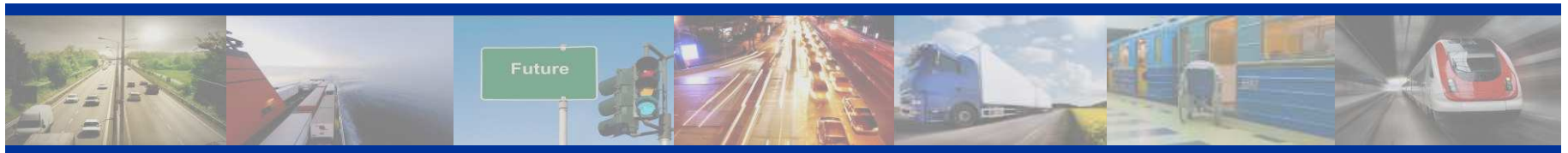




United Nations Economic Commission for Europe  
Transport Division

# Supply Chain Challenges for National Competitiveness through Transport

24th Session of the Working Party on Transport Trends and Economics  
Geneva, 6-7 September 2011





# Objective, scope of the project and the timeline

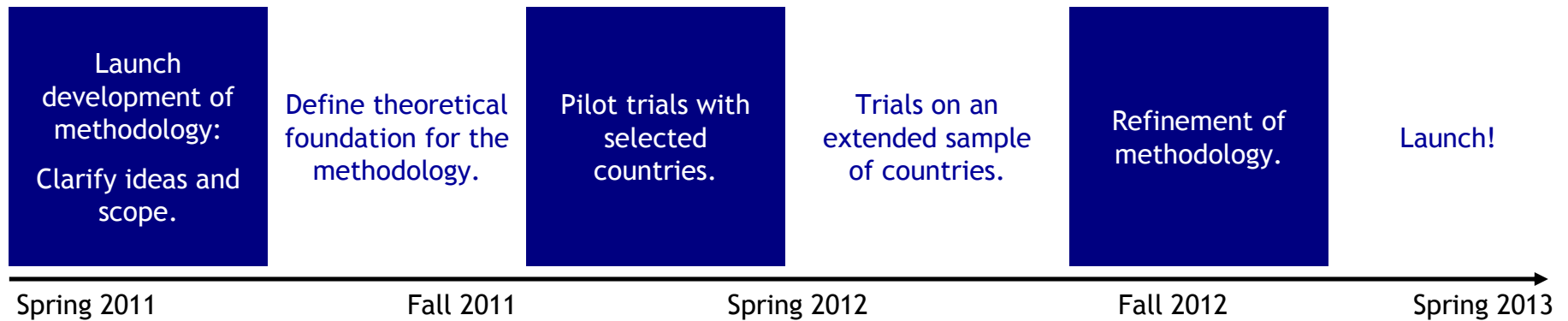
## → The situation today

1. No standard approach for measuring the quality of transport services.
2. Many approaches, but methodology is not transparent and rarely builds on a systematic idea.

## → Our role:

1. Build a transparent and systematic methodology for assessing the quality of transport services.
2. A methodology that can be used as a baseline and a reference point.

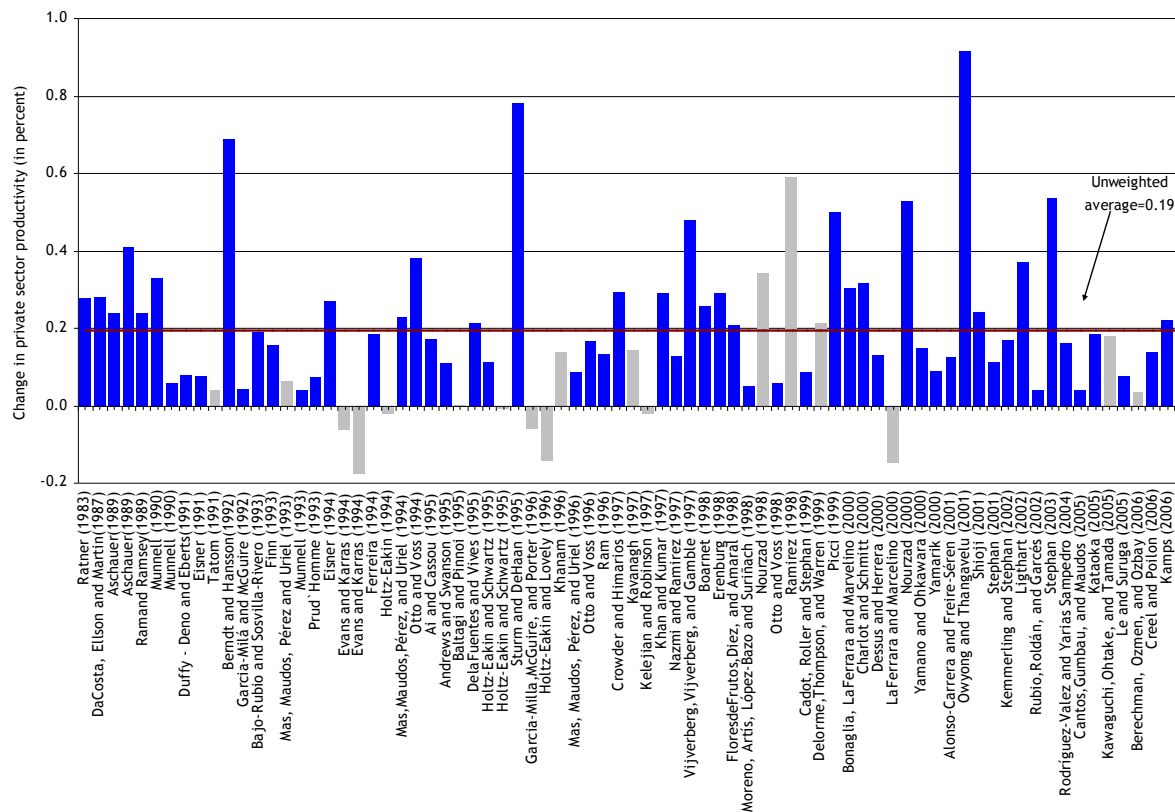
## → Timeline:



## Impact on private sector productivity of a 1% increase in public capital

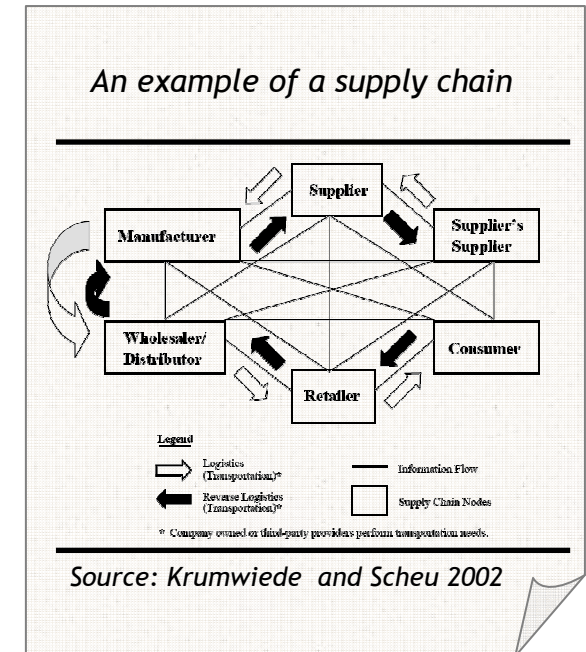
The need for a systematic methodology

- There is ample evidence of a positive relationship between the quality of transport and economic development.
- The role of transport is complex, heterogeneous and multidimensional.
- How do we measure the quality of transport?
- How can we evaluate if we don't know how to measure?
- Is there any national experience?



## The point of departure

- Before we can measure we need to understand
- What is the role of transport in modern supply chains and for national competitiveness?
- **Challenges:**
  1. The role of transport depends on the economic development, the geographic characteristics and the dominant sectors in the country.
  2. Supply chains and logistic system are complex and standard definitions are difficult and to some extent inappropriate.
  3. Academic (and non-academic) literature on this topic is relatively rich, but not very systematic.
  4. Data availability varies considerably from country to country.



## The existing methodologies

- Transport is often included in reports and benchmarks
- A wide range of transport related indicators are used
- General challenges
  1. Mostly supply indicators
  2. No systematic approach -> rarely an explanation why the selected indicators were used
  3. No transparency -> data usually not available publicly

### 4. As a result:

- ➔ No consistency in outcome
- ➔ For Italy, the infrastructure is rated in top 22% in WEF2010 and in top 55% in IMD2010

Treatment of transport in six selected reports (all reports are from 2010)

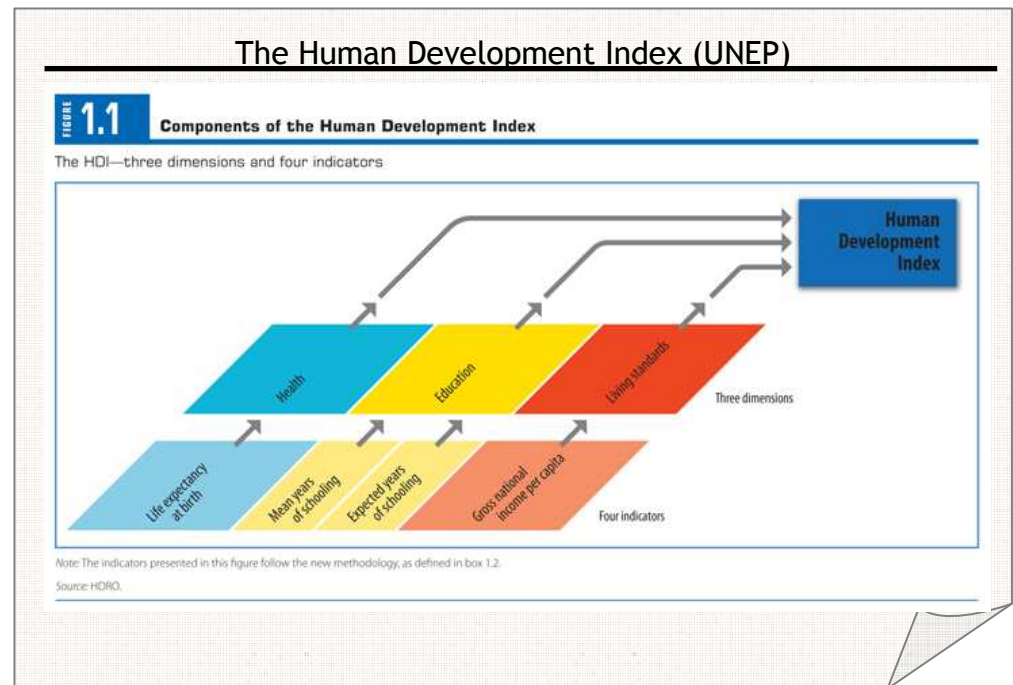
	Supply	Quality	Efficiency	Costs	Time	Reliability	Logistics	Available IT	Border crossing	Security	Environmental sustainability	Number of countries included	Rank of Italy
WB Logistics Performance Index		✓	✓	✓	✓	✓	✓	✓	✓	✓		155	22
WB Doing Business Index				✓	✓				✓			183	59
WEF Global Competitiveness Rep.	✓	✓										139	48
IMD World Competitiveness YB	✓		✓	✓							✓	58	40
Lisbon Scorecard	✓		✓								✓	25	23
EIU Doing Business Ranking	✓	✓	✓									82	47

## Prerequisites for a systematic approach

1. Understand the role of transport in modern supply chains
2. Clear objective of what kind of measurement instrument we want to develop.
3. Rigorous translation from understand the role of transport to a model to data and to aggregation.
4. Transparency

## Approaches

- (1) A complex detailed approach
- (2) A simple approach (a parallel to HDI?)





# Understanding the new role of transport

“Understanding the modern role of transport” - note by the secretariat

- Crucial step in development of a methodology
- Not a straightforward, not a simple explanation
- Lack of systematic approach in literature
  
- Evaluates the existing literature and systematizes the findings, with references to academic and non-academic literature
- Describes the methodology used for the review
- Presents the result of the literature review and:
  - Summarizes the evidence on how transport influences the society in general
  - Evaluates the importance of transport within the supply chain
  - Reviews the role of transport in logistics
  - Evaluates the characteristics of each mode of transport and their role in society, logistics and in supply chains
  - Profound analysis of each mode of transport to assess its characteristics
  - Assesses characteristics of cross-modal aspects of transport
  
- Presents a systematic overview of the role of transport in a schematic way

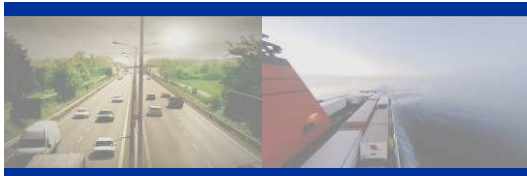


# Understanding the new role of transport - Conclusions

**Table 5.1:** Summarizing findings on the role of transport

<b>Conclusion 1</b>	Transport is important for society. It increases competitiveness and social inclusion.
<b>Conclusion 2</b>	Transport is important for the overall performance of supply chains.
<b>Conclusion 3</b>	<p>Transport is an important element of logistics:</p> <ul style="list-style-type: none"> <li>(i) Transport costs are a major cost component of logistics (Tseng et al., 2005; Gunasekaran et al., 2004; Stajniak and Romanow, 2008)</li> <li>(ii) Transport can reduce the need for warehousing through time compressions (reliability, just-in-time delivery and real-time information) (Morash and Clinton, 1997)</li> <li>(iii) Transport can improve logistics efficiency through dynamic effects by promoting clustering of firms, leading to a greater degree of proximity in production (Burmeister and Colletis- Wahl, 1997; Krugman, 1991).</li> </ul>
<b>Conclusion 4</b>	<ul style="list-style-type: none"> <li>(i) Transport should be divided into maritime, air and inland transport. Because: air and maritime transport efficiency depends on the quality of network nodes (ports), while the inland transport performance depends on the quality of the network that connects nodes (tracks, roads, channels, etc.).</li> <li>(ii) Air and road transport are flexible, fast, but expensive modes and will therefore be more efficient for high value per weight goods, while IWT, rail and maritime transport are relatively inflexible, slow, but cheap and with a high carrying capacity. These modes should therefore be used for goods with a low value per weight or when transport needs are very constant.</li> </ul>
<b>Conclusion 5</b>	<p>Air transport is characterized by:</p> <ul style="list-style-type: none"> <li>▪ flexibility</li> <li>▪ speed</li> <li>▪ high costs</li> <li>▪ no network requirements</li> <li>▪ dependent on airports (network nodes)</li> <li>▪ dependent on integration with other transport modes</li> <li>▪ mainly used for high value per weight goods</li> <li>▪ is dependent on inland modes for engaging in Just-In-Time and door-to-door services.</li> </ul>
<b>Conclusion 6</b>	<p>The role of sea transport is characterized by:</p> <ul style="list-style-type: none"> <li>▪ high carrying capacity</li> <li>▪ low costs (while importance of costs is ambiguous)</li> <li>▪ transport of low value per weight goods</li> <li>▪ transport of goods with constant demand</li> <li>▪ inflexible</li> <li>▪ slow</li> <li>▪ quality depends on reliability</li> <li>▪ quality depends on access to real-time information</li> </ul>

*Continued on the next page*





# Understanding the new role of transport - Conclusions

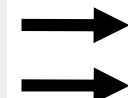
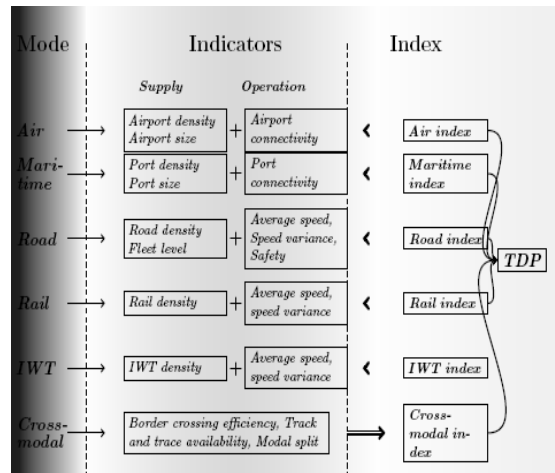
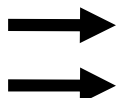
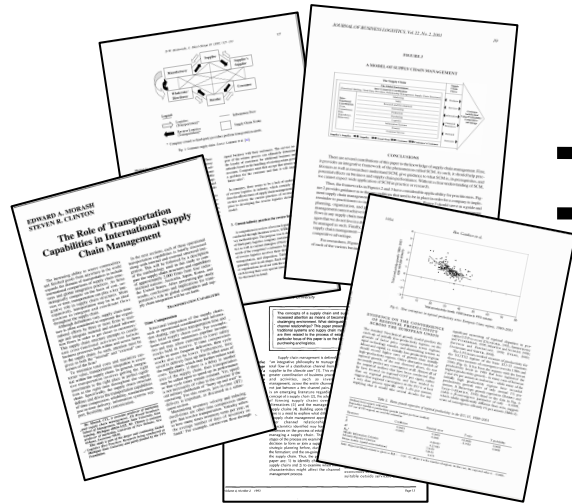
**Table 5.1 (continued): Summarizing findings on the role of transport**

<b>Conclusion 7</b>	<p><i>Inland transport has a number of common characteristics, these are:</i></p> <ul style="list-style-type: none"> <li>▪ <i>connecting air and maritime transport to the final market</i></li> <li>▪ <i>dependent on network paths</i></li> </ul> <p><i>Rail transport is characterized by:</i></p> <ul style="list-style-type: none"> <li>▪ <i>a high carrying capacity</i></li> <li>▪ <i>low operational costs, but high maintenance and investment needs</i></li> <li>▪ <i>high energy efficiency</i></li> <li>▪ <i>high safety</i></li> <li>▪ <i>inflexibility</i></li> <li>▪ <i>reliability</i></li> </ul> <p><i>Road transport is characterized by:</i></p> <ul style="list-style-type: none"> <li>▪ <i>a low carrying capacity</i></li> <li>▪ <i>high operational costs, but low maintenance and investment needs.</i></li> <li>▪ <i>low energy efficiency</i></li> <li>▪ <i>low safety</i></li> <li>▪ <i>flexibility</i></li> <li>▪ <i>reliability issues</i></li> </ul> <p><i>Inland waterways transport is characterized by:</i></p> <ul style="list-style-type: none"> <li>▪ <i>a high carrying capacity</i></li> <li>▪ <i>low operational costs</i></li> <li>▪ <i>inflexible</i></li> <li>▪ <i>high safety</i></li> <li>▪ <i>reliable</i></li> </ul>
<b>Conclusion 8</b>	<p><i>Quality, timeliness, reliability and flexibility are key aspects of transport and are regarded to be more important than costs. Standardization is desired in regular services and customization is desired in last-minute changes. Moreover country specific factors should be considered when assessing and describing the role of transport systems.</i></p>
<b>Conclusion 9</b>	<p><i>In addition to the characteristics of each transport mode transport performance depends on:</i></p> <ol style="list-style-type: none"> <li><i>(i) Safety</i></li> <li><i>(ii) Security</i></li> <li><i>iii) Social responsibility</i></li> <li><i>iv) Environmental Performance</i></li> <li><i>(v) The access to real-time information on transport flows.</i></li> </ol>



# 6. Next steps

1. Translate the systematized knowledge into a model
2. Take model to data
3. Trials - > evaluate quality
4. Refinements
5. Develop final model



A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
2	Algeria	Country	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3	Algeria	Country	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
4	Algeria	Country	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000





Thank you for your attention



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Transport Division



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