

# Integración sistémica de puertos

*visiones y perspectivas sobre  
cabotaje, hinterland y short sea shipping*

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NACIONES UNIDAS  
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**Seminario**

**COSIPLAN**

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An aerial photograph of a river meandering through a dense, dark green forest. The river is light-colored and winds in a series of large, sweeping curves across the landscape. The forest appears thick and continuous, with some small clearings or variations in tree density visible. The overall scene is captured from a high angle, showing the natural flow and path of the water through the terrain.

*“Transport is an epitome of the complex relationships that exist between the physical and political activity and levels of economic development”*

*(Hoyle and Knowles, 1998).*



current challenges



short sea shipping and  
cabotage

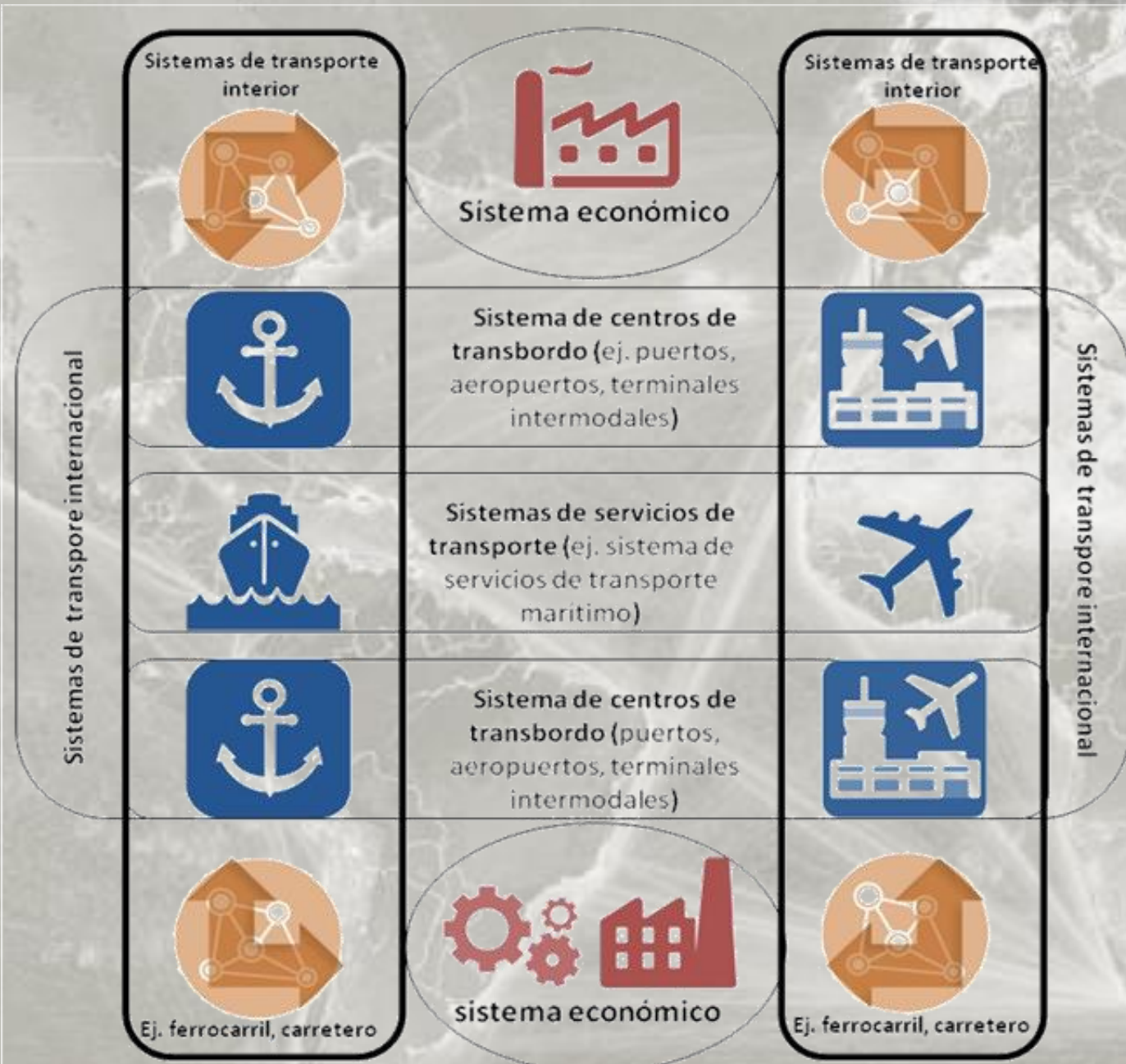


port and hinterland  
integration

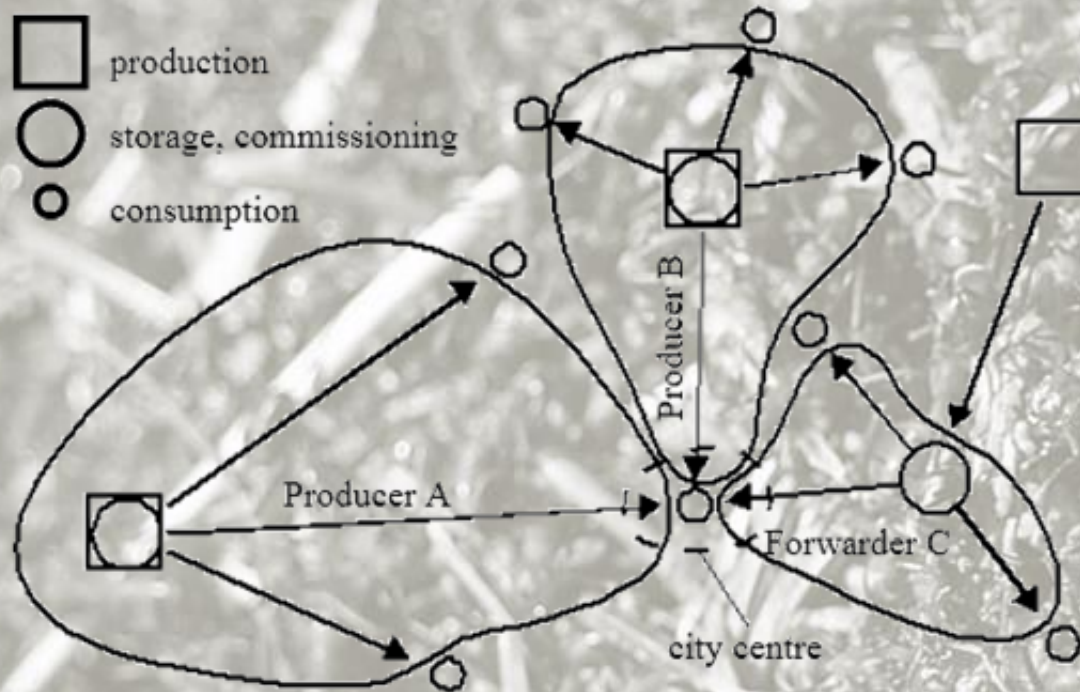


perspectives





# transport without co-ordinated logistics





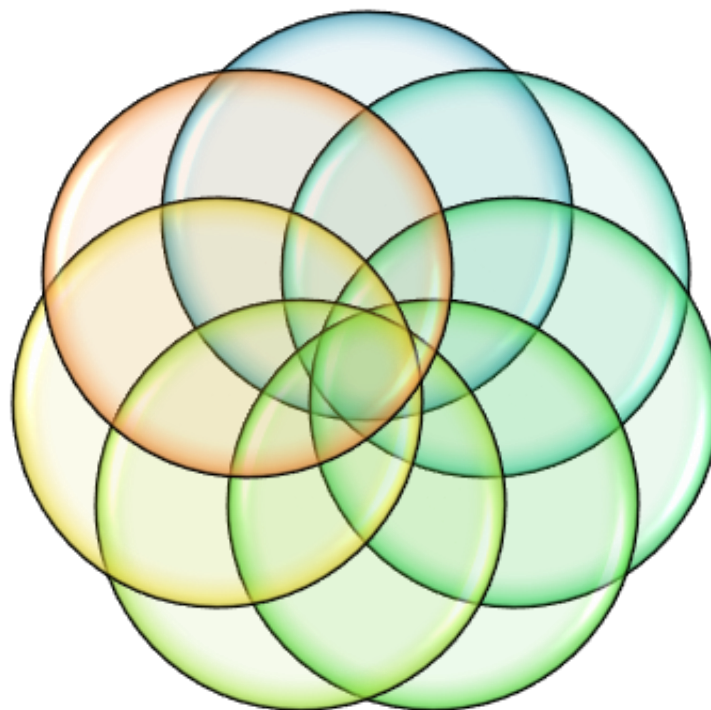
port development  
(infrastructure, governance,  
managerial)

inland  
waterways

maritime  
foreland

rail  
infrastructure

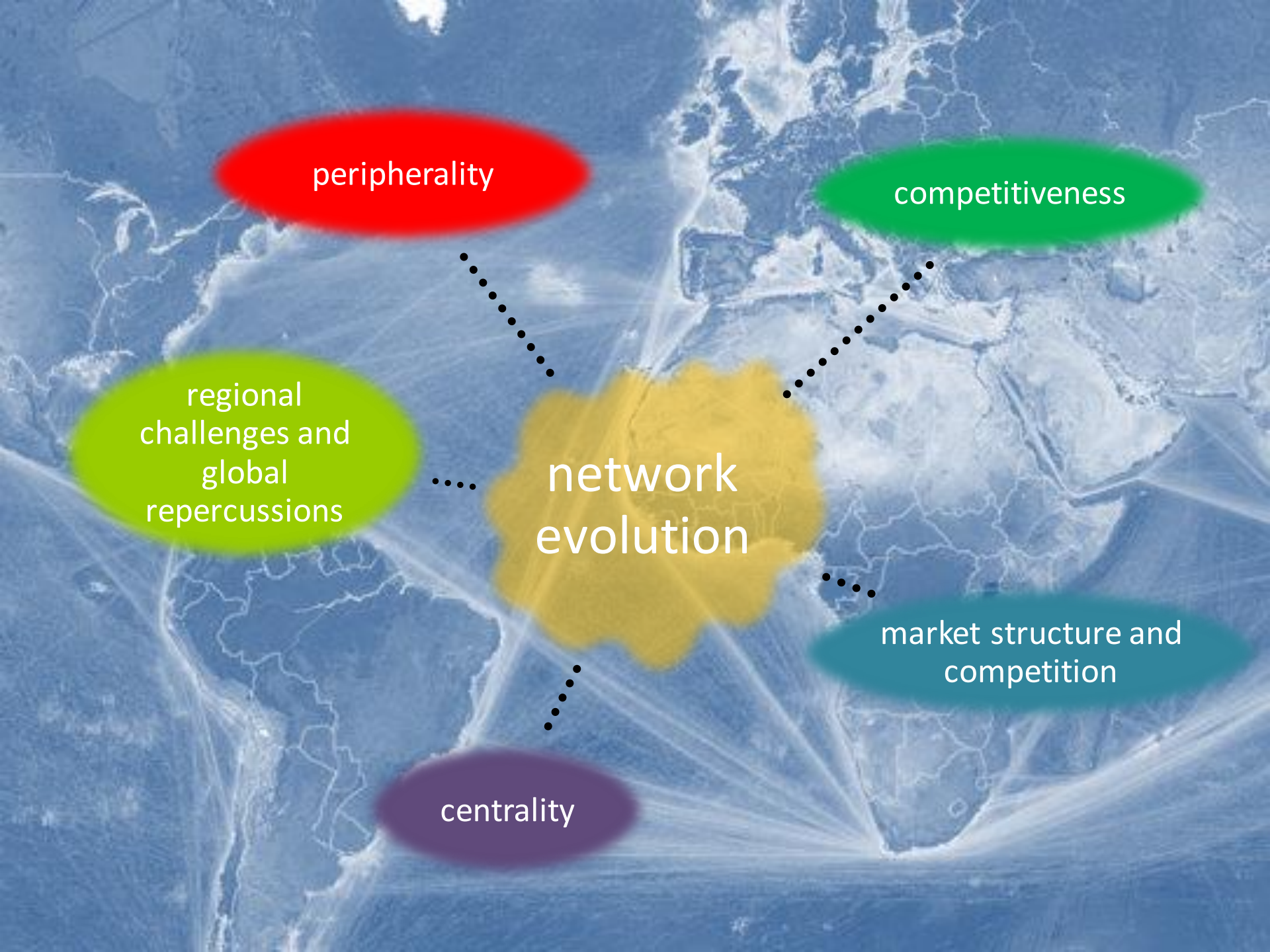
port-hinterland  
integration



road  
infrastructure

logistics  
strategies





peripherality

competitiveness

regional  
challenges and  
global  
repercussions

network  
evolution

market structure and  
competition

centrality



## historically separate subsystems converge

Maritime services  $\leftarrow \rightarrow$  Port system  $\leftarrow \rightarrow$  Inland transport system and terminals

- Development beyond horizontal integration
- Vertical integration





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perspectives



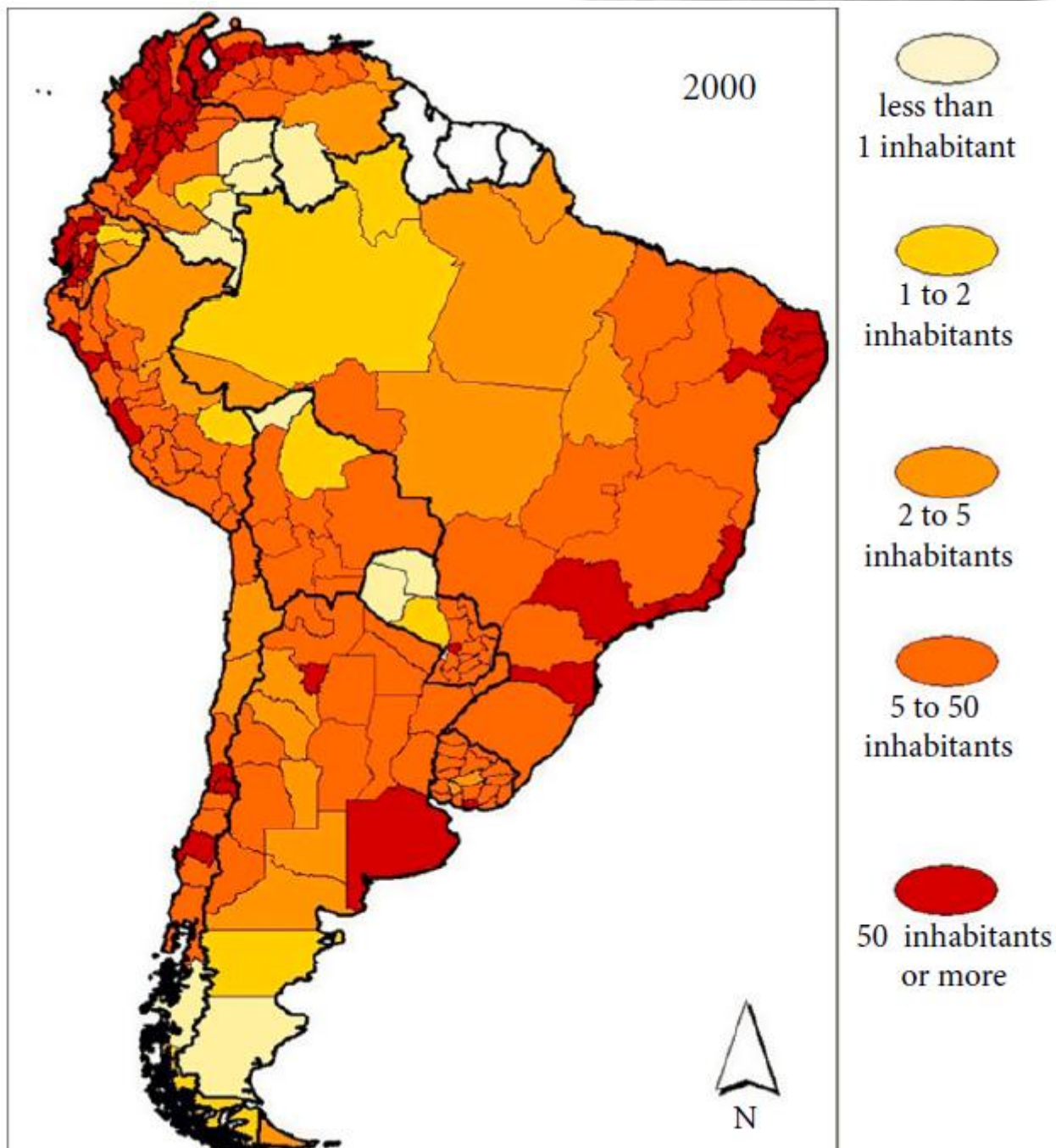
## Short Sea Shipping (SSS)

- maritime transport services that do not cross an ocean
- a type of service undeveloped in South America

Do the existing land-based traffic patterns offer promising traffic development opportunities that might support new SSS operations in corridors where a SSS service is currently not available?



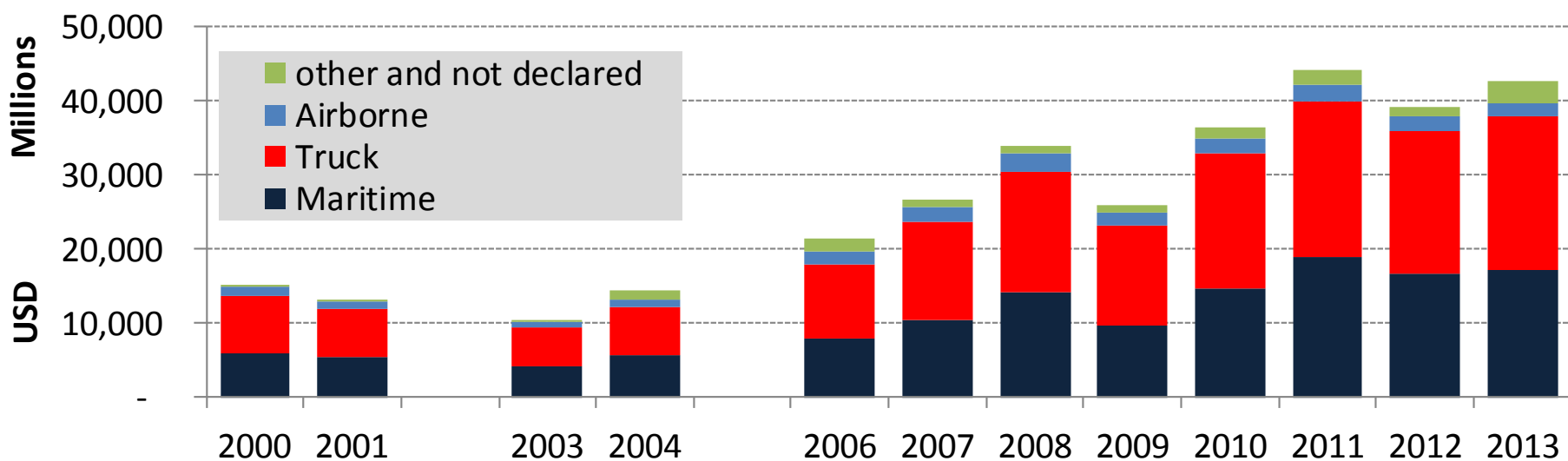
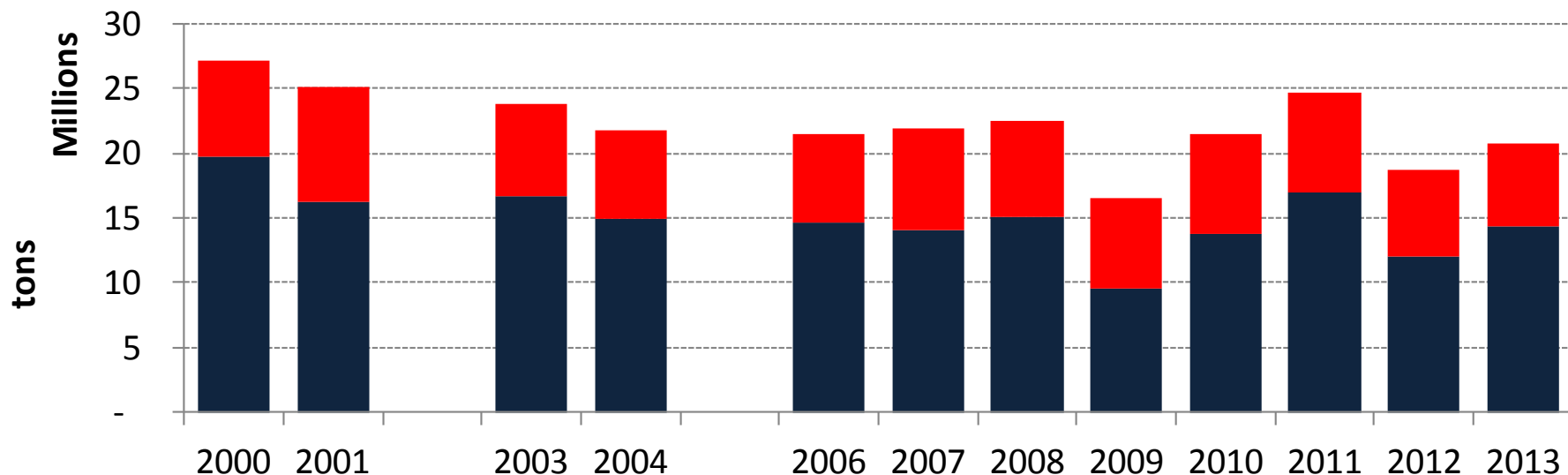
# South America population density (inhabitants/km<sup>2</sup>)







## ECSA international trade flows and modal split





## ECSA corridors

1. Sao Paulo – Curitiba – Porto Alegre – Santa María – Uruguayana – Paso de los Libres – Zárate – Buenos Aires
2. Sao Paulo – Curitiba – Florianópolis – Porto Alegre – Pelotas – Río Grande – Chui Chuy – Montevideo
3. Buenos Aires – Fray Bentos – Montevideo
4. additional national road corridors : Brazilian coast and to Manaus, as well as Buenos Aires – Bahía Blanca - Ushuaia

*complemented* by SSS corridors



## intracoastal maritime containerized trade full TEU, 2007-2012

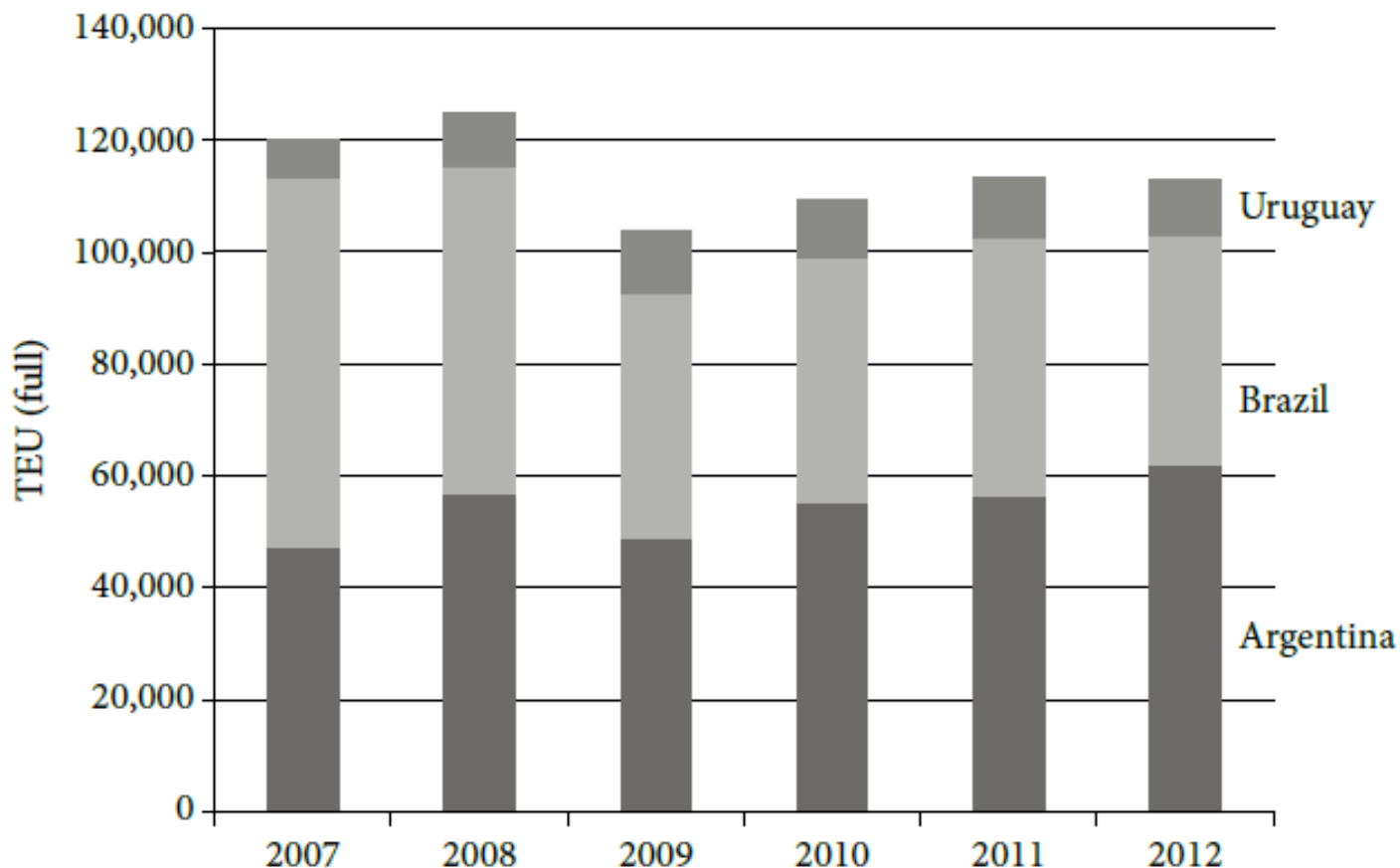


FIGURE 3 *Intracoastal maritime containerized trade, full TEUs, 2007–2012.*

SOURCE: AUTHORS BASED ON DYNAMAR (2013), EAST COAST SOUTH AMERICA (WORLDWIDE) CONTAINER TRADES 2013, AVAILABLE ONLINE: <[HTTPS://WWW.DYNAMAR.COM/PUBLICATIONS/115](https://www.dynamar.com/publications/115)>.





## comparing maritime and truck movements

### intra-ECSA containerized trade, full TEUs, 2012

| Export/destination | Other trades | ECSA   | Cabotage |
|--------------------|--------------|--------|----------|
| Argentina          | 990,282      | 61,523 | N/A      |
| Brazil             | 4,239,106    | 41,230 | 810,793  |
| Uruguay            | 276,592      | 9774   | N/A      |

Source: Authors, based on ECLAC 2013, National Waterborne Transport Agency (ANTAQ), *Anuário Estatístico Aquaviário*, various years (Brasília, 2012).

### truck movements in bilateral trade ECSA, 2000 and 2010

|                   | 2000    | 2010    | Annual average growth rate (%) |
|-------------------|---------|---------|--------------------------------|
| Uruguay–Argentina | 69,224  | 85,201  | 2.1                            |
| Uruguay–Brazil    | 73,295  | 60,509  | - 1.9                          |
| Argentina–Brazil  | 272,965 | 412,437 | 4.2                            |
| Total             | 415,484 | 558,147 | 3.0                            |

Source: Brazilian Association of International Transport Companies (Portuguese acronym: ABTI) and Statistical Transport Yearbook, Uruguay, 2001 and 2012.



## Road and sea distance in ECSCA (in km)

|                      |              | Road<br>distance | Sea<br>distance | Ratio sea<br>vs. road |
|----------------------|--------------|------------------|-----------------|-----------------------|
| <i>International</i> |              |                  |                 |                       |
| Sao Paulo            | Buenos Aires | 2250             | 1848            | 0.82                  |
| Sao Paulo            | Montevideo   | 1943             | 1669            | 0.86                  |
| Buenos Aires         | Montevideo   | 600              | 238             | 0.40                  |
| <i>National</i>      |              |                  |                 |                       |
| Santos               | Paranagua    | 436              | 287             | 0.66                  |
| Santos               | Manaus       | 3954             | 5963            | 1.51                  |
| Buenos Aires         | Bahia Blanca | 636              | 1040            | 1.64                  |

Notes: sea distance expressed in km by conversion of nautical miles (NM) into kilometers.

1 NM = 1.852 km. Santos is the port for Sao Paulo.

Source: Authors based on Searates.com (July 15, 2013) for nautical distances and using Google Maps for truck route and road distance calculation.



## strategic questions

- What factors (other than demand) need to be considered that would enhance or diminish the prospects of SSS services?
- What regulatory factors need to be considered?
- How do existing cabotage restrictions affect shipping markets and competitiveness in trade?
- What further research is necessary to encourage modal switching?





## lessons learned in other regions

- market conditions:
  - distance
  - competing rail freight options
  - availability of secondary ports
  - road congestion
  - border crossings
  - regulation
    - cabotage regime
    - SSS operators prefer to charter vessels to maximize flexibility and responsiveness to market conditions and demand
    - construction costs



## strategic regulatory questions

- How does the continuation of cabotage restrictions affect shipping markets and competitiveness?
- What have been the private sector strategies to respond to these restrictions?
- What are the effects and emerging challenges?



## How does the continuation of cabotage restrictions affect shipping markets and competitiveness?

- availability of tonnage:
  - requirements of domestic constructions (ARG, BRA, URU)
- availability of crew
  - requirements of national crews
- current legislation to promote national ship building stands in contrast to promote SSS (BRA)
- increased demand for cabotage not satisfied by ship building industry
- limits possibilities of integrated logistics services in SSS



## private sector strategies

- example: Alianca
  - 1998 taken over by Oetker Group – Hamburg Süd
  - control of cabotage market
  - limited competition until 2013
- example Maersk:
  - 2006 Maersk purchase Mercosul line (established 1996)
  - cooperation: Maersk, Log-In and MSC charter Brazilian flagged vessels in 2013
- Brazilian companies cooperate with international companies: Companhia Norsul de Navegacao and MSC (also cooperate in Navegantes terminal)



## What are the effects and emerging challenges?

- emerging international hub and spoke networks will increase demand for SSS services
- current regulation limits SSS development
- lower levels of capacity utilization
- need for supranational efforts to create complimentary policies and regulation (harmonization and liberalization)
- identify tools to promote SSS services
- emissions regulation , emission control areas and carbon pricing can significantly alter the market
- understand decision making of cargo owners
  - 1. developing a financial support toolbox to address the cargo owner's risk in trying a new and unproven short sea option while supporting a short sea ship operator's start-up risk prior to the right-sizing of the short sea fleet;
  - 2. providing support for port facility development should appropriate facilities be unable to attract financing;
  - 3. providing market development funding for first year marketing expenses;
  - 4. phasing in/out waiver or permit programs should market incumbents need time to adjust;
  - 5. supporting demonstration projects; and/or
  - 6. incorporating social costing into modal pricing schemes during start-up.<sup>38</sup>





current challenges



short sea shipping and  
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port and hinterland  
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perspectives

# port challenges

- **too much road haulage**
- **low occupancy rate**
- **lots of relatively small flows**
- **Inefficient information exchange**
- **informality**

*“To be able to handle cargo flows sustainable and efficient now and in the future a sea change is necessary”. (Baghus – ECT Rotterdam, 2011).*



## challenges in hinterland

- Roads are congested
- Infrastructure will not be able to handle the growing volumes
- modal split obligations
- port areas are congested
- Infrastructure development behind
  
- Efficient hinterland connections, including accompanying services will influence the port of choice.
- The quality of the hinterland connections influences the efficiency of the terminal
  
- Increasing demand for sustainable transport

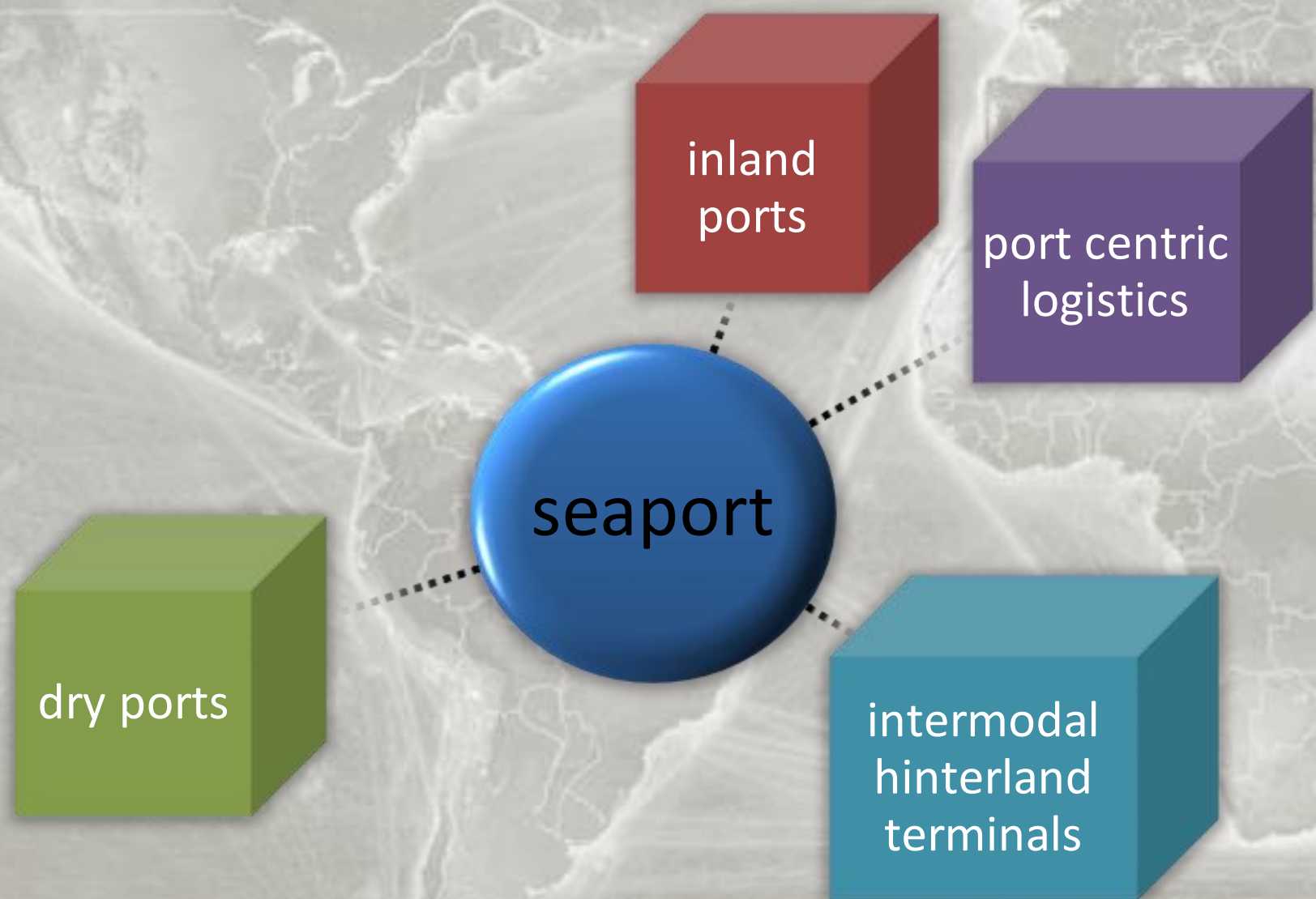


# hinterland

- a port's potential hinterland - the area that can be reached at a cheaper cost or in a shorter time than from another port.
- Therefore:
  - hinterlands overlap.
  - port development in a spatio-temporal perspective process of creation and adaptation to satisfy changing demands of clients.
  - shift in requirements from basic port facilities to logistics facilities.
  - increasing role of hinterland access in port development strategies.  
Fewer captive hinterlands – more competition.



# Facets of directional development of a port or port system







## A dry port concept?

“A dry port is an inland intermodal terminal directly connected to seaport(s) with high capacity transport mean(s), where customers can leave/pick up their standardised units as if directly to a seaport.”

“used much more consciously”





## elements to consider

- institutional framework for port operations and the changing role of port authorities under a competitive and privatised port environment
- changing relation and play of power between port authorities, port operators, logistics operators and shipping lines
- conceptualisation of the hinterland: regionalisation of maritime and land hinterlands



## **basic infrastructure**

with inland terminals increasingly becoming basic infrastructure within the port system, the context in which they develop will shape and contribute to future economic and logistics development and can contribute to easing a potentially looming catastrophe emerging from exponential growth.

**giving a direction to port hinterland integration**



**Sea**

**Inside-Out**



**Sea**

**Outside-In**



## Venlo, NL: Outside-In load centre with extended gate

- Driven by private port terminal operator ECT, Rotterdam
- Integrated container management system, by the inland terminal. “Terminal haulage”.
- Joint venture with logistics park operator.
- Load centre but also a satellite terminal
- True structural transformation of port operations.

### Partner







## Falköping, Sweden: Inside-Out load centre

- In Sweden, municipalities can build infrastructure speculatively.
- Difficulties consolidating market demand across political boundaries.
- Aim was to become integrated with port of Gothenburg, which did not happen.
- No container traffic currently (but timber traffic growing).
- Illustrates the risks of public sector development.
- Policy and planning must be aligned with market demand and operational requirements.



## Port centric logistics in the UK

- Changing paradigm in the UK.
- Could be more efficient than centralising inventory
- Small-medium ports can use spare land, thus gaining an advantage over larger ports whose main goal is throughput
- Ports have moved from central to intermediate and now back to central
- Location splitting healed through structural transformation?
- Port-based vs inland-based. Different to issues facing large Northern Range ports. What effects will this trend have on onward distribution? Rail, road, feeder size?



## key issues in hinterland integration

- proactive policies and policy failures with regard to port development require an understanding of the impact of different spaces and scales on transport governance capacity.
- structures are ostensibly linked to territorial spaces, their legitimacy and agency are very much relationally constructed, through the power of regional elites and industry players.
- the actual institutional capacity inside the organisational and institutional structure of the governance set-up is key



## **beware of over-simplification**

- Complex process involving partnerships between ports, rail, terminals, 3PLs, local and regional governments, communities, etc. Customs/legal issues, e.g. Venlo.
- How does each stakeholder measure potential benefits and thus decide their investment?
- Developing such infrastructure allows container flows to be bundled on high capacity links so that private operators can then bid on this consolidated traffic.



## summary

- “Location splitting” - a global phenomenon with local characteristics
- Port devolution and the deregulation of transport services in general has opened wider possibilities for both the private and public sectors, as well as for varying forms of cooperation between the two.
- There is a lot of scope to develop the “modalities” of how ports interact with their hinterland and foreland



## summary (cont'd)

- Land use and transport planning require integrated approaches across local, regional and national boundaries to be able to proactively influence and direct port development in this form of spatially discontinuous system.

**The success or failure of 'structural transformation' can be commonly attributed to the inadequacy of policy and/or regulatory regime and/or to the existence of institutional barriers which prevent or strengthen the efficient and effective operation of an 'inland terminal'.**





current challenges



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perspectives



## emerging issues to face future challenges

integration in logistics chains

strategies of market players

sustainable and systemic vision of  
maritime, port and hinterland  
development

proactive and integrated policies and  
regulatory frameworks





## main challenges

- to align the conception, design, implementation and monitoring and control of policies related to infrastructure and services to maximize their impact on development, requiring the review of its policies for infrastructure services.
- to improve the policies related to infrastructure and logistics services to maximize their impact on development (conception, design, implementation, monitoring and control of the policies).
- to integrate sustainability principles in current and future policies and strategies



**... many issues are about awareness, knowledge sharing,  
collaboration and cooperation**

the need to understand the “why’s” and “how’s” to  
make the right policy decisions and  
to shape the future of freight and logistics  
strategies







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questions?

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