GREEN TRANSPORT CORRIDORS

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Nachhaltigkeit

- Handlungsprinzip zur **Ressourcen-Nutzung**, bei dem die Bewahrung der wesentlichen Eigenschaften, der **Stabilität** und der **natürlichen Regenerationsfähigkeit** des jeweiligen Systems im Vordergrund steht.
  - Das Prinzip der Nachhaltigkeit wurde erstmals 1713 von Hans Carl von Carlowitz für die Forstwirtschaft schriftlich formuliert
  - Aktuell: **Zukunftscharta**
- Drei – Säulen – Modell

1. keinen Raubbau an der **Natur**
   (ökologischer Fußabdruck)
2. **wirtschaftlich** nicht auf Kosten der Kinder über die Verhältnisse leben
3. **sozialen** Spannungen sollen sich in Grenzen halten und Konflikte nicht eskalieren

Zukunftscharta

- Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (2014)

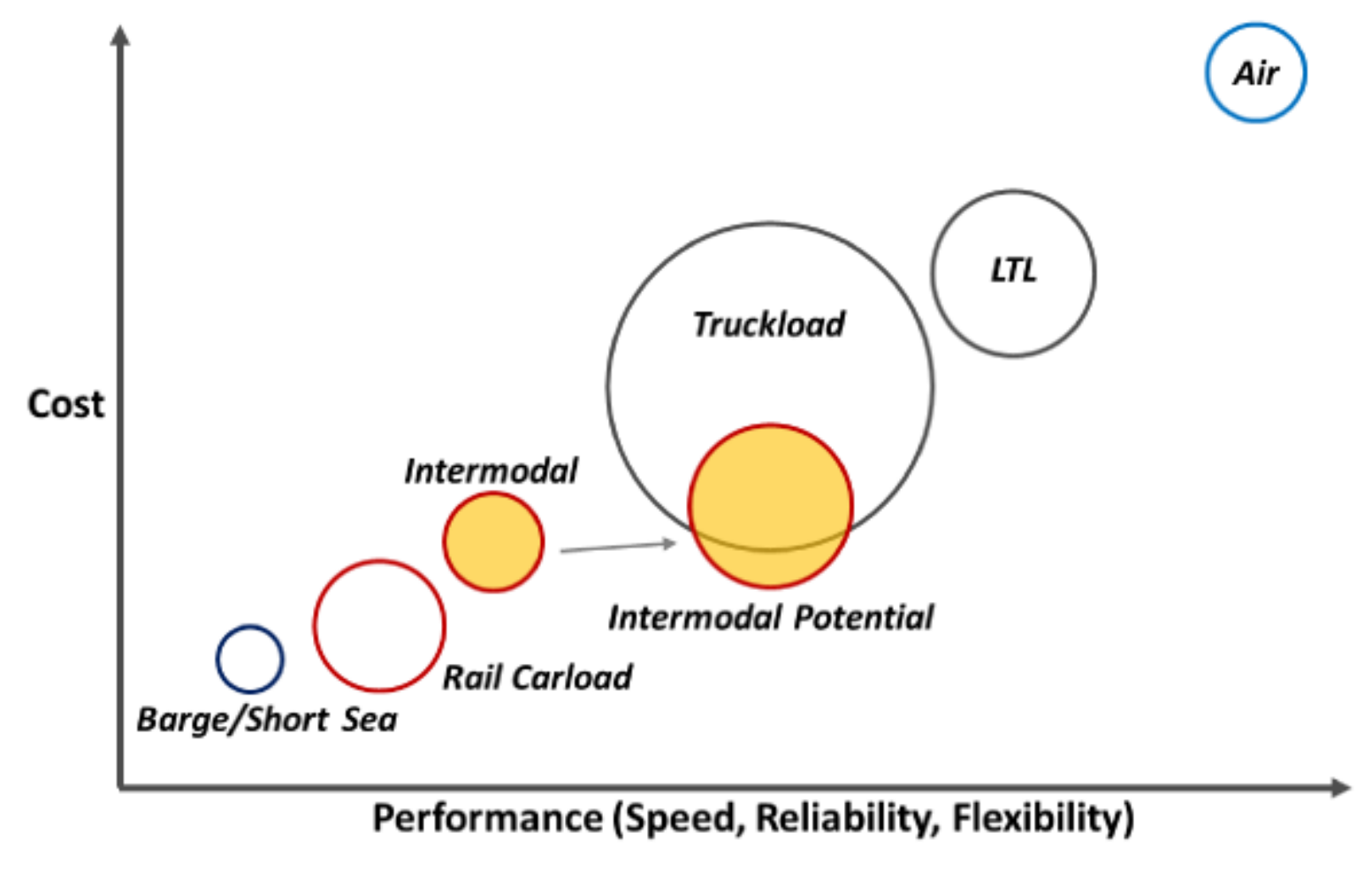
  www.zukunftscharta.de

  - „ Wirtschaftswachstum mit Nachhaltigkeit und menschenwürdiger Beschäftigung verbinden “
  - Nachhaltiges Wachstum beinhaltet:
    - menschenwürdiges Leben
    - im Einklang mit Umwelt und Natur
    - mit Beschäftigung (incl. selbstständiger Tätigkeit) die produktiv, sicher, erfüllend ist
    - EINEWELT Verantwortung erfordert außerdem:
      - Alternative Wirtschaftsmodelle, Fairer Handel, Öko- und Sozialstandards, Entschuldung, Migration

Green Transport Corridors

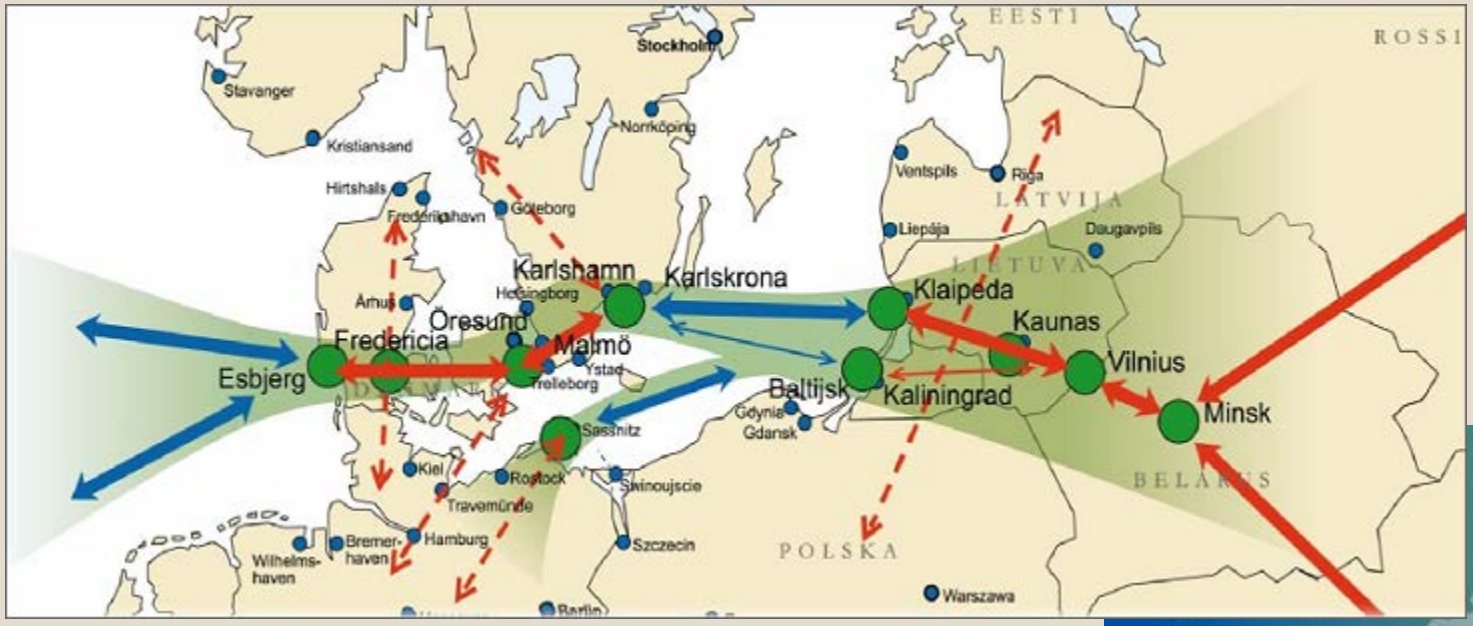
- 50 % increase in passenger and freight transport within the next 20 years (Tetraplan, 2009)
- Green transport corridors were introduced in Freight Transport Logistics Action Plan (FTLAP) from 2007 and renewed in EC White Paper on Transport in 2011
  - The concept of transport corridors is marked by a **concentration of freight traffic between major hubs** and by relatively **long distances of transport**.
  - Along these corridors industry will be encouraged to rely on **co-modality** and on **advanced technology** in order to accommodate **rising traffic volumes while promoting environmental sustainability and energy efficiency**.
  - Green transport corridors will reflect an **integrated transport concept where short sea shipping, rail, inland waterways and road complement each other to enable the choice of environmentally friendly transport**.

Characteristics of Transport Modes

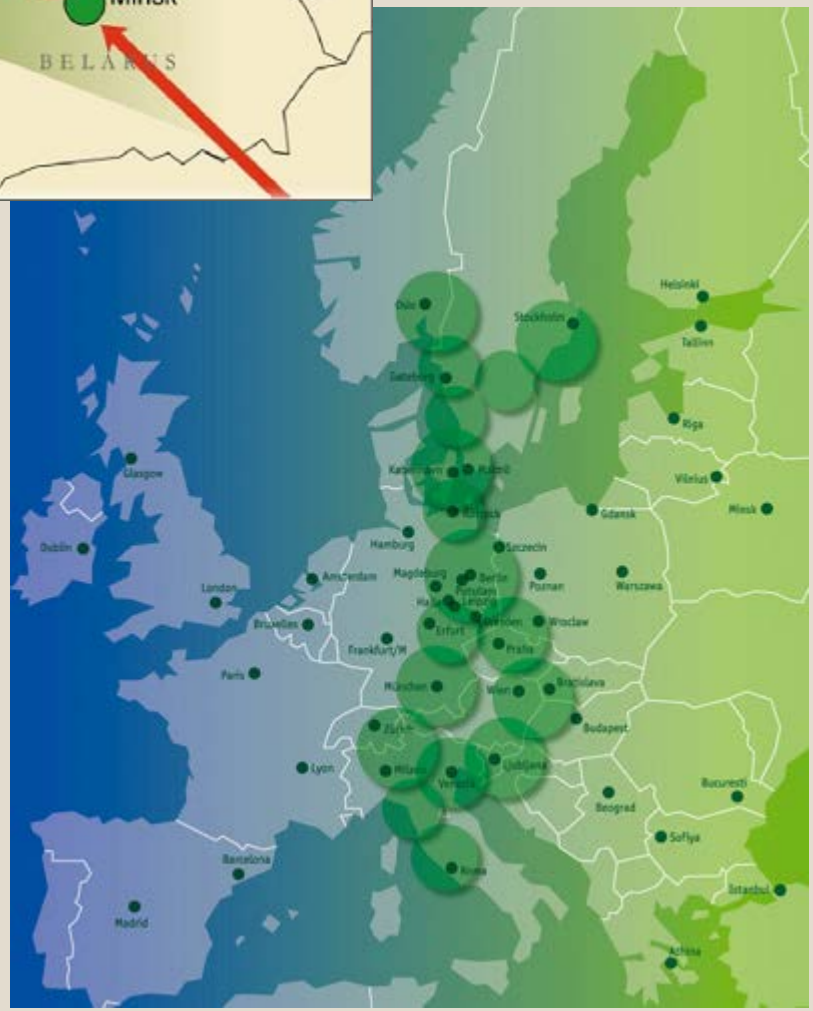


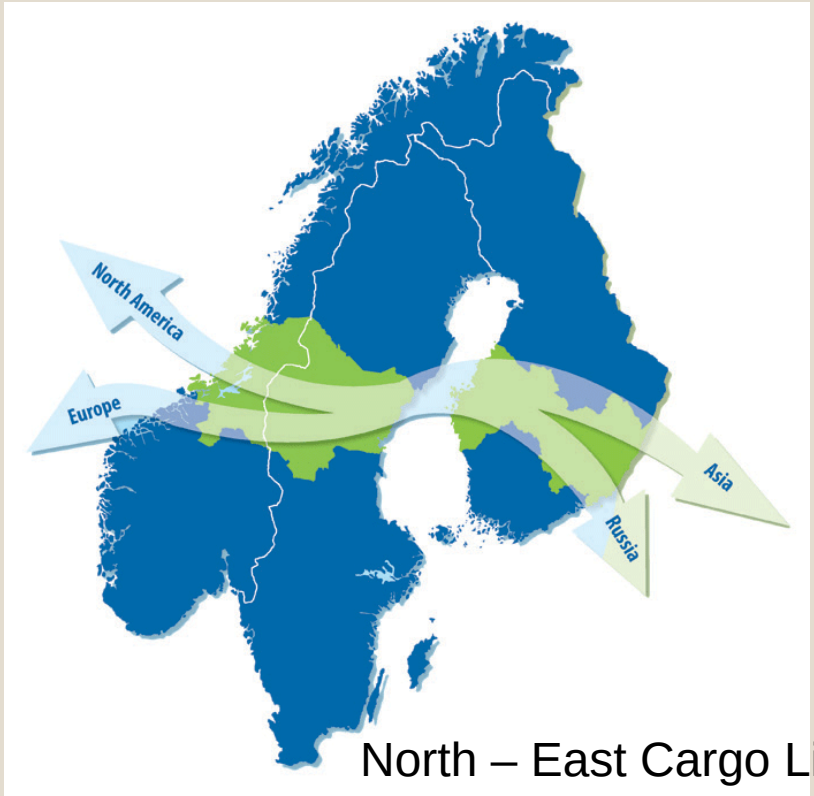
Source: adapted from Zumerchik, J., J-P Rodrigue and J. Lanigan Sr., (2009) "Automated Transfer Management Systems to Improve the Intermodal Performance of North American Rail Freight Distribution", The Journal of the Transportation Research Forum, Vol. 48, No. 3, pp. 59-76.

East – West Transport Corridor



Scandria





North – East Cargo Link

EU Green Corridor Initiatives

- Between 2008 and 2013 in a large number of national and international projects about intermodal and green transport concepts were realised

- FP7 project: SuperGreen
  - Evaluation & benchmarking of green transport

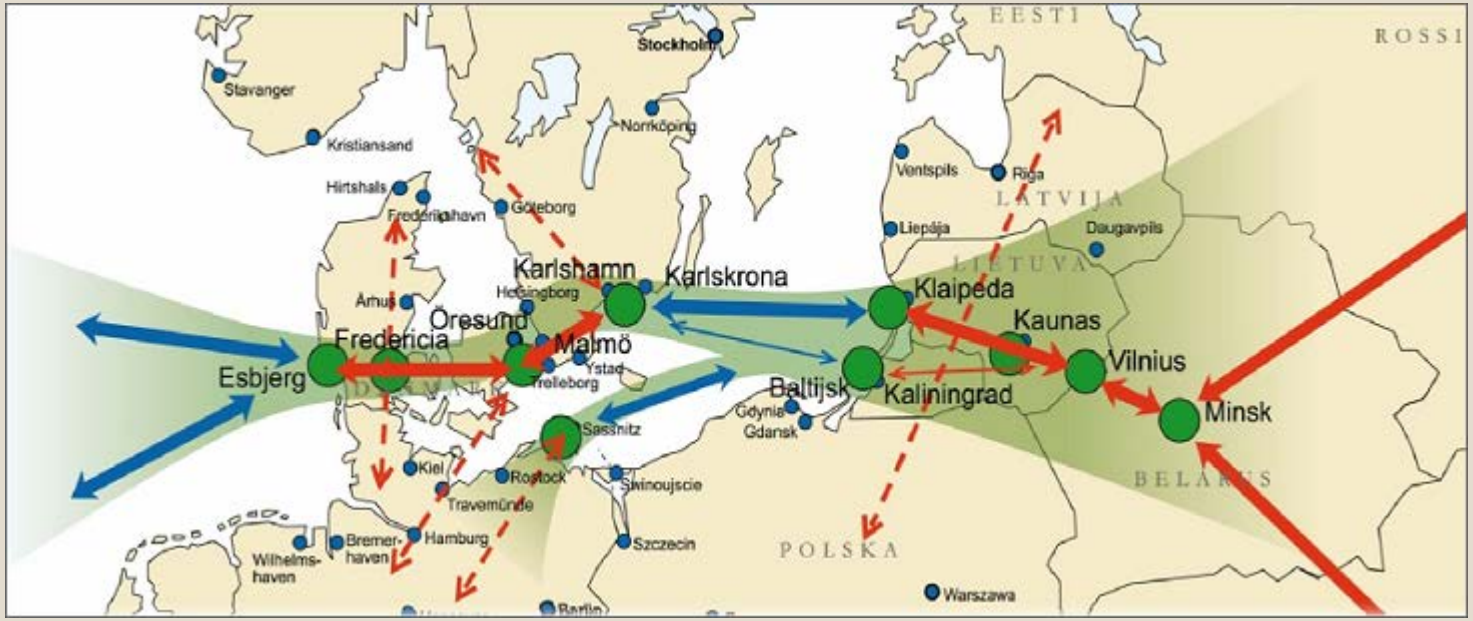
- Implementation projects for developing and testing green corridor concepts in EU context
  - **Green Corridor** Swedish Logistics Forum
  - **East-West Transport Corridor** BSR Interreg IVB
  - **Scandria** BSR Interreg IVB
  - **North-East Cargo Link** BSR Interreg IVB
  - **Transbaltic** BSR Interreg IVB
  - **BSR Transport Cluster** BSR Interreg IVB
  - **Code24 (Rotterdam – Genoa)** NEW Interreg IVB

Characteristics of Green Corridor Concept

- co-modality
- adequate transshipment facilities (hubs development)
- innovative transport units and vehicles
- advanced ITS applications (intelligent transport systems)
- economies of scale with bundled cargo
- fair and non-discriminatory access

- GTC shall deliver transport solutions that are more economically, ecologically and socially viable than other (non-green) corridors

East-West Transport Corridor

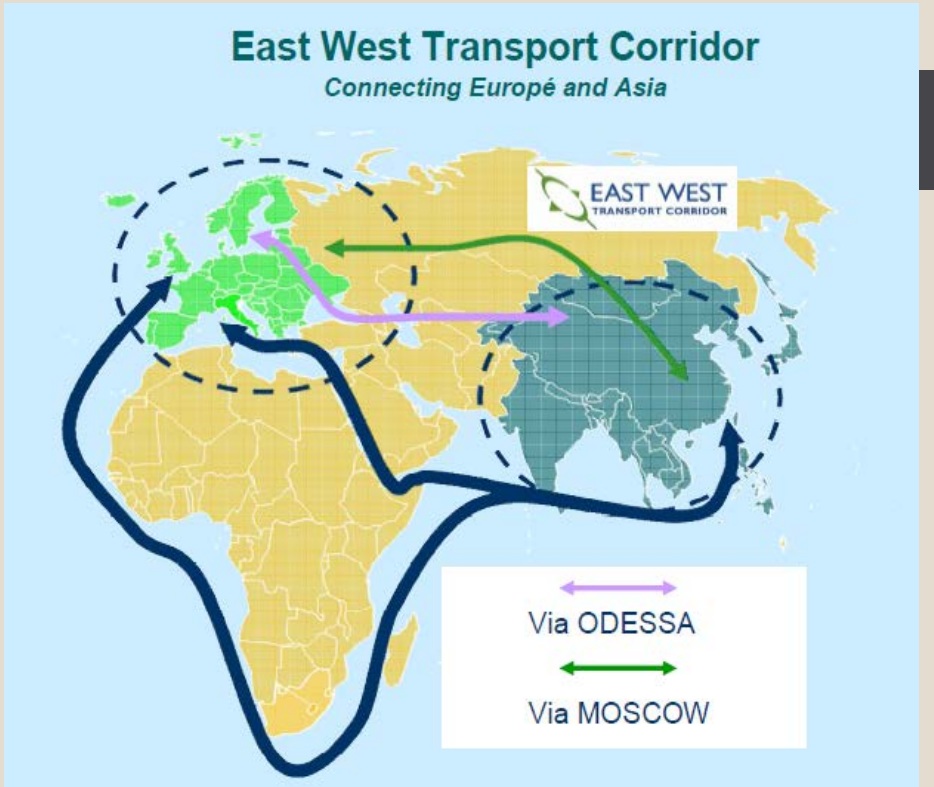


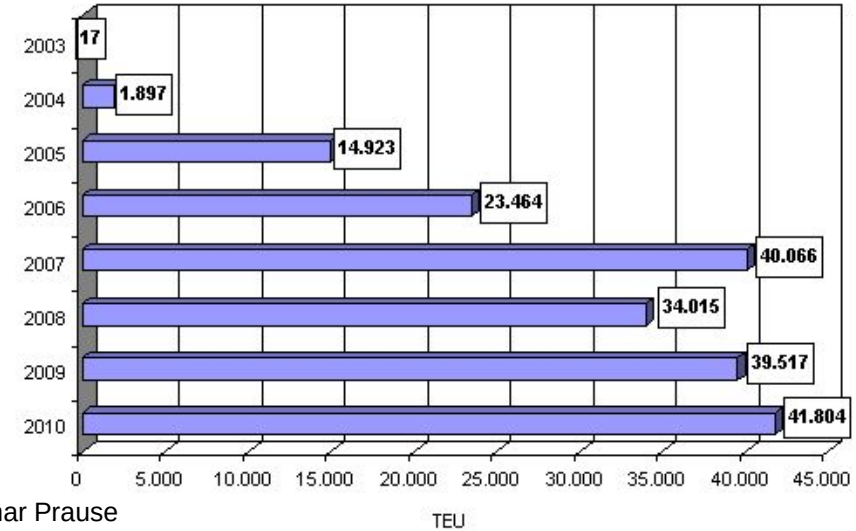
- *Green Corridor Project with first "Green Corridor Manual"*
- *Linking South Baltic Sea and Black Sea (beyond EU)*
- *Special Focus on Short Sea Shipping and Trains*
- *Backbone: Shuttle Train "Viking"*
- *Development of Hubs along the Corridor*
- *Pan-European Perspective (EU till Far East)*

EWTC Perspectives

Container Shuttle Train „Viking“

Distance Klaipeda - Ilyichevsk - 1734 km, Journey time: 55 hours





EWTC2: Manual & KPIs

- EWTC2 Project developed the first Green Corridor Manual including KPI set for monitoring corridor performance

Operational
Enabling

Operational indicators
aiming at optimizing on-going transport flows with regard to their overall sustainability performance.

Enabling indicators
to be monitored in a corridor dashboard, where the aim is to optimize long-term development with regard to sustainability performance.

Performance areas	EWTC	SuperGreen
Economic efficiency	**Indicator areas**	
	Total goods volumes	Relative transport cost [€/tkm]
		Frequency (number of services per year) [number]
	On time delivery	Reliability (on time deliveries)[%]
		Transit time [hours]*
	Corridor ability and capacity	
Environmental efficiency	**Indicator areas**	
	Total energy used	
	Greenhouse gases, CO_2e	Carbon dioxide; CO_2 [g/tom]
	Engine standards	Sulphur oxide, SO_X [g/1000 tkm]
	ISO 9001 dangerous goods	
	Alternative fuels filling stations	
Social efficiency	**Indicator areas**	
	ISO 31 000**	
	ISO 39 000**	
	Safe parking	
	Common rating systems***	
	Fenced terminal	

* Alternatively, average speed in km/h

Realisation problems I

- **Realization of the creation of a fair and balanced transport spot market** represents a task far beyond a technical question, since the implementation is related to the **political question** of convincing the current **big logistics players to open their closed ICT systems** and to **integrate** these systems **into a common logistics platform** of the green transport corridor, which is directly related to a loss of their influence and market power.

Realisation Problems II

- Another challenge for the whole green corridor is related to the **creation of an open data base** within the green corridor ICT system **comprising freight tariffs and contracting conditions** in order to be able to build green corridor spot market for logistics services. This requirement is related to the implementation of **openness, transparency and trust** among the stakeholders, which is rather an organizational or political task belonging to the sphere of the “soft factors” of the green corridor.

Realisation Problems III

- Corridor governance & management
  - TransGovernance Project
    - multi-level governance, corridor management models
  - Ownership models for common resources
  - Anti-Trust limitations
  - Common KPI-systems (*GTC balanced scorecard*)
  - Corridor marketing & branding
- “Soft logistics”
  - Knowledge management & Integrated ICT – systems
  - Intercultural topics
  - Networking, region & meso-logistics
    - Coopetition, cluster aspects

Organisational framework conditions of Green Transport Corridors

- Frame conditions for integrated green corridor ICT systems
  - **open** architecture,
  - oriented on **standards**,
  - focus on **inter-operability** and **co-modality**,
  - **independent** of technology,
  - endorsed and adopted by major freight ICT-systems providers and logistics operators,
  - support the European transport and logistics system to be more efficient and environmental-friendly
  - creation of a **fair and balanced** transport spot market within the corridors enabling market leaders and SMEs to interact at a low cost.

Source: Prause and Hunke (2014)

But how to measure ?

Ongoing research

- Green Corridors as tubular clusters
  - Integration of logistics clusters into green corridors
- The corridor is a conglomeration of different stakeholders which act along a defined geographical area in order to achieve different goals but with the same objective to reduce costs, increase efficiency, minimize environmental impact and create sustainable logistics solutions.
- Green corridor governance and management structures should be powerful and efficient
  - Management Control Systems needed

Green transport corridor as a tubular service cluster

Logistics Clusters, Yossi Sheffi (2013)

- “logistics intensive clusters” are agglomerations of several types of firms and operations providing logistics services and logistics operations of industrial firms and operations of companies for whom logistics is a large part of their business.

- Such logistics clusters also include firms that provide services to logistics companies like maintenance operations, software providers, specialized law firms or international financial services providers.

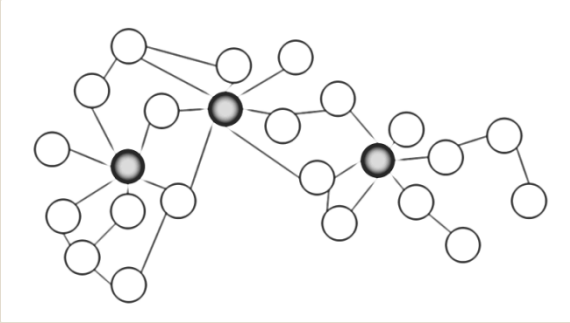


Figure 1. Transport corridor in social network theory

Figure 2. Green corridor as tubular Cluster

Stakeholders of Green Corridors

- ‘‘persons or groups that have, or claim ownership, rights, or interests in a corporation and its activities, past, present, or future.’’ Clarkson (1995)
- Hubs:
  - Ports and logistic centres
  - Logistic forwarders
  - Political institutions on several levels
- “Secondary stakeholders are those who influence or affect, or are influenced or affected by, the organisation, but they are not engaged in transactions and are not essential for its existence.”
  - media
  - competing companies
  - natural environment and future generation (Wheeler & Silanpää, 1998)

SCM Management & Governance: Balanced Scorecard Approach

Perspective	Strategic target	Indicator	Measures
Financial Perspective	Increase return of SC	Increase RoA of SC by x %	Outsource warehousing Reduce working capital
	Try to achieve cost ledership	Reduce logistics costs in SC per unit by x %	Bundling of partner capacities
Process Perspective	Max. lead time client: 10 days	Reduce SC lead time to 10 days	Cross partner process optimization
	Increase flexibility of operations	Increase freezing point in % of lead time of SC	Flexible parts, postponement
Perspective of Cooperation Intensity	Increase data exchange between SC partners	Number and frequency of exchanged data sets	Improve IT - networking of SC partners
	Increase coordination between SC partners	Number of necessary coordination meetings	Systematic management of notes and minutes
Perspective of Cooperation Quality	Increase trust and satisfaction level between SC partners	Establish indicators for trust and satisfaction	Define common visions and guidelines
	Increase cooperation quality	Number of uncooperative solved conflicts	Establish „referee“ for the SC

Source: Sydow and Möllering, 2013

Green Corridor Balanced Scorecard

- Sustainability perspective
  - Economic efficiency
  - Environmental efficiency
  - Social efficiency
- Growth perspective
  - Innovation activities
  - New services
  - Green corridor stakeholder fluctuation
  - TO of new services
- Cooperation intensity
  - Data exchange
  - Coordination needs
- Cooperation quality
  - Openness
  - Trust level
  - Transparency level
  - Conflict level

Conclusions

- The concept of Green Transport Corridor plays an important role in the European transport policy but a powerful management control system for those corridors in still missing.
- Even for supply chains a literature review reveals that no integral theory or conceptual framework papers about supply chain controlling exist in the leading English speaking journals.
  - The situation is slightly different among German speaking scholars, since a German supply chain controlling concepts exists in German literature.
- By understanding green corridors as a regional network, which enjoys supply chain characteristics, methods of network-oriented controlling and supply chain controlling can be applied. In network-oriented controlling the balanced scorecard concept of Kaplan and Norton (1996) has been successfully adapted and further developed.
- An important step towards supply chain and network-oriented controlling was established by Weber (2002), who created a cross-company balanced scorecard for a supply chain, which consisted of four perspectives including:
  - the financial perspective,
  - the process perspective,
  - the perspectives of cooperation intensity
  - the cooperation quality.

  The two cooperation perspectives describe the "hard factors" and "soft factors" of the cooperation
- Green Corridor Governance & Management Models are still under research but the approach of Weber for Supply Chains can be further developed to tackle a balanced scorecard proposal for Green Corridors

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