Urban freight system in a dense urban unit

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Agenda

- Problem description
- Theory
- Methodology
- Empirical data
- Result analysis
- Discussion
- Conclusion
Problem description

- Urban freight system: A system to transport goods
  - Basis for the existing life style
  - Key role in supply chain
  - Influence the final cost of a product
  - Impact on the efficiency of economy
  - Environmental impacts

- Sustainable future----sustainable urban freight system
Research question

- **Changes** are certain
- Sustainable development
- A **tool** to judge relative sustainability

Research question:
- What are the **criteria** for a **sustainable urban freight system**?!
  - What are the applications of these criteria for an urban freight system?
- Requires a thorough understanding of the system
  - What are the shortcomings and **impacts** of today’s system?
Thesis approach

Downstream impacts

Upstream causes

Sustainability criteria for urban freight system
OECD:
“The delivery of goods in city and suburban areas, including the reverse flow of used goods in terms of clean waste”
Sustainability criteria

- Sustainable development
- What is sustainable and what is not?

- Belkema (2002)
  - “Translation of future generation demands into set of functional and operational criteria”

- Sahely (2005) — Urban infrastructure
- Foxon (2002) — UK water industry
Research Design

- Systematic combining
  - Analytical framework: **Urban freight system**
  - Theory: **Models, tools**
  - The case: **DenCity**
  - The empirical world: **Interview, observation**

Source: Dubois and Gadde, 2002
Data collection

- Literature review
- Interviews
- Observation in workshops and meeting
Interview

- Preparation:
  - Socio-technical systems
  - Sustainability transitions
  - Multi level perspective
  - Sustainability criteria

- Interview
Collected data

Basic human needs
  - Habitat loss
  - Users’ awareness
  - Segregated solutions
  - Policy
  - Rigid infrastructure
  - Quality of life
  - Market
  - Security
  - Economic development
  - Adoptable
  - Culture
  - Obstacle for innovations
  - No tough regulations
  - Time loss

To act versus to talk
  - Infrastructure
  - Visual intrusion
  - Health
  - Costumer acceptance
  - Landuse planning
  - Rigid transportation network
  - Emission
  - Non-renewable energy
  - Livability
  - Noise

Global warming
  - Future generation demands
  - Evaluation
  - Public awareness
  - Cheap unsustainable solutions
  - Revenue model
  - Equity impact
  - Stress on environment
  - Damage to infrastructure

- Market is driving policy
- Resource consumption
- Non-homogenous system
- Space efficiency
- Car dependency
- Non-renewable energy
- Consequences are unknown
- Basic human needs
- Time loss
- User behaviors
## Process

<table>
<thead>
<tr>
<th>Downstream impacts</th>
<th>Upstream cause</th>
<th>Criteria</th>
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<td>Noise</td>
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<td>Vibration</td>
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<td>Liveability</td>
<td>High interaction between vehicles and sensitive areas</td>
<td>Minimum interaction between vehicles and residents while providing adequate and high quality services.</td>
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<td>Time loss</td>
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<td>Accident</td>
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<td>Safety</td>
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<td><strong>Sustainability Criteria</strong></td>
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<tr>
<td><strong>Minimum interaction</strong> between <strong>vehicles</strong> and <strong>residents</strong> while providing adequate and <strong>high quality services</strong>.</td>
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<td>High quality of services that are <strong>equitably available</strong>, <strong>accessible</strong>, and <strong>affordable</strong> by all at <strong>all levels</strong> regardless of the gender, background, ethnicity, and economic status.</td>
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<td>Should be <strong>durable</strong>, <strong>flexible</strong> and <strong>adoptable</strong> to changes at a reasonable cost.</td>
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<td><strong>Emissions</strong> should be <strong>lowered</strong> to the level that do not violate the <strong>nature’s closed loops</strong>.</td>
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<td><strong>Material</strong> and <strong>resource</strong> usage should be <strong>efficient</strong>, effective, and in the limit of <strong>earth tolerance capacity</strong>.</td>
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<td>Provides <strong>homogenous</strong> and inter connected <strong>districts</strong></td>
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<td><strong>Decision making</strong> should be <strong>participatory</strong> and <strong>inclusive</strong> at <strong>all levels</strong> while having a holistic view over the system.</td>
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Discussion

❖ Criteria

❖ Abstract or operational?
❖ Abstract or realistic?
❖ Guidance or solution?
❖ Simple and comprehensive

❖ Barriers

❖ Fragmented solutions
❖ Main focus on passenger transportation
❖ Rigid infrastructure
❖ Normative trends are dominant
❖ Market is major driving force
Conclusions

- A tool to **evaluate** relative **sustainability**
- **Incorporate sustainability** in our practices
- **Development** versus growth
- **Mindsets**
- **Flexible** platforms
- Sustainable urban freight system for a sustainable city
Thank you!