

Research at LiU – Sustainable (Green) Logistics

Professor Maria Hüge-Brodin, Green Logistics Management

Linköping, 10 May 2017

Research projects, past 5 years - ongoing

- Green and sustainable logistics (based in the LQ group)
- Green logistics + aerodynamics – initial initiatives
- Other related research at LiU

Green logistics

5 themes of research into sustainable (mostly green) logistics

1(5) LSPs – service development and business models *(K. Isaksson, C. Maack, M. Hüge-Brodin)*

- How can LSPs green their service offering? (-2014)
 - Create general service development context
 - ...and then add green aspects
 - Focus on learning (internal and customers)
 - Further knowledge exchange with external stakeholders
- How can LSPs develop a business model supporting environmental improvements? (-2014)
 - Important to include all activities
 - Operations as well as strategies
 - Common problem: focus on external info
 - CSF: dynamic capabilities / greening



2(5) LSPs – process management for sustainable development⁵

(P. Cronemyr, P. Navarro, M. Hüge-Brodin)

(2016-ongoing)

- How could LSPs improve their environmental performance by applying process management?
- 3 Phase project
 - Customer service delivery process
 - Improvement process
 - Learning process
- Case studies and action research
- Funding from the Kamprad foundation



3(5) Projects (some of...) on co-ordination between LSPs and shippers *(U. Sallnäs (Martinsen), M.*

Huge-Brodin)

- **LSP – Shipper interface** – for improved sustainability (-2014) (w. Prof Stentoft-Arlbjörn, USD & Prof Huemer, BI)
- Towards greener supply chains: **Inclusion of environmental activities in relationships between logistics service providers and shippers** (Martinsen, PhD thesis, 2014)
- GSCM coordination Supplier-shipper → LSP-shipper →? (2014 – ongoing)
- Various research initiatives in collaboration with E. Sweeney, Aston & P. Evangelista, IRiSS-CNR

4(5) City Logistics

(M. Abrahamsson, M. Björklund, H. Johansson)

- Develop models for city logistics to support
 - Development and design of cl systems
 - Introduction of cl systems
 - Business models for city logistics, for all types of related actors
- Balance companies costs and societal costs – who will pay?
- Participants: LiU, VTI (Swedish ...), several municipalities, industry organisations for trade and for transport, and Closer.

5(5) Transport related CSR – for increased sustainability and innovation

(M. Björklund, H. Johansson, Prof H. Forslund - Linnaeus Uni)

- Identify, describe and analyse innovations for more efficient/effective business and/or improved CSR performance
- Case studies and workshops
- Practical focus – impact in terms of new processes, thinking patterns, methods and knowledge transfer

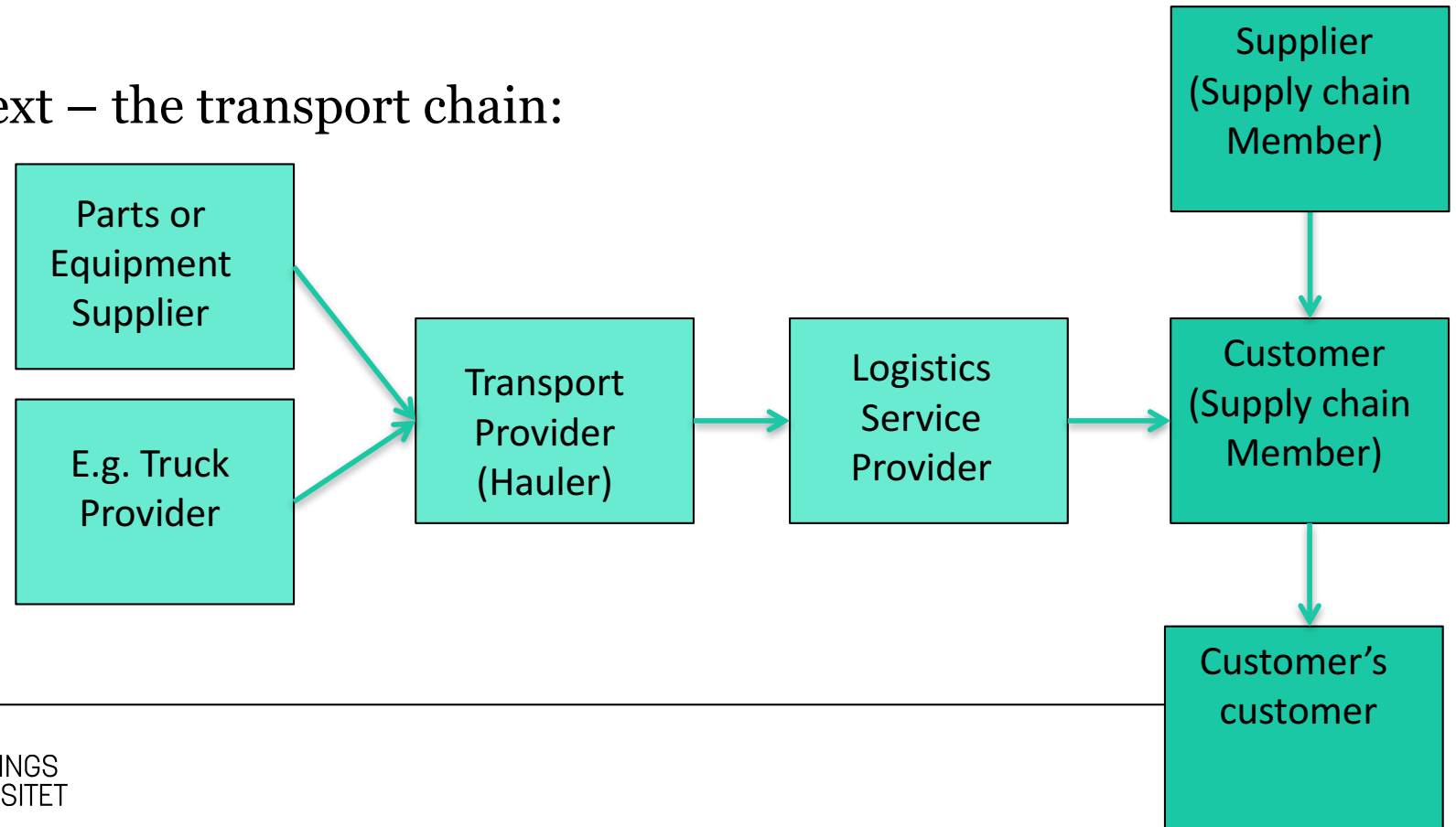


Logistics & Aerodynamics

Overall purpose

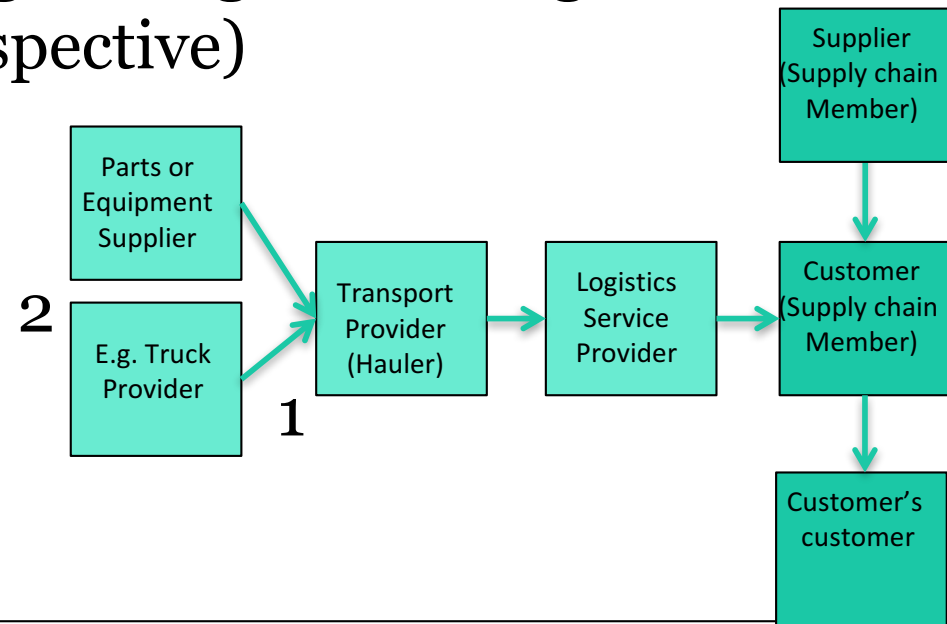
To address the slowness the greening of logistics by studying the interaction between new technology, logistics and business

The context – the transport chain:



Two studies and two research tasks

- 1) Long-term success in greening logistics and transport operations (hauler / trp provider perspective)
- 2) Identify barriers and enablers for greening logistics through extended use of "greening" technologies (Technology provider perspective)



Overview – two studies

	1) Successful Hauler	2) Why not use greening technology?
Method	Case study	Case study including customer survey, kind of action research
Theory/Litt field	RBV and Dynamic Capabilities	Green Logistics: Drivers and Barriers
Partners	(Alfredsson Transport)	PLS (builds truck bodies)
Time plan	First stage finilised in Sept 2015, next stage 2017 to see long-term changes and effects	Case study including survey ongoing.
Output / Publ.	Presentations at Nofoma 2014 and SLOW 2015, paper at LRN 2015	Presentation at SRF Workshop, December 2016. Next step due to response rate.

Other LiU research related to green logistics

Several LiU-actors relate to green/sust logistics

14

- Communication and Transport Systems (Quant. Logistics, Traffic systems, Traffic Safety& Environment)
- Sustainable Energy Systems (Biomass projects, Biofuel, Energy efficiency in industries, Sustainable cities)
- Environmental Technology & Management (Industrial Symbiosis, Product-Service innovations, Sustainable urban development)
- Industrial Marketing (Wood industry projects, Business models for service, growth in SMEs)
- Machine Design and Fluid & Mechatronic Systems (conceptual design, product optimization, fluid power, pneumatics)
- Thematic studies – Environmental Change (a platform for social contemporary problem-oriented and critical-interpretive environmental research...inter-disciplinarity)
- Visualisation center
- NSC
- WASP – Wallenberg Autonomous Systems Program

WASP - Wallenberg Autonomous Systems and Software Program

- Largest individual research program in Sweden ever
 - 1950 MSEK (more than \$ 200 million) for 10 years
- Linköping Univ. (host), Chalmers, KTH, Lund Univ.
- Includes:
 - Autonomous driving
 - Intelligent and efficient transport systems
- Autonomous systems in interaction with humans
- Started Sept 2016