical industry added value logistics and port operations.



The Port of Antwerp

The European Clusters

What makes a cluster competitive?



Background and context

- **EU = world's largest chemicals producer**
market share = 29.5% - chemical sales = 537 €billion*
- **Growth rate is slower than in other regions of the world***
- **Clusters play an important role in improving the supply chain competitiveness of the chemical industry****

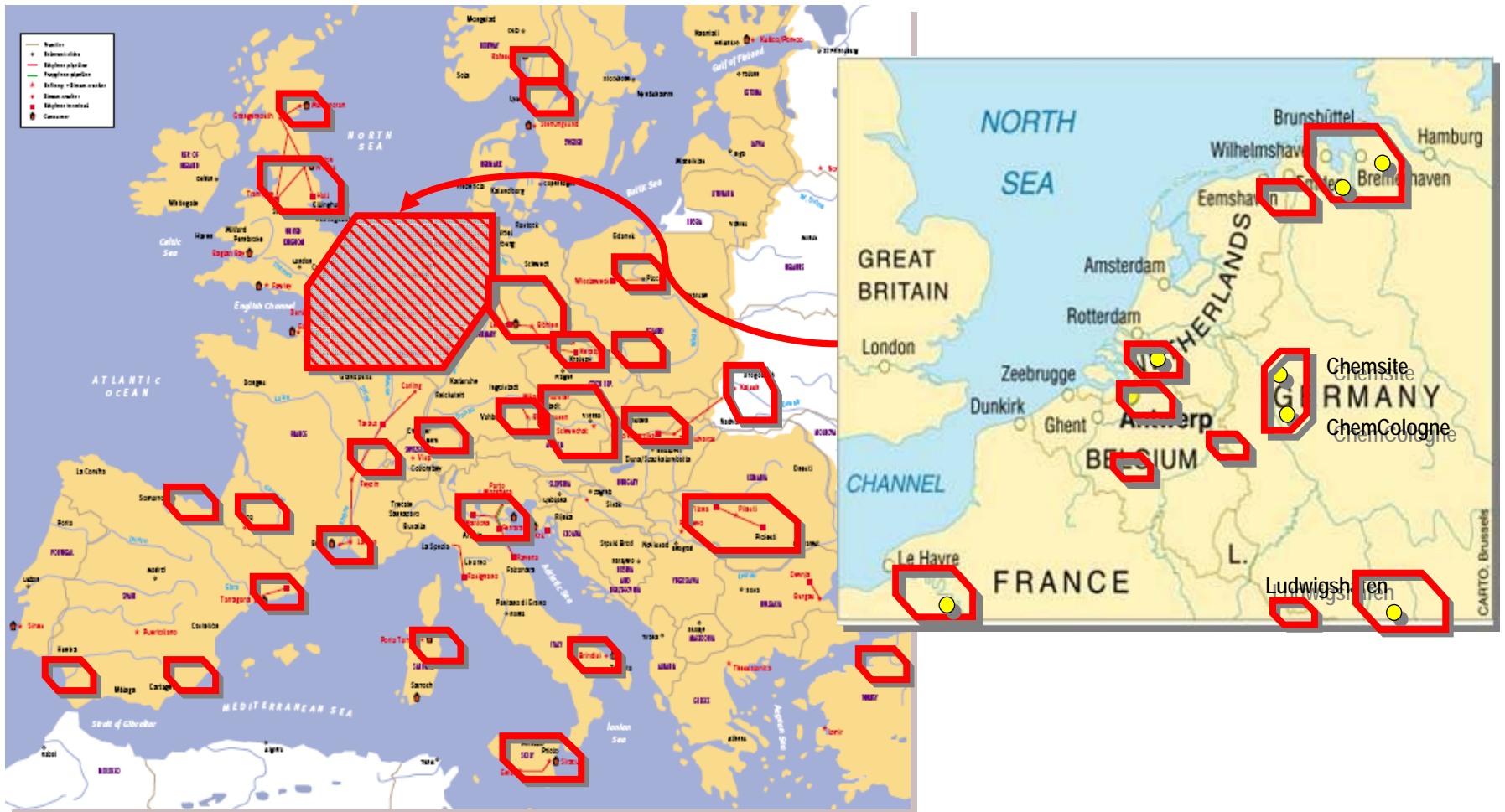
Current situation of the European chemical industry clusters

- **Over 300 chemical production sites, majority in clusters**
- **Historically evolved around**
 - **raw material source**
 - **supplier to the downstream industry**
- **Adaptive to change**
- **Highly integrated along the product value chains**
- **Benefit from competitive infrastructure, utilities and services**

Practical definition of chemical clusters

- **World scale production**
- **Integration upstream and/or downstream**
- **Synergy with service and utility providers**
- **Access to at least 3 of the major transport modes (maritime, inland waterways, pipelines, rail, road)**
- **A significant exchange of product flows**
- **A significant employer and contributor to regional job creation**

Major Chemical Clusters in Europe



The Port of Antwerp The European Clusters What makes a cluster competitive?



Two basic requirements for the development of a chemical cluster

Primary requirement:

Easy access to raw materials and feedstock

Secondary requirement:

Easy access to markets

**Can we identify criteria that
characterize competitive clusters?**

Supply chain criteria for a competitive cluster (I)

- Raw material and feedstock supplies at competitive prices:
 - good logistical access
 - strong local production
- Degree of cluster (feedstock-product) integration
- Cluster synergies (also beyond feedstock-product integration)
- Efficient overall supply chain structure
 - presence of LSP's
 - choice of transport modes (modal split)
 - supply chain collaboration opportunities

Supply chain criteria for a competitive cluster (II)

- Proximity/easy access of key markets and most important customers
- Sector and product diversity
- Presence of leading global companies
- Good (logistical) infrastructure

Other criteria for a competitive cluster

- Good investment environment (fiscal, regulatory, SHE, etc)
- Low-risk and stable business climate and stable regulatory environment
- Energy, utilities and services at competitive prices
- Good (and stable) energy supply structure
- Availability of labour at competitive prices
- Good schooling and education facilities
- Expansion possibilities → availability of land
- Cluster leadership

Thank You