

**2nd Meeting of the COMCEC Transport Working Group
Ankara – 08 October 2013**

Developing Multimodal Freight Transport Among The OIC Member Countries

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Objectives

First Stage:

1. Identify the basic concept of MFT, its role in enhancing trade and factors affecting its success.
2. Investigate the latest trends in MFT in the world

Second Stage:

3. Identify the current status of MFT practices in the OIC Member States
4. Determine the implementation barriers (political, legal, institutional, fiscal, and physical infrastructure) for enhancing better utilization of MFT practices in the OIC Member States.
5. Propose recommendations for improving MFT practices

Part 1:

MFT Concept and Key Success Factors

Schedule

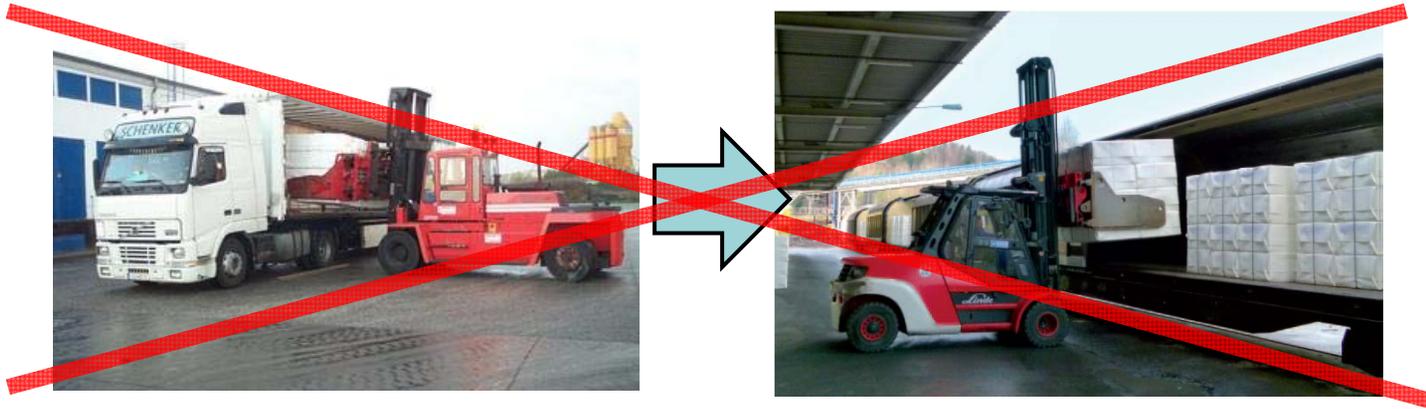
- Definition of MFT
- MFT market segments and loading units
- Business models
- Key success factors
- Conclusion/lessons

What is Multimodal Freight Transport?

- MFT means the transport of goods in a chain of transport of at least two modes of transport where the goods themselves are not discharged and re-loaded at the transshipment point but remain in a loading unit (of minimum 20' length) usually built according to international standards.
- MFT is used as synonym for Combined Transport (Europe) or Intermodal Transport (UK, North America, India).

Definition of MFT

What is Multimodal Freight Transport?



NO



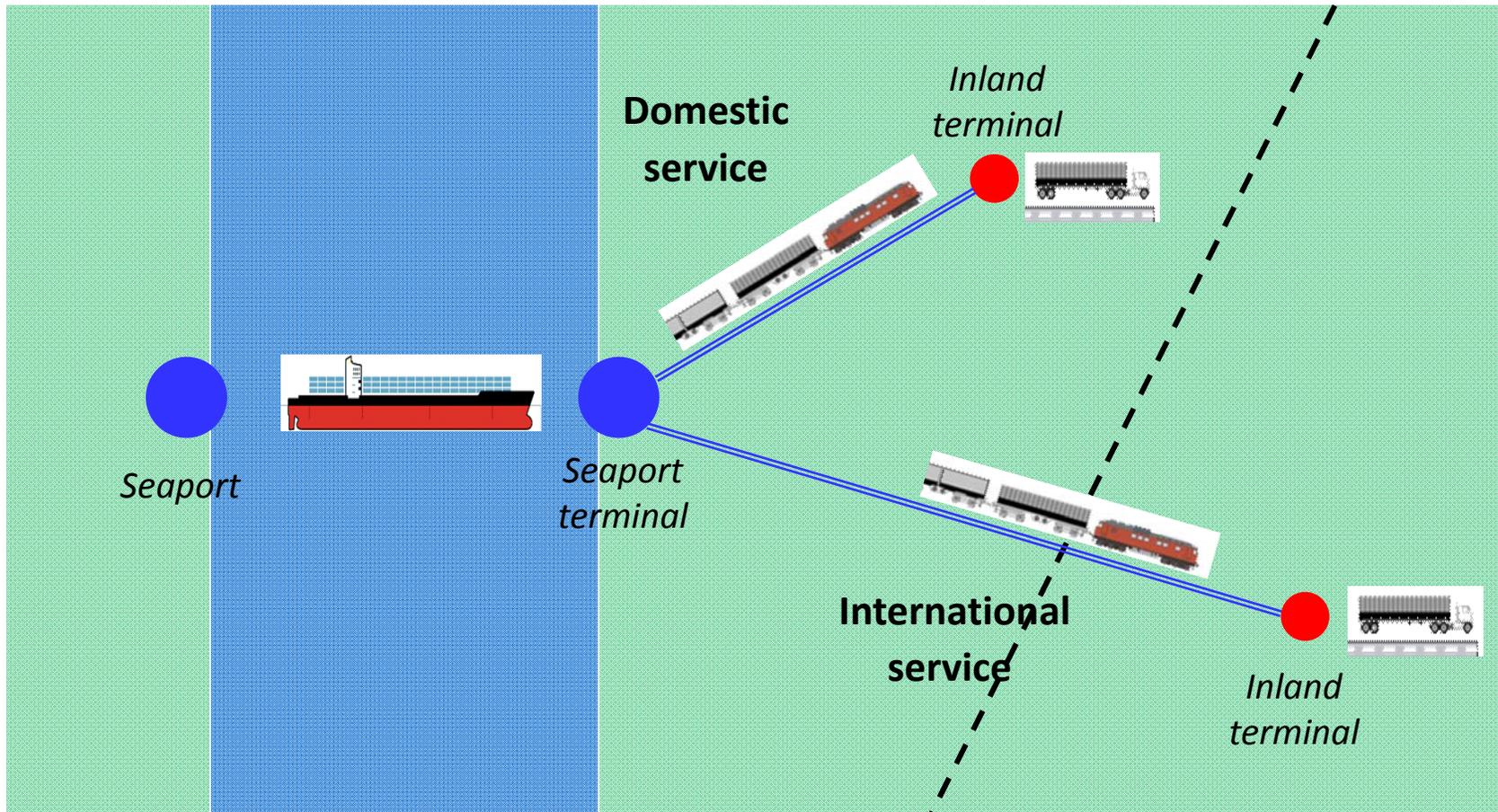
YES

Two main MFT market segments

- Intermodal container hinterland transport: the transport of marine containers carrying inter-continental goods between seaports and inland locations arriving at or departing from seaports by an ocean journey. The intermodal chain of transport usually comprises of a rail (inland waterway) and road leg.
- Continental intermodal transport: the transport of goods between land-based origins and destinations in a transport chain typically involving an initial road leg, a rail transport and a final road leg.

MFT market segments and loading units

Intermodal container hinterland transport



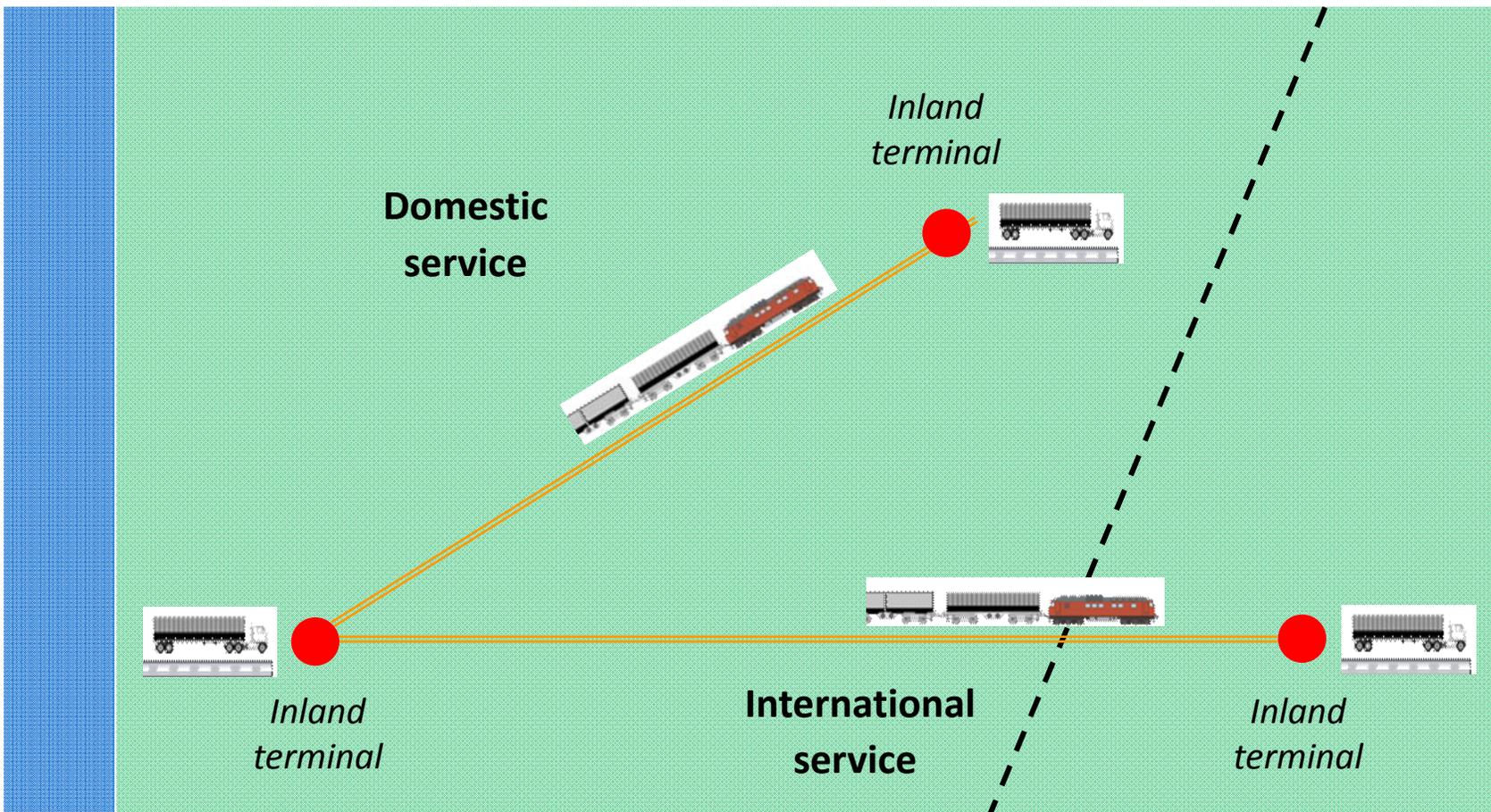
MFT market segments and loading units

Unit for inter-continental trade: Freight Container (ISO Container)



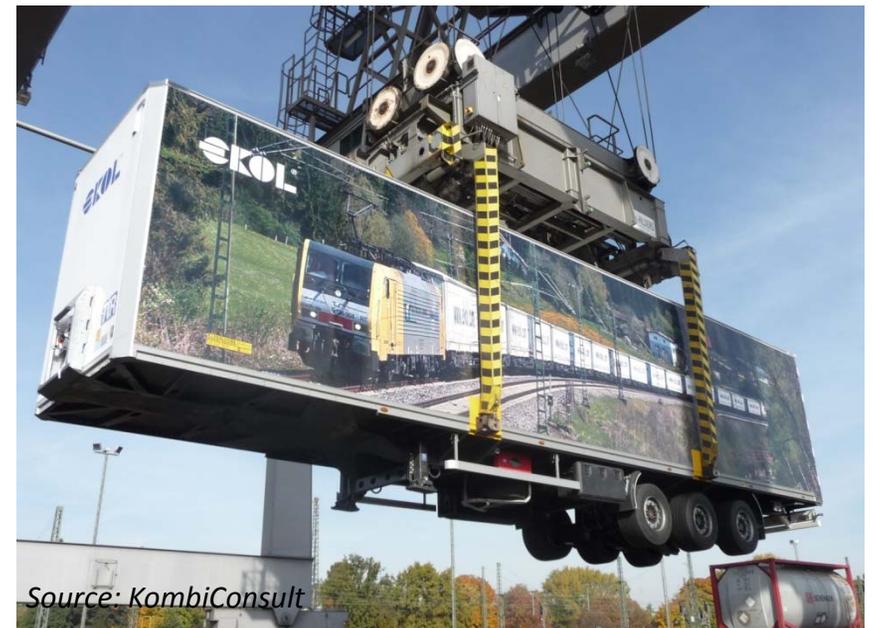
MFT market segments and loading units

Continental intermodal transport



MFT market segments and loading units

Units for continental MFT: Domestic Container, Swap Body, Semi-trailer



Source: Kombiverkehr

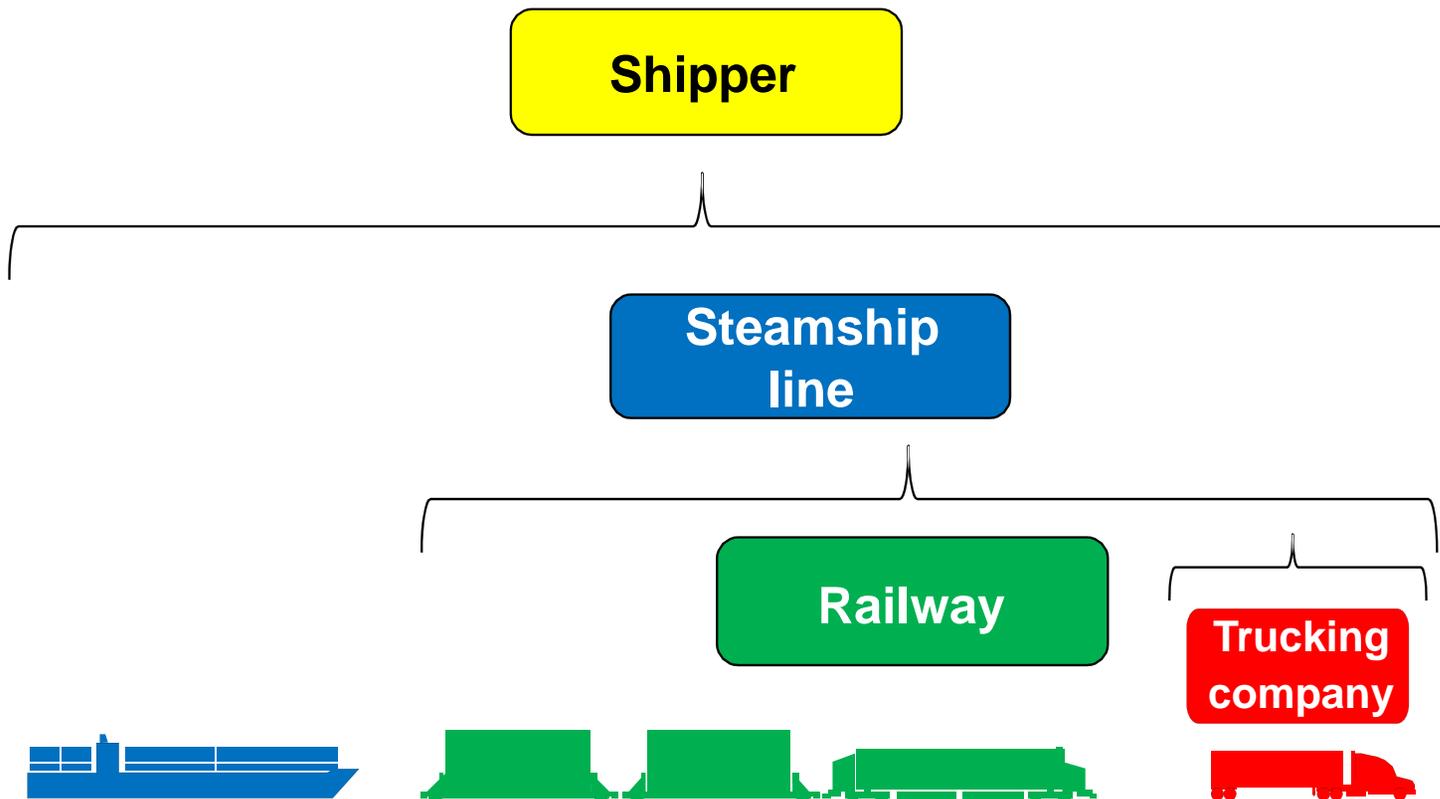
Business models in intermodal rail/road transport

Two opposite examples: North America and Europe

Characteristic	North America	Europe
Ownership of railways	Private enterprises	State-owned enterprises
Railways' availability of critical assets	Fully integrated companies	Management of infrastructure separated from supply of freight and train operating services
Market approach of railways	Demand-oriented matching customer requirements	Supply-oriented optimizing production systems
Distribution strategy of railways	Clear to avoid conflicts of interest with customers	Wavering between marketing by re-sellers and direct offer
Distribution channels of railways	Direct to customers	Mostly via "broker" (re-seller): intermodal operator

Business models in intermodal rail/road transport

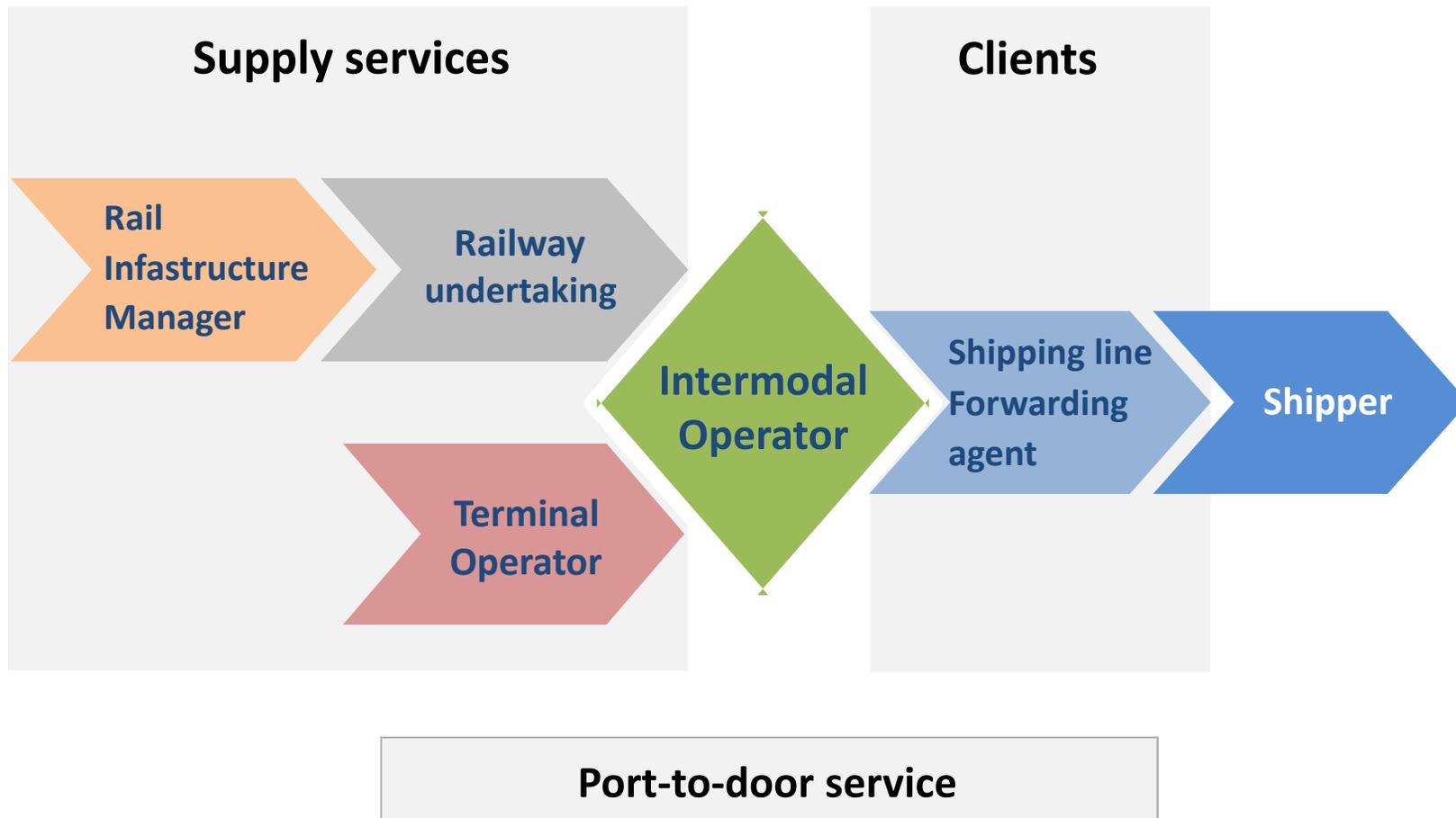
Container hinterland services in North America *)



*) In North America, this market segment is called “international intermodal”.

Business models in intermodal rail/road transport

Container hinterland services in Europe



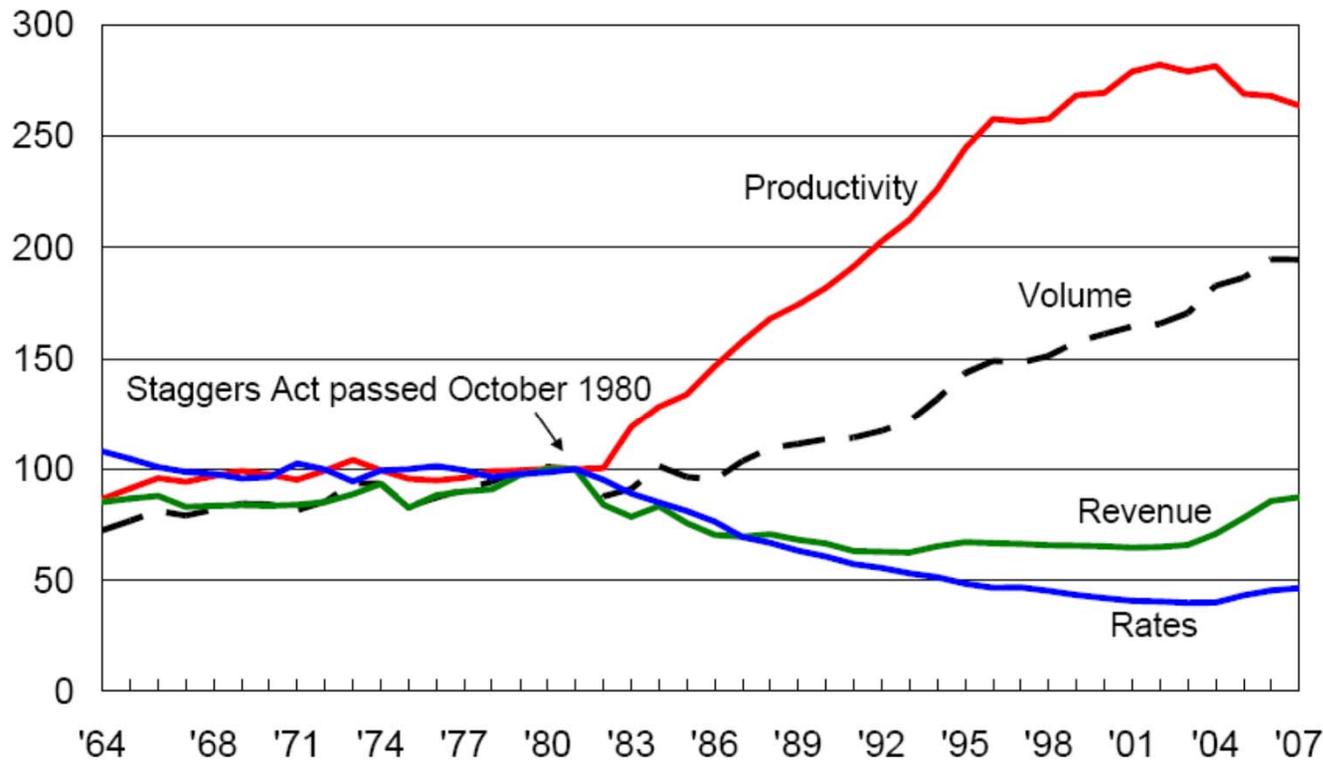
North America and the US (the example of private railways)

- Deregulation of railway industry (Staggers Rail Act, 1980):
 - Elimination of price control (market-oriented pricing)
 - Unhindered governance of rail infrastructure
 - Relaxation of anti-trust law; facilitation of M&As
- Deregulation released forces and enabled enhancement measures to achieve an entire turn-around of the ailing freight railways industry

Key success factors of MFT rail/road services

North America and the US: key results

Evolution of key performance indicators of US freight railways (1981=100)



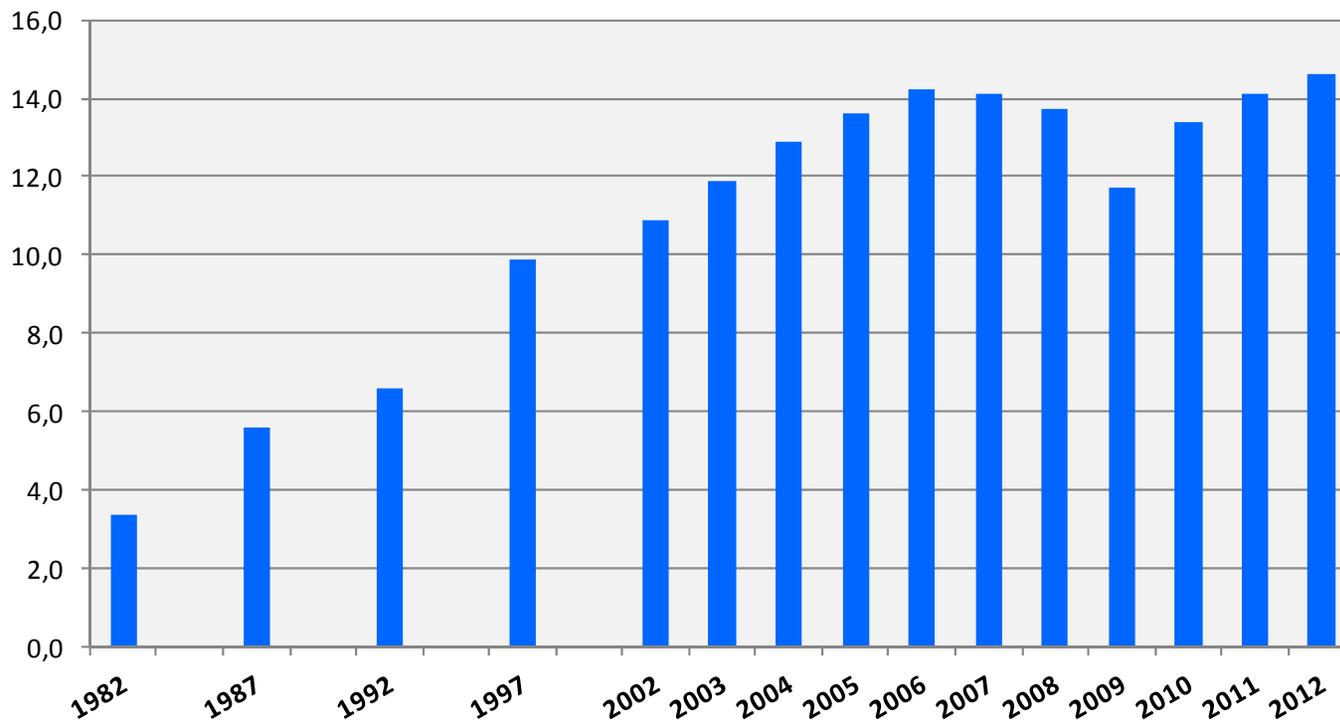
Rates are revenue per ton-mile; volume is ton-miles. Source: AAR

Key success factors of MFT rail/road services

North America and the US: key results

Evolution of North American intermodal transport volume, 1982-2012

Million loadings



Source: : Intermodal Association of North America (IANA)

Key success factors of MFT rail/road services

North America and the US: key enhancements

- Modernization of and investments into network and equipment :
 - Upgrading and enlargement of rail network from single to double or even triple track line
 - Raising clearance (▷ doublestack)
 - Advanced signalling systems (capacity increase)
 - State-of-the-art intermodal terminals
 - Efficient locomotives and intermodal wagons



Source: AAR

Key success factors of MFT rail/road services

North America and the US: key enhancements

- Operational and technological innovations :
 - Overwhelmingly dedicated intermodal services (instead of “mixed” intermodal/conventional wagonload trains)
 - Separate services for container hinterland and continental markets
 - Double-stack container transport
 - More than doubling of train length to 2.4 – 3.0 km
 - Reduced engine driver teams
 - RFID-based tracking of trains & wagons
 - RFID and OCR identification technologies at terminals



Source: CN

Key success factors of MFT rail/road services

North America and the US: key enhancements

■ Commercial innovations

- Clear, easy to understand and rather standardized business models
- Contractual partnerships with parcel service providers (e.g. UPS), motor carriers (JB Hunt), shipping lines (APL) that provide base loads for starting up services.



Source: BNSF

Western Europe (the example of state railways)

- Business model centred around intermodal operator :
 - Broker function: reconciling supply and demand by bridging gaps between national state railways and LSPs (forwarders, shipping lines)
 - Customer-orientation in order to deliver road-competitive services
 - Intermodal operator takes over capacity employment risks from railways by buying full (block) trains
 - Rather “asset-free“, cost-efficient companies
 - Recent developments see a partly abandonment of “asset-free” business model in order to safeguard resources (terminals, wagons, rail traction) for providing effective services.

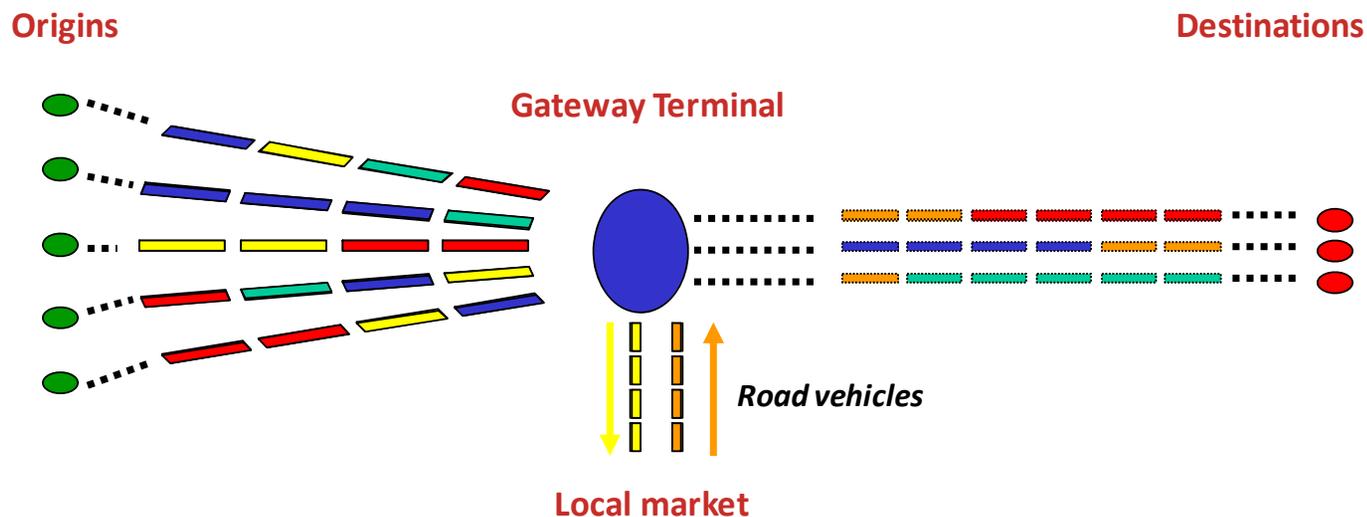
Western Europe

- As the management of the rail network and rail freight services was state-owned the EU-enforced liberalization of access to the rail freight market for third parties was fundamental for improving the competitive situation and market penetration of intermodal transport:
 - Non-discriminatory access to public rail network for authorized railways
 - Free market access for providing intermodal services
 - Independent price building (no price regulation)
 - Elimination of quota regulation.

Key success factors of MFT rail/road services

Western Europe

- Operational and technological innovations :
 - Intermodal and wagonload services separated (dedicated intermodal trains)
 - Container hinterland and continental markets overwhelmingly served by separate services
 - Direct and shuttle trains replace complex consolidation systems
 - Gateway concept to serve less-than- trainload trade lanes (Figure below)



Key success factors of MFT rail/road services

Western Europe

- Operational and technological innovations :
 - Multiple-system electric locomotives overcoming lacks of interoperability between rail networks with different power and signalling systems and ensuring seamless border-crossing services
 - 80' and 90' articulated wagons for the transport of containers
 - Ultra-wide, ultra-low pocket wagon for transport of high-cube semi-trailers



Key success factors of MFT rail/road services

Western Europe

- Sea ports promoting hinterland transport of seaborne containers by rail or barge, often in conjunction with national intermodal operators
- Large manufacturing companies, for example, from the chemical, automotive or paper industry called for intermodal solutions: reduction of supply chain costs, increased safety, “green logistics”

Key success factors of MFT rail/road services

Western Europe

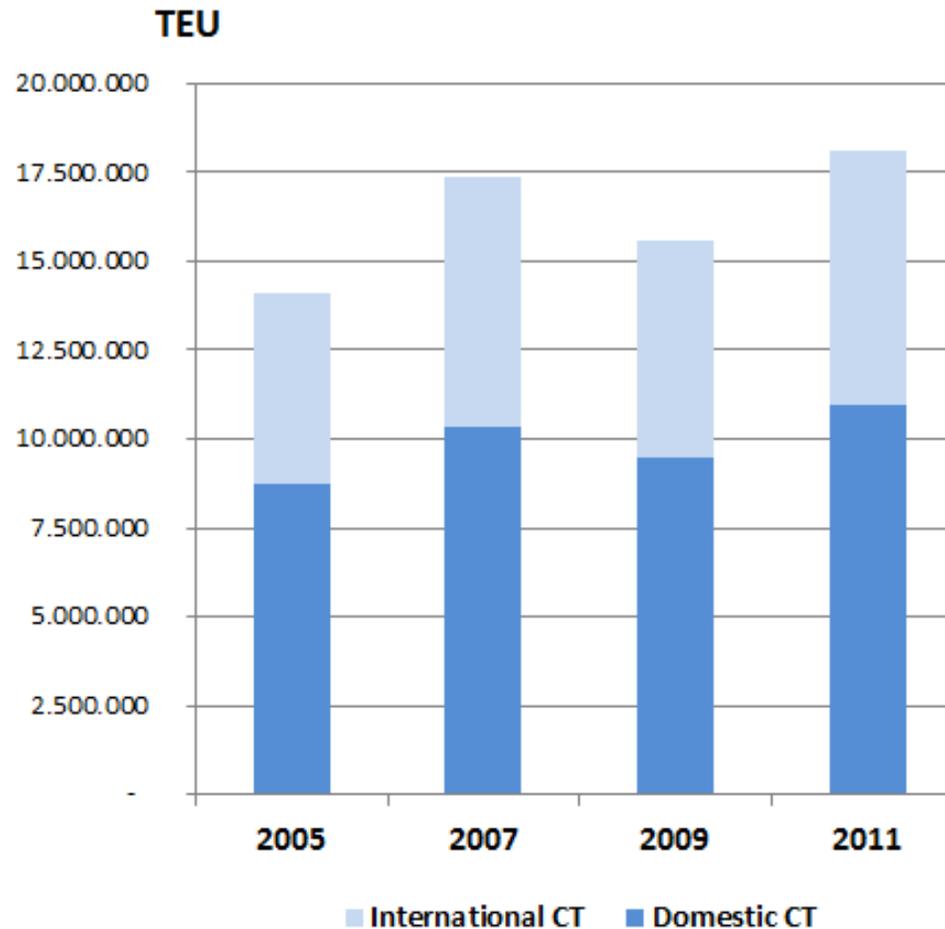
■ Incentives from regulatory framework:

Area	Incentive
Infrastructure	State and EU grants for building/enlarging intermodal terminals
Rail leg of intermodal transport	State and EU grants for starting up intermodal services
	State grants for intermodal services considered as public transport services
Road leg of intermodal transport	Exemption from road vehicle tax
	Reimbursement of road vehicle tax
	Derogation from weight limit for road vehicles (44 t instead of 40 t gross weight)
	Exemption of road leg from weekend, holiday or night driving bans on road
	Exemption of road leg from restrictions on cabotage transports
Technology	State grants or loans with reduced interest rates for purchasing loading units
	State grants for mode-integrating IT systems and external training costs

Key success factors of MFT rail/road services

Western Europe

Intermodal rail/road transport volume (TEU by market segment), 2005-2011



Conclusions/lessons: how to ensure successful MFT services

- Business model:
 - MFT service provider must understand market and customer needs;
 - Set up a simple business model to facilitate utilization of MFT services;
 - Ensure clear distribution channels to avoid competition with your clients.

- Service level and operations:
 - Ensure inexpensive and fairly reliable MFT services; that is what the majority of customers call for;
 - Consider MFT services as a “commodity” and implement cost-efficient, straightforward production systems;
 - Minimize operational interfaces to avoid delays, failures, irregularities;
 - Prefer dedicated MFT trains if sufficient market potential identified;
 - Distinctive customer requirements should be matched by customized services including corresponding price differentiation.

Conclusions/lessons: how to ensure successful MFT services

■ Rolling stock:

- Deploy state-of-the-art locomotives and intermodal wagons: benchmark their capabilities with trucks;
- Ensure efficient employment cycles of your costly assets (a high proportion of idle time will ruin your competitiveness).

■ Intermodal terminals:

- Terminals are your “point of sale”: if the service quality is not attractive clients will not buy your product (= MFT service);
- A fast clearing and processing of pick-up/delivery trucks is fundamental (avoid lengthy terminal dwell times);
- Ensure a good road access and an immediate connection to main rail line
- Deploy efficient handling equipment;
- Employ skilled staff and care for regular training.

Conclusions/lessons: how to ensure successful MFT services

- Establish partnerships with potential clients or interested parties such as ports to attain base loads or improve access to markets.
- Policy:
 - If rail network is private the owners/service providers should not be regulated unless they misuse their position;
 - If rail network is public it is suggested to stimulate competition on the operator level to enable efficiency and high performance;
 - If a state is responsible for investments in public roads it should also finance public intermodal terminals or see to PPP models;
 - MFT services require for equal terms of competition with road haulage in terms of cost (taxes, fees) and administration (customs, safety rules etc);
 - Consider specific incentives for MFT services if they provide for social benefits (e.g. better environmental performance or safety record).

Part 2:

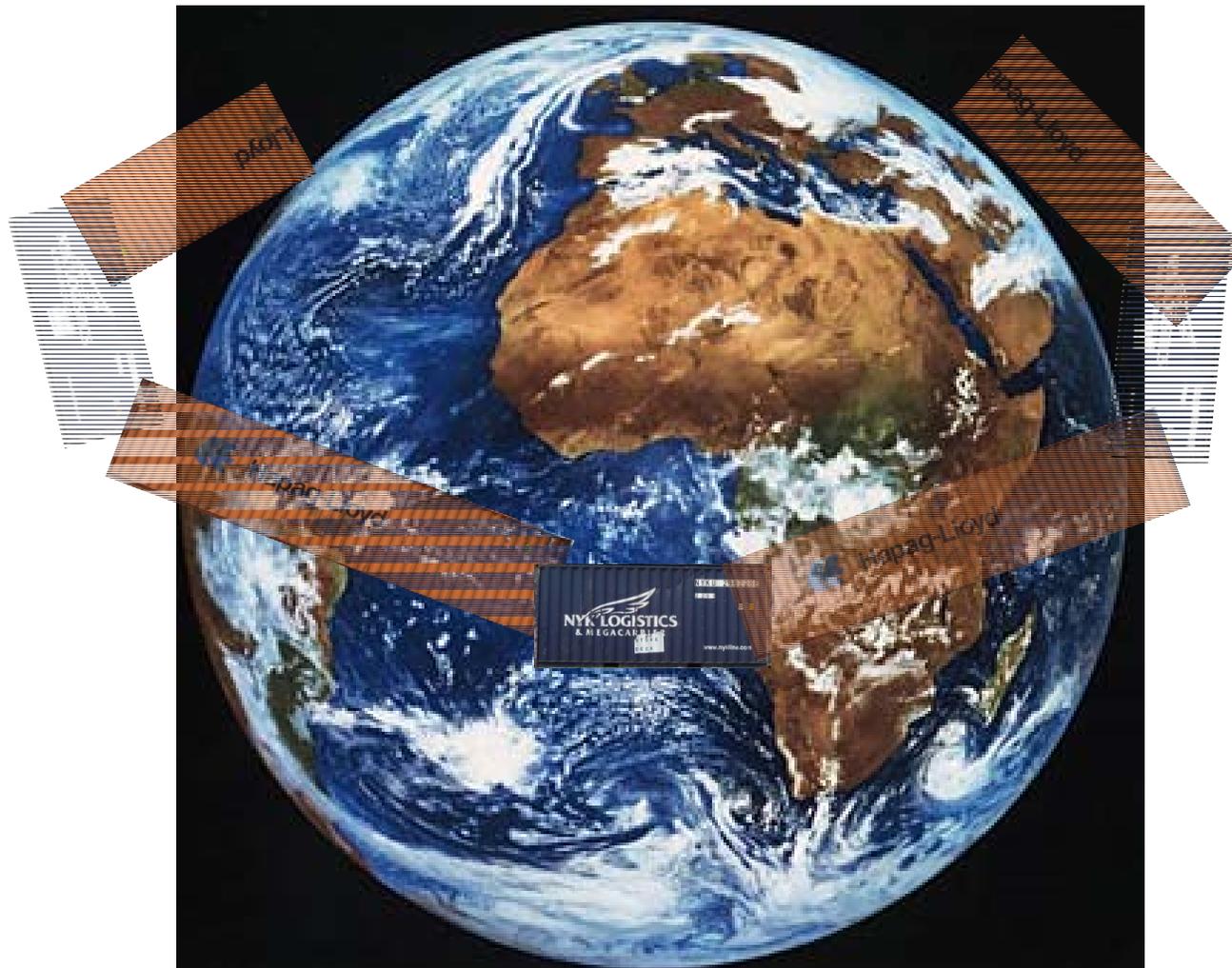
Global Trends and Policies in MFT

Schedule

- Trends in seaborne container traffic
- Trends in developing countries
- Trends in container hinterland and continental MFT
- Trends in policy on MFT
- Conclusions

Trends in seaborne container traffic

World seaborne container traffic, 2012

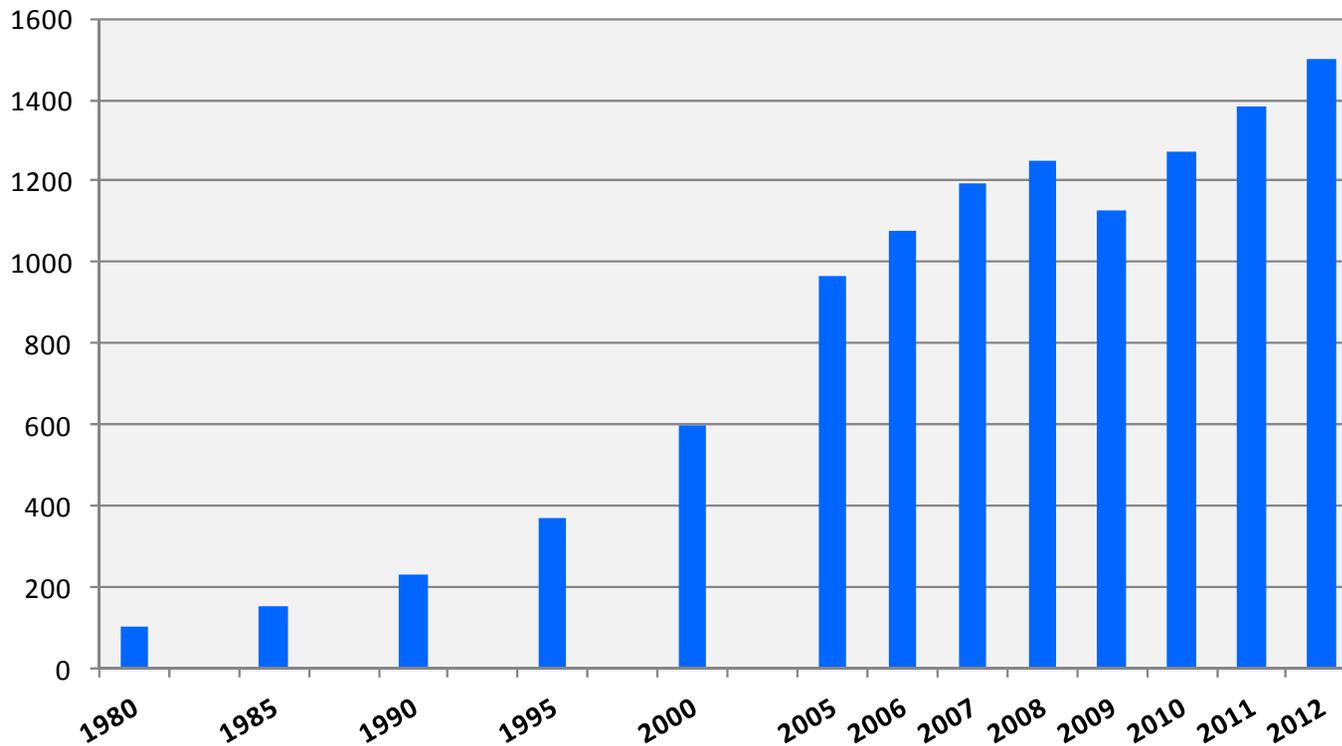


152 m TEU
=
20 x
around-the- world

Trends in seaborne container traffic

World seaborne container traffic, 1980 -2012

Million tons



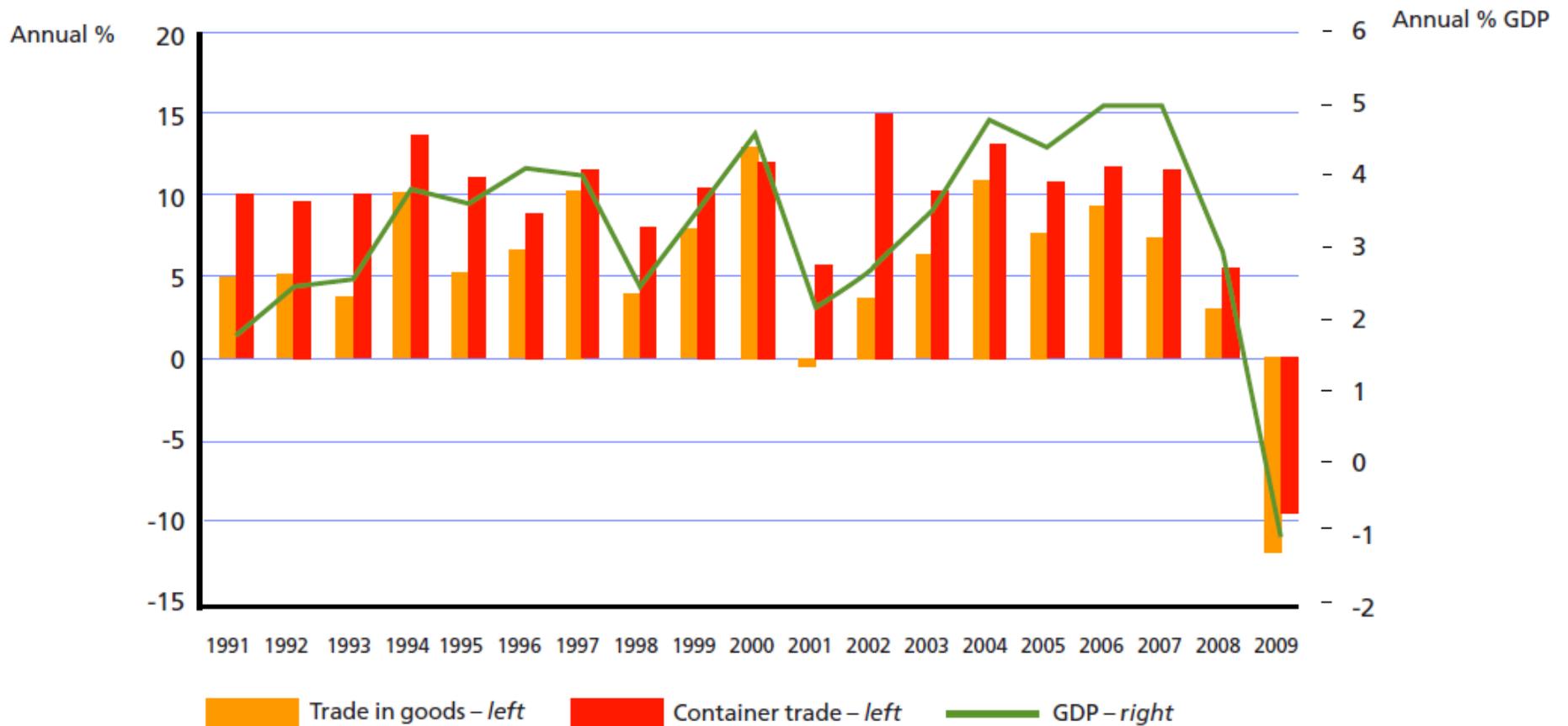
1990-2010:

+ 500%

Ø 8.2% p.a.

Trends in seaborne container traffic

Will container traffic lose momentum and 'just' grow in line with trade?



Source: Jan Hofmann (UNCTAD), Nov. 2011, based on Ocean Shipping Consultants

Will container traffic lose momentum and ‘just’ grow in line with trade?

Pros	Cons
<ul style="list-style-type: none"> • Containerization of commodities nearly completed 	<ul style="list-style-type: none"> • Further goods can be containerized (reefer, bulk): smaller lots, higher delivery frequency
<ul style="list-style-type: none"> • Containerization of countries almost completed 	<ul style="list-style-type: none"> • Productivity potential of MFT services in developing countries not yet utilized
<ul style="list-style-type: none"> • Near Sourcing 	<ul style="list-style-type: none"> • Still a large potential for global production networks based on cost differences and economies of scale in ocean transport
<ul style="list-style-type: none"> • China will turn away from pure export orientation and strengthen domestic economy 	<ul style="list-style-type: none"> • Transfer of production (e.g. Chemicals) from developed countries to countries supplying raw products

Shipping lines caught between overcapacities and sluggish economy

- 2000-2011:
 - Demand for seaborne container traffic: +7.2% p.a. on average
 - Supply of container vessel capacity: +10.1% p.a. on average
- Overcapacities are due to increase by 2015 with respect to new vessels ordered and slowdown of world trade.
- Counter measures of container shipping lines:
 - Aggressive pricing to catch market shares
 - Set-up of alliances: partners share vessel capacity, ensure economies of scale, rationalize services and port of calls; implications for competition law?
 - Cost management, e.g. slow steaming
 - Bigger vessels (ULCV)

Shipping lines caught between overcapacities and sluggish economy

- The case of slow steaming:
 - Reduction of speed from 24-25 knots to 15 to 20 knots
 - 80% (2012) of services between Far East and Europe operated by slow steaming vessels
 - Cost savings for shipping lines at 3-5%?
 - 15-30% longer journey times increasing inventory cost
 - Improved reliability of service may –partly- offset this disadvantage
 - Will manufacturers and retailers moving high-value goods accept slow steaming or search for new supply chain concepts?

Shipping lines caught between overcapacities and sluggish economy

- The case of ULCVs (> 12,000 TEU capacity):
 - Further economies of scale and reduced cost per TEU shipped
 - Sufficient volumes to use the full capacity or just another twist of price spiral (competing for TEU)?
 - Pressure on ports and terminals: reduced number of ports of call; constraints of nautical profile of water access; investments in cranes providing for wider bridges (23-25 rows)
 - More containers loaded/unloaded per call require for more efficient high-volume hinterland transport systems



Source: dpa

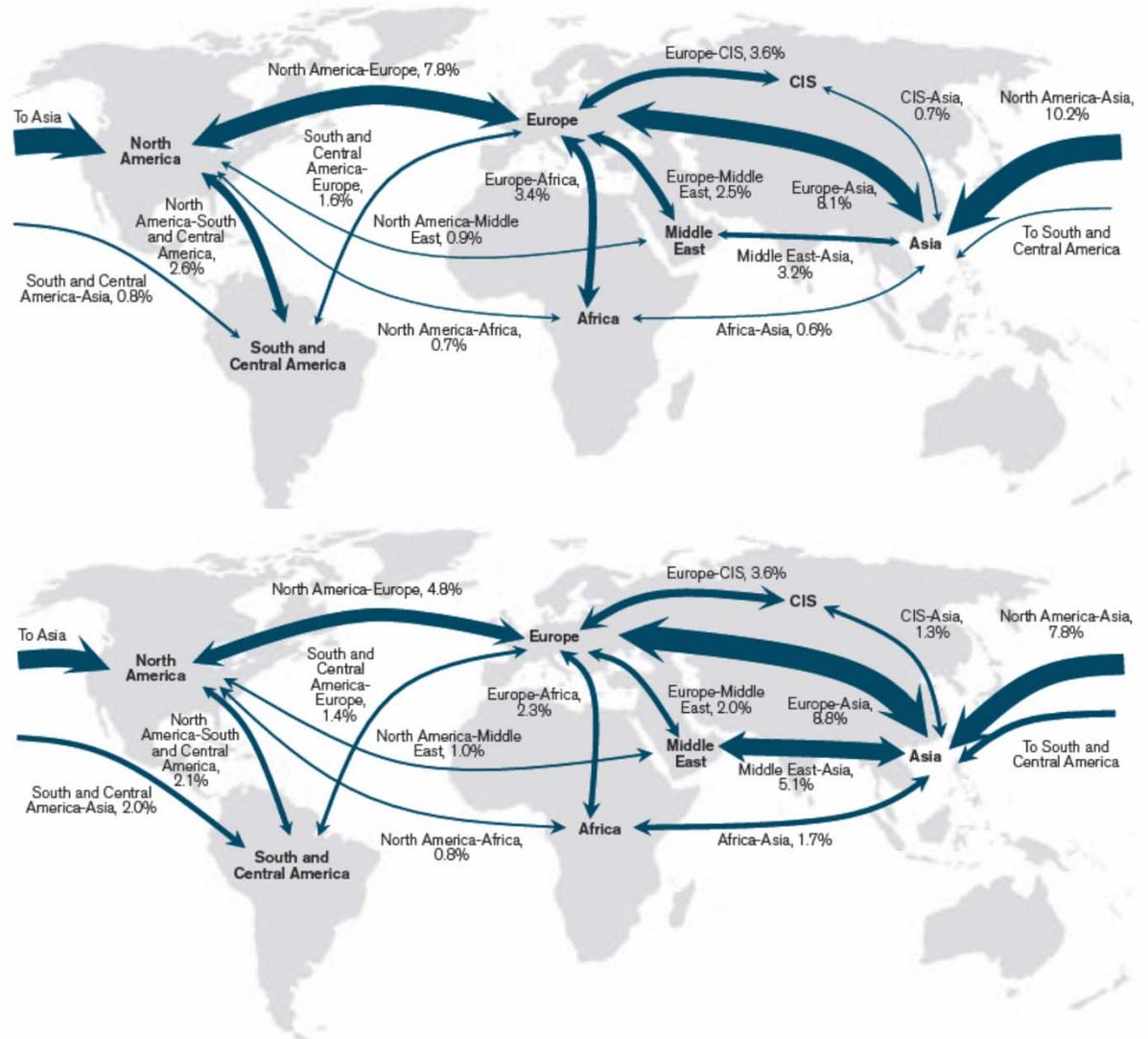
Main developments

- Developing countries gained a share of approx. 70% of world container port throughput though this result is slightly biased by strong growth of China's ports (25% of total port throughput)
- Market share of developing countries of world container traffic improved to about 40% in 2011
- Shift of importance of containerized trade lanes from the traditionally dominating Asia–North America and Asia–Europe routes to inner-Asiatic trade lanes; it is suggested that trend will intensify as the exchange of manufactured goods and the establishment of multilateral production networks in the region will be rising.
- General trend visible in structure of total world trade (next slide)

Trends in developing countries

Main developments

Share of total world trade between geographic regions, 1990 (top) v 2011 (bottom)



Source: World Trade Organization, Report 2013

Main developments

- Increasing importance of container ports in developing countries as transshipment hub for global liner networks (e.g. Egypt, Malaysia, Morocco, United Arab Emirates).
- Investments in nautical profiles, port and hinterland infrastructure pays: selected as port of call, integrated into services mainly of “South-South” trade (e.g. Nigeria, Ghana, South Africa v Mocambique)
- Against this background, China is implementing a network of 18 large state-of-the-art inland intermodal terminals, some of them reportedly operative already.

Trends in developing countries

China's master plan for rail and intermodal terminals

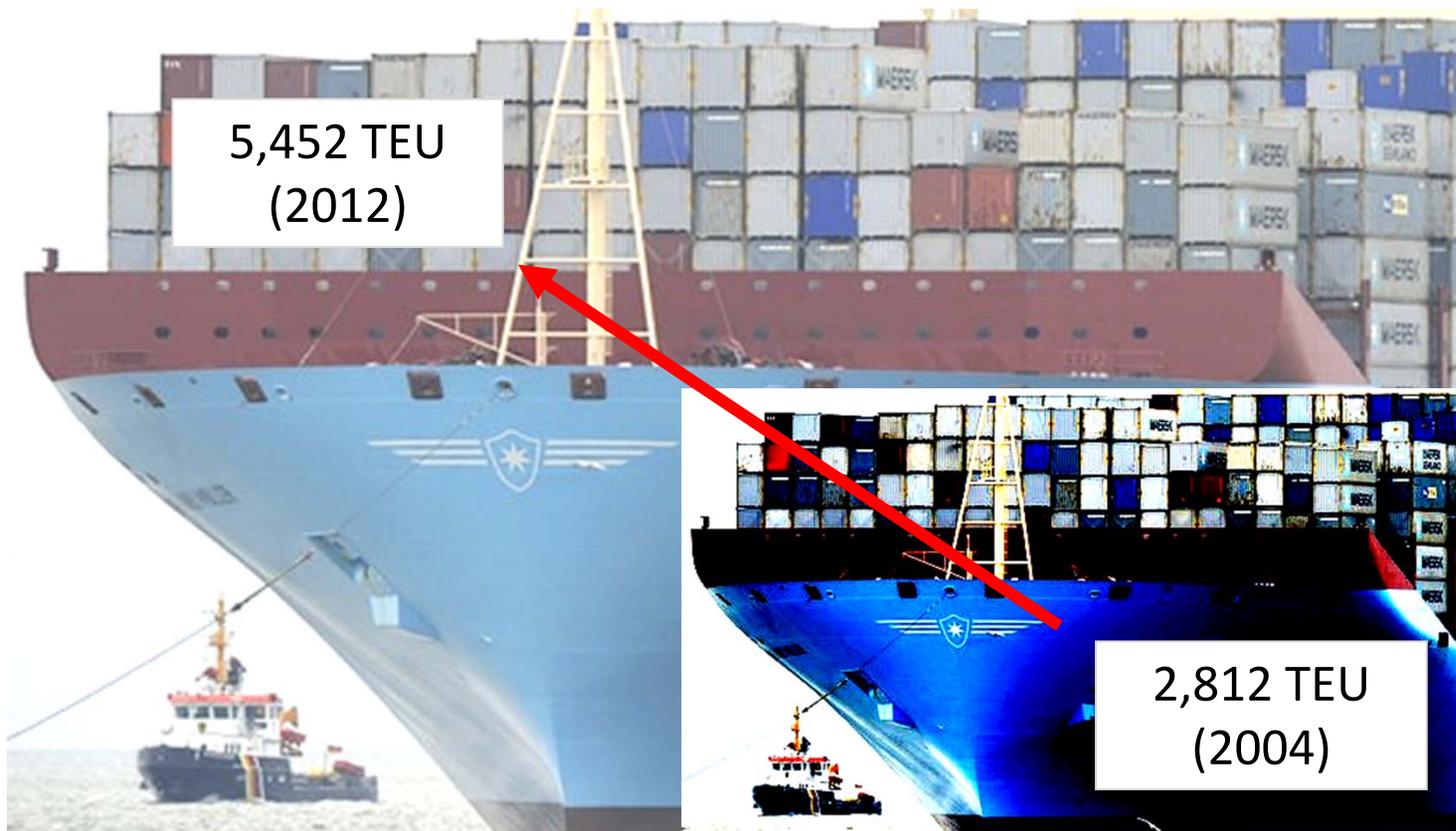


Main developments

- Connectivity plays a key role in the opportunity being integrated into global supply chains.
- Threats for developing countries are posed from the trend to bigger vessels, reduction of port of calls and number of competing shipping lines per service (see next 2 slides).

Trends in developing countries

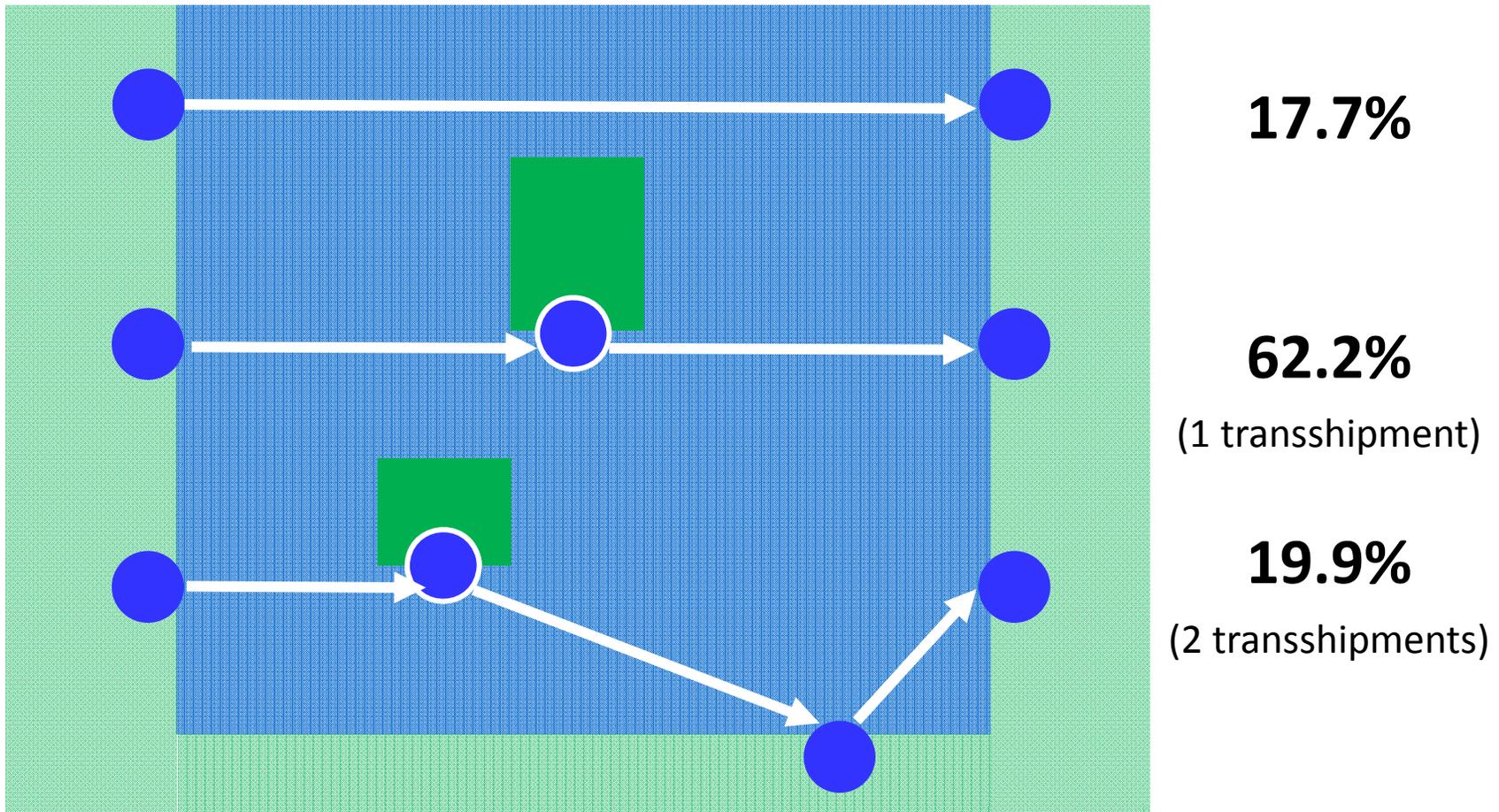
Container vessel size (average vessel maximum deployed)



Source: UNCTAD: Review of maritime transport 2012; dpa (photo)

Trends in developing countries

Connectivity: how container trade lanes are served (% of country pairs)



Key role of efficient container hinterland transport services

- Efficiency of hinterland transport systems in terms of infrastructure, service level and operational management is key to:
 - Competitiveness of manufacturers or retailers;
 - Competitiveness of supply chains;
 - Competitiveness of ports;
 - Competitiveness of countries/regions.

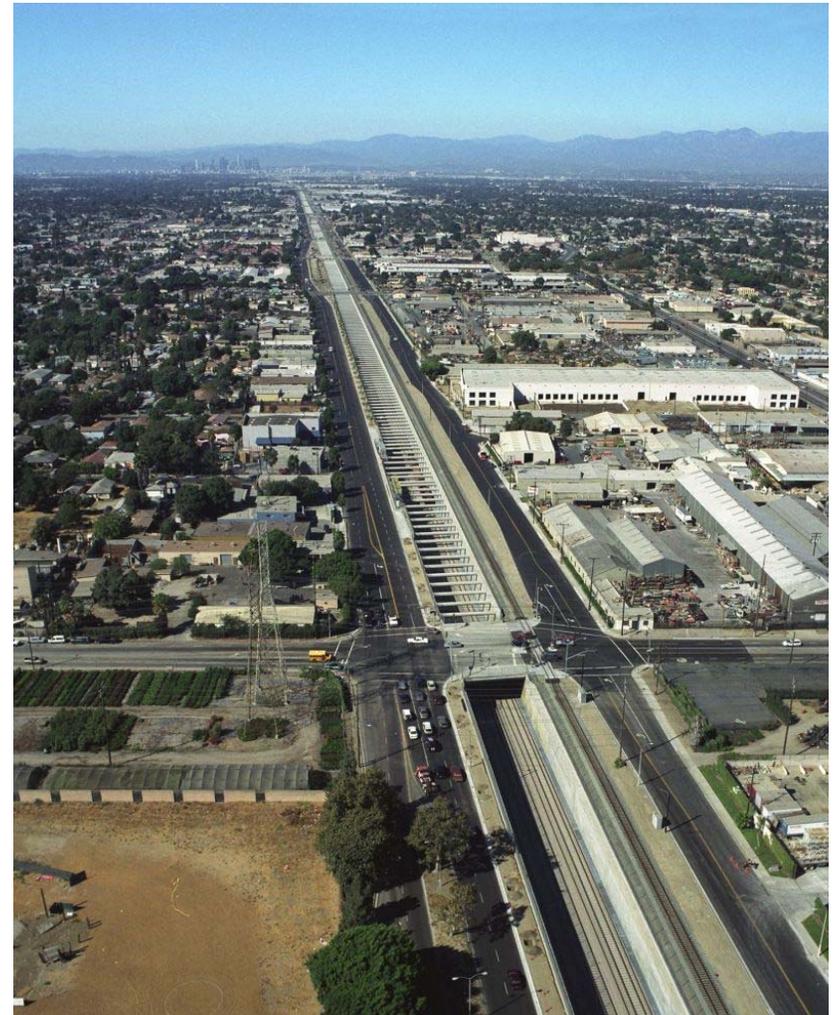
- Ports recognize importance of effective hinterland MFT services:
 - High-volume hinterland systems enable economies of scale within ports
 - A cost-efficient production including competitive terminal handling charges attract larger vessels and more service providers
 - More service providers stimulate competition, which in turn can continue to raise the attractiveness of the port.

Main developments in continental MFT

- Increasing interest in rail-based container transports between Europe and China/Korea:
 - Development of fairly fast intermodal through-services (20 days) renewed interest from high-value goods manufacturers (inventory cost)
 - Extended lead times in ocean shipping owing to slow steaming
 - High freight rate and irregular frequency constrain market potential
- Increasing need of shippers and logistics service providers to implement sustainable logistics raise demand for environmental-friendly intermodal services:
 - Consumer requirements to retailers: bio products lead to green logistics
 - Increased insurance fees following impacts of climate change
 - Pressure from investors and rating agencies to reduce CO₂ footprint

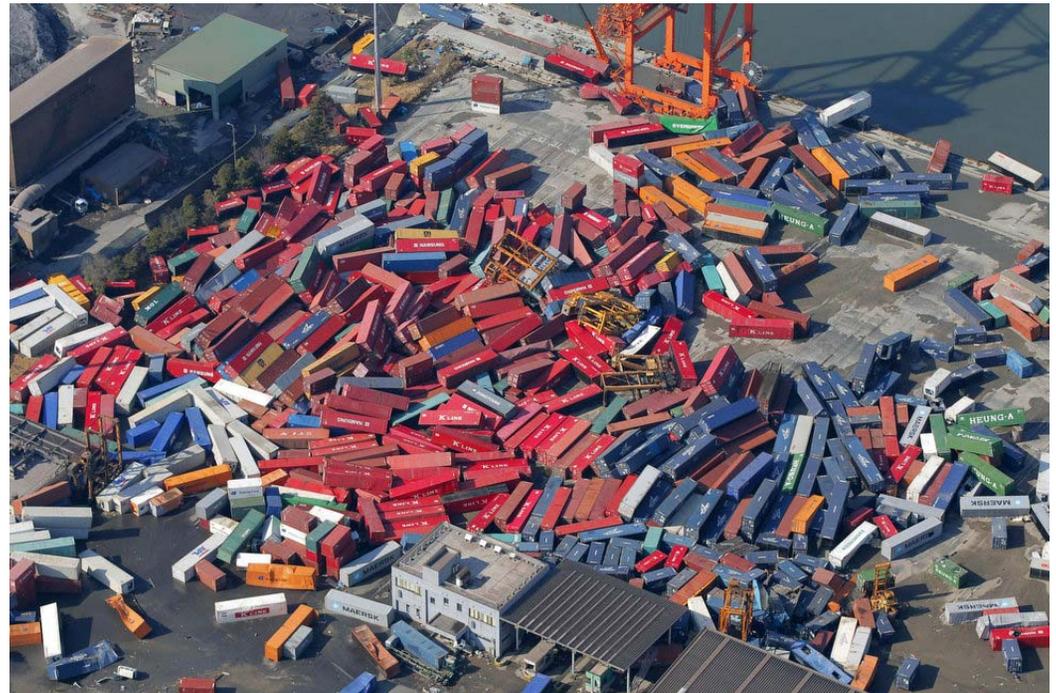
Public-Private-Partnerships

- PPP models become more popular for investments into rail network and intermodal terminals in Asia, Africa, Europe and also in the US: Alameda corridor, Crescent & Heartland corridors, Chicago. Main reasons are enhancement of traffic safety, environment and regional economic development.



Climate change policy

- Global supply chains seem to become increasingly vulnerable to natural disasters partly attributed to man-made climate change.
- Seaports are particularly challenged:
 - Preventive measures incl. hinterland infrastructure
 - Enhance resilience of facilities & IT systems
 - Disaster risk management
- New IPCC Report (2013) may raise alertness for world climate agreement (Kyoto P)



Key role of the container and MFT for enhancing trade

- Effects of containerized trade and rail hinterland services on external trade quantified for 157 countries for period 1966 to 1983 *):
 - 22 industrialized countries: external trade grew by 292% within first 20 years of containerization of ports (same as a member of free trade agreement) but achieved a plus of 790% if both ports and hinterland rail system were containerized
 - 135 developing countries: similar effects but smaller extent; external trade grew by 121% within first 20 years of containerization of ports but by 357% if both ports and hinterland rail system were containerized
 - In developing countries the stimulating impacts of containerization slowed down after 5 years, in industrialized countries they continued over 20 years.

**) Source: Bernhofen/El-Sahli/Kneller: Estimating the effects of the Container Revolution on World Trade. Feb 2013.*

Key role of the container and MFT for enhancing trade

- Effects of containerized trade and rail hinterland services on external trade quantified for 157 countries for period 1966 to 1983 *):

Sample	Period (years)	Impact on size of bilateral trade flows		
		Containerization of ports and hinterland rail	Containerization only of ports	GATT membership
22 industrialized countries	5	+ 320%	-	92%
	20	+ 790%	+292%	285%
135 developing countries	5	+ 320%	-	-
	20	+ 357%	+121%	-

*) Source: Bernhofen/El-Sahli/Kneller: Estimating the effects of the Container Revolution on World Trade. Feb 2013.



THANK YOU

KombiConsult - Advisors To The Intermodal World