



Go Europe with  
**greenskills4vet**

**U N I K A S S E L**  
**V E R S I T Ä T**

Projekt 2016-1-DE02-KA202-003386

# GreenSKills4VET

## IO.1

**Analysis of the sector and report of good practices in Germany:  
Sustainable development-related aspects  
and OER in the field of VET in Logistics**

**Contribution of project partner University of Kassel  
Henrik Peitsch**



Henrik Peitsch - Mail: [eurobbos@eurobbos.eu](mailto:eurobbos@eurobbos.eu)

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

## Summary

### 1 Vocational training

More than 80% of adolescents in Germany complete their initial vocational education in the dual system (company-based training and school education). The amount of lessons per week is normally 12 hours at part-time vocational schools.

The legal basis for the dual system of vocational education are the vocational training act, in German *Berufsbildungsgesetz (BBiG)* for all apprenticeships in industry and trade companies and the so-called crafts-act, in German *Handwerksordnung (HwO)* for all craft occupations. There are autonomous supervisory authorities for a variety of professions, e.g. health professions.

For the vast majority of recognised occupations, the regulations are issued by the responsible ministry – usually the Federal Ministry for Economics and Technology (BMWi) – acting in agreement with the Federal Ministry of Education and Research (BMBF). These regulations contain minimum standards for the company-based part of the initial vocational training.

The number of young people starting a vocational training has dropped whereas the number of students beginning their studies has increased within the last couple of years. This, however, led to a competition between both educational systems.

In the field of forwarding and logistics, 85% of the pupils begin their initial vocational trainings as so-called merchants for freight forwarding and logistics services, in German *Kaufmann-/frau für Spedition und Logistikdienstleistungen*. The training period takes three years.

### 2 Logistics

In 2016, approx. 2.95 million people have been working in the economic sector of logistics. For 2017, a growth rate of 1.9% on a branch turnover is expected at a rate of about 263 billion Euro as well as an increasing number of employees.

Some of the logistics associations have initiated a variety of projects and studies for the adjustment of the logistics concepts for sustainable logistics (green logistics). Elements of a resource-friendly optimization of the supply chain and the development of adequate management systems already exist and have been taken over into the business strategy of various companies.

Nevertheless, there are only a few descriptions and examples of competence standards for the employees for the purposes of sustainable logistics.

### 3 Analysis of the material

The following material has been reviewed:

- training regulations – training framework
- frame curriculum
- textbooks
- examinations

#### 3.1 Training regulations – training framework

There are no detailed instructions for the teachers and trainers in the training regulations for creating competencies and tasks with regard to aspects of sustainability.

### 3.2 Frame curriculum (vocational school)

In the frame curriculum for the school-based-training one can just find recommendations. These recommendations can be complemented by the single federal states and concretised by school-internal curricula. However, it is pointed out that vocational schools have to enhance the awareness of ecological responsibility of the pupils. Schools are also asked to prepare pupils for their future life, especially their work and private life which will be influenced by ecological threats.

Action-oriented teaching should promote a holistic comprehension of the professional reality, e.g. technical, safety-related, economic, juridical, ecological as well as social aspects. Employee-oriented competencies and the ability to contribute to an economic, human and ecological construction of labour in companies are also part of professional competencies.

In three out of 15 learning fields, aspects concerning sustainability / environmental protection / ecology can be found. Nevertheless, these remarks are not suitable as basis to create learning tasks. Only one learning objective corresponds to the requirements profile *reflection and problem solution*: field of learning no 12 – *Pupils judge the procurement concepts with regard to the categories costs, production safety and environmental protection*.

### 3.3 Textbooks

From three examined textbooks, one book – Bischof et al. – contained no chapter referring to sustainability issues. Even the catchword index did not include any suitable catchword. Another textbook – Brandenburg et al. – contained suitable catchwords but the referring learning fields did not deal with aspects concerning sustainability.

Just one of the examined textbooks contained a whole section dealing with sustainability. According to this, it should be pointed out that this chapter (5 out of 524 pages) seems to be relatively short.

### 3.4 Examinations

No tasks dealing with aspects of sustainable development have been found in the reviewed examinations.

In the common framework for the final examination (AKA Prüfungskatalog) there are only a very small part of tasks concerning sustainability issues (5 % - Wirtschafts- und Sozialkunde, Economics and Social studies). The tasks are not placed into the context of the whole business process of logistics.

### 3.5 OER

At the moment, there is no appropriate material available for the vocational training of the occupation “Freight forwarding and logistics services clerk”. (Vgl. Bleeß)

The ministers for education of all federal States (Länder) have *concluded* an agreement on OER. This strategy paper: „Education in the digital world“ should be used as an obliging frame for the creation of OER. As a result of this agreement an information centre for OER will be established in spring 2017. (KMK 2016)

## Content

1. The dual system of vocational education in Germany
2. Vocational Education and Training situation
3. The Educational tasks of Vocational Schools
4. The Economic Sector of Logistics and its Overall Economic Relevance
5. Green logistics
6. Vocational Training in the Field of Logistics
7. Agenda 21 – Sustainable development
8. Education for Sustainable Development and Vocational Education in Germany (ESD/BBNE)
9. Appendix: Analysis of the investigated legal requirements for the vocational education as well as textbooks, examinations (vocational education of merchants for freight forwarding and logistics services)

## References

### 1 The dual system of initial vocational education in Germany

In Germany, the professional qualification mostly takes place in government-approved occupations within the dual system outside universities or colleges. Standards of the dual system are uniform throughout Germany. Professional qualification of this kind is written into the vocational training act (Berufsbildungsgesetz (BBiG)), the crafts-act (Handwerksordnung (HwO)) or the training regulations (Ausbildungsordnungen). 327 certified occupations have been listed in 2014. The training period takes between two and three and a half years.

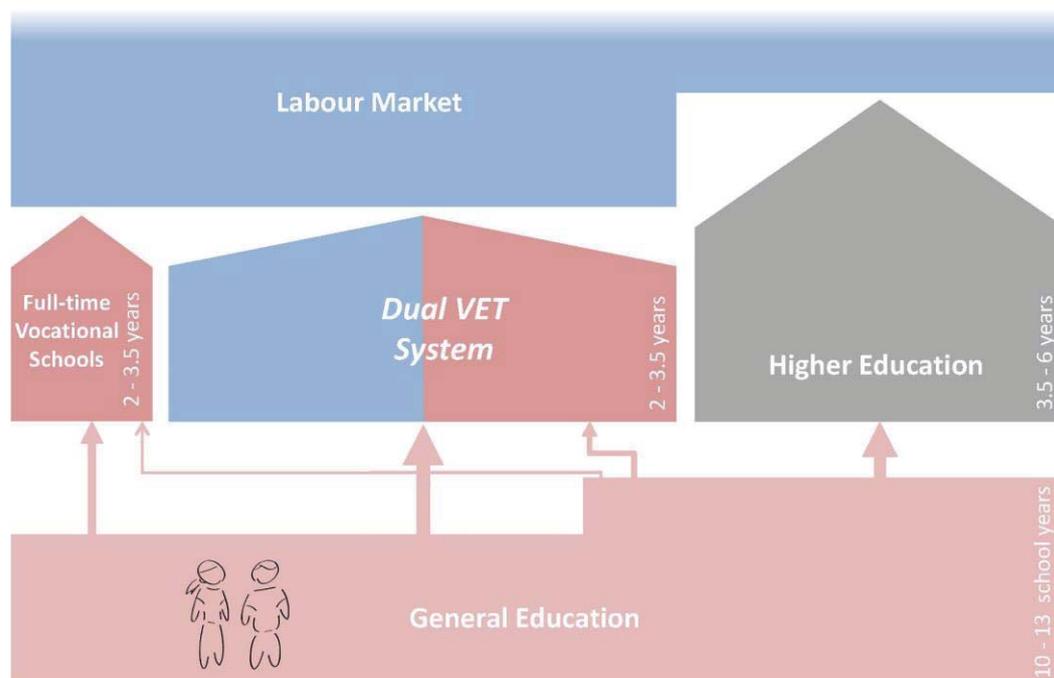


Figure 1: Dual System VET - <https://www.bibb.de/govet/de/54880.php>

For a series of occupations, there are also regulations apart from the regulations which can be found in the BBiG or the HwO. Health professions, for example, are regulated in the Nursing Act (Krankenpflegegesetz (KrPflG)).

The dual system of vocational education (“Learning within the working process” – “Alternance Scheme” or “Apprenticeships”, “Work-based Learning”) is a very important aspect of the high professional qualification of the employees. This, in comparison, contributed, especially during the financial crisis, to a very low youth unemployment.

Apart from the dual system, vocational schools also provide school-based VET courses (fulltime VET), which also lead to a vocational qualification. In this context, the so-called assistance occupations (e.g. Business Assistance / Business Assistant for Foreign Languages and Correspondence).

The training regulations for government-approved occupations are enacted by the responsible ministry - normally the Federal Ministry for Economic Affairs and Energy (Bundesministerium für Wirtschaft und Energie (BMWi)) - in agreement with the Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung (BMBF)). These regulations are also the basis for the school curricula. However, these can just be regarded as recommendations for the single federal states. In the single federal states, different curricula and syllabi exist.

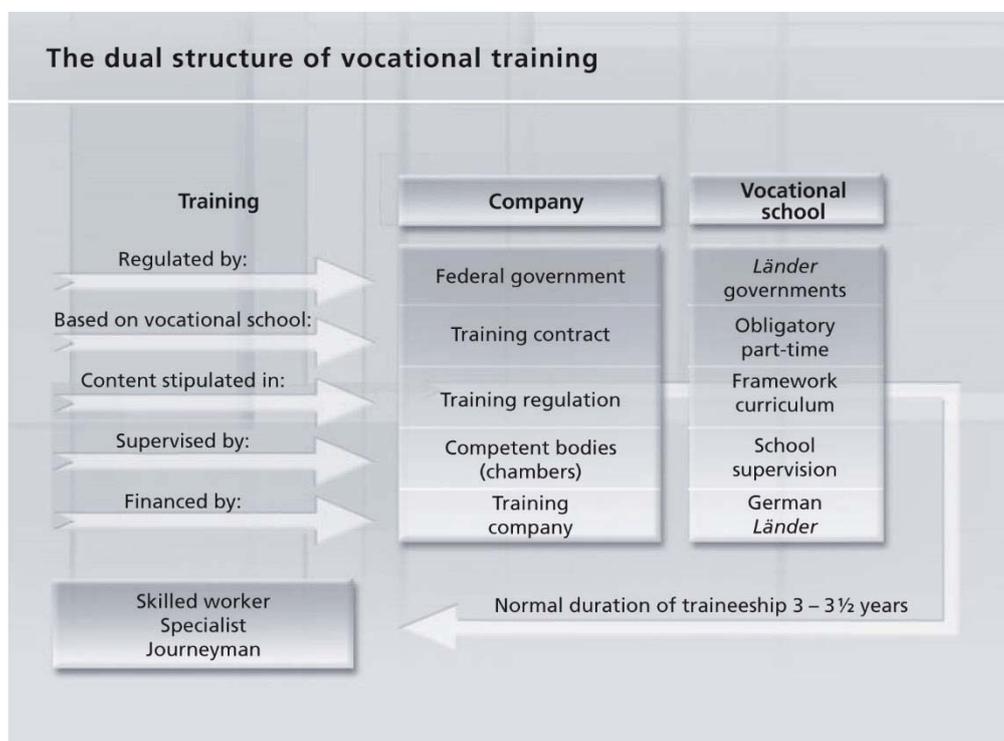


Figure 2: Structure VET Germany – BiBB 2011 p. 9

When it comes to the preparation of new training regulations, both social partners, the employers’ association as well as the trade unions, are involved. Decisions are guided by the principle of consensus.

The professional associations (Chamber of Industry and Commerce (German: IHK), Chamber of Handicrafts (Handwerkskammer) etc.) are responsible for the examinations. This, however, is a special characteristic of the system. There are autonomous supervisory authorities for a variety of professions which do not belong to the sector of commerce or handicraft (e.g. agriculture, health professions etc.). There are federally regulated examinations for some professions. They are created by institutions of the professional associations.

Trainees	<ul style="list-style-type: none"> <li>On average <b>55.7 %</b> of the population enter Dual VET, <b>44.2 %</b> graduate from Dual VET</li> <li><b>1.4 m trainees</b> in <b>327</b> recognised training occupations</li> <li><b>5.4 %</b> of all employees are trainees</li> <li><b>High employment security</b> (95 % <i>Dual VET</i> graduates employed, only 80 % employed among untrained)</li> <li><b>43.8 %</b> of <i>Dual VET</i> graduates continue working in same occupational field</li> <li>Receive <b>average training allowance</b> of about 795 € per month as trainee (training contract with company)</li> <li><b>70 %</b> of VET is on the job in company</li> <li><b>Reduced risk getting unemployed</b> after leaving secondary school</li> <li><b>High variety of occupations</b> – matching the personal and career interests</li> </ul>
Employers	<ul style="list-style-type: none"> <li><b>438,000</b> of <b>2.1 m companies train (20.7 %)</b>, most of which are medium-size and large companies</li> <li>Train more than <b>500,000</b> new trainees every year</li> <li>Hire <b>66 %</b> of Dual VET trainees as employees after training</li> <li>Employers invest on average <b>18,000 € per apprentice per year</b> (62 % of which is training allowance)</li> <li><b>76 %</b> of investment is refinanced by productive contributions of trainees during training period</li> <li><b>Independent</b> from labour-market – <b>enhancing</b> the human resources policy of the company</li> <li>Forster <b>SME competitiveness</b> on international markets</li> </ul>
Government	<ul style="list-style-type: none"> <li>Shares expenses for VET system <b>with employers</b></li> <li><b>Public expenditure for Dual VET: 5.4 bn €</b></li> <li>2.9 bn € for 1,600 public vocational schools providing part-time VET</li> <li>2.5 bn € for steering, monitoring and further supporting measures</li> <li><b>EUR 7.7 bn € contribution by employers</b> (overall net cost of Dual VET; gross cost = 25.6 bn €)</li> </ul>

Chart 1: VET System Advantages - <https://www.bibb.de/govet/en/54880.php> - Extensions made by the Author - Date: 2015

In the past, this system has proven to be very flexible. Methods for developing new training profiles as well as the adaptation to changing vocational qualification requirements have, despite complicated voting conditions (Federal government and federal states as well as social partners), accelerated in the past.

## 2 Vocational Education and Training situation<sup>1</sup>

In 2015, approx. 1.34 million young people have been in a vocational training within the dual system (827,457 male and 509,547 female) in Germany. Approx. 517,000 have begun their training (506,580 started studying) in the reporting year. This number of people has spread over the following sectors:

Newly concluded training contracts from October 1 <sup>st</sup> 2015 until September 30 <sup>th</sup> 2016 due to their fields of competence	Percentage in %
Industry and commerce	58.5
Crafts	27.2
Public sector	2.7
Agriculture	2.6
Independent professions	8.6
housekeeping	0.4

Chart 2: Newly concluded training contracts due to their fields of competence – Extensions made by the author - <https://www.bibb.de/de/53906.php>

<sup>1</sup> Due to different data reports (BiBB and Statistisches Bundesamt), there are no coherent annual results. However, it can be assumed that there is no extraordinary influence on the data affecting the results.

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

According to the relevant legal regulations (BBiG/HwO), there are no formal requirements for a vocational training. In practice, however, pupils having completed the lower secondary school or pupils with no school-leaving qualification face problems or fail to start a vocational training. A vocational training is, in such cases, just possible after prior qualification activities.

In the reporting year 2013, approx. 42% of the trainees had a secondary school certificate, whereas the percentage of trainees with university entrance qualification was 25.3% (see BiBB data report).

More than half of the training contracts (54.4% - 56.2% male, 69.9% female) have been completed in just 20 out of 327 recognized professions in 2015 (see Statistisches Bundesamt. Fachserie p. 52).

This unexpected distribution of trainees to a few professions highlights a specific problem of the dual system:

- Offered training positions are focused on regional economic structure and
- just a few SME provide vocational training (training rate see below)
- large companies are often located in economic conurbations and
- the trainees' mobility is often very low,
- as well as their flexibility with regard to their vocational choice.

Participation in vocational training 2011					
	Number of employees				
	1-9	10-49	50-499	500+	In total
Companies in total	1,665,327	334,601	88,810	5,176	2,093,914
Training companies	236,254	152,924	61,295	4,489	455,080
Training company rate	14.2	45.7	69.0	86.7	21.7
Number of employees subject to social insurance in total	4,831,495	6,734,942	11,012,571	6,208,482	28,787,490
trainees	320,838	429,327	605,128	286,749	1,642,042
Training rate	6.6	6.4	5.5	4.6	5.7

Chart 3: Participation in Vocational Training - Statistisches Bundesamt. Berufsbildung

In the past few years, the percentage of vocational training relationships has dropped, whereas the number of young people starting to study has been rising (see Statistisches Bundesamt. Hochschulen). This fact strengthened the competition between both training systems. The rising number of higher general educational attainments led to a predatory competition especially to the detriment of the pupils with lower secondary school qualification.

### 3 The Educational tasks of Vocational Schools

According to the school law of Lower Saxony, schools have the tasks to enable the pupils to ...

- understand and support the thought of international understanding, especially the idea of a common future of the European peoples and to live together with people from other nations and cultural areas,
- understand economic and ecological relations,
- act responsibly towards the environment and to live a health-conscious life,
- assert themselves and to shape social life responsibly.

Article 15 points out that vocational schools also have the tasks to provide general education apart from vocational education (NschG).

In 2007, the Standing Conference of the Ministers of Education and Cultural Affairs have agreed that it should be part of the vocational school's educational task to prepare pupils for their future life, especially their work and private life which will be influenced by ecological threats and endangered by This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

accident risks. Apart from that, vocational schools also have to present possibilities for prevention and reduction of such risks and threats (see KMK 2007, p. 10).

In March 2015, the Standing Conference of the Ministers of Education and Cultural Affairs has completed the educational tasks of vocational schools in a framework agreement:

Vocational schools have the task to enable pupils to gain professional as well as transdisciplinary competences in consideration of requirements of the vocational training. They enable the pupils to exercise a profession and to co-design work and social life with social, economic and ecological responsibility (see KMK 2015, p. 2).

In 2014, the main committee of the Federal Institute for Vocational Education and Training (BiBB) has passed a recommendation for the organization of competence-oriented training regulations. Aim of this recommendation was the qualitative improvement of the various professions' learning goals' descriptions. The competence and learning goal orientation focuses on the results of these pedagogical interventions. However, contents do not become less important (output instead of input orientation). The recommendation combines the construct of professional ability to act with the German qualification frame's (DQR's) understanding of competence. According to the DQR, competence means the ability and willingness of the individual to use his or her knowledge, skills as well as personal, social and methodical abilities to act thoughtful and individually as well as socially responsible. Competence can be regarded as comprehensive competence in acting autonomously (see BiBB Datenreport, p. 122).

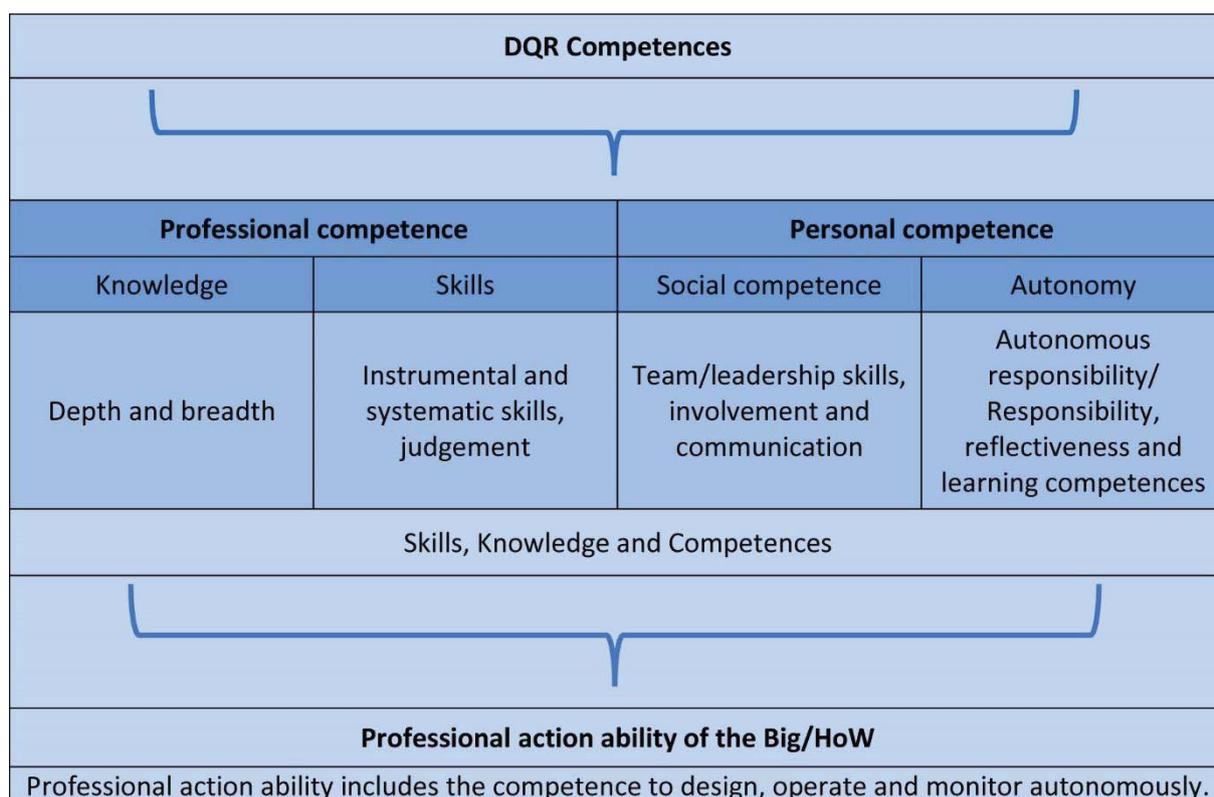


Figure 3: Competence dimensions of the DQR and construct of the professional ability to act according to the BBiG/HwO – BiBB. Datenreport, p. 122

#### 4 The Economic Sector of Logistics and its Overall Economic Relevance

The term logistics which has been used since the middle of the 19<sup>th</sup> century has its origin in the military sector and includes all activities concerning replenishment organization as well as control, movement and housing of troops. In some literature one can also find evidence that the term might come from

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

the French verb “loger” for “to accommodate”. General Antoine-Henri Jomini was the first person who took a closer look at the term “logistics” in his work “Précis de l’Art de la Guerre” in 1837 (see DHL, p. 9).

From the mid-sixties of the past century, the term has also been used for civil purposes in the US (see Schule, p. 2). Wegner and Wegner, however, point out with reason that logistic activities had to be fulfilled since the emergence of factories and companies. Division of work and an increase in international trade made strategies for the management of material and strategies necessary (see Wegner/Wegner, p. 3 ff.). The exploitation of the overseas trade routes marked the first period of glory of the European Economic Area. A global economy has been established from the 16<sup>th</sup> up until the 18<sup>th</sup> century which has crossed political, religious as well as geographic borders (see Braudel, p. 20).

According to Gabler economic encyclopedia the term logistics includes tasks of integrated planning, coordination, action and control of material flows and material-related information from origin to usage. Sometimes, the Seven-Rights-Definition based on Plowman is used. According to this definition, logistics guarantee the availability of the right goods, in the right amount, in the right condition, at the right time, in the right place, for the right customer at the right costs (see Gabler Wirtschaftlexikon 2017).

According to Arndt, the following mega trends (which will not be explained in detail) influencing the future development of logistics and its meaning for the global economy (see Arndt, p. 1 ff.) can be pointed out:

- globalization
- increasing customer requirements
- shortened product lifecycles
- information technology – digitalization/networking
- outsourcing in the automotive, food industry and consumer goods industry

According to reports of the Global Supply Chain Network (BVL), there are currently 2.95 million people working in logistical professions in industry, trade and service. For 2017, a growth rate of 1.9% on a branch turnover is expected at a rate of about 263 billion Euro as well as an increasing number of employees. The transport of goods plays a very important role because Germany can be regarded as transit country due to its geographical location. The proportion of road haulage of overall transport of goods is, in contrast to rail freight transport, constantly rising.

National transport performance in billion tkm			
	1991	2005	2014
Rail freight transport	82.2	95.4	112.6
Road haulage	196.0	310.1	310.1

Chart 4: Transport Performance (see Statistisches Bundesamt)

## 5 Green Logistics

For a couple of years now, the logistics sector is willing to integrate aspects of a sustainable development into their business models. (INVL) This sector produces worldwide more than 5.5% of the CO2 emissions. Together with the transportation sectors, the amount rises up to 23%. Since 2010, a project team, under the leadership of the Fraunhofer institute for material flow and logistics (IML), develops methods and instruments to evaluate storage, distribution and even reverse logistics in the Federal Ministry of Education and Research with the problem area of ecological effects of logistical systems. Big logistics service providers as well as 15 companies of the loading and transporting sector are also part of this project team.

This as well as other reports and projects focus on the resource-saving optimization of the supply chain and the development of corresponding management concepts taking all stakeholders into account (holistic consideration of logistics with reference to trade-offs between storage, transport and packaging as well as saving resources and environmental sustainability). The authors Deckert et al. propose the following measures to improve the aspect of sustainability: (1) reduction of transport, (2) reduction of the amount of transported goods and (3) reduction of the transport damage (see Deckert et al.).

In most of the published reports, there are no results concerning competence requirements of the employees with regard to sustainable development.

PricewaterhouseCoopers has, on behalf of the World’s Road Transport Organisation (IRU), drawn up Delphi study on the employee recruitment. The authors come to the following conclusion with regard to the company’s attractiveness: “Certainly not every expert sees CR<sup>2</sup> as a passing fad. In fact, some positive voices think that CR<sup>2</sup> will become the standard evaluation criterion for companies. And as companies become more global and look to demonstrate a commitment to fair working practices and sustainable environmental practices in every part of the world where they operate, CR can break down social and cultural barriers” (PWC, p. 31).

## 6 Vocational Training in the Field of Logistics

In the commercial administrative area field forwarding and logistics, the following recognized occupations, according to the BBiG, can be found:

Training occupations	2015
Merchants for Freight Forwarding and Logistics Services	14,121
Merchants for Transport Services	1,032
Shipping Merchants	855
Aviation Merchants	129
Total number of trainees	1,337,004
*5,688 of it are female (40.2%)	
See Statistisches Bundesamt. Fachserie. p. 139	

Chart 5: Commercial Training Occupation in the Field of Forwarding and Logistics

The trainings to become Assistant for Logistics or International Aviation Assistant have a subordinate role.

Most of the trainees work as Merchants for Freight Forwarding and Logistics Services. The training duration takes three years. The trainees have to pass a written intermediate exam after approx. 15 months. The results of this intermediate exam do not count for the final exam. The final exam takes place on a fixed day for several Federal States and consists of a written and practical part (case-related expert talk). School performance is not integral part of the final result.

In the year 2015, 5,523 (1.1% of all contracts) new contracts have been signed (2,157 female and 3,363 male). For female trainees, this training profession occupies place 17 out of the 20 most famous occupations (see *ibid*, p. 52). 3,111 of the trainees had university or college entrance qualification (56.3%) whereas 2,028 had a secondary school certificate (36.7%). Just 3.2% had no school-leaving qualification or a lower secondary school certification (7.3%) (see *ibid*, p. 67).

Training allowance	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year
€ per month	330 - 800	340 - 850	370 - 890

<sup>2</sup> Corporate Responsibility

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Chart 6: Training Allowance According to Training Years - <https://www.ausbildung.de/berufe/speditionskaufmann/gehalt>

The following chart published by the Federal Institute for Vocational Education and Training listing competences contains no information concerning Vocational Education for Sustainable Development (BBNE).

<b>Occupation Freight forwarding and logistics services clerk PROFILE OF SKILLS AND COMPETENCES</b>
<ul style="list-style-type: none"><li>– Plan and organise the dispatch, shipment and storage of goods and other logistics services according due consideration to relevant legal requirements and environmental protection aspects</li><li>– Control and monitor the effective cooperation of persons and institutions involved in logistics chains</li><li>– Take advantage of opportunities to consolidate consignments into larger load units</li><li>– Obtain insurance cover</li><li>– Accord due consideration to customs and foreign trade regulations</li><li>– Use information and communication systems</li><li>– Procure information and make information available</li><li>– Correspond and communicate in English with foreign business partners and customers and process English-language documentation</li><li>– Identify customer requirements, advise and offer support to customers</li><li>– Identify and evaluate service provision available on the transport and logistics market</li><li>– Calculate prices</li><li>– Draw up offers and prepare contracts</li><li>– Process customer complaints and claims notices and assist in the settlement of claims</li><li>– Manage payment processes and warning procedures Assist in the calculation of costs and earnings and in commercial management</li><li>– Monitor the market and assist in the further development of service provision of the company</li><li>– Assist with the establishment of networks for the consolidation, transportation and delivery of loads</li><li>– Assist in the development of logistics concepts</li><li>– Act autonomously in performing tasks within the scope of operational instructions given and in accordance with legal stipulations.</li></ul>
<a href="https://www.bibb.de/de/berufeinfo.php/profile/apprenticeship/6564564">https://www.bibb.de/de/berufeinfo.php/profile/apprenticeship/6564564</a>

Chart 7: Occupation Freight forwarding and logistics services clerk

## **7 Agenda 21 – Sustainable Development**

In literature, several different representations of the triad ecology, economy and social issues with regard to sustainable development can be found. Some authors have completed the model with further elements (e.g. politics, education, culture, participation).

Resolutions of the World Climate Conference 1992 which are summarized in the Agenda 21 are defined in chapter 8. Integration of environmental and developmental aspects in the decision-making process should be regarded as aim to improve and rearrange decision-making processes with the aim to take ecological and socio-economic questions into account and to make a full participation of the public possible (see Agenda 21, p. 67).

From a systematic point of view and according to the Agenda 21, it would be appropriate to differentiate between the level of aim and the level of action (measures) of a sustainable development. The triad mentioned above can then be seen as level of aim. On the level of action, the three areas of politics, economy and society can be found together with their sub-categories.

In contrast to the predominant pillar or dimension model, the integrative model depicted below highlights the single dimensions and their interaction.

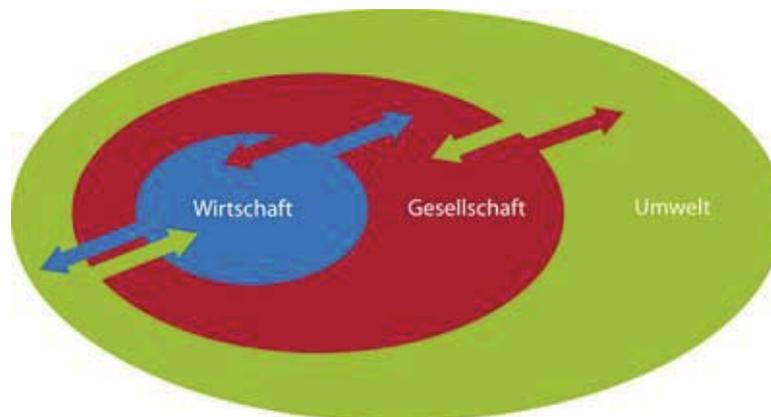


Figure 4: Integrative model of Sustainable Development, Beilage Bulletin umweltbildung.ch 1/2012

## 8 Education for Sustainable Development and Vocational Education in Germany (ESD/BBNE)

The discussion of the necessity to focus on sustainable development goals in the educational system in Germany is part of the pedagogical and educational discussion since 1993 (see Overwien and WBGU).

The concept of education for sustainable development means to turn away from instructional teaching and to organize education more openly. This goes hand in hand with the idea to change existing mental models and rules and to make inter- and transdisciplinary problem-solving strategies possible for all social actors. It also implies a paradigm shift of pedagogic intervention making new learning strategies and methods possible.

Elements of education for sustainable development can hardly be found in curricula of schools providing general education. A coherent interdisciplinary approach as well as a fundamental foundation in the schools' profiles are still missing. Education for sustainable development is often restricted to school projects which are running for a limited period and a limited number of pupils. According to Buddenberg, the reason for this insufficient prevalence of the BNE concept is the lacking anchoring in school curricula as well as in the teachers' knowledge about educational tasks. BNE has therefore to be isolated from its existing project character and be implemented at schools with a certain cross-functional task (see Buddenberg).

The ecological, economic and social crisis also require a paradigm shift in the vocational education. Vocational learning has to overcome the learning of functionally and technically determined actions. Vocational acting has to include the meaning of practical acting in its historically based social structures of meaning. The individual has to understand the preconditions, conditions, contexts and consequences of his or her action sufficiently (see Vogel). In this context, a theory of vocational education has to adapt to the question which kind of nature should be promoted with help of its didactical orientation, which kind of nature of a human development would be useful and how processes of vocational learning have to be organized in order to establish a human nature (see *ibid*, p. 279).

The Federal Institute for Vocational Education and Training (BiBB) has already promoted pilot projects to support environmental education in the 1980s and 1990s. These pilot project, however, can be regarded as precursors for a vocational education for sustainable development (see Mohorič. Modellversuchsförderschwerpunkt, p.8). The program of the Federal-State Commission of 1998 can be seen as

milestone of this development. Result of their programmatic work was the framework for global development with regard to a sustainable development (BLK). This framework has been published in a new version in 2015.

Kastrup et al. have formulated some guidelines in form of theses which could be used to develop sustainability-oriented learning situations (see Kastrup et al., p. 120).

**Chart 7: Didactical Guidelines for Learning and Working Situations for a Vocational Training of Sustainable Development (BBNE)**

1. Starting point for BBNE are concrete vocational fields of action and situations of action
2. To develop learning situations, the specific perspectives of BBNE can be used as didactical categories of analysis <ul style="list-style-type: none"> <li>- Social, ecological and economic aspects (interactions, contradictions, dilemmas)</li> <li>- Influences on others (local, regional, global)</li> <li>- Influence on the future (positive vision of the future)</li> <li>- Strategies of action (consistency, sufficiency, efficiency)</li> <li>- Life-cycles and process chains (products, processes)</li> </ul>
3. BBNE is based on current didactical principles of vocational education <ul style="list-style-type: none"> <li>- Interrelationship of principles of situation, science and personality</li> <li>- Focus on work processes and tasks (situational, self-directed)</li> <li>- Development-oriented (self-efficacy, willingness to act, interaction, communication)</li> <li>- Competence orientation (personal development, holistic education)</li> </ul>
4. Didactical priorities have to be set
5. The aim of an educational programme should be completeness with regard to the different dimensions of sustainability

*Chart 8: Didactical Guidelines for Learning and Working Situations for a Vocational Training of Sustainable Development (BBNE) – Kastrup p. 120*

The Federal Ministry of Education and Research promotes the development and testing of sustainability-oriented learning tasks for the training of Merchants for Freight Forwarding and Logistics Services within its project Pro-DEENLA, which is part of the pilot scheme “Vocational Education for Sustainable Development 2015-2019” (see BiBB 2016, p. 16).

The discussions on sustainability are too short-sighted when they regard economic and social structures as insurmountable. BNE must not be restricted to personal changes in value on an individual level. The ecological crisis must not be placed into the reproductive sector of the private sphere, even though problems of the production sector are generated in the public sphere (see Dinger, p. 356).

Objects of research	General references	Learning fields: Skills and knowledge
<p><b>1 Training regulations</b></p> <p><b>1.1 Framework curriculum</b> Federal law No. 39 - 26th of July, 2004</p>	<p><b>§ 4 Framework curriculum</b> The professional training are at least the following skills and knowledge:</p> <ol style="list-style-type: none"> <li>1. The training company:               <ol style="list-style-type: none"> <li>1.1 Position, legal form and structure,</li> <li>1.2 Vocational training,</li> <li>1.3 HR management, administrative regulations for work</li> <li>1.4 Security and health protection at the work,</li> <li>1.5 Environment protection;</li> </ol> </li> </ol> <p>Duration two to four months – 1st practical training year</p>	<p><b>Skills and knowledge to be learned</b> In avoidance of environmental impacts caused by the company by acting within professional, in particular</p> <ol style="list-style-type: none"> <li>a) to explain possible environmental impacts by the training company and its contribution to the <b>environment protection</b> by examples</li> <li>b) to be able to execute regulations of <b>environment protection</b> within the training company</li> <li>c) to make use of economic and <b>environmentally friendly</b> energy and resources</li> <li>d) to avoid waste; to use clean methods for disposals</li> </ol>
<p><b>1.2 Frame curriculum (school)</b> Agreement of the ministers of education conference (KMK) - 4/30/2004</p>	<p><b>Part II: Educational mission of the Vocational School</b> The vocational school has to in general to educate professional basics and professional competences and enhances the before acquired general education. She will <b>empower</b> the students to participate in shaping the working environment and the society in social and <b>ecological</b> responsibility ... Related to the an KMK-agreement (KMK 3/15/1991) the vocational school has the aim:</p> <ul style="list-style-type: none"> <li>– „to educate occupational competences, which connects professional competence with general human and social abilities ...“</li> </ul> <p>To gain these aims the vocational school has to...</p> <ul style="list-style-type: none"> <li>– <b>advise environment threats</b> and accident hazards which may occur within the working process or private lifestyle and to indicate possibilities for avoidance or decrease them</li> </ul> <p><b>Part III: Didactical principles</b> Based on learning theories and didactic theories of knowledge the following landmarks are called in a pragmatic way .... – <b>Activities</b> should promote a holistic understanding of the world of work and <b>include</b> e.g. technical ..., economic,..., <b>ecological, social aspects</b></p> <p><b>Part IV: Preliminary remarks</b> ....Beyond employee-oriented behaviour the ability <b>to participate</b> in shaping an economic, humane and <b>ecological</b> world of work.</p>	<p><b>Learning field 4: Comparison of mode of transportation and work on transport orders (80 hrs)</b> <b>Aim:</b> The students have to search – also in English – <b>information</b> about political, economic, social and <b>ecological developments and rulings</b> on national, European and global level.</p> <p><b>Learning field 12: Offering and organizing procurement logistics (40 hrs)</b> <b>Aim:</b> ....students have to assess the <b>supply chain principles</b> concerning the costs, production security and <b>environment protection</b>.</p> <p><b>Learning field 15: To arrange supply chains towards economic conditions (80 hrs)</b> <b>Aim:</b> The students have to search – also in English – <b>information</b> about political, economic, social and <b>ecological developments and rulings</b> on national, European and global level... <b>Contents:</b> ... <b>Environmental concepts</b> and <b>environmental policy</b></p>

Learning books used by the students		
<p>1.3 K.D. Bishop et al. Leistungserstellung in Spedition und Logistik – 11. Auflage, Bildungsverlag EINS. 576 Seiten</p>	<p><b>Introduction / preface:</b> No information within about Nachhaltigkeit/Umweltschutz/Ökologie (sustainability, environment protection/ecology) <b>Table of contents:</b> Within the 15 learning fields and more than 390 subtitles there is no information about Nachhaltigkeit/Umweltschutz/Ökologie <b>Keyword register:</b> So the list contains none of the searched keywords.</p>	<p>The book contains no passages (information / duties) to the subjects of environment protection / ecology. <b>Learning field 4: Comparing the modes of transportation and work on transport orders (80 hrs)</b> The shown comparison of the different modes of transportation in this book doesn't refer to the categories of Umweltschutz/Umweltbelastung/Ökologie (environment protection/ecological damages/ecology)</p>
<p>1.4 H. Brandenburg et al. Güterverkehr – Spedition – Logistik. Leistungserstellung in Spedition und Logistik – 42. Auflage, Bildungsverlag EINS. 700 Seiten</p>	<p><b>Introduction / preface:</b> No information about Nachhaltigkeit/Umweltschutz/Ökologie <b>Table of contents:</b> Within the 15 learning fields and more than 400 subtitles only one title refers to Nachhaltigkeit/Umweltschutz/Ökologie: 21.11.1 Attempts avoiding waste avoidance and green disposal. <b>Keyword register:</b> The list contains the following keywords : – Ecological benefit (see 642) – Environment (see 274 and see 671) – Pollution tax (see 672) – Environmental specifications (see 671) – Environmental costs (see 676) – Environmental legislations (see 671) – Environment protection (see 136)</p>	<p><b>Learning field 5: Handling orders of consolidated cargo (80 hrs)</b> Advantage of system alliances: Less <b>environment damage</b> (emphasised in the original) pollutants, noise and land consumption (see 274) <b>Learning field 13: Offering and organizing outbound logistics (80 hrs)</b> – Advantages of vehicle management: „Some effects on cost cutting involve even an <b>ecological benefit</b> (emphasised in the original) (see 642) – Environment protection as a part of the target system of the enterprise: – <b>Avoidance / reduction of waste</b> – <b>Recycling</b> – <b>Waste removal</b> (emphasised in the original) (see 672) – Returnable systems – an eco-friendly packaging solution (see 674) – Overview outbound logistics: Environmental specifications and environmental legislations</p> <p>Exercise: No 15. Assess the packaging systems which don't threaten the environment most.</p>
<p>1.5 M. Voth / C. Hesse Leistungsprozesse Spedition und Logistik. Informationshandbuch – 12. Auflage, Bildungsverlag EINS. 524 Seiten. Format DIN A 4</p>	<p><b>Introduction / preface:</b> No information about Nachhaltigkeit/Umweltschutz/Ökologie <b>Table of contents:</b> Within the 9 learning fields and more than 510 subtitles only four refer to the researched subject: Learning field 13 – Outbound logistics offer and organise 30 lastingness 30.1 Economic responsibility 30.2. Environmental responsibility 30.3 Social responsibility 30.4 CO2 footprint (coach voucher Footprint) <b>Catchword list:</b> The list contains the following concepts: – CO2 issues – CO2 footprint – Lastingness – Ecological balance – Environmental responsibility</p>	<p><b>Learning field 4: Comparing the modes of transportation and work on transport orders (80 hrs)</b> Comparative criterion: Environmental compatibility – energy consumption Learning field <b>Learning field 13: Offering and organizing outbound logistics (80 hrs)</b> <b>Subtitle sustainability:</b> – Definition of sustainability – Columns of sustainability: e.g. environmental responsibility – Environmental threats caused by the transport sector: greenhouse gas, particulates, resources, raw material consumption, land consumption – <b>Economic responsibility:</b> Protection of the efficiency of the enterprise by resource protection – <b>Environmental responsibility</b> sustainable use of resources: e.g. usage of eco-friendly materials, low-emission vehicles, low-emission modes of transportation, optimising carriages, "green"</p>

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

		<p>logistics, waste avoidance and waste separation</p> <ul style="list-style-type: none"> <li>– <b>Social responsibility:</b> e.g. enhancing ecological awareness among the staff, gender justice, socially acceptable working hour models, employee's integration, readiness to engage in dialog with environment protection groups</li> <li>– <b>CO2 footprint:</b> e.g. <a href="http://www.eco-transit.org/index.de">www.eco-transit.org/index.de</a> Comparison of the CO2 issues of the different modes of modes of transportation</li> </ul>
<b>Examinations</b>		
1.6 AkA <sup>3</sup> (Ed.). Exam catalogue of the examinations	The catalogue is issued as a help to create tasks for the written final examination. Creating tasks for the certain areas there have the activity proceedings as determined by the given structure of the process orientation to be taken in account.	Within the stated areas of production and specifics of the carriers are examples of activities from which tasks can be generated. Merely in the exam subject economic customer and social studies tasks can be set to the area environment protection (figure in 1306) (portion of the problems 5%)
1.7 Final examination winter, 2015/2016	This test contains no tasks referring to Nachhaltigkeit/Umweltschutz/Ökologie	
1.8 Final examination summer, 2016	This test contains no tasks referring to Nachhaltigkeit/Umweltschutz/Ökologie	

### References:

- Arndt, Holger (2015): *Logistikmanagement*. Wiesbaden
- Behne, Markus / Peitsch, Henrik (2012): *Nachhaltige Entwicklung am Beispiel Mobilität*. In: Lange, Dirk / Grabbert, Tammo / Heldt, Inken (Hrsg.) (2012): *Das Politik-Labor. Forschendes Lernen in der Politischen Bildung. Band 2*
- BiBB (Hrsg.) (2011): *Vocational Training Regulations and the Process Behind Them*. Bonn - <https://www.bibb.de/veroeffentlichungen/en/publication/show/2062> - 27.02.2017
- BiBB (Hrsg.) (2016): *Berufsbildung für nachhaltige Entwicklung 2015 – 2019. Begleitung, Koordination und Transfer. Modellversuche. Wissenschaftliche Begleitung*.
- BiBB (Hrsg.) (2016): *Datenreport 2015*
- Blees, Ingo / Deimann, Markus / Seipel, Hedwig / Hirschmann, Doris / Muuß-Merholz, Jöran, hrsg. von der Bertelsmannstiftung (2015): *Whitepaper Open Educational Resources (OER) in Weiterbildung / Erwachsenenbildung. Bestandsaufnahme und Potenziale 2015*
- Braudel, Fernand (1986): *Sozialgeschichte des 15. – 18. Jahrhunderts. Aufbruch zur Weltwirtschaft*. München
- Buddenberg, Magdalena: (2016): *Bildung für nachhaltige Entwicklung als Querschnittsaufgabe*. In: *Die Deutsche Schule. Zeitschrift für Erziehungswissenschaft, Bildungspolitik und pädagogische Praxis. Jahrgang 108. Heft 3/2016. Seite 267 – 277*
- Bundesminister für Wirtschaft und Arbeit (2004): *Verordnung über die Berufsausbildung zum Kaufmann für Spedition und Logistikkdienstleistung/zur Kauffrau für Spedition und Logistikkdienstleistung*
- Deckert, Carsten / Fröhlich, Elisabeth (2014): *Green Logistics: Framework zur Steigerung der DHL (2005): Logistik Lotse 2005*. Bonn
- Dinger, Johannes (2003): *Postmoderne und Nachhaltigkeit. Eine diskurstheoretische Analyse der sozialen Konstruktion von nachhaltiger Entwicklung*. München
- Fraunhofer-Institut für Materialfluss und Logistik (IML): <http://www.green-logistics-network.info/de/detail/zieleergebnisse> - 25.02.2017
- Gabler-Wirtschaftslexikon: <http://wirtschaftslexikon.gabler.de/Definition/logistik.html> - 18.02.2017
- INVL - Institut für Nachhaltigkeit in Verkehr und Logistik (2010): *The Institute for Sustainability in Transport and Logistics at the University of Heilbronn. Concerning definition, understanding and dissemination of "Green Logistics" in the freight forwarding and logistics industry*. DSLV Deutscher Speditions- und Logistikverband e.V. (Ed.)

<sup>3</sup> AkA – Responsible chamber for creating the tasks for the final and intermediate examinations. Nürnberg - IHK for Central Franconia

- Kastrup, Julia / Kuhlmeier, Werner / Reichwein, Wilko / Vollmer, Thomas (2102): *Mitwirkung an der Energiewende lernen. Leitlinien für die didaktische Gestaltung der Berufsbildung für eine nachhaltige Entwicklung*. In: *lernen & lehren*. Heft 107/2012. S. 117 – 124. <http://verlag.lernenundlehren.de/heftarchiv> - 27.02.2017
- KMK (2004): *Rahmenlehrplan für den Ausbildungsberuf Kaufmann für Spedition und Logistikdienstleistung/Kauffrau für Spedition und Logistikdienstleistung*
- KMK (2007): *Handreichung für die Erarbeitung von Rahmenlehrplänen der Kultusministerkonferenz für den berufsbezogenen Unterricht in der Berufsschule und ihre Abstimmung mit Ausbildungsordnungen des Bundes für anerkannte Ausbildungsberufe*. Bonn
- KMK (2015): *Rahmenvereinbarung über die Berufsschule - Beschluss vom 12.03.2015*.
- KMK (2016): *Strategie der Kultusministerkonferenz „Bildung in der digitalen Welt“*. Beschluss vom 08.12.2016
- Logistik für Unternehmen – Ausgabe: Ausgabe: 11-12-2016 - <http://www.ingenieur.de/Logistik-fuer-Unternehmen/2016/Ausgabe-11-12/Topthema/Wind-of-Change-in-Logistik-und-Supply-Chain-Management> - Zugriff: 25.02.2017
- Logistische Nachhaltigkeit. In: *Supply Chain Management II/2014*. <http://www.bme.de/tool-box-fuer-eine-nachhaltige-logistik-246> - 25.02.2017
- Mohorič, Andrea (2014): *Der Modellversuchsförderschwerpunkt „Berufliche Bildung für eine nachhaltige Entwicklung“ (BBNE) am Bundesinstitut für Berufsbildung (BIBB)*. In: Kuhlmeier, Werner / Mohorič, Andrea / Vollmer, Thomas (Hrsg.) (2014): *Berufsbildung für nachhaltige Entwicklung. Modellversuche 2010 – 2013: Erkenntnisse, Schlussfolgerungen und Ausblicke*. S. 7 - 12
- Mohorič, Andrea (2014): *Berufsbildung für nachhaltige Entwicklung – Das Bundesinstitut für Berufsbildung als Akteur und Moderator bei der Gestaltung des Transfers der Modellversuchsergebnisse*. In: Kuhlmeier, Werner / Mohorič, Andrea / Vollmer, Thomas (Hrsg.) (2014): *Berufsbildung für nachhaltige Entwicklung. Modellversuche 2010 – 2013: Erkenntnisse, Schlussfolgerungen und Ausblicke*. S. 183 - 196
- Niedersächsisches Schulgesetz (NSchG)
- Overwien, Bernd (2016): *Education for Sustainable Development and Global Learning – References to Teaching Right Livelihood*. In: Christoforatu, Ellen (ed.): *Education in a Globalized World. Teaching Right Livelihood*. Immenhausen/Kassel, S. 40-56
- PwC (2012): *Transportation & Logistics 2030. Volume 5: Winning the talent race*. [www.pwc.com/tl2030](http://www.pwc.com/tl2030). 27.02.2017
- Schulte, Christof (1995)<sup>2</sup>: *Logistik*. München
- Speditions- und Logistikverband Hessen/Rheinland-Pfalz e.V. (Hrsg.): *Logistikimpulse Magazin*
- Statistisches Bundesamt (2013): *Berufsbildung auf einen Blick*. Wiesbaden
- Statistisches Bundesamt (2016): *Fachserie 11. Reihe 3. 2015. Bildung und Kultur. Berufliche Bildung*. Wiesbaden
- Statistisches Bundesamt (2016): *Hochschulen auf einen Blick. Ausgabe 2016*. Wiesbaden
- Umweltstiftung Schweiz: *Beilage Bulletin umweltbildung.ch 1/2012* - <http://www.umweltbildung.ch/aktuell/umweltbildungch> - 27.02.2017
- UN (1992): *Agenda 21*. [www.un.org/depts/german/conf/agenda21/agenda\\_21.pdf](http://www.un.org/depts/german/conf/agenda21/agenda_21.pdf). 27.02.2017
- Vogel, Thomas (2011<sup>3</sup>): *Naturgemäße Berufsbildung. Gesellschaftliche Naturkrise und berufliche Bildung im Kontext Kritischer Theorie*. Norderstedt. Books on Demand.
- WBGU (2011): *Hauptgutachten. Welt im Wandel. Gesellschaftsvertrag für eine Große Transformation*. Berlin. <http://www.wbgu.de/hg2011> - 27.02.2017
- Wegner, Ullrich / Wegner, Kirsten (2017): *Einführung in das Logistik-Management. Prozesse – Strukturen – Anwendungen*. 3., aktualisierte und erweiterte Auflage. Wiesbaden

#### **Internet:**

- <https://www.ausbildung.de/berufe/speditionskaufmann/gehalt>
- <https://www.bibb.de/govet/de/54880.php>
- <https://www.bibb.de/de/53906.php>