

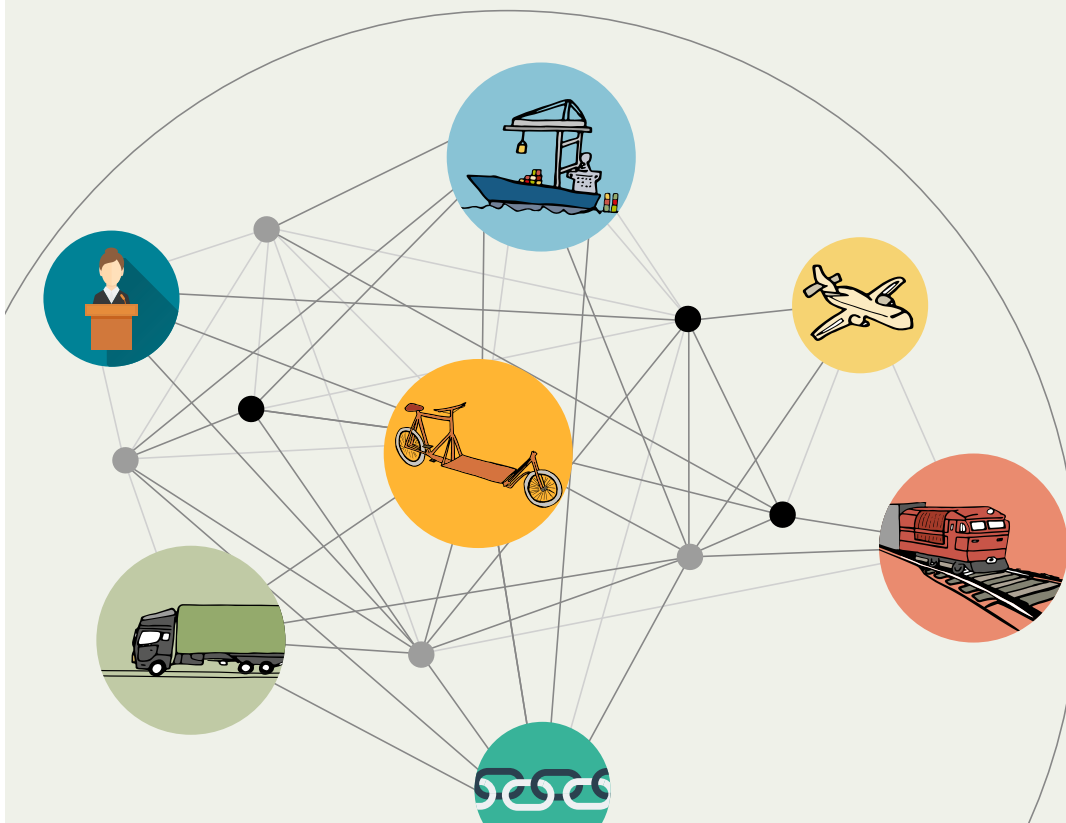
Pro-DEENLA

LEUPHANA
UNIVERSITY OF LÜNEBURG

Steinbeis Innovation Center
Logistics and Sustainability

“COMBINED TRANSPORT!?” LEARNING MODULE

NOTES FOR
TRAINERS/TEACHERS

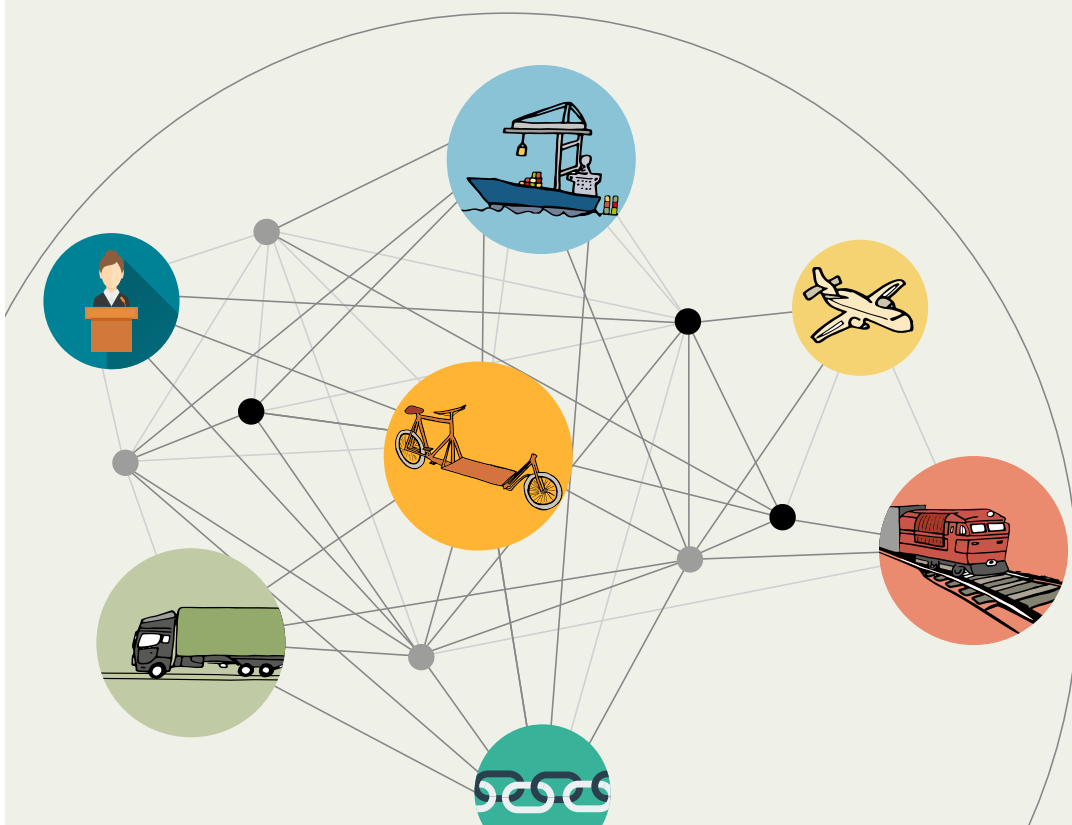


SPONSORED BY THE

CONTENTS

NOTES FOR TRAINERS/TEACHERS

Learning module context	3
Contents of the learning module	4
Summary of the learning module	6
Simulation	8



LEARNING MODULE CONTEXT

The following learning tasks relating to the topic of “Combined transport!?” are aligned to the contents of the occupational profile position “Forwarding and logistics services” in the general training plan for vocational education and training in the occupation of freight forwarding and logistics services clerk.

Within the scope of the occupational profile position “Forwarding and logistics services”, trainees are, for example, required to consider the area of the shipment and transportation of goods and to compare the effectiveness of haulage via such routes as road, rail, air freight, and inland and maritime shipping. They are also asked to stipulate transport connections according to traffic geography and economic criteria and to evaluate the possibilities for deploying combined transport. Likewise, there is scope to address the linking up of services from different modes of transport.

This learning module comprises three learning tasks and focuses on actions which are aligned to sustainability in the shipment and transport of goods. Whereas the first learning task considers combined transport at a conceptual level, the second task proceeds to look explicitly at the benefits and drawbacks of the individual modes of transport. The third learning task explores combined transport at a traffic policy level in order to provide an understanding of the role played by political institutions and different interest groups in respect of a future-oriented transport network.

CONTENTS OF THE LEARNING MODULE

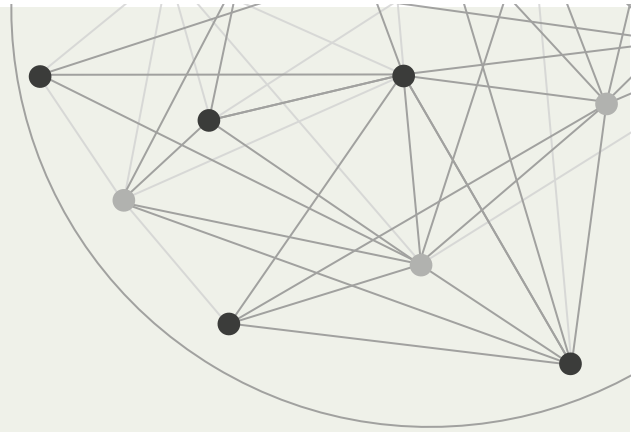
The "Freight Transport and Logistics Masterplan" produced by the Federal Ministry of Transport and Digital Infrastructure describes the way in which goods traffic and logistics are structured as being key to a sustainable transport policy. Policy makers and service providers in the transport and logistics sector are facing both ecological and infrastructure challenges as traffic volumes continue to rise. The choice of which mode or means of transport to use is one of the factors crucial to the nature and extent of the impact that economic activities will exert on the social and ecological environment. Against this background, the federal government adopted new funding guidelines in 2017 with the aim of strengthening combined transport and intermodal transport routes. The overarching objective of the federal government in the process is to combat climate change by reducing CO₂ emissions by 40 per cent by 2020. The target set for 2050 is as high as 80 to 95 per cent.

In 2015, the transport sector accounted for a proportion of 18 per cent of overall CO₂ emissions. However, this figure could increase dramatically if the amount of freight transport continues to rise. Better levels of efficiency in the commercial vehicle sector, e.g. as a result of technical improvements, are being offset by the ongoing increase in traffic volume. Transport-related CO₂ emissions are therefore stagnating. In 1990, the sector was responsible for 163 million tonnes of CO₂ equivalents. The corresponding figure for 2014 was 164 million tonnes. Environmentally friendly and future-proof transport and logistics networks are, however, a prerequisite for successful and sustainable business development. This is particularly true for a country like Germany, which is deeply integrated into global economic cycles and is also one of Europe's key transit hubs by dint of its central position. However, responsibility for designing transport and logistics networks that are aligned in a more environmentally friendly manner does not merely rest with the transport and logistics service providers. Far-sighted

political decision-making processes relating to the expansion and modification of the road, rail and waterway network form an even more important foundation for forward-looking transport and logistics networks. According to the current Federal Transport Infrastructure Plan, 49 per cent of all investments up until the year 2030 will be devoted to the roads. 42 per cent will be spent on the railways, and 9 per cent has been earmarked for the country's waterways. Nevertheless, there is no reason why transport and logistics service providers cannot already opt for a combined transport approach.

Combined transport makes use of the respective advantages offered by the various means of conveyance and combines these benefits to form a logistics chain that is both cost-effective and environmentally compatible. The terms "combined transport" and "intermodal transport" are often used as synonyms. Strictly speaking, however, intermodal transport refers to goods in the same unit (e.g. a container, semi-trailer, or full lorry), which are carried on two or more modes of transport. Combined transport, on the other hand, represents a sub-group of intermodal transport in that the main leg takes place via ship or rail whilst a lorry is used for the start and finish of the route. Combined transport is specifically defined by the United Nations as being a type of "intermodal transport where the major part of the [...] journey is by rail, inland waterways or sea, and any initial and/or final legs carried out by road are as short as possible" (UN/ECE 2001, p. 18). According to the German Promotion Centre for Combined Transport (SGKV), the various definitions of combined transport all have three crucial characteristics in common:

1. Goods are transported in a standard loading unit within an intermodal chain.
2. There is at least one switch between road, rail, inland waterway, or maritime route.
3. A systemic approach is in place to make changes of modes of transport easier.



From a business management point of view, the supposition might be that every switch between modes of transport, especially on continental routes, would entail extra costs and additional risks. However, combined transport can be seen as offering numerous advantages if we take an overall societal perspective of freight transport rather than adopting an isolated operational point of view. Placing a greater emphasis on railways and waterways can free up space for freight transported by road and also reduce transport-related emissions and noise pollution. Moreover, combined transport can also create economic benefits: in addition to the generally lower costs of mass modes of transport, the 44-tonne regulation, for example, also means that vehicles deployed on an initial or final leg or for the journey to the nearest terminal may operate at a total weight of 44 tonnes. Exceptions are also in place regarding bans on weekend driving, tax breaks for motor vehicles, and toll costs.

The decision to opt for a suitable means of transport or for combined modes of transport is based on various criteria such as the capacity of the means of transport, security aspects, costs, length of the route, speed and also the environmental sustainability. The various modes of transport offer the following main attributes:

1. Road transport offers a higher degree of flexibility than other modes of haulage, especially over the “last mile”. But there is also the disadvantage that volumes are lower, and this leads to greater environmental pollution.
2. Rail is particularly well-suited to transporting high volumes of heavy goods. The initial and final legs involved mean that transport takes longer than by road. This means that additional costs may be incurred – though volume advantages will compensate for these in certain cases.
3. The waterways also offer a mode of transport for large and heavy volumes and in addition represent a




very secure and reliable option. On the negative side, transport times are relatively long, and high costs are incurred by initial and final legs. The respective port infrastructures are a crucial factor in this regard (e.g. distribution and capacity of ports and the work processes involved). These exercise a major influence on the quality and speed of initial and final legs.

4. By definition, air freight does not constitute an element of combined transport. Nevertheless, it forms part of intermodal transport and is further characterised by rapidity, security, and high frequency. However, volume is low compared to modes of transport via rail and waterway. Transport by air is fast and safe, and this enables savings to be made in terms of capital commitment, packaging, and insurance. On the other hand, freight costs are high.

The transport and logistics sector can support the dissemination of combined transport by taking action at two levels. Firstly, it can make a major contribution to achieving a future-oriented combination of different modes of transport by the way in which it issues orders. Secondly, it can use its lobbying interests at a political level as a vehicle for seeking to secure the necessary general conditions for a sustainable transport and logistics network.

SUMMARY OF THE LEARNING MODULE

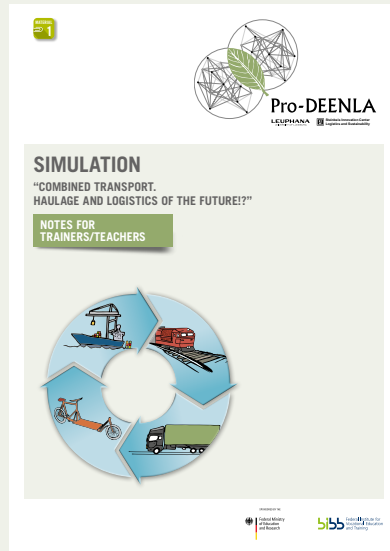
Classification under training regulation:	Forwarding and logistics services
Topic:	Combined transport!?
Type of learning task:	Basic learning task, link-up learning task, expansion learning task
Learning venues:	Workplace, company or classroom, inter-company learning venue
Learning arrangements:	Individual work, and pairs or group work
Target competencies:	<ul style="list-style-type: none"> - The trainees explain the concept of combined transport. - The trainees outline the advantages and disadvantages of different modes of transport. - The trainees discuss the advantages and disadvantages of the concept of combined transport, taking economical, ecological, and political perspectives into account.
Brief description and module context:	<p>In the basic learning task, the trainees begin by developing a summary of the concept of combined transport. They use this information as a basis for planning combined transport for the manufacture and delivery process of a bar of chocolate and research the extent to which this form of intermodal transport is used at their company. Within the scope of the link-up task, the trainees look at the benefits and drawbacks of the modes of transport of rail, waterway, road, and air by playing a board game entitled “Responsibility has the right of way”. They then reflect together on the findings and ideas they have obtained. In the simulation entitled “Combined transport. Haulage and logistics of the future!?” (expansion learning task), the trainees consequently take on a transport policy perspective. As interest groups or representatives of the political administration, they are faced with the task of negotiating their respective objectives for a sustainable transport infrastructure in the best possible way. The trainees subsequently evaluate the course of the game and reflect upon their findings with regard to everyday (company) life.</p> <p>This module builds on basic modules (e.g. “Sustainable development”) and places the focus on the concept of combined transport with a view to designing innovative delivery chains.</p>
Contents and tasks:	<ul style="list-style-type: none"> - Development and application of the concept of “combined transport” - Structured consideration of the benefits and drawbacks of the modes of transport of rail, road, waterway, and air - Discussion about and reflections on future-oriented transport policy from the perspective of various interest groups and political institutions
Materials required:	<ul style="list-style-type: none"> - Computer with Internet access - Scissors, glue, and at least four one-cent coins (for the board game “Responsibility has the right of way”)

LEARNING PHASES	SEQUENCE OF ACTIVITIES FOR LEARNERS	EXPLANATION OF LEARNING METHODS AND TECHNIQUES	NOTES ON RESOURCES
 THE INTRODUCTORY PHASE IS WELL-SUITED TO BE WORKED ON INDIVIDUALLY			
INTRODUCTORY PHASE	<p>Trainees need to begin by developing an understanding of the concept of combined transport before they are able to discuss the advantages and disadvantages of the individual modes of transport. For this purpose, they read an information text about which they answer key questions. They also plan combined transport for the manufacturing process of a bar of chocolate. Finally, they research whether and to which extent combined transport is used in their own company.</p>	<p>Trainees are provided with tips on how to draw up a chart. The aims here are to understand the concept of combined transport and to secure and pool the findings which have emerged (see Note 1).</p>	<p>It will be useful for trainees to have access to a PC computer in order to carry out research and create the graphic.</p>
 THE ANALYSIS AND DEVELOPMENT PHASE IS WELL-SUITED TO BE WORKED ON IN PAIRS OR GROUPS			
ANALYSIS AND DEVELOPMENT PHASE	<p>Once the trainees have undertaken detailed consideration of the idea of combined transport, they adopt a play-based approach to looking at the individual benefits and drawbacks of the individual modes of transport of road, rail, waterway, and air. The trainees use the board game "Responsibility has the right of way" to familiarise themselves with the possible advantages and disadvantages of the different modes of transport. They subsequently reflect upon their impressions and set out their findings in a table-based structure.</p>	<p>Trainees are provided with instructions to inform them how to play the game (see Note 3). They also receive tips on how to proceed if the game is to be played with more than four players (see Note 4). Trainees are also provided with a table, which they can use to structure and record their results (see Material 5*).</p>	
 THE PRESENTATION AND REFLECTION PHASE IS WELL-SUITED TO BE WORKED ON IN GROUPS			
PRESENTATION AND REFLECTION PHASE	<p>Once the trainees have addressed the concept of combined transport and looked at the individual modes of transport, they move on to consider the topic from a political perspective. They use a simulation entitled "Combined transport. Haulage and logistics of the future!?" to take on the roles of various interest groups and political institutions and to draw up arguments for a sustainable transport policy. The aim is to represent different interests in the best possible way during a plenary discussion and to negotiate as much financial support as possible from the federal government. The trainees subsequently evaluate the course of the game and reflect upon their findings with regard to everyday (company) life.</p>	<p>A game leader gives instructions for the simulation, providing an introduction to the game, laying out the game rules and how to play it and also providing information on the follow-up. The game may be led by the trainer or by an experienced trainee. The game leader is also responsible for administering and distributing any notes, key questions, etc. The materials in question are included with these notes.</p>	<p>It will be useful for the trainees to have access to the Internet in order to carry out research.</p>

* see Notes for Trainees/Students



SIMULATION



SOURCES:

- Arnold, Dieter; Kuhn, Axel; Furmans, Kai; Isermann, Heinz; Tempelmeier, Horst (2008):** *Handbuch Logistik [Handbook of logistics]*. 3rd revised edition. Berlin, Heidelberg: Springer-Verlag.
- Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit [Federal Ministry for the Environment, Nature Conservation and Nuclear Safety] (2015):** *Klimaschutz in Zahlen. Fakten, Trends und Impulse deutscher Klimapolitik [Climate protection in figures. Facts, trends and impetuses of German climate policy]*.
- Bundesministerium für Verkehr, Bau und Stadtentwicklung [Federal Ministry for Transport, Construction and Urban Development] (2008):** *Masterplan Güterverkehr und Logistik [Freight Transport and Logistics Masterplan]*. Berlin: BMVBS.
- Bundesministerium für Verkehr und digitale Infrastruktur [Federal Ministry of Transport and Digital Infrastructure] (2016):** *Aktionsplan Güterverkehr und Logistik – nachhaltig und effizient in die Zukunft [Action Plan for Freight Transport and Logistics – a sustainable and efficient future]*. Berlin: BMVI.
- Bundesministerium für Verkehr und digitale Infrastruktur [Federal Ministry of Transport and Digital Infrastructure] (2018):** *Kombinierter Verkehr. Umweltschonend, verkehrssicher, wirtschaftlich [Combined Transport. Environmentally friendly, safe, cost-effective]*. Available online at: <http://www.bmvi.de/SharedDocs/DE/Artikel/G/kombinierter-verkehr.html>. As at: 01.03.2018.
- Clausen, Uwe; Geiger, Christiane (2013):** *Verkehrs- und Transportlogistik [Traffic and transport logistics]*. 2nd edition. Berlin, Heidelberg: Springer-Verlag.
- DSLVL Deutscher Speditions- und Logistikverband e.V. [German Association of Shipping and Logistics Providers, DSLVL] (2015):** *Zahlen - Daten - Fakten aus Spedition und Logistik [Figures - Data - Facts from haulage and logistics]*. Bonn: DSLVL.
- Kummer, Sebastian; Schramm, Hans-Joachim; Sudy, Irene (2010):** *Internationales Transport- und Logistikmanagement [International transport and logistics management]*. Vienna: Facultas.
- SGKV – Studiengesellschaft für den Kombinierten Verkehr e.V. [German Research Centre for Combined Transport] (2018):** *Der kombinierte Verkehr [Combined transport]*. Available online at: www.sgkv.de/en/. As at: 01.03.2018.
- Statistisches Bundesamt [Federal Statistical Office] (2017):** *Statistisches Jahrbuch 2017. Kapitel 25 Transport und Verkehr [Statistical Year Book 2017. Chapter 25: Transport and traffic]*.
- United Nations (UN/ECE) (2001):** *Terminology on Combined Transport*. New York and Geneva.

IMPRINT

Leuphana University of Lüneburg, Business Education Unit, Universitätsallee 1, 21335 Lüneburg, Germany
 Steinbeis Innovation Center Logistics and Sustainability (SLN), Dresdener Straße 17, 74889 Sinsheim, Germany
Editorial staff: Prof. Andreas Fischer, Harald Hantke, Jens-Jochen Roth, Kristin Senneke, Jan Pranger, Michael Tietz
Design and print setting: Anke Sudfeld
Photos/Illustrations: Fotolia, Jan Pranger

LICENSE NOTE

This learning module is subject to the Creative Commons license "Attribution – ShareAlike 3.0 Germany (CC BY-SA 3.0 DE)".
 Explanation of the license: <https://creativecommons.org/licenses/by-sa/3.0/de/deed.en>