

National report

**on the qualifications and national vocational education
and training system (VET) for professionals in the Solid
Waste Management Industry in Germany**

STRUCTURE

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1. Introduction

The waste management industry is changing. New laws, initiated by European legislations, as well as rapid technological change require highly qualified personal on the technician as well as manager level to cope with the current and future dynamic business environment

This report provides an overview of the waste management industry as well as the relevant required qualifications by technicians and managers of Solid Waste Facilities. The aim is, on the national level, to draw conclusions towards the development of an European qualification framework for solid waste management professionals. Professionals mean technicians and managers. Both qualification levels are equal to EQF 4 and EOF 6.

The following report provides an overview of:

1. Waste management industry structure in Germany,
2. Relevant qualifications of professionals to deal with different sorts of waste,
3. Important topics, acquired knowledge and skills
4. Relevant legislation,
5. Labor market and working condition,
6. VET System and quality assurance system.

The report is based on statistical data and survey results. The relevant information was gathered by a standardized questionnaire (see Annex I), which was distributed in June and July 2013 to waste management facilities, associations, authorities and training organizations. 616 questionnaires were sent to:

- a) Managers (managing directors, head of human resources), of public owned waste management facilities,
- b) Managers managing directors, head of human resources) of private owned waste management facilities,
- c) Provider of trainings,
- d) Industry associations.

We obtained 68 returned questionnaires. The survey was executed by an online questionnaire. We mainly focused on the management level. The survey consisted of three steps:

1. Focus on public owned waste management firms with the help of the industry association "VKS im VKU" (Association of municipal waste management and public cleaning in the association of municipals). With the support by them, we were able to get first-hand insights. The companies were contacted in two steps by a structured online questionnaire. The link to the survey was included in the email. Before the end of the official deadline a reminder to the webpage of "VKS im VKU" was published. This helped to gather further completed questionnaires (Figure 1)
2. Focus on private owned firms: Private interviews with managers (director, human resources, finance) were conducted.
3. Focus on VET providers: The Research Institute for Vocational Education and Training (F-BB) carried out the survey among VET institutions.
4. Focus on industry associations: The online questionnaire was sent to the relevant associations.

The screenshot shows the website of the Association of Municipal Waste Management and Public Cleaning (VKU). The main navigation bar includes 'Energiewirtschaft', 'Wasser/Abwasser', and 'Abfallwirtschaft'. The 'Abfallwirtschaft' section is active. The main content area features a news article titled 'Kommunale Abfallwirtschaft und Stadtreinigung VKS' with the sub-heading 'Herausforderung Zukunft'. The article discusses the development of a European qualification for waste management and circular economy professionals. A sidebar on the left provides a comprehensive menu of topics, including environmental protection, waste management, and business operations. On the right, there is a user login section, a forum banner, and an event announcement for a conference in Dresden.

Figure 1: Survey reminder at the webpage of “VKS im VKU” (Association of municipal waste management and public cleaning in the association of municipals)

The actions carried out helped us to get up to data and first information from deciders. The return rate is with 11.04% higher than expected.

The questionnaires were slightly changed, to respond to the highly developed state of the German vocational education and training in the field of waste management.

2. Waste Management Industry in Germany

Almost 40 bn. € earned German companies, which were active in the waste management industry, in 2011.¹ At this time Germany had 14.887 waste management facilities². Three years before, in 2008, almost 1% or 121 more facilities were operating. Most of the facilities deal with the collection, recycling and the treatment of waste (66%).

The federal structure of Germany enables a distinct view on the density of waste management distribution. There is a correlation between the area and the economic power of a federal state. The federal state of Bavaria has with 4.990 the highest number of waste management facilities in Germany.³ Only one third or 1826 waste management facilities are located in North-Rhine Westphalia, followed by Upper Saxony with 1289 and Baden Württemberg 1669 with such facilities.

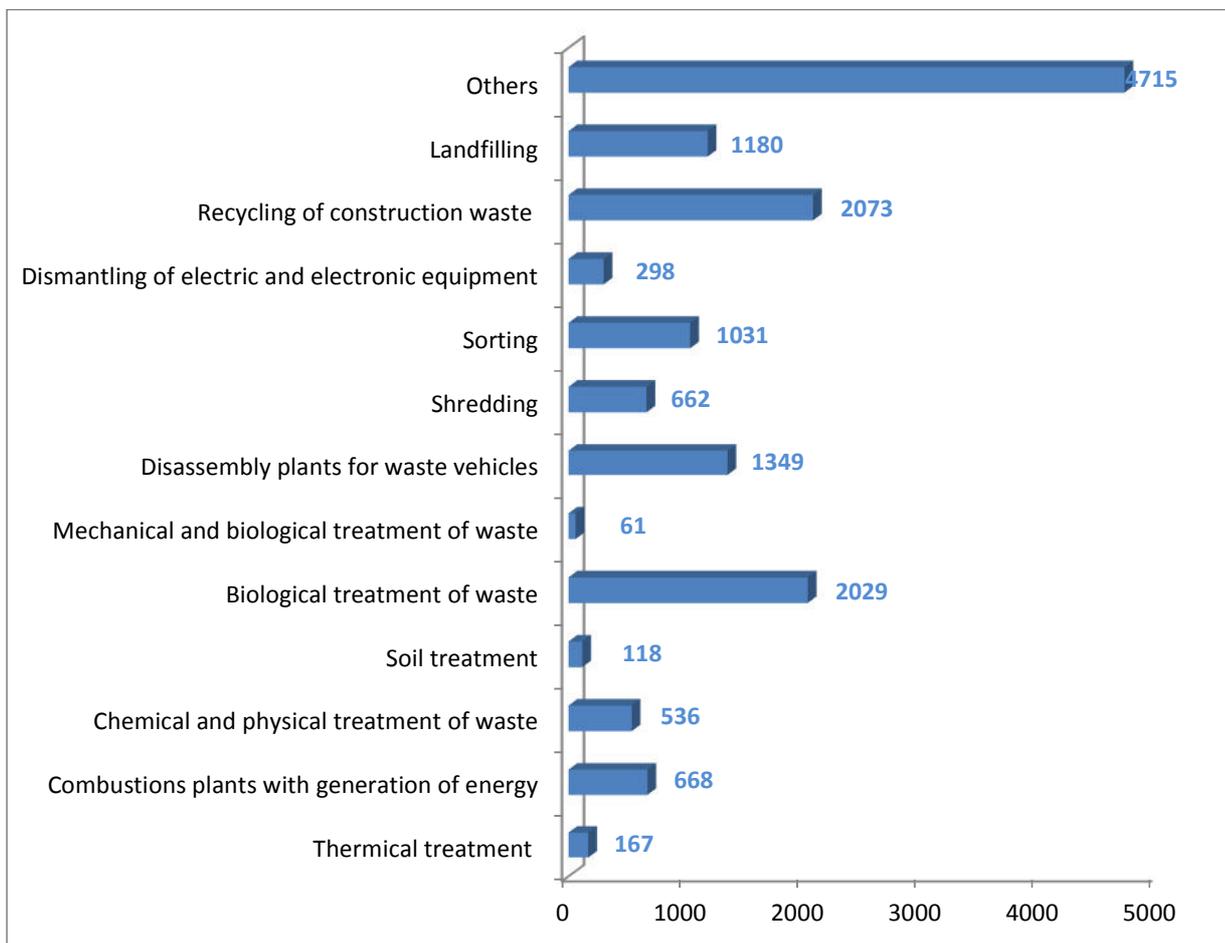


Figure 2: Number of waste facilities for certain treatment options (2011)⁴

¹ Waste Recycling Management – Reuse of waste, save resources (brochure), German Federal Ministry for Environment, Nature Conservation and Nuclear Safety, 2011, p. 4.

² DESTATIS (Federal Statistical Office), Abfallentsorgung, Fachserie 19, Fachreihe 1, 2011, p. 29.

³ DESTATIS (Federal Statistical Office), Abfallentsorgung, Fachserie 19, Fachreihe 1, 2011, p. 28.

⁴ Destatis (German Statistical Office), Manufacturing, technical series No. 4, Edition 6.1., p. 14.

Only 4% or 668 are incineration facilities. The data show the variety of recycling and disposal operations.

In 2011 there were 1180 landfills.⁵ Most of the landfills or 83% are for uncontaminated soil and construction waste, treated household and commercial waste.

A sector specific view provides a detailed picture about the collected amounts. The broad regional coverage of the waste water and waste disposal operations reflect, that almost one third of the sites deal with waste water and water disposal, but only 167 Mio. t were collected. In comparison to that number, the input from mining and manufacturing is 5 times higher. Fewer numbers of facilities with a higher capacity are the reason.

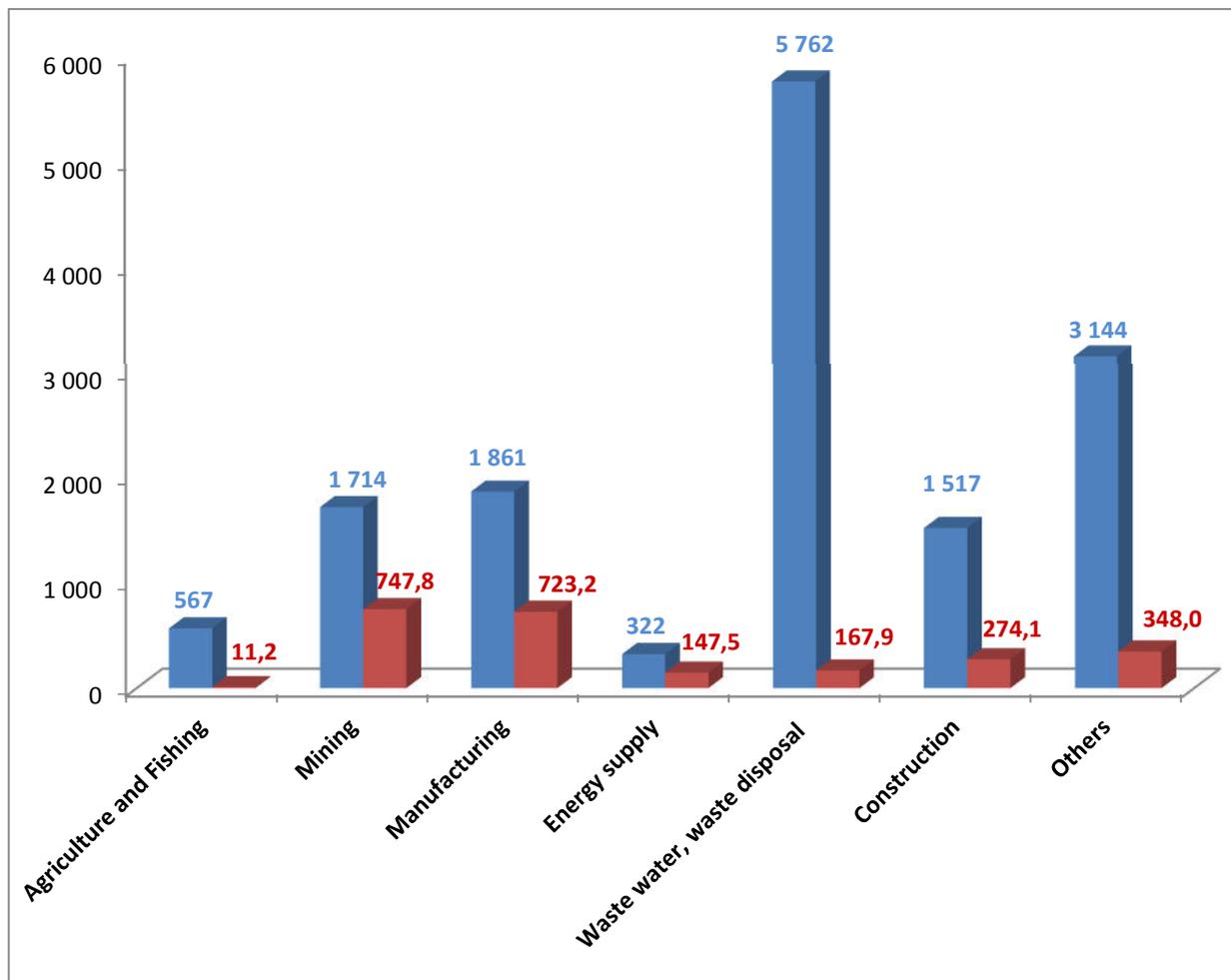


Figure 3: Solid waste facilities with input by sector (blue bars) and relevant waste (per 100.000 t) for the 14.887 solid waste facilities in 2011⁶

⁵ Destatis (German Statistical Office), Manufacturing, technical series No. 4, Edition 6.1., p. 36.

⁶ DESTATIS (Federal Statistical Office), Abfallentsorgung, Fachserie 19, Fachreihe 1, 2011, p.29.

2.1 Structure of Waste Management Industry

The German waste management industry has many private and public owned companies, which carry out the same tasks. The municipalities can choose, if they are active in all waste management processes or if they publish an invitation to tender for certain tasks. Municipalities mostly collect and sort waste. Private companies recycle waste, because municipalities run no recycling facilities, apart from composting facilities for green waste. Private and public owned waste management facilities are competitors mainly in running waste incineration facilities.

In Germany there are 1578 public and private owned companies, which are dealing with the collection, the treatment and the disposal of waste.⁷ 66% are limited companies (Ltd.). More than two third have an annual turnover of not more than 10 Mio. €.

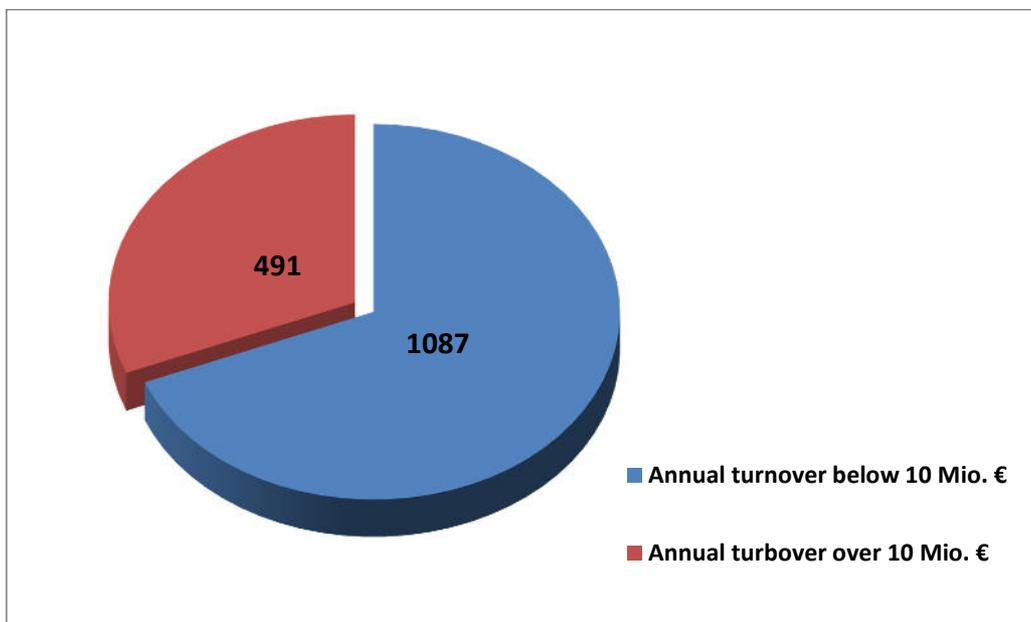


Figure 4: Number of with an annual turnover below or above 10 Mio. €. (2011)

Waste management, in Germany, is mostly a public task, carried out by public owned companies. These public owned entities account to 88% of the market. There are about 414 public owned companies in the field of waste management, which are represented by the “VKS im VKU”. Most of these firms provide services like waste collection, recycling, cleaning, composting, incineration and landfills. Some of them run all waste sorting and waste treatment options. This reflect the following numbers. There are companies active in the field of: waste collection (287), recycling (232), composting (91), incineration (43), mechanical biological treatment (31) and landfilling (136).⁸

⁷ Destatis (German Statistical Office), Manufacturing, technical series No. 4, Edition 6.1., p. 50.

⁸ VKU (Association of municipals), policy paper, 2010, p. 31.

The collected waste fractions show that almost 50% of the companies deal with biodegradable waste, paper, glass and light packaging. The other half includes collecting hazardous materials, residual and bulky waste.

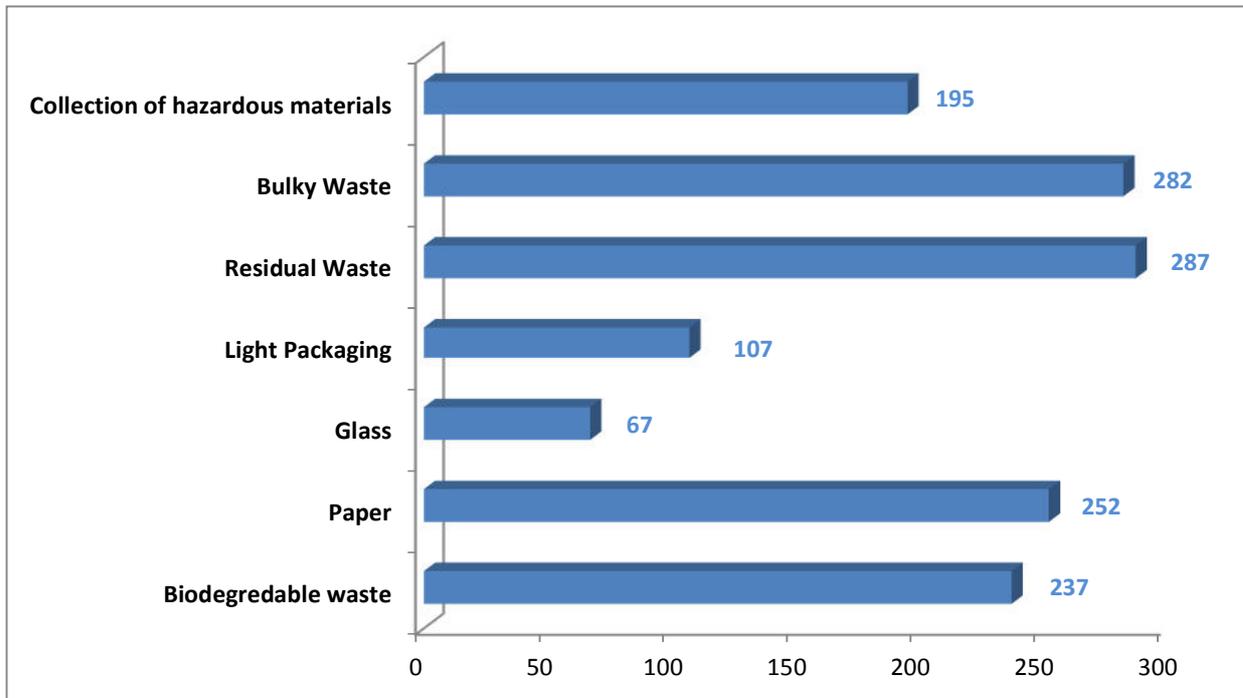


Figure 5: Fields of business of public owned waste management companies according to collected waste fractions (2011)⁹

In 2011 in Germany 64% or 251 Mio. t of municipal waste is recycled. This is the highest rate in the EU-27.¹⁰

2.2 National legislation

The legal framework for the waste management industry in Germany is determined by the European Waste Framework Directive (2008/98/EC) and the German Recycling Management Act¹¹. The latter act was enforced in 1996. Its predecessors relate to the act concerning the disposal of waste from 1972.

The German act and the European directive are harmonized, but both regulations are not fully congruent. The German Recycling Management Act goes beyond the European directive, because the German waste

⁹ VKU (Association of municipals), policy paper, 2010, p. 31.

¹⁰ VKU (Association of municipals), policy paper, 2010, p. 31.

¹¹ Kreislaufwirtschaftsgesetz (KrWG - Gesetz zur Förderung der Kreislaufwirtschaft und Sicherung der umweltverträglichen Bewirtschaftung von Abfällen) from 05.22. 2013

management industry is more advanced in such things as waste prevention, waste treatment and waste recycling as well as the product take-back obligation of companies.

The German Recycling Management Act (2013) implements and defines the elements of the waste hierarchy (prevention, recycling, disposal) further. Basic goal is the prevention of waste, especially the reduction of not recyclable waste for landfills. The public acceptance for new landfills and new incineration facilities in Germany is quite low. Therefore, the waste hierarchy consists of the following steps: waste prevention, followed by the recovery option: preparation for reuse, recycling, use/recovery of waste (to generate new materials and energy) as well as waste disposal. **Waste is not simply waste, waste is seen as a raw material.**

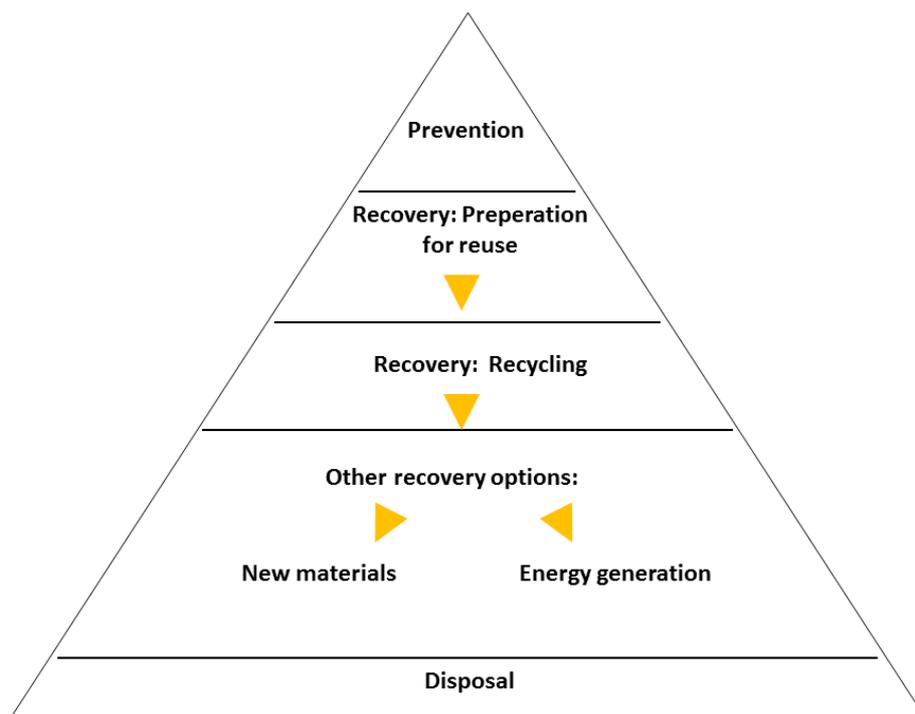


Figure 6: Waste hierarchy: prevention, recycling, re-use and dispose environment friendly (according to the German Recycling Management law)¹²

The general regulations of the German Recycling Management Act are specified by a series of ordinances.

I. Ordinance concerning the prevention and the recycling of packaging waste¹³: Main Goal is the prevention of packaging waste. If that outcome cannot be achieved, the generation of new materials and the energy generation out of waste are aimed.

¹² See: Waste Recycling Management – Reuse of waste, save resources (brochure), German Federal Ministry for Environment, Nature Conservation and Nuclear Safety, 2012, p. 10.

¹³ “Verordnung über die Vermeidung und Verwertung von Verpackungsabfällen” (2012).

II. Ordinance for end of life vehicles¹⁴: Vehicle producer and vehicle distributors finance the recycling of cars, after the end of life of a car. 85% of the average weight of single vehicle has to be recycled or at least 80% have to be used for the generation of new materials or for the generation of energy.

III. Ordinance for Landfills¹⁵: Waste has to be (chemically) stable, before a disposal takes place. If necessary, waste has to be treated. A treatment is sufficient, if the result is irreversible. Calorific waste for recycling or thermal treatment or polluted fractions has to be largely separated before the mechanical and biological treatment.

IV. Electrical and Electronic Equipment Act¹⁶: The equipment producers are obliged to take back old electrical and electronic equipment, which public municipalities collected. The law aims to prevent a pollutant carryover to other processes and products; the optimization of metal yield; state of the art plastic recycling; screen recycling and eco-efficient reuse of materials.

VI. Ordinance for Biological Waste¹⁷: Biological waste has to be treated (by microorganisms, enzymes etc.) before it is used. The parameters of biological waste (pH-value, lead metal ratio etc.) have to be controlled regularly. During a period of 3 years at least 20 tons of biological treated waste per hectare farmland is allowed.

The positive outcomes of the German Waste Management and Recycling ordinances and laws are¹⁸:

- Economic growth and waste production are decoupled. Waste production decreased in recent years.
- The reuse of municipal waste increased to 77%.
- Increase of generation of new materials and energy from waste saves 8 times more crude oil, natural gas and coal as in the year 1990.

2.3. Solid Waste Streams

To characterize the solid waste management the solid waste streams and the processes of waste disposal have to be analyzed.

The waste disposal processes are differentiated into certain value chains:

- Waste collection;
- Waste transportation;
- Waste sorting and recycling of secondary raw materials and disposal materials;

¹⁴ "Altfahrzeug-Verordnung" (2012).

¹⁵ „Deponieverordnung“ (2013)

¹⁶ "Elektro- und Elektronikgerätegesetz" (2013)

¹⁷ "Bioabfallverordnung" (2013)

¹⁸ See: Waste Recycling Management – Reuse of waste, save resources (brochure), German Federal Ministry for Environment, Nature Conservation and Nuclear Safety, 2011, pp. 11-13.

- Waste recovery (to new materials and for energy generation);
- Waste trade and marketing and
- Elimination of residual waste.

Each of the above mentioned processes can be subdivided according to the relevant solid waste stream, like:

- Municipal waste;
- Hazardous waste (pollutants, waste from hospitals) ;
- Waste from construction sites and demolition waste;
- According to recyclables¹⁹:
 - Waste batteries;
 - Biogenic waste (green waste, biological waste, food waste).
 - Waste of electronic and electronic equipment;
 - Waste glass;
 - Waste metals;
 - Waste oil;
 - Waste paper;
 - Waste polymers (waste plastics, waste rubber);
 - Waste textiles;
 - Waste vehicles;
 - Packaging waste and
 - Waste wood.

Since 2002 the waste recycling quota increased from 65% to 75% in the year 2010. In the same period the disposal quota decreased by 10% to 25%.

The recycling quota in 2010 for several recyclables are above 70%, i.e. for²⁰:

- Waste paper: 88,3 %;
- Waste glass: 86,1%;
- Waste plastics: 75%;
- Waste electronic and electronic equipment: 83,5% and
- Waste vehicles: 95,5%;

¹⁹ www.bmu.de/themen/wasser-abfall-boden/abfallwirtschaft/abfallarten-abfallstroeme

²⁰ Waste Recycling Management in Germany in 2013 – facts, data and figures (brochure), German Federal Ministry for Environment, Nature Conservation and Nuclear Safety, 2012, pp.8-27.

2.4. Waste Management Industry Associations and Networks

The organization of waste management industry is characterized by three associations, which cover all material streams and several associations, which represent the interests of single companies of certain material streams. The association structure is heterogeneous. Reasons are the different ownerships (public and private), different material flows (paper, glass, metal etc.), the different value chains (collection, transporting, processing, recycling and landfilling) and the final products (secondary raw materials and energy)²¹.

The biggest three associations are:

I. **Association of municipal waste management and public cleaning in the association of municipals** (“VKS im VKU”²²) – www.vku.de

This association is the organizational platform for all the German public owned recycling and waste management companies. Members are also involved in electrical power, gas, heat and water supply. Relevant for the waste management industry is the sub association of municipal waste management and public cleaning in the association of municipals (“VKS in VKU”). This sub association has currently 414 members (companies, public entities like cities, communities etc.). The members had in 2011 more than 68.000 employees and the annual turnover with waste management services amounted to 8.7 bn. € annually.²³

II. **Federal association of the German Waste, Water and Raw Materials Industry** (“Bundesverband der Deutschen Entsorgungs-, Wasser- und Rohstoffwirtschaft”) - www.bde-berlin.org

The association, with its 750 members (2012), is the biggest lobby group of the recycling, waste management and water supply industry in Germany and Europe, according to association information. Members are SME’s, multinationals and international cooperation’s as well as their affiliates.

III. **Federal association of secondary raw materials and disposal** („Bundesverband Sekundärrohstoffe und Entsorgung“) – www.bvse.de

The 670 members of the association are mainly SME’s from the waste management industry. They had all together in 2011 an annual turnover of 10 bn. € and more than 50.000 employees.²⁴ There are 7 technical sub associations: scrap, e-scrap and care recycling;

²¹ The economic importance of the German waste management industry, Federal Ministry for Economics and Technology, 2009, p. 74.

²² Verband kommunale Abfallwirtschaft und Stadtreinigung (VKS) im Verband kommunaler Unternehmen (VKU)

²³ VKU (Association of municipals), policy paper, 2010, p. 3.

²⁴ [www.bvse.de/3/7/bvse - Wir setzen auf Erfolg](http://www.bvse.de/3/7/bvse_-_Wir_setzen_auf_Erfolg_)

hazardous waste; paper recycling; glass recycling; plastic recycling; waste wood and waste fuels; textile recycling;

Further associations are:

- I. **Federal association of German steel recycling and waste management companies** (“Bundesverband Deutscher Stahlrecycling- und Entsorgungsunternehmen”) - www.bdsv.de
- II. **Business association metals** (“Wirtschaftsvereinigung Metalle”) - www.wvmetalle.de
- III. **Association of German metal dealer** (“Verband deutscher Metallhändler”) - www.metallhandel-online.com
- IV. **Association of the alumina recycling industry** (“Verband der Aluminiumrecycling-Industrie e.V.”) - www.aluminium-recycling.com
- V. **Federal association for composting** (“Bundesgütegemeinschaft Kompost e.V.”) - www.kompost.de
- VI. **Federal association of recycling building materials** (“Bundesvereinigung Recyclingbaustoffe e.V.”) - www.recyclingbaustoffe.de
- VII. **Federal association of waste wood processing and recycling** (“Bundesverband der Altholzaufbereiter und –verwerter”) - www.altholzverband.de
- VIII. **Association of the German paper mills** (“Verband Deutscher Papierfabriken e.V.”) - www.vdp-online.de/en.html

3. Importance of knowledge

The waste management industry requires well trained people. The German VET pays attention to it. The occupation as “recycling and waste management technician” (NQF-level 4, equal to EQF 4) is offered. The training content is standardized.

For the management level, the further training as “certified specialist for recycling and waste management, and public cleaning services” is available. A technician undertaking the further education achieves EQF level 6 and is qualified for management tasks. The content of the further education is regulated and all over Germany the same.

The following topics are covered during the 3 years of training for achieving the technician level²⁵:

- Health and safety,
- Environmental protection,
- Principles of corporate organisation and management,
- State- of- the art technologies,
- Measurement, regulation and control technology,
- Applying basics of natural sciences,
- Dealing with hazardous materials,
- Dealing with working equipment, storage of materials,
- Customer and business oriented acting,
- Principles of waste classification,
- Waste disposal and recycling techniques,
- Maintenance of equipment,
- Waste streams,
- Quality assurance,
- Information technology,
- National and EU legal requirements, waste management policy principles.

²⁵ See the training regulation for the recycling and waste management technician.

The following topics are covered at the manager level:

Basic qualifications:

- Acting according to the law (environmental law, labour law)
- Acting according to business principles (organisation of the company, organisational development, types of costs, costs centers, cost accounting, calculation methods)
- Acting according to information, communication and planning methods (evaluation of planning and analysis methods, application of presentation methods, project management methods, information and communication methods)
- Working together in the company (leadership principles, methods for solving company problems and social conflicts)
- Basics in the field of natural sciences and technology (application of statistical methods, introduction to chemistry, Calculation of company and process related parameters during tension and movement)

Action specific qualification:

- Technology (operating machinery and equipment in waste management industry; logistics, collection and transport of waste, public cleansing)
- Organization (costs, management a facility/company, monitoring actions and client focus, health and safety and environmental protection, law)
- Human resources (leading and developing employees, management systems)

We decided not to ask the companies how important the knowledge is, as it is already covered by training plans for technicians and managers. However the level of importance can be considered as medium to high. Especially health and safety is an important issue.

We slightly changed the questions and asked the companies, which courses their employees might be interested in to take part.

The following offers for the technician and the management level: further training to becoming a waste management officer as well as an immission control officer in the company; technical rules for hazardous materials (setting up collection points for hazardous materials), seminar on landfill gas, waste sampling and transport of hazardous materials.

4. Current Skills and importance of practical skills

The level of importance has been scored (1 – low importance, 2- medium and 3 - high importance).

A medium importance can be considered for all skills. Health and safety and waste management procedures are slightly higher scored, due to their importance in the training plans of the technicians and the certified specialists (manager level).

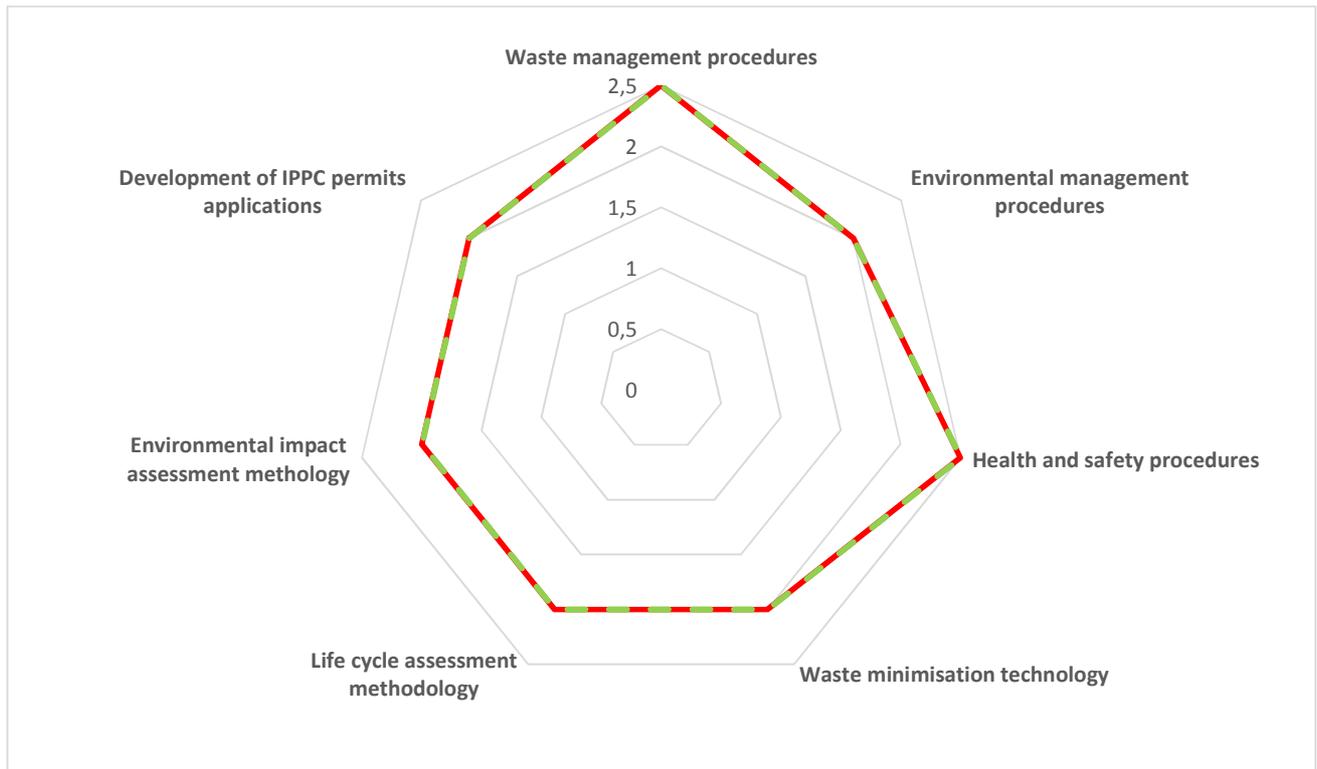


Figure 7: Current skills (red) and importance of practical skills (green) [scored results]

The importance of current and practical skills can be considered as similar. This reflects Figure 7.

5. Labor status

The German waste management industry employed in 2011 almost 200.000 persons.²⁶ Public owned companies alone had 68.000 persons.

The waste management industry is a quite profitable business. The average annual sales per employee range from 170.000 € to 380.00 €. Most profitable were the treatment of scrap metals, construction waste, waste paper and hazardous waste.²⁷

5.1. Salary level

The monthly salaries for technicians, during their apprenticeship, differ according to years of training and whether the employer is a public or private owned company. The monthly salary of each recycling and waste management technician apprentice all over Germany is the same or at least comparable.

Years of training	Private	Public
1	595 €	753 €
2	647 €	803 €
3	711 €	849 €

Table 1: Monthly salary of apprentices (Recycling and waste management technician)²⁸

From January 1st, 2013, the standard wage for employees in the waste management industry is 8.68 € per hour.

Trained recycling and waste management technicians earn, according to the available information, 1200 € to 3200 € per month.²⁹

The salary of managers differs according to the size of the company, their years of work experience and their involvement in the human resource management. The salary ranges from 50.000 € to 180.000 € (managing director) per year.

²⁶ Waste Recycling Management in Germany in 2013 – facts, data and figures (brochure), German Federal Ministry for Environment, Nature Conservation and Nuclear Safety, 2012, p. 5.

²⁷ www.bmwi.de/DE/Themen/Industrie/Rohstoffe-und-Ressourcen/entsorgungs-und-kreislaufwirtschaft.html

²⁸ <http://berufenet.arbeitsagentur.de/berufe/docroot/r2/blobs/pdf/bkb/14757.pdf>

²⁹ www.gehaltsvergleich.com/gehalt/Fachkraft-Kreislauf-Abfallwirtschaft.html

5.2. Competitions for employees (survey results)

In figure 8 the results of the survey are presented and they show a high demand for qualified personnel. Middle to high level of competition for technicians is reported in 50% of the answers. Surprisingly, an even higher competition level is found for managers with 30%. A medium competition level amounts to 17% for managers.

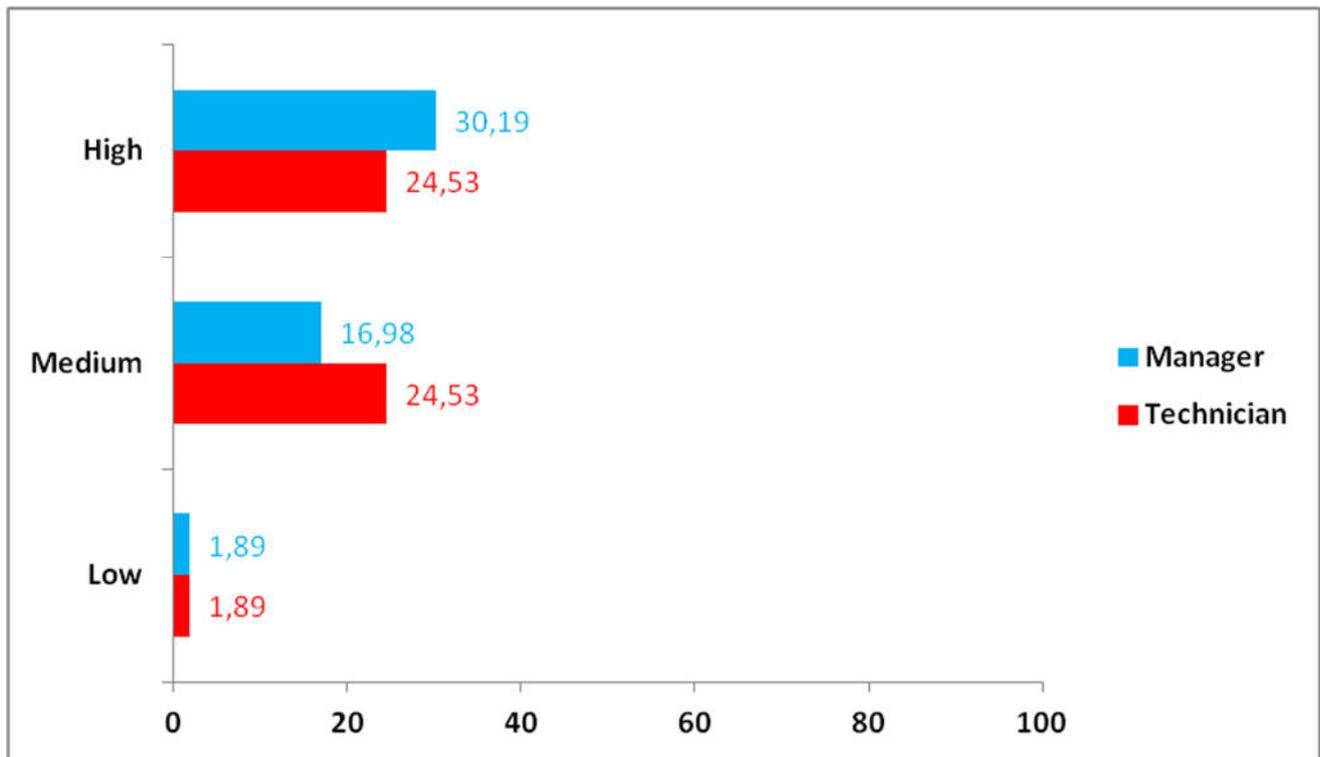


Figure 8: Competition level for employees (in %)

5.3. Employee Replacements (survey results)

In 2011 24% of the companies active in the waste management industry employed new personal, but 7% of the firms are not able to find the preferred candidates. For 2012 und 2013 38% of the firms forecast replacements, but 67% expect replacements, because of the retirement of current employees.³⁰

The survey results indicate the strong demand of qualified personnel. Figure 9 highlights this tendency. The replacement rate and/or need for managers was quite high, as almost in 50% of the cases of the responding companies reported a need of up to 5 managers in the last three years. The need for 5 to 10 technicians is in more the 50% of the responding firms also quite high.

³⁰ IAB Research Report 2012, S. 64.

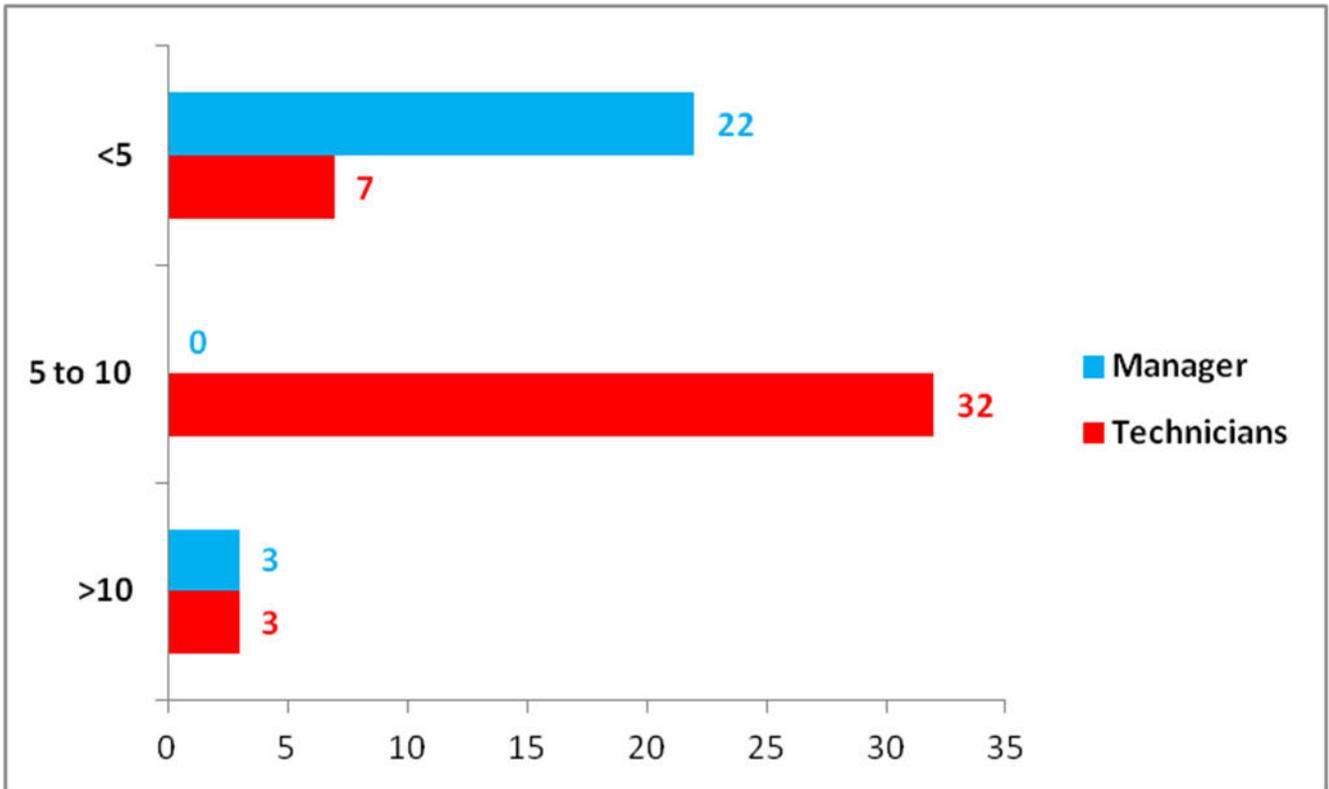


Figure 9: Number of employee replacements in the last three years

The survey results show the fight for qualified personnel on the technician and management level.

5.4. Work Conditions (survey results)

The overall situation in the German waste management industry, concerning the work conditions, is good (see figure 10). 2 out of 3 answers document this. Very good conditions have a share of almost 20% and satisfactory conditions amount to 13%. In general or more than 80% of all cases, good to very good were reported in the survey. The survey focused mainly on the management level. Satisfactory to bad conditions reported mainly technicians. In addition, the effect of ensuring a certain level of work conditions, by meeting the legal requirements, is important.

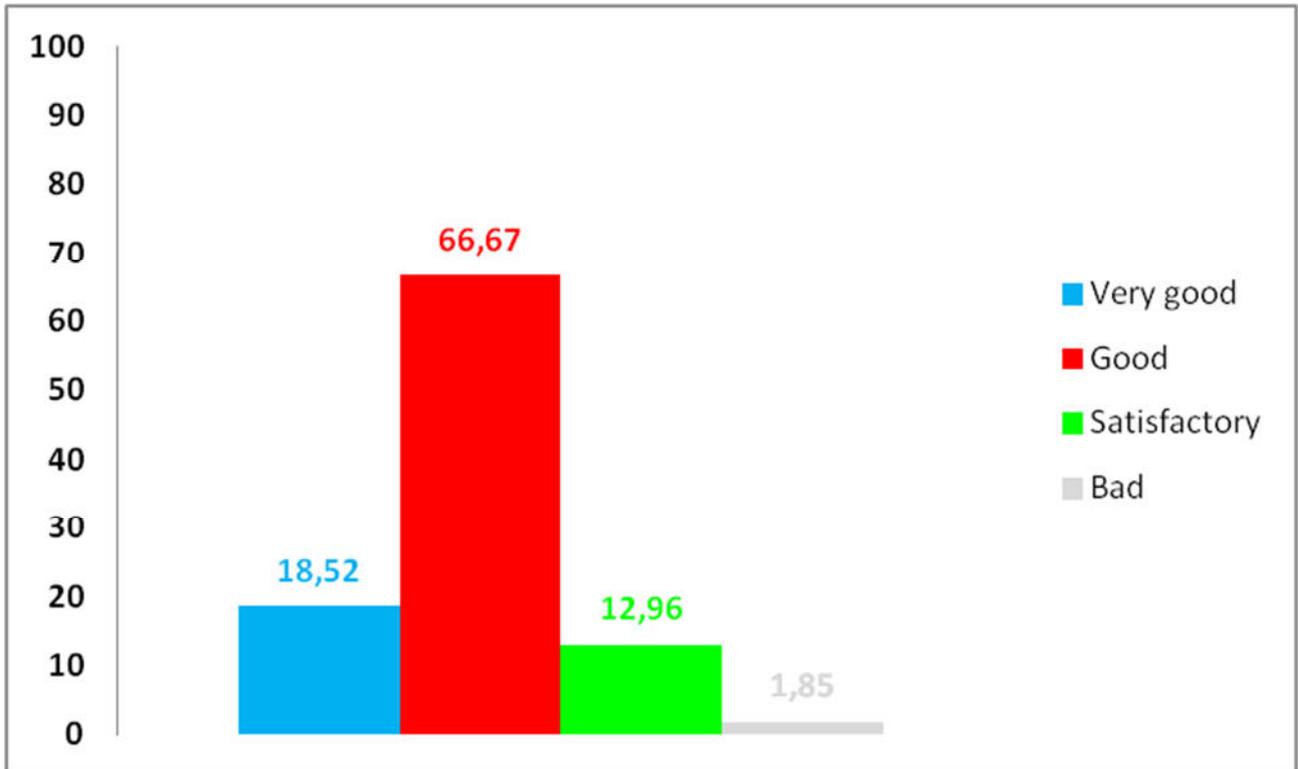


Figure 10: Work conditions (in %)

5.5. Social Status

In general, the German dual VET-System is globally well recognized, as it contributes to the economic power of Germany and ensures a skilled workforce. This reflects also the good social status of apprentices in Germany in general and for the apprentices in the waste management industry. The vocational education and training is a practical orientated. The apprentices are paid by their company. 49% of school graduates become apprentices.

In addition, the status of employees depends upon their responsibilities and is reflected by the individual salary level.

6. Waste Management Industry VET-system in Germany

In Germany, the training in the waste management industry is regulated. There are training plans for the course of the training (3 years for the waste management technician, 2 year for the “certified specialist for recycling and waste management, and public cleaning services”). Due to the dual education and training system companies and schools are engaged the training process. Normally 50% of the youth, who finish school, start a training.

Responsible stakeholders are:

- Federal government (recognizes training occupations and promotes measures to support dual training),
- Federal states (issue curricula),
- Chambers of commerce (administer examinations),
- Employer’s Associations and trade unions (negotiate provisions in collective agreements, i.e. amount of allowance paid to apprentices).

6.1. Accreditation and awarding process

In Germany, a two-step **accreditation system** is in place, consisting of so-called certification and accreditation procedures. In the regulatory framework, external evaluation of VET providers and their training courses is called ‘certification’ and ‘licensing’, the bodies which are to exercise the licensing process are called ‘certification agencies’ (*Zertifizierungsstellen*) or ‘centres of expertise’ (*fachkundige Stellen*). To carry out their activities, these agencies or centres have to be ‘accredited’ first by the German Federal Employment Agency (Bundesagentur für Arbeit – the public employment service), which thus acts as the overall body for accreditation (*Anerkennungsstelle*) The body assigns external experts as evaluators.

Training providers must fulfill the following criteria to be accredited:

- a) financial standing, professional competence and good reputation;
- b) consideration of the current situation and trends in the labour market and availability of support mechanisms for job placements of participants;
- c) suitability of managerial, advisory and teaching staff for implementation of successful training programmes;
- d) application of an internal quality assurance system.

For accreditation of training programmes the following requirements have to be fulfilled:

- e) a training concept tailor-made to requirements of potential participants;
- f) consideration of labour market-related and regional development trends;

- g) a concept which aims towards a high employment rate of participants;
- h) preparation of participants for a qualification (or qualification modules);
- i) a certificate stating the acquired qualification;
- j) expense ratios in line with principles of efficiency and cost-effectiveness;
- k) duration of training limited to the technically-required extent;
- l) integration of practical learning units into the training.

In addition, the training providers have to implement a quality management system (DIN EN ISO 9000, 9001:2000).

Key actions of accreditation system are that as many participants as possible are placed in jobs, pass the examinations successfully, do not drop out and are satisfied with the training program in general.

In Germany, the chambers of commerce (self-governing bodies) are responsible for **awarding** qualifications in the waste management industry. They advise the stakeholders in training, supervise training in the company, verify the aptitude of companies and training instructors, register training contracts and administer examinations.

6.2. Quality assurance

The main actors in the dual vocational and education training system are the companies and the vocational training schools. Further players are the Federal Institute for Vocational Education and Training, the Federal Ministry of Education and Research, the Standing Conference of the Ministers of Education and Cultural Affairs of the German Federal States, the Federal Employment Agency and social partners (workers unions etc.).

The Federal Institute for Vocational Training and Education is responsible to prepare training plans. The Standing Conference of the Ministers of Education and Cultural Affairs of the German Federal States is responsible that the education policy in each Federal State matches. The Federal Employment Agency consults and supports the VET. The responsible ministries recognize the relevant job profiles. The chambers of commerce are responsible to monitor the companies.

In Germany, the core document in the field of training (EQF-Level 4) is the German Vocational Training Act. It contains instruments for the quality assurance in VET. The act defines standards and defines the framework of examinations. The responsible institutions are named to assure the professional suitability of apprentices and their obligations. A common goal of the German Vocational Training Act is to work together with social partners, the Federal States and the Federal Institute for Vocational Education and Training on instruments of quality assurance. These instruments shall be applicable during the process of a continuous quality assurance.

7. Training programs

The survey also provides insights in the perceived quality of training programs according to the following five parameters:

- a) Scope/Contents,
- b) Integration of theoretical and practical training,
- c) Quality of training materials,
- d) Qualification of trainers,
- e) Training facility.

Figure 11 presents the results. The best score got the parameter “integration of theoretical and practical training, followed by quality of training materials and scope /contents of training programs. This means the approach and extent of the taught contents are rated higher than the quality of training facilities and the qualification of trainers.

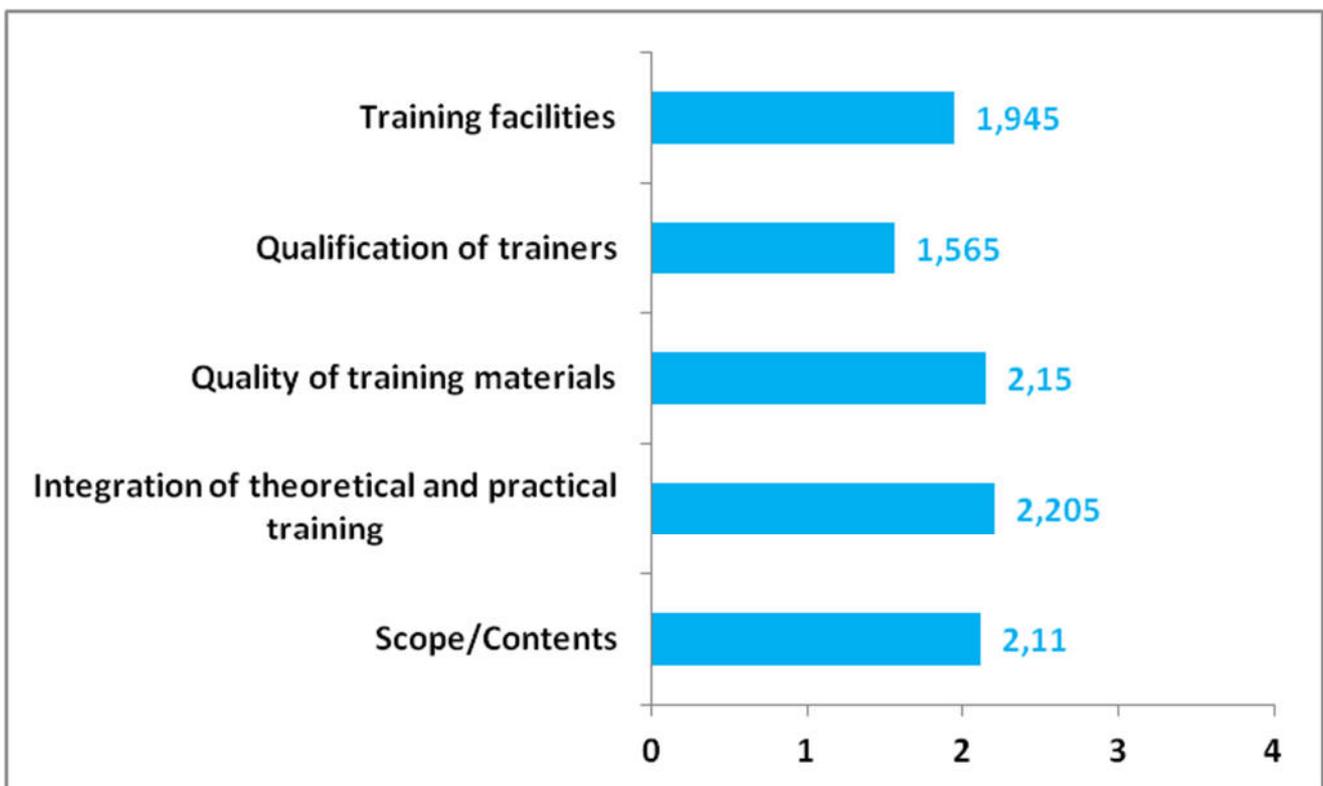


Figure 11: Perceived quality of training programs (survey results; 1 – satisfactory, 2- good, 3- very good)

One important factor for the participation in training programs in the waste management industry is their availability. The comparison of the monthly wages with the training program costs provide further information on the pay-off of the trainings. Figure 12 below show that for technicians and for managers the availability is given. A technician earns per month up to 3200 €. The training course costs amount to 100 €/day. On the managerial level is a similar picture. The monthly wage amounts up to 15.000€. The

course costs for a becoming a “certified specialist for recycling and waste management, and public cleaning services” over 2 years’ time amount to 5000 € (program costs).

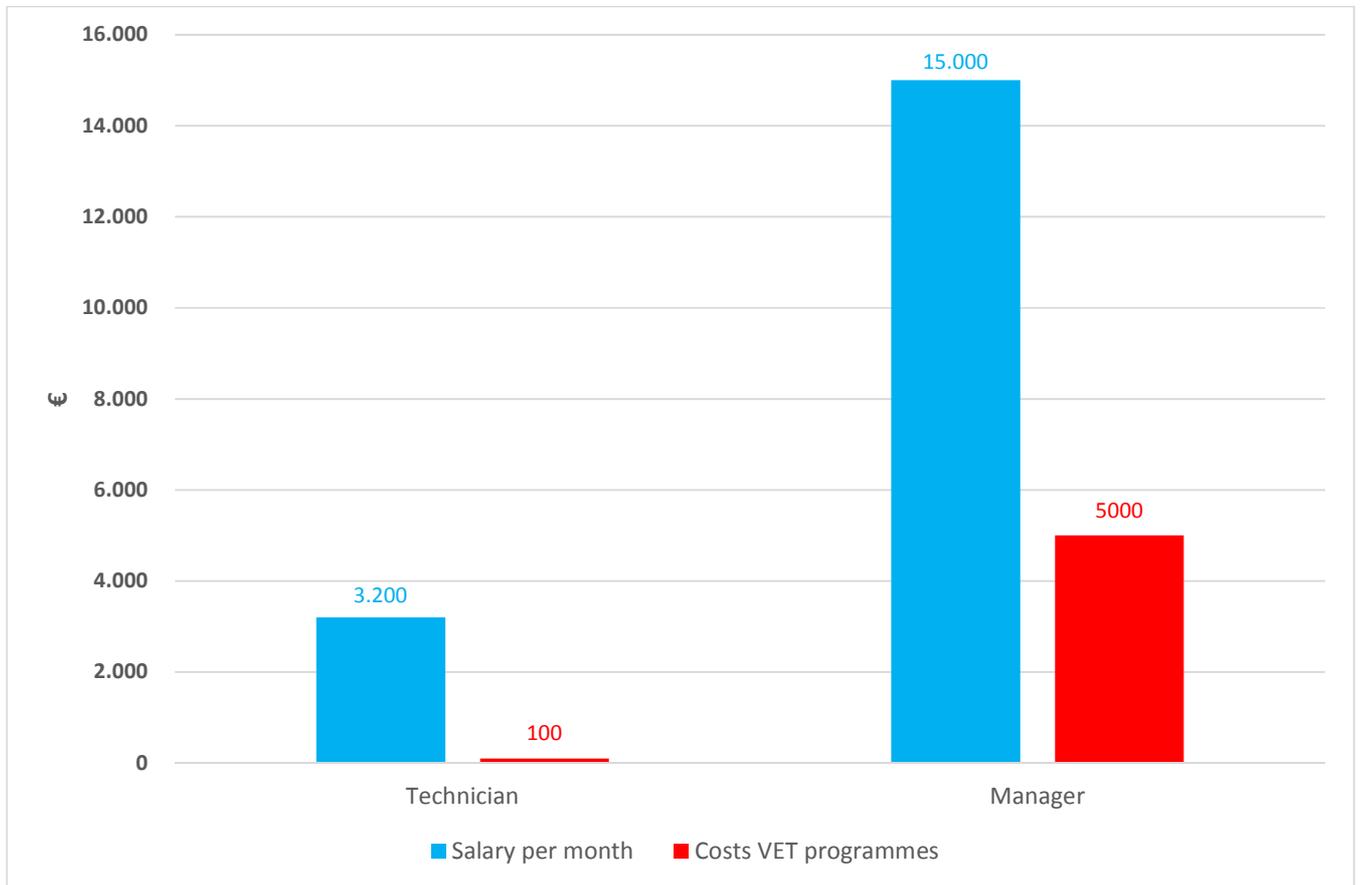


Figure 12: Availability of training programs for technicians and manager (comparison of monthly income and training costs)

In addition, during the survey 73% said that there are no obstacles to take part in trainings for technicians and manager. 27 % said there some obstacles like cost pressure by competitors and the use of temporary workers. To become a manager is for high-qualified person not attractive due to low wages in i.e. periphery regions.

If the training course are affordable, than the willingness to participate must be high. However, this is not the case (figure 13 below). The interest on course offers show no clear picture. Almost one-third said (33%) to have a rather low interest, one-third a normal interest (35%) and one-third a high interest (32%).

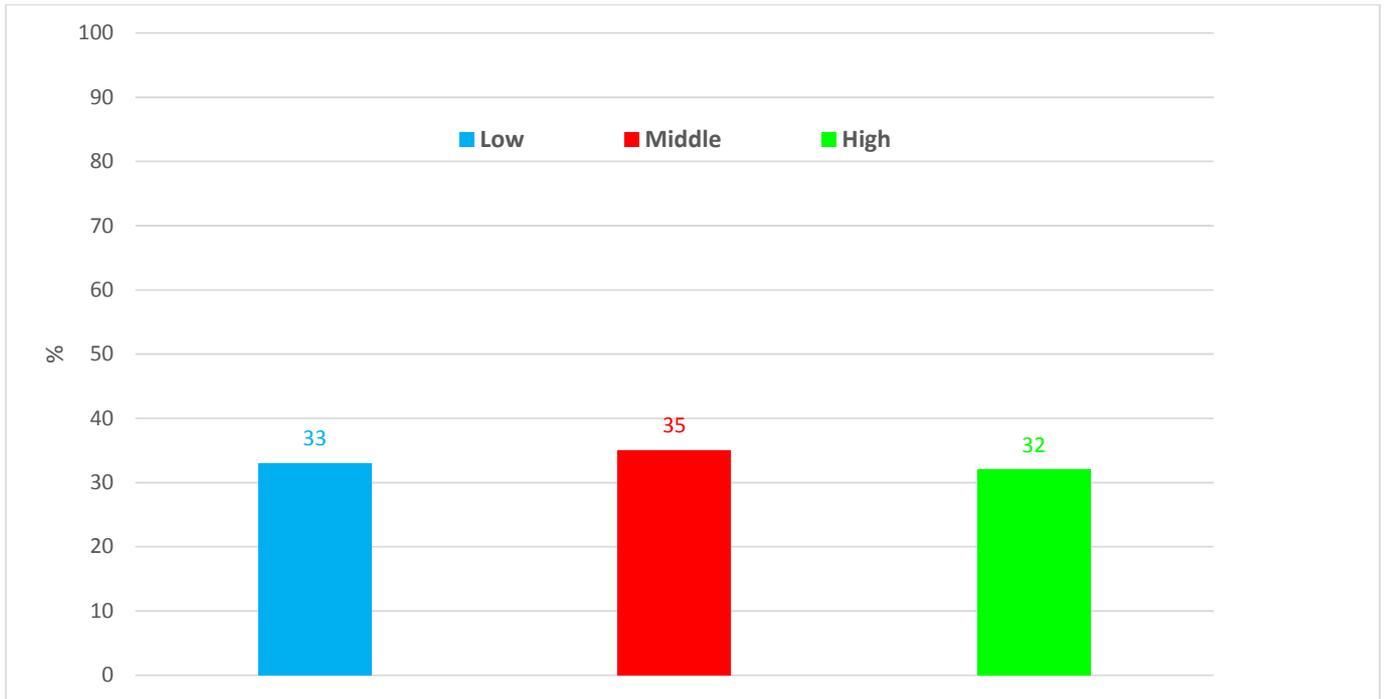


Figure 13: Interest/Willingness to participate in training programs (technician and manager level)

A further look on the training offers in Germany shows a clear picture: there are plenty of it. This ranges from standardized training on EQF Level 4 (each of the 16 federal states has at least one provider) and EQF-Level 6 and as well further training on specialized topics. In Germany online trainings for the waste management, industry seems to date not that common. However for further offers the way of provision (offline and/or online) might be important in the future.

8. Conclusions and recommendations

The German market for trainings in the field of waste management is quite developed. A specialized training curriculum for the occupational profile “recycling and waste management technician” and the “certified specialist for recycling and waste management, and public cleaning services” (manager level) exists. Interest in trainings originated mainly due to legal obligations, i.e. training of waste commissioners, dealing with hazardous waste. Therefore, interest in the field of health & safety and waste management procedures is present. An increasing demand for dealing with biodegradable material, due to the mandatory collection of bio waste by 2015, in fermentation and composting plants provides further opportunities.

The training offers are affordable to participants according to the maximal salary per month for technicians (3200 €) and for managers (15000€). In addition, there is financial support by the employer and third parties. The competition for employees is for the technician and the manager level on an high to middle level. The highest number of employee replacements in the last three years at the technician

level were in the range of 5-10 people. For the manager level there were among the majority of interviewed companies mainly up to five employee replacements. In addition, the work conditions were rates mainly good.

The quality of training programs were rated mainly good. The lowest score has the parameter "qualification of trainers". However, for the criteria to participate in further trainings measures was no real tendency visible.

For the provision of further trainings, for i.e. managers, work process oriented offers and a further implementation of online and mobile learning seems to provide an advantage to first movers in the future.

A N N E X

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Waste Manager_Unternehmen

Übersicht Umfrage entwerfen Beantwortungen erfassen Ergebnisse analysieren

- AKTUELLE ANSICHT ?
- GESPEICHERTE ANSICHTEN (1) ?
- EXPORTE ?
- FREIGELEGEBENE DATEN ?

BEFRAGTE: 33 von 33 Alle exportieren Alle freigeben

Frageübersichten
Datentrends
Einzelne Beantwortungen

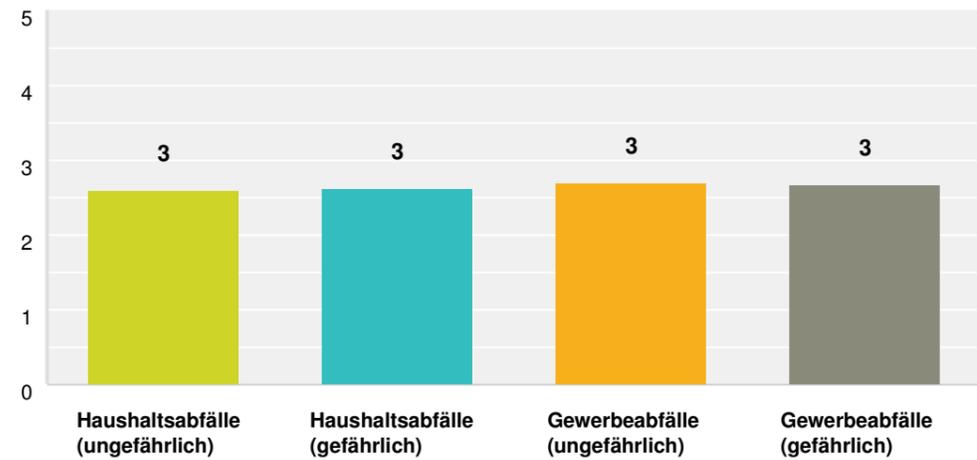
Alle Seiten

SEITE 2

F1 Anpassen Exportieren

Mit welchen Abfällen haben Ihre Mitarbeiter zu tun? In der Tabelle wird für die zwei Qualifikationsstufen – Fachkraft (1) und Führungskraft (2) – jeweils nach Herkunft des Abfalls und der Gefährlichkeit des Abfalls (nach Abfallverzeichnisverordnung) unterschieden. Damit sind die notwendigen Kenntnisse und Fähigkeiten ableitbar. (Zutreffendes bitte anklicken.)

Beantwortet: 31 Übersprungen: 2



	Fachkraft	Führungskraft	Befragte gesamt
▼ Haushaltsabfälle (ungefährlich)	100,00% 31	80,65% 25	31
▼ Haushaltsabfälle (gefährlich)	92,31% 24	84,62% 22	26
▼ Gewerbeabfälle (ungefährlich)	100,00% 27	85,19% 23	27
▼ Gewerbeabfälle (gefährlich)	88,89% 16	88,89% 16	18

SEITE 3

F2 Anpassen Exportieren

Wie würden Sie die Qualität bestehender, regionaler und nationaler Ausbildungsprogramme für Fach- und Führungskräfte für die Kreislaufwirtschaft einschätzen? Die jeweiligen Qualitätsindikatoren befinden sich in der linken Spalte. (Zutreffendes bitte anklicken.)
1 - sehr gut, 2 - gut, 3 - befriedigend, 4 - unbefriedigend

1 - **sehr gut**, 2 - **gut**, 3 - **befriedigend**, 4 - **unbefriedigend**

Beantwortet: 24 Übersprungen: 9

	Fachkräfte	Führungskräfte	Befragte gesamt
Umfang/Inhalte (1)	100,00% 2	50,00% 1	2
Umfang/Inhalte (2)	87,50% 14	81,25% 13	16
Umfang/Inhalte (3)	80,00% 8	80,00% 8	10
Umfang/Inhalte (4)	0,00% 0	100,00% 1	1
Verflechtung von theoretischer und praktischer Ausbildung (1)	66,67% 2	66,67% 2	3
Verflechtung von theoretischer und praktischer Ausbildung (2)	91,67% 11	83,33% 10	12
Verflechtung von theoretischer und praktischer Ausbildung (3)	90,91% 10	81,82% 9	11
Verflechtung von theoretischer und praktischer Ausbildung (4)	50,00% 1	100,00% 2	2
Qualität des Ausbildungsmaterials (1)	100,00% 3	66,67% 2	3
Qualität des Ausbildungsmaterials (2)	94,74% 18	89,47% 17	19
Qualität des Ausbildungsmaterials (3)	66,67% 2	100,00% 3	3
Qualität des Ausbildungsmaterials (4)	100,00% 1	100,00% 1	1
Qualität der Ausbilder (1)	75,00% 3	50,00% 2	4
Qualität der Ausbilder (2)	86,67% 13	100,00% 15	15
Qualität der Ausbilder (3)	100,00% 3	66,67% 2	3
Qualität der Ausbilder (4)	100,00% 1	100,00% 1	1
Schulungseinrichtungen (1)	71,43% 5	85,71% 6	7
Schulungseinrichtungen (2)	85,71% 12	78,57% 11	14
Schulungseinrichtungen (3)	100,00% 5	40,00% 2	5
Schulungseinrichtungen (4)	0,00% 0	100,00% 1	1

SEITE 4

F3

Anpassen

Exportieren

**Ist die Vergütung in Ihrem Unternehmen
tarifgebunden und erfolgt die Vergütung für
das Management laut
Branchendurchschnitt? (Zutreffendes bitte
anklicken.)**

Beantwortet: 25 Übersprungen: 8

	Ja	Nein	Gesamt
Tarifbindung	84,00% 21	16,00% 4	25
Managementvergütung lt. Branchendurchschnitt	55,00% 11	45,00% 9	20

Branchenübergreifend			
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SEITE 5

F4

Anpassen Exportieren

Wie schätzen Sie den Wettbewerb um Arbeitskräfte ein? (Zutreffendes bitte anklicken.)

Beantwortet: 24 Übersprungen: 9

	Fachkräfte	Führungskräfte	Befragte gesamt
▼ Niedrig	50,00% 1	50,00% 1	2
▼ Mittel	75,00% 12	56,25% 9	16
▼ Hoch	68,42% 13	73,68% 14	19

SEITE 6

F5

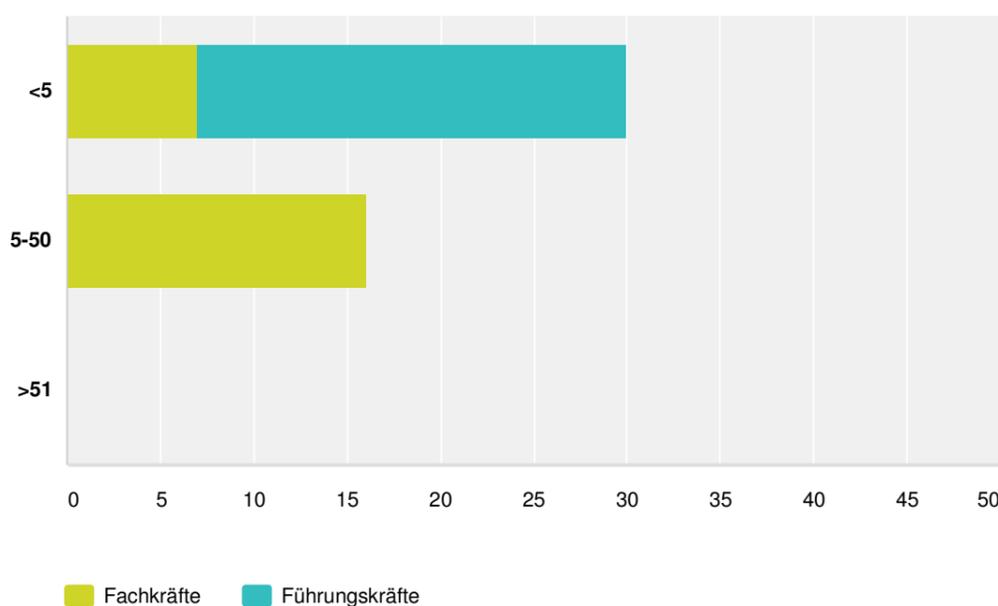
Diagrammtyp Anzeigeoptionen Farben Bezeichnungen

Auf alle anwenden (Einige werden nicht geändert) ?

Abbrechen Speichern

Wie viele Neueinstellungen erfolgten in den letzten 3 Jahren bei den Fach- und bei den Führungskräften? (Zutreffendes bitte anklicken.)

Beantwortet: 23 Übersprungen: 10



	Fachkräfte	Führungskräfte	Befragte gesamt
▼ <5	30,43% 7	100,00% 23	23
▼ 5-50	100,00% 16	0,00% 0	16
▼ >51	0,00% 0	0,00% 0	0

SEITE 7

F6

Diagrammtyp Anzeigeoptionen Farben Bezeichnungen

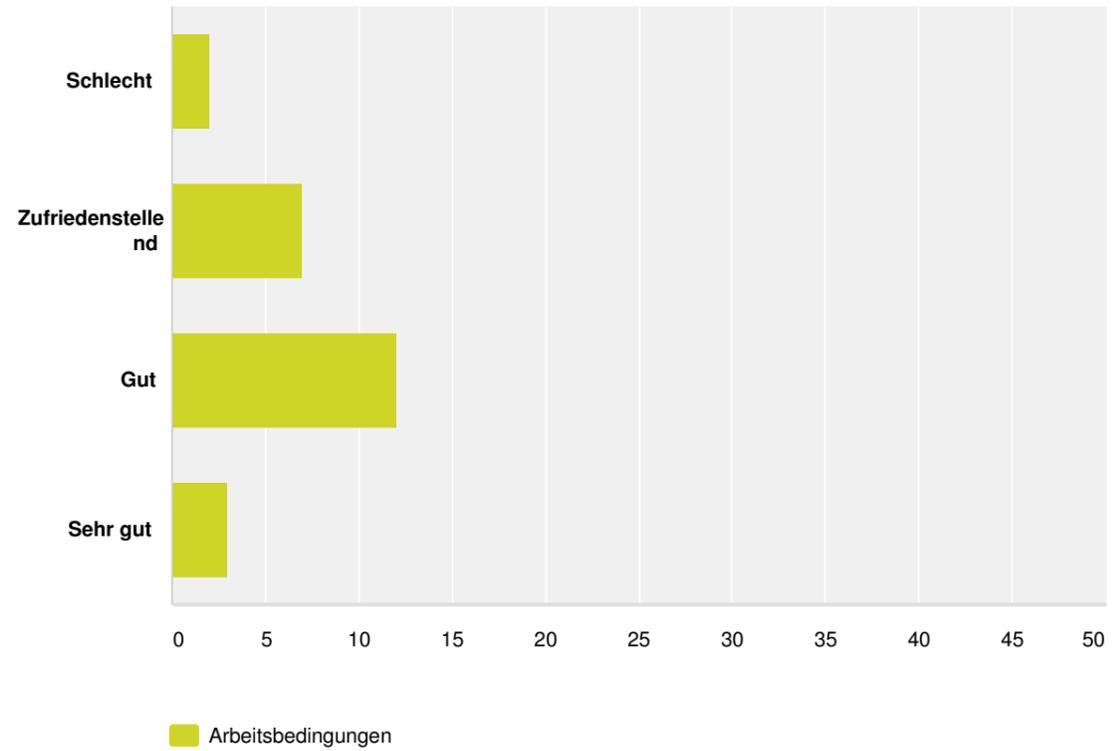
F6

Diagrammtyp Anzeigeoptionen Farben Bezeichnungen

Auf alle anwenden (Einige werden nicht geändert) Abbrechen Speichern

Wie schätzen Sie die Arbeitsbedingungen (Gesundheit und Sicherheit) in der Kreislaufwirtschaft ein? (Zutreffendes bitte anklicken.)

Beantwortet: 23 Übersprungen: 10



Arbeitsbedingungen	Befragte gesamt
Schlecht	2
Zufriedenstellend	7
Gut	12
Sehr gut	3

SEITE 8

F7

Anpassen Exportieren

Haben Ihre eigenen Mitarbeiter Interesse an Berufsbildungsmaßnahmen teilzunehmen? (Zutreffendes bitte anklicken)

Beantwortet: 23 Übersprungen: 10

	Fachkraft	Führungskraft	Befragte gesamt
ABTEILUNGSÜBERGREIFEND	70,00% 7	70,00% 7	10
Fortbildung verantw. Personen § 6 TgV u. § 11 EfbV und für Betriebsbeauftragte für Abfall nach KrW-/AbfG	61,11% 11	72,22% 13	18
Staatlich anerkannter Lehrgang zum/r Betriebs-beauftragten für Immissionsschutz - Fachkunde nach § 7 Nr. 2 der 5. BImSchV	71,43% 5	71,43% 5	7
(Immissionsschutzbeauftragte/r)	42,86% 3	85,71% 6	7
Abfallbeauftragter des Unternehmens	66,67% 10	53,33% 8	15

▼ Abfallbeauftragter des Unternehmens	66,67% 10	53,33% 8	15
▼ Befähigte Person zum Prüfen austauschbarer Kipp- u. Absatzbehälter (Sachkundenachweis) BGR 186	84,62% 11	23,08% 3	13
▼ ABTEILUNGSSPEZIFISCH	85,71% 6	42,86% 3	7
▼ Verantwortlichkeit, Pflichtenübertragung und Haftung im Arbeitsschutz	62,50% 10	68,75% 11	16
▼ TRGS 520 (jährliche Wiederholungsschulung)	100,00% 15	40,00% 6	15
▼ TRGS 520 (Grundlehrgang)	100,00% 15	33,33% 5	15
▼ Sicherheitsseminar-Fachseminar Deponiegas	100,00% 10	30,00% 3	10
▼ Aus- u. Fortbildung für Betriebspersonal nach § 4 Abs. 2 Deponieverordnung, Grundlehrgang	71,43% 5	42,86% 3	7
▼ Fortbildung und Sicherheitsunterweisung § 6 Deponieverordnung (Deponiegas)	85,71% 6	42,86% 3	7
▼ OPTIONAL	100,00% 4	50,00% 2	4
▼ Aufbaulehrgang für Betriebspersonal von Deponie-Entgasungsanlagen	100,00% 6	0,00% 0	6
▼ Sachkundelehrgang Probennahme Abfall gem. LAGA-Richtlinie PN 98	100,00% 11	18,18% 2	11
▼ Schulung gem.§ 6 Gefahrgutbeauftragten-V.O.u. § 12 Gefahrstoff-V.O. (ADR)	90,91% 10	27,27% 3	11
▼ Lehrgang für Gefahrgutbeauftragte - Grundkurs allgemeiner Teil und besondere Teil Straßentransport	80,00% 8	50,00% 5	10
▼ Gefahrgutbeauftragten-Fortbildungslehrgang allgemeiner Teil und besonderer Teil Straßenverkehr (Schulungsnachweis Gb 144-45)	88,89% 8	33,33% 3	9
▼ Änderung für Gefahrguttransporte in der Abfallwirtschaft durch die neue Gefahrengutausnahmereverordnung (GGAV) und die neue technische Regel Gefahrstoffe 520 (TRGS 520)	83,33% 10	41,67% 5	12
▼ Seminar Gefahrstoffverordnung, Novellierungen (Fachkunde/Sachkunde)	72,73% 8	81,82% 9	11
▼ Fortbildung für Betriebsbeauftragte für Immissionsschutz im Sinne des § 9 der 5. BImSchV - neue rechtliche und technische Entwicklungen	62,50% 5	75,00% 6	8
▼ Fortbildung Brandschutzbeauftragter	75,00% 9	50,00% 6	12

Kommentare (0)

SEITE 9

F8

Diagrammtyp	Anzeigeoptionen	Farben	Bezeichnungen
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 Auf alle anwenden (Einige werden nicht geändert)

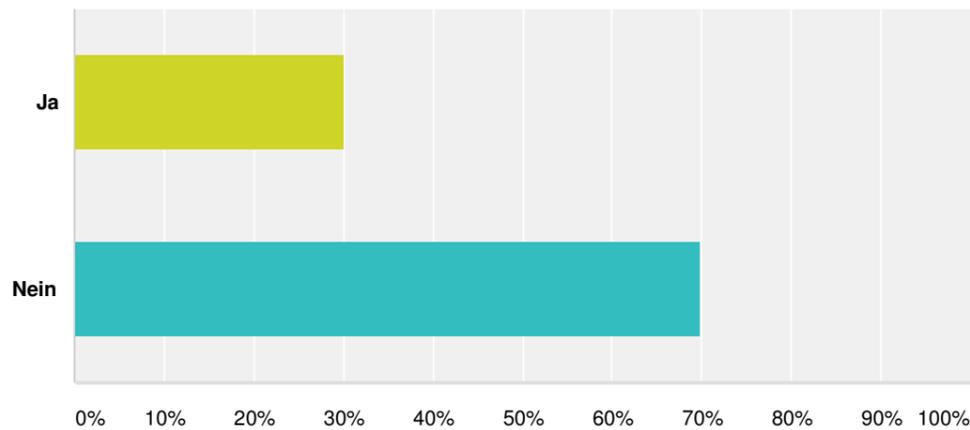

Abbrechen

Speichern

Gibt es wichtige Hindernisse in Bezug zur Berufsausbildung von Führungskräften von Entsorgungsanlagen? (Zutreffendes bitte anklicken.)

Entsorgungsanlagen? (Zutreffendes bitte anklicken.)

Beantwortet: 20 Übersprungen: 13



Antwortmöglichkeiten	Beantwortungen
▼ Ja	30,00% 6
▼ Nein	70,00% 14
Gesamt	20

[Kommentare \(3\)](#)

F9

Exportieren

Welche Position haben Sie in Ihrem Unternehmen?

Beantwortet: 21 Übersprungen: 12

Beantwortungen (21) Textanalyse Meine Kategorien

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- Abteilungsleiter, Ausbilder
30.07.2013 08:34 [Beantwortungen von Befragten anzeigen](#)
- Betriebsleitung Koordination Ausbildung umwelttechnische Berufe
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