

READER - TRANSPORT AND ENVIRONMENT AND WHICH CONTRIBUTION EACH INDIVIDUAL CAN MAKE

Collection of the relevant contents for the slide set

"Transport and environment and the contribution each individual can make".

1. Transport and environment

Logistics plays an essential role in the economy as it ensures that the goods are transported from the raw material supplier via the producer to the end consumer. Although logistics encompasses many processes and activities, transport, and thus freight transport, can be identified as the most polluting sector. In particular, congestion and greenhouse gas emissions caused by freight transport can be identified as the most serious environmental problems in logistics in the EU.¹

In 2005, 23% of global CO₂ emissions were attributable to the transport sector. On an OECD country basis, the figure was 30%.² As shown in the figure below, transport was responsible for 23.2% of greenhouse gases in the EU in 2014.³

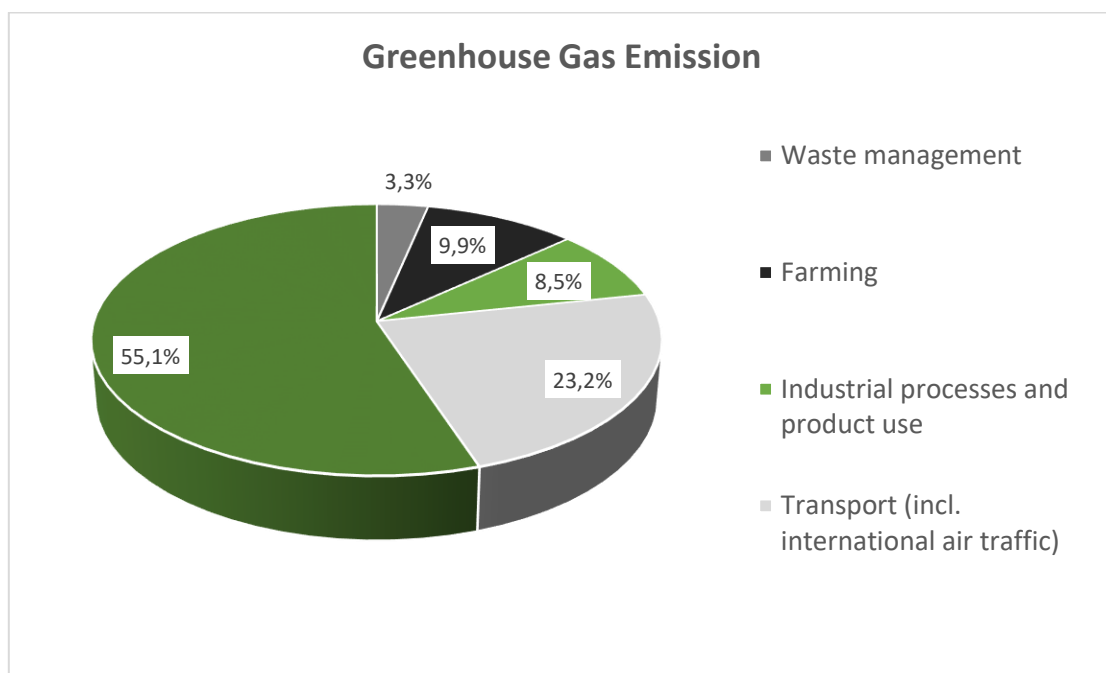


Figure 1 – Greenhouse gas emissions by sector in EU-28 (2014) (own graphic, source: Eurostat, 2016)

As an image analysis of the „Friends on the ROAD“ campaign shows, private individuals in particular negative characteristics with the truck, whereas entrepreneurs associate predominantly positive characteristics with the truck. For example, environmental pollution, particulate matter, noise and traffic pollution or obstruction are primarily associated with truck.⁴

A comparison of transport modes also shows that a large proportion of greenhouse gases are caused by trucks (see figure 2).

¹ Cf. Whiteing, 2010, p. 7

² Cf. International Transport Forum, 2010, p.7

³ Cf. Eurostat, 2016

⁴ Cf. Consent Markt- und Sozialforschung, 2014, p. 5f

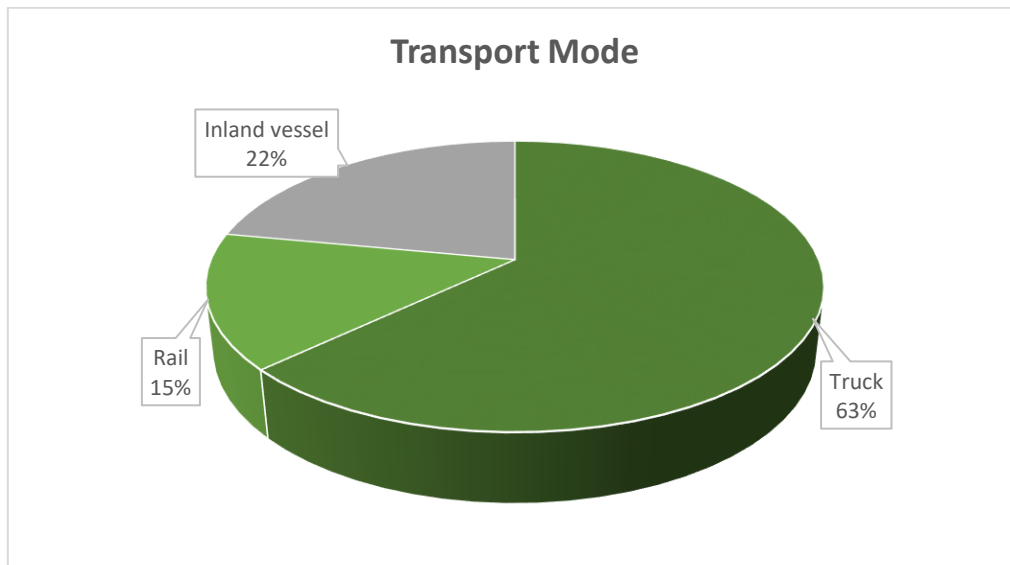


Figure 2 – Greenhouse gas emissions by transport mode in Germany (2012) (own graph, source: UBA, 2012, S.14)

An additional 55% increase in truck transport is forecasted for 2050, with the total transport volume also rising by 57%.⁵ Above all, international freight traffic will increase and so will the transport routes. As a result, the transport infrastructure is increasingly reaching its limits – congestion is the result.⁶

1.1. Sustainable development in freight transport

As already mentioned, freight transport is increasingly reaching its limits. It is therefore important that freight transport develops in a sustainable manner in the future. Here already different drivers have been identified to drive such a development forward. The European Commission also recognises these and appropriate measures have been defined to counter them.

1.1.1. Drivers for sustainable development

According to Bretzke & Barkawi, four drivers that drive sustainable development can be identified:⁷

- Rise in energy costs: Due to the dependence on oil in the transport sector and the increasing transport volumes described above, the transport sector is confronted with an increase in energy costs. This in turn has a negative impact on transport costs.
- Transport infrastructure bottleneck: The increasing volume of transport leads to increasing traffic congestion, which is reflected in increasing congestion. As shown in figure 3, 25 hours per year were spent in traffic jams in Austria in 2014. In Belgium the value is 51 hours.

⁵ Cf. European Union, 2013, p. 39

⁶ Cf. OECD/International Transport Forum, 2015, 28et seq.

⁷ Cf. Bretzke & Barkawi, 2010, p. 33et seq. und Kudla, 2010, p. 232

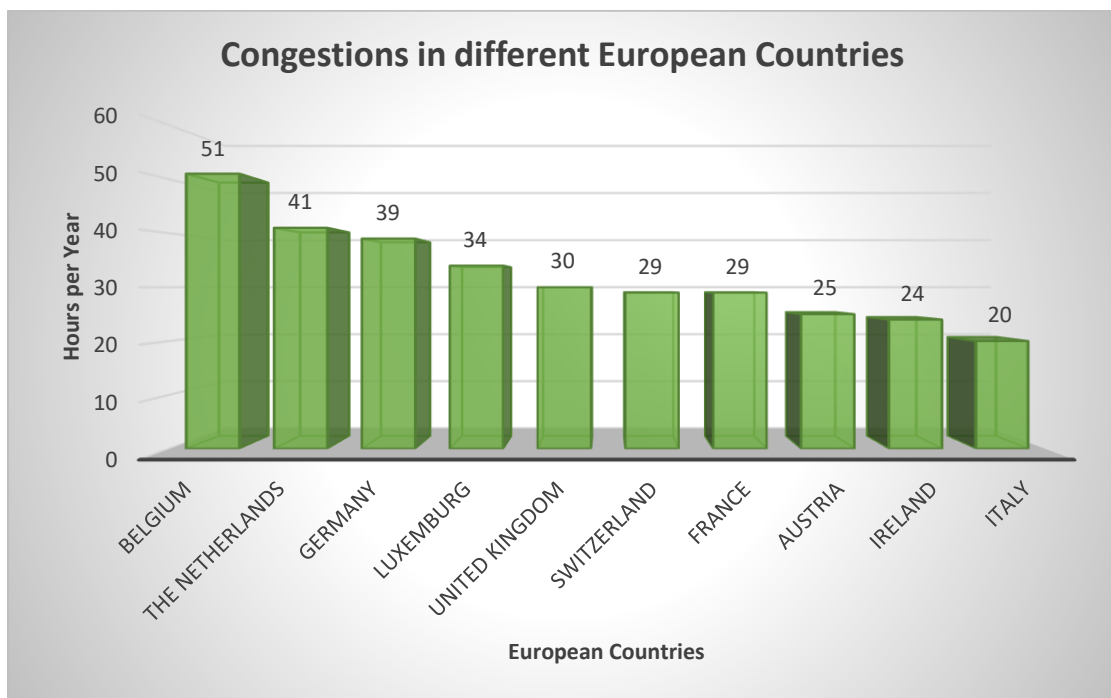


Figure 3 – Congestion situation in European countries in 2014 (hours/year)(own graph)⁸

- **Political Pressure:** On the political side, the pressure towards sustainable transport modes is increasing all the time. This is expressed in taxes, an increasing consideration of external costs and the setting of emission limits for means of transport. These measures in turn influence transport costs, motivating transport service providers to use more sustainable transport modes.
- **Social Pressure:** In addition, society has an increased interest in environmentally friendly transport solutions without having to restrict its own mobility. In addition, there is an increasing demand for sustainable products, especially in the food sector, which indicates an increased environmental awareness on the part of society. The transport industry is mainly influenced by social trends, due to its proximity to the economy and private shippers.

Political Measures

As already mentioned, the policy tries to promote the use of sustainable transport modes through various measures. The European Commission's 2011 White Paper "Roadmap to a Single European Transport Area – Towards a competitive and resource-efficient transport system" presented the EU's vision for transport in the future. This White Paper contains proposals for action by the EU to make transport more sustainable in the future. Since an increased volume of transport must be expected in the future, traffic avoidance is not an option. Therefore, in particular the use of different transport

⁸ URL: <http://inrix.com/press/scorecard-report-united-kingdom/> [04.08.2016]

modes (multimodality) is seen as an appropriate measure to make efficient use of existing resources and avoid further bottlenecks in infrastructure. Rail and inland waterways are recognised as sustainable transport modes. Therefore, a modal shift towards these transport modes should also take place. The objective by 2030 is to shift 30 % of road transport over 300 km to rail or inland waterways. By 2050, the value should be 50 %.⁹

Currently, a large number of companies are mainly designing their production to be sustainable and are increasingly trying to use sustainable raw materials for their products as well. Since transport in this context plays an essential role in connecting the various actors such as raw material suppliers and producers, transport services must also be increasingly sustainable if a product is to be truly sustainable.¹⁰

An important concept in connection with sustainable transport is “Green Logistics”. “Green logistics is a logistics concept that requires logistics to be environmentally friendly, socially responsible and financially viable.” *Rituray Saroha* (2014)

This means that a balance should be struck between the following three dimensions of sustainability: Economy, ecology and social affairs. This leads to tensions between these three areas, as not all the objectives of the individual areas can be pursued at the same time. The following goals can be assigned to the respective areas:¹¹

Social goals: The aim is to raise awareness of sustainable transport in order to motivate consumers to make additional use of it. In addition, a good quality of life should be guaranteed for society in general.

Ecological goals: From an ecological point of view, the reduction of emissions and the general reduction of resource consumption can be named as targets.

Economic goals: From a financial point of view, no additional costs should be incurred in using or offering sustainable transport services, cost reductions should be achieved and unproductivity minimised.

Of course, other objectives can be assigned to the different areas, which makes it even more difficult to achieve a balanced pursuit of objectives across all areas.

⁹ Cf. European Commission, 2011, p.3 et seq.

¹⁰ URL: <https://www.youtube.com/watch?v=5ofhMxRRyec> [03.08.2016], URL: <http://www.envisionfreight.com/value/index.html%3Fid=introduction.html> [03.08.2016]

¹¹ URL: <https://www.youtube.com/watch?v=xUF9C10DPrg> [05.08.2016]

2. Characteristics of a Sustainable Transport Mode

Currently, ecological (above all CO₂ emissions) and economic factors (transport costs) are in the focus of an assessment of the transport modes. From a business point of view, environmental protection is often seen as an opportunity to reduce costs or increase revenues.¹² Environmental protection is still a secondary condition for many companies and is mainly used for marketing purposes.¹³ For a comprehensive comparison of the transport modes from the point of view of sustainability, however, in addition to emissions and transport costs, other factors from the three dimensions of sustainability must also be taken into account. These are dealt with in the following chapter.

2.1. Ecological Areas of Influence

From an ecological point of view, emissions, land use and thus road costs, noise and specific energy consumption can be cited as important assessment criteria.

Emissions

The various means of transport cause different amounts of greenhouse gases, nitrogen oxides and particulate matter depending on the volume of traffic (measured in tonne-kilometres) and the fuels or types of propulsion used. For this reason, fuel production is also taken into account when comparing emissions.¹⁴

As can be seen in figure 4, compared to rail and inland waterways, trucks are primarily responsible for greenhouse gases, which are very harmful at global level.¹⁵ These also have a direct impact on the greenhouse effect. This is why international measures are needed here to jointly reduce emissions. For example, the Kyoto Protocol set upper limits for the CO₂ emissions of industrialised countries.¹⁶

¹² Cf. Pazirandeh & Jafari, 2013, p.890

¹³ Cf. Bretzke & Barkawi, 2010, p.47

¹⁴ Cf. UBA, 2012, p.14

¹⁵ Cf. Wutke, 2013, p.8

¹⁶ Cf. Nehm, Schwemmer, & Kübler, 2011, p.6

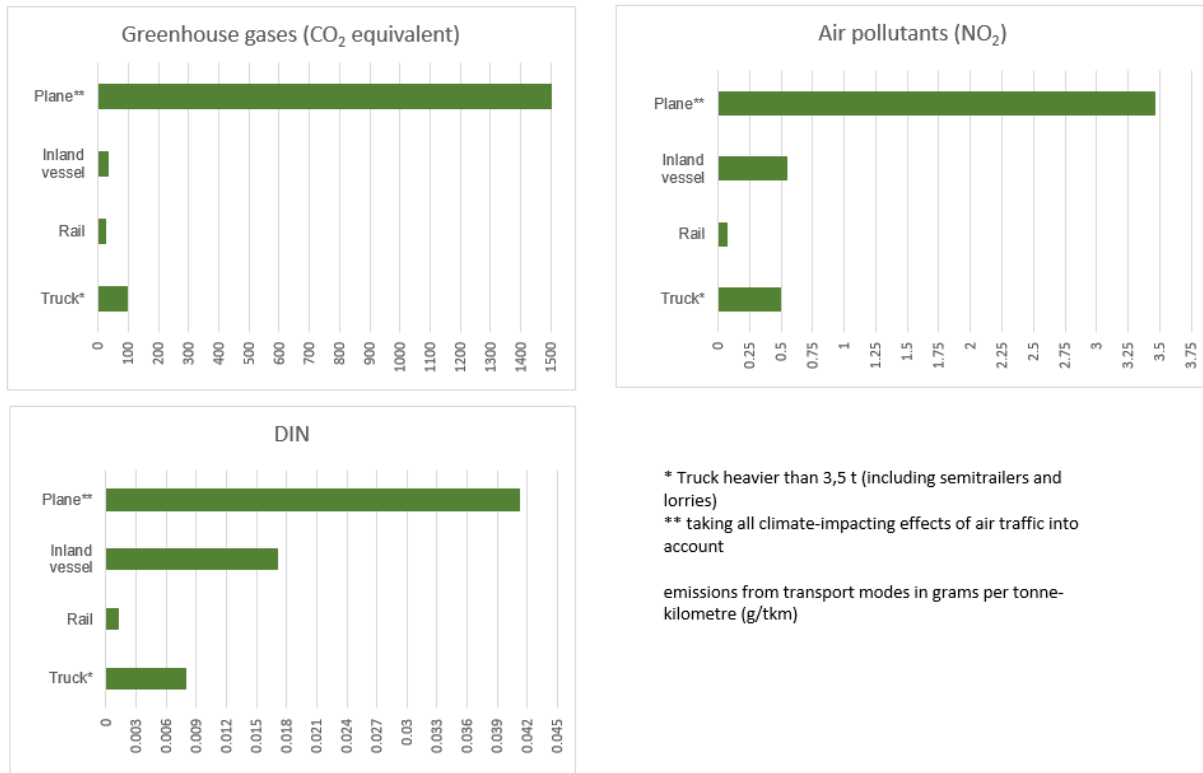


Figure 4 – Comparison of greenhouse gases, nitrogen oxides and particulate matter by transport mode (in g/tkm)(own presentation, source: UBA, 2012, p.15)

In comparison with greenhouse gases, national or regional measures are therefore necessary to minimise the impact of these pollutants. On the Austrian motorways, for example, if the immission limits are exceeded, there is a speed limit in order to reduce immissions.¹⁷ In comparison with greenhouse gases, national or regional measures are therefore necessary to minimise the impact of these pollutants. On the Austrian motorways, for example, if the immission limits are exceeded, there is a speed limit in order to reduce immissions.¹⁸ The inland waterway vessel in particular has a large quantity of these emissions – which is sometimes due to the less stringent emission limits in inland waterway transport and the long service life of ship engines.¹⁹

Land consumption/Travel costs

Road costs consist of the costs for the construction and maintenance of traffic routes. Since in the case of inland waterways it is usually possible to fall back on a natural infrastructure, the costs for the infrastructure and land consumption are correspondingly low. Detailed comparison with land transport modes in this respect are available from Germany: Accordingly, the infrastructure costs per tonne-kilometre for rail or road are around four times higher than for waterways. According to current cost estimates for infrastructure projects in the neighbouring states, the improvement of the

¹⁷ Cf. Wutke, 2013, p.8

¹⁸ Cf. bmvit, 2012, p.1 et seq.

¹⁹ Cf. Europäische Kommission, 2013, p.8

entire infrastructure of the almost 2,415 km long Danube waterway would amount to a total of EU 1.2 billion. This corresponds roughly to the costs incurred for the construction of around 50 km of road or rail infrastructure. Current European railway tunnel projects each costs around EUR 10 to 20 billion.²⁰

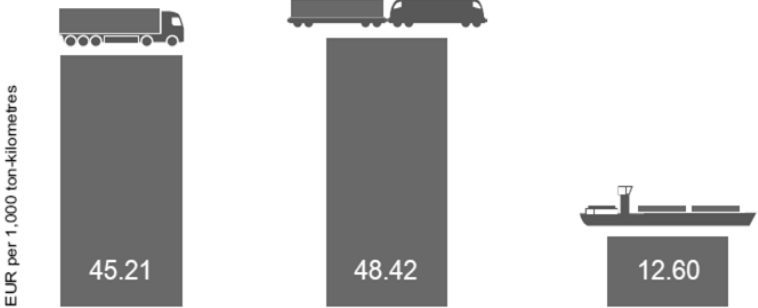


Figure 5 – Comparison of road costs using the example of German land transport modes (source: PLANCO Consulting & Bundesanstalt für Gewässerkunde 2007)²¹

Specific Energy Consumption

„In terms of specific energy consumption, inland navigation can be described as the most effective and therefore environmentally friendly transport mode. The inland waterway vessel can transport one tonne of cargo almost four times as far as a truck with the same energy consumption.“²²

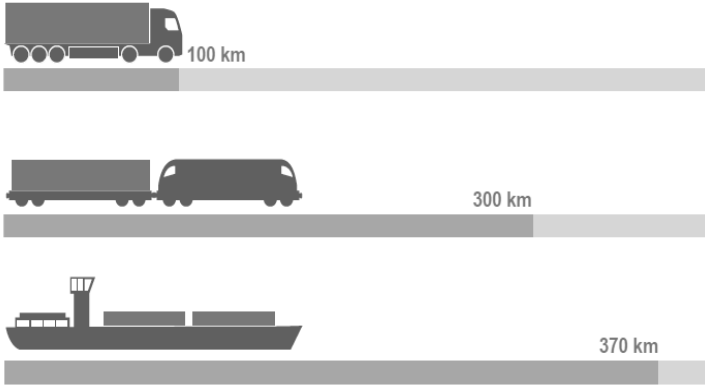


Figure 6 – Transport distances for one tonne of goods with the same energy consumption (source: viadonau)

Din

Due to the density of the network and the proximity to settlements and conurbations, roads mainly cause din pollution. Railway din affects the environment, especially in certain areas, whereas freight

²⁰ Cf. Dolinsek, et al., 2013, p.22
²¹ Cf. Dolinsek, et al., 2013, p.22
²² Cf. Dolinsek, et al., 2013, p.20

traffic on waterways causes hardly any din. Din also depends on subjective perception – at the same din level, road din is perceived as more disturbing than railway din.²³

As the „Noise Viewer“ of the Noise Observation and Information Service of Europe shows, the UK and Germany are particularly affected by road din at night and during the day. In Austria, din pollution caused by rail traffic is particularly noticeable during the day. In Italy and France, a large proportion of the population is affected by road and rail din day and night.²⁴

2.2. Social Areas of Influence

Social areas of influence can be understood as road safety and the working conditions associated with the various transport modes. These are described below.

Road Safety

Compared to rail and road, inland waterway vessels can be described as the safest means of transport.²⁵ This is made possible by high safety standards. This in turn has an impact on accident costs, which are comparatively low (see also external costs in comparison). For this reason, approximately 80% of dangerous goods transport in Europe is carried out by inland waterway.²⁶

Working Conditions

In inland navigation, long stays on the ship are not unusual, which also means that a large part of the leisure time is spent on the ship.

The railway often has a 3-shift model which leads to regulated working hours. Since passenger transport is given priority during the day, most freight transport takes place at night, which in turn leads to night work.

Truck drivers are confronted with long and irregular working hours. In addition, the pressure of deadlines and time in the competition-driven industry means that driving times and rest periods are neglected. For long-distance drivers, the long absence from home is an additional factor.²⁷

²³ Cf. UIC, 2010, p.4f

²⁴ URL: <http://noise.eionet.europa.eu/viewer.html> [10.08.2016]

²⁵ Cf. PLANCO Consulting GmbH/Bundesanstalt für Gewässerkunde, 2007, p.17

²⁶ Cf. Krause, 2009, p.67

²⁷ Cf. Bundesamt für Güterverkehr (BAG), 2014, p.9 et seq.

2.3. Economic Areas of Influence

From an economic point of view, in addition to transport costs themselves, external costs are becoming increasingly important when comparing modes of transport. In the following, both types of costs are briefly presented in the comparison of modes of transport.

Transportation Costs

Transport costs are one of the most important factors in an economic comparison. These are mainly influenced by the transport volume and thus the utilisation of the transport modes, the transport distance and the type of goods transported. Transport costs decrease with increasing transport distances for all transport modes. In terms of transport per tonne-kilometre, the inland waterway vessel is the cheapest compared with rail and road.²⁸ However, the concrete costs of a transport route can vary depending on the transported goods and the distance.²⁹

External Costs

„The external costs, i.e. those resulting from climate gases, air pollutants, accidents and din, are also lowest for inland waterway vessels. In particular, CO2 emissions are comparatively low, which means that inland navigation can contribute to achieving the European Union’s climate objectives.“³⁰

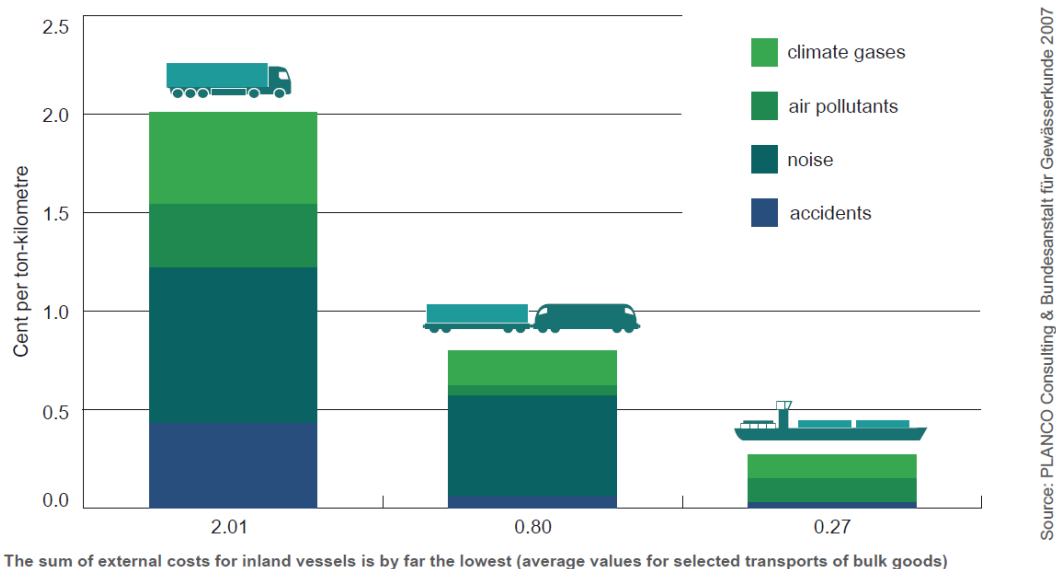


Figure 7 – Comparison of external costs by transport mode (Source: PLANCO Consulting & Bundesanstalt für Gewässerkunde 2007)³¹

²⁸ Cf. PLANCO Consulting GmbH/Bundesanstalt für Gewässerkunde, 2007, p.29-41

²⁹ Cf. Kille & Schmidt, 2008, p.22

³⁰ Cf. Dolinsek, et al., 2013, p.20

³¹ Cf. Dolinsek, et al., 2013, p.21

3. Comparison of Transport Modes

The strengths and weaknesses of the road, rail and waterway transport modes are highlighted in the following.

3.1. Transport Mode Road

Strengths

The high transport speed compared to the rail and waterway transport modes can be cited as an advantage of road transport. Another of the road's strengths is its coverage of the entire infrastructure and thus its ability to form a network (from door to door). Due to the wide range of different means of transport, this mode of transport offers great flexibility. In addition, many IT solutions (e.g. tracing and tracking) are already widely used. In addition, the use of the infrastructure is associated with low costs (costs for road damage are only covered to a limited extent).³²

Weaknesses

As the costs of congestion or noise pollution (so-called external costs) are gaining more and more attention, the road is confronted with increasing costs pressure. The time restriction in the form of driving bans also has an impact on the road as a transport mode. With regard to environmental aspects such as noise pollution or accidents, the road performs relatively poorly in comparison with other transport modes.³³

3.2. Transport Mode Rail

Strengths

Especially in the case of block trains or direct trains, rail can score with a fast transport speed. In addition, the transport mode is mass-efficient and the transports are predictable. Due to standards, the safety level is very high. In contrast to road transport, transport prices are not influenced by tolls and can therefore be relatively favourable depending on the transported volume. The lower CO2 consumption compared to the road can also be mentioned as an advantage.³⁴

Weaknesses

Due to infrastructural differences, cross-border transport by rail is still difficult. The dependence on timetables impairs the flexibility of the transports. Tracking shipments is also very difficult compared to road transport. Moreover, unlike air transport, rail transport does not enjoy any tax advantages.³⁵

³² Cf. Kille & Schmidt , 2008, p.53

³³ Cf. Kille & Schmidt , 2008, p.53, Cf. Dolinsek, et al., 2013, p. 19 et seq.

³⁴ Cf. Kille & Schmidt , 2008, p.54

³⁵ Cf. Kille & Schmidt , 2008, p.54

3.3. Transport Mode Waterway

Strengths

„The strengths of Danube navigation lie above all in its ability to transport large quantities per ship unit, its low transport costs and its environmental friendliness. In addition, it can be used around the clock (e.g. no weekend or night driving ban) and has a high level of safety and low infrastructure costs.“³⁶

Weaknesses

„The weaknesses concern the dependence on fluctuating fairway conditions and the associated varying degree of utilisation of the ships, the low transport speed and the low network density, which often require pre- and post-carriage by road or rail.“³⁷

3.4. Combination of different Transport Modes

By combining the transport modes, the specific advantages of each mode mentioned above can be exploited and specific disadvantages minimised. Some strengths and weaknesses of each mode are listed in the table below.

Due to the high network density and the speed of short transport distances, road transport is particularly suitable for the pre- and post-carriage of multimodal transports. Due to the low environmental impact and the relatively low transport costs of rail and waterway for medium and long distances and high volumes, these two transport modes are suitable for the main run in multimodal transport. By bundling freight transports, appropriate transport volumes can be achieved that justify transport with these transport modes from an economic point of view.³⁸

Transport Mode	Strengths	Weaknesses
Road	<ul style="list-style-type: none">• High network density• Speed of short transport distances	<ul style="list-style-type: none">• Low transport volumes• High external costs
Rail	<ul style="list-style-type: none">• Low environmental impact (CO₂, pollutants, din)• More dense network (comparison of waterways)• Low-cost & fast on medium transport routes	<ul style="list-style-type: none">• Low network density than the road
Inland Waterway	<ul style="list-style-type: none">• Low transport costs and low negative effects at high volumes	<ul style="list-style-type: none">• Transportation time• Network density

Table 1 – Comparison of strengths and weaknesses of the transport modes (own table, source: BMVIT, Court of Audit, 2012)

³⁶ Cf. Dolinsek, et al., 2013, p. 19

³⁷ Cf. Dolinsek, et al., 2013, p. 19

³⁸ Cf. bmvit/ Rechnungshof, 2012, p. 260

4. Challenges of Sustainable Freight Transport

The realisation of sustainable freight transport is associated with various challenges. On the one hand, there are different spheres of influence and actors in freight transport that influence each other and therefore measures have to be planned accordingly in order to achieve the desired effect. Nevertheless, in addition to the policy measures already mentioned, there are various other measures to promote sustainable freight transport. The areas of influence of freight transport, the challenges and measures are described below. In addition, best practice examples are given at the end in which companies already use or offer sustainable transport.

4.1. Spheres of influence in Freight Traffic

The modal split depends mainly on the supply and demand of freight transport. On the supply side, the following areas of influence can be identified: existing infrastructure, new technologies, free capacities and competition on the market.

In addition, society, the economy and politics determine the freight transport environment. The demand for goods is primarily determined by the procurement and distribution strategy of the companies. The choice of transport modes by companies also has a significant impact on the volume of freight transport capacity utilisation, while customers want fast delivery times and low transport costs.³⁹

All in all freight transport is dependent on many different factors, which in turn influence each other (see figure 8). For this reason, different starting points and challenges also arise for the sustainable orientation of freight transport.

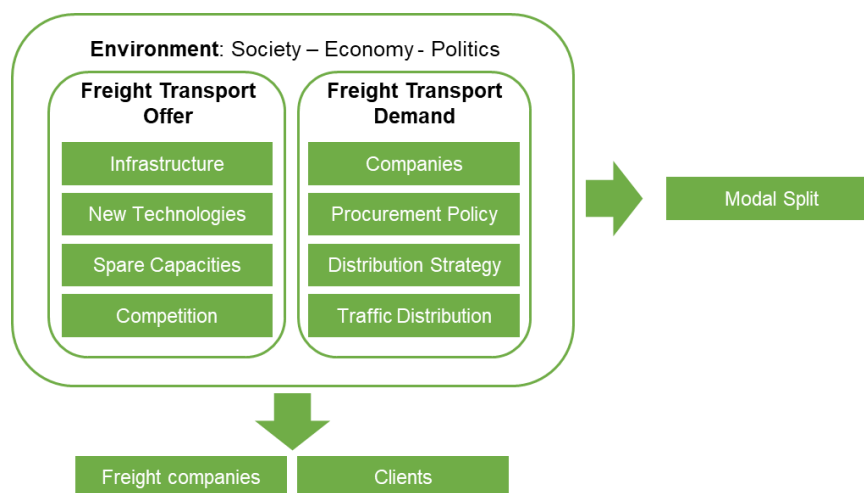


Figure 8 – Areas of influence in freight transport (own description, source: Holderied, 2005, p.18)

³⁹ Cf. Holderied, 2005, p.17 et seq.

4.2. Challenges for sustainable Freight Transport

Among others, the following challenges can be identified in the course of implementing sustainable freight transport:⁴⁰

- The use of new technologies in the transport sector, for instance, is not yet possible in the commercial sense.
- The choice of transport mainly depends on the value of the transported goods and the transport time. Due to the cost advantage of truck transport, it is still frequently used as a means of transport.
- The trend away from mass production towards individualisation is leading to an increase in shipments and a further increase in transport volumes.
- The disadvantage of rail is that passenger transport is often given preferential treatment and fewer technical innovations are available. This makes this transport mode less attractive as an alternative to trucks.
- As local disposal is decreasing, the need for „reverse logistics“ for recycling processes or in the course of waste management has led to a higher transport volume.

4.3. Promotion of Sustainable Freight Transport

There are different ways of promoting sustainable freight transport:⁴¹

Since the choice of transport mode strongly depends on transport prices, a new pricing policy in the transport sector could help to increase the use of sustainable transport modes.

The development and use of alternative fuels could also lead to more sustainable freight transport.

As mentioned at the beginning of the presentation, modal shift is also seen as an appropriate measure to promote sustainable freight transport. By shifting from road to rail or waterway, the environmental impact is to be reduced.

With regard to means of transport, improving existing means of transport in terms of size, weight or capacity and fuel consumption can be useful in order to achieve sustainable freight transport in the long term. According to the requirements of the transported goods, the development of new means of transport would also be a possible solution (e.g. self-propelled means of transport).

⁴⁰ Cf. Institute for Transport Studies, 2010, p.15

⁴¹ Cf. Institute for Transport Studies, 2010, p.21 et seq.

An efficient combination of existing transport modes can also reduce environmental impacts. With information and communication technologies (ICT), transports can be planned more efficiently and better, which could, for example, reduce empty journeys or efficiently utilize transport capacity.

Finally, the development of new business models can also lead to freight transport becoming more sustainable. By focusing on local production and sales, for example, long transport distances could be reduced.

4.4. Best Practice Examples

Some logistics service providers already offer the possibility of sending goods in an environmentally friendly way.⁴²

The company „Grüne Erde“, which sells ecologically and fairly manufactured products, also ships all shipments CO2 neutral by compensation the CO2 emissions caused by the transport by investing in climate protection projects, In 2014, for example, 85,800 items (letters, advertising and parcels) were delivered CO2 neutral.⁴³

The start-up company „ImagineCargo“ offers customers (private or corporate) the opportunity to send items such as letters or parcels in an environmentally friendly manner. The railway is used and cycle couriers are used to transport the consignments from the sender to the recipient.⁴⁴

⁴² URL: <http://www.dhl.de/de/paket/information/privatkunden/gogreen-klimafreundlicher-versand.html> [10.08.2016]

⁴³ URL: <http://www.grueneerde.com/de/produkte/zertifizierte-zustellung.html?3> [10.08.2016]

⁴⁴ URL: <http://www.imaginecargo.com/> [10.08.2016]

5. Influencing Factor Society

As mentioned already, social trends and demands have a decisive influence on freight transport. An increased demand for sustainable products (e.g. in the food sector) can be identified. In addition, the underlying processes are being viewed more and more critically by consumers, which increases the demand for sustainable services such as transport as well. As the online survey “Green Trend Survey”, which was conducted by Deutsche Post DHL in the course of the trend study “Delivering Tomorrow: Customer Expectations in 2020 and Beyond”, shows in 2012, consumers are prepared to prefer sustainable transport services to cheaper transport services. In addition, there is a fundamental willingness to pay more for this sustainable transport service. Nevertheless, the majority of consumers expect that sustainable transport services should in principle be offered in the future without paying an additional price.⁴⁵

As the result of a survey carried out by PricewaterhouseCoopers in the course of a study shows, 86% of the 500 people surveyed perceive rail as an environmentally friendly means of transport (see Figure 9). The majority of respondents perceives the truck as not environmentally friendly. They would see the train in particular as a suitable transport alternative. In addition, more than half of the respondents are prepared to pay more for sustainable transport – between 5 and 20%. Thus, from a social point of view, the ship and the train are perceived above all as sustainable transport modes.⁴⁶

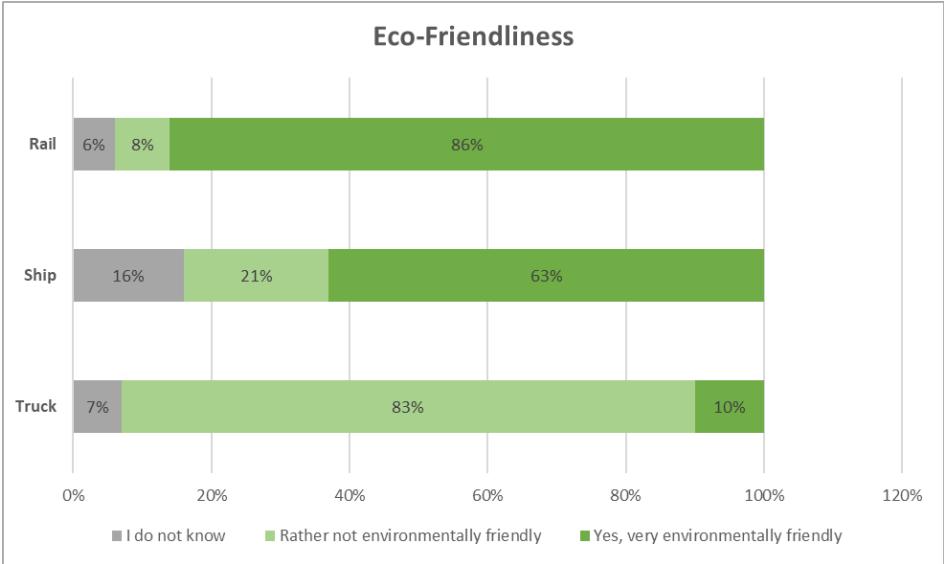


Figure 9 – Social perception of transport modes (own presentation, source: PwCSurvey (2008), p.45)

Since consumer behaviour also has an influence on freight transport, stationary and online shopping are compared in terms of environmental impact.⁴⁷

⁴⁵ Cf. Deutsche Post AG, 2012, p.42 et seq.

⁴⁶ Cf. PricewaterhouseCoopers, 2008, p.45f

⁴⁷ Cf. Deutsche Post AG, 2012, S.42 et seq.

5.1. Online Purchase

Characteristics

An online purchase, also known as e-commerce, is a business transaction or an electronically processed business process in which the persons involved are not in direct physical contact.⁴⁸ The online purchase is mainly associated with three advantages: Cost savings can be achieved by comparing the products. The possibility of free delivery is also attractive for consumers. In addition, online trading is not bound to business hours, so access is possible at any time. For the younger consumer group, online retailing also offers a certain entertainment value.⁴⁹

Transport processes

Several handling processes are associated with online purchasing: The goods are usually transported from the warehouse to the transshipment points and then, depending on the geographical location of the customers, are distributed to further distribution centres before they are transported to the customer. Individual orders such as express orders mean that companies have fewer bundling options for shipments. Therefore, flexible route planning is necessary to meet these requirements. In online trading, there is also an increase in returns.⁵⁰ The return rate for Zalando, for example, is 50%. Nevertheless, online trading requires fewer or shorter individual transport services on the part of the customer than stationary trading, as consignments are delivered collectively. The CO₂ emission when shipping a small item such as a mobile phone is 310g – minus 35% compared to a stationary purchase. For large items, the value is approximately 8kg.⁵¹

The advantage of online purchasing is that the transport services can be bundled and thus the transports can be used relatively efficiently. In one tour, for example, approximately 97.4 broadcasts are combined.⁵²

The exact CO₂-emission, however, depends on the shipment mode:⁵³

- If express delivery is chosen, transport must be organised more quickly, which reduces the possibility of bundling.
- When delivering to a parcel station, the customer must cover the last mile himself, which in turn results in CO₂ emissions due to the individual transport service.

⁴⁸ URL: <http://wirtschaftslexikon.gabler.de/Definition/e-commerce.html> [11.08.2016]

⁴⁹ Cf. DCTI, 2015, p.38f

⁵⁰ Cf. DCTI, 2015, S.23et seq.

⁵¹ URL: <http://www.jetzt.de/lexikon/ist-online-shopping-schlecht-582714> [04.08.2016], URL: <https://www.onlinehaendler-news.de/handel/studien/19828-online-handel-klimafreundlich.html> [04.08.2016]

⁵² Cf. DCTI, 2015, p.70

⁵³ URL: <http://www.jetzt.de/lexikon/ist-online-shopping-schlecht-582714> [04.08.2016]

- In case of home delivery there is the possibility that the customer is not present whereby further delivery attempts may be necessary or shipping to a parcel station.

Measures undertaken by company/politics in order to make purchasing sustainable

In online trading, a reduction in the returns rate can be achieved with the help of a more precise description of the items. Additional transport routes can be avoided by minimizing delivery attempts in the course of optimized customer agreements or efficient time window delivery. Logistics companies can also reduce CO2 emissions by using environmentally friendly vehicles (e.g. hybrid drive). Through the development of sustainable mobility concepts, such as distribution concepts in conurbations such as cities, CO2 savings can be realized.⁵⁴

Measures undertaken by the consumer in order to make purchasing sustainable

As already mentioned, the consumer can influence the transport volume by choosing the shipping type. By avoiding express deliveries and dispatching the goods in a collective delivery, companies can take advantage of bundling effects. When buying, consumers can use the product descriptions and customer reviews to avoid ordering unnecessarily many products, most of which are returned. Particularly in the textile sector, different sizes are often ordered from the same article, so the return rate is very high.⁵⁵

The consumer can also influence the number of delivery attempts. By using parcel tracking, the day of delivery can be better estimated ensuring that you are at home for delivery. It is also possible to deliver parcels to the workplace or to choose delivery to a parcel station on the daily route to work, thus avoiding additional individual transport routes by car.⁵⁶

5.2. Stationary Purchase

Features & Benefits

Stationary purchase or stationary retailing means to purchase in stores that have fixed locations.⁵⁷

The advantages of stationary retail are that the consumer can convince himself of the quality of the product and, if necessary, also take advantage of advice. Social contacts can also be maintained.⁵⁸

⁵⁴ URL: <https://www.onlinehaendler-news.de/handel/studien/19828-online-handel-klimafreundlich.html> [04.08.2016]

⁵⁵ URL: <http://www.tagesspiegel.de/wirtschaft/umweltbelastung-durch-zalando-und-co-warum-anprobieren-besser-ist-als-onlineshopping/9486812.html> [10.08.2016]

⁵⁶ URL: <https://www.onlinehaendler-news.de/handel/studien/19828-online-handel-klimafreundlich.html> [04.08.2016]

⁵⁷ URL: <http://wirtschaftslexikon.gabler.de/Definition/stationaerer-handel.html> [11.08.2016]

⁵⁸ Cf. DCTI, 2015, p.39 et seq.

Transport Processes

The transport processes in stationary purchasing are characterized by the fact that companies have more bundling options for a delivery to a shop. In addition, by avoiding transport to individual end customers, fewer transport services are provided by the companies compared with online trading. The customer himself is therefore responsible for the “last mile” and thus for collecting the products from the shop.⁵⁹

The CO₂-emission with the purchase of a small article (e.g. mobile phone) is around 450g, the CO₂ emission with the purchase of a large article (e.g. sofa) is around 8.4 kg. A large proportion of CO₂ emissions are caused by the individual transport services required to get to the store. In addition, the distance to the shop is usually covered by car. Lower values may be possible when choosing public transport or other means of transport.⁶⁰

Measures undertaken by company/politics in order to make purchasing sustainable

In the stationary trade, an improvement of the infrastructure to enable the switch to alternative means of transport such as bicycles or public transport can be a possible measure on the part of politicians to make purchasing more environmentally friendly.⁶¹ Der Handel kann durch die Kombination von unterschiedlichen Verkaufskanälen (online, stationär) neue Konzepte entwickeln und dadurch ein CO₂ bewusstes Einkaufsverhalten der Konsumenten fördern. So kann der Kunde beispielsweise mit Hilfe des click & collect Konzept Produkte online bestellen und im Geschäft des Unternehmens abholen und somit Verkaufswege optimieren.⁶²

Measures undertaken by the consumer in order to make purchasing sustainable

In the stationary trade, individual CO₂ emissions can be reduced by switching to public transport or alternative means of transport such as bicycle. When using a car, the transport routes should be minimised in order to keep the individual transport performance as low as possible (e.g. searching for a central car park and shopping on foot). In addition, the choice of sustainable products such as fair-trade products or regional products can ensure that the transport route of the consumed goods is as short as possible.⁶³

⁵⁹ Cf. DCTI, 2015, p.23 et seq.

⁶⁰ URL: <https://www.onlinehaendler-news.de/handel/studien/19828-online-handel-klimafreundlich.html> [04.08.2016]

⁶¹ URL: <https://www.onlinehaendler-news.de/handel/studien/19828-online-handel-klimafreundlich.html> [04.08.2016]

⁶² Cf. Ritter, 2013, p.5f

⁶³ URL: <http://www.nachhaltig-einkaufen.de/> [10.08.2016], URL: <https://www.onlinehaendler-news.de/handel/studien/19828-online-handel-klimafreundlich.html> [04.08.2016]

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