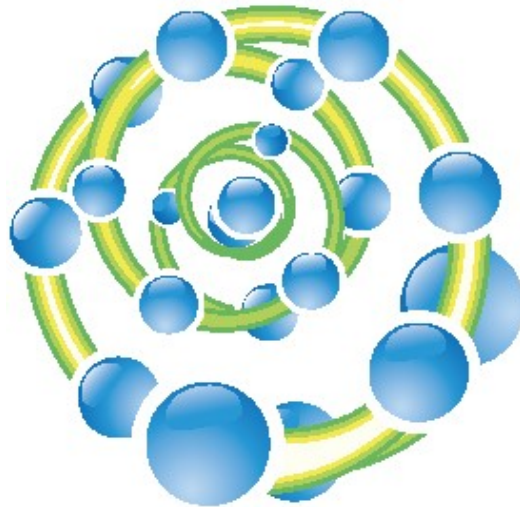


## Innovation in VET

### Germany



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## 1. Hermann Schmidt Prize

Changes in the world of work require continuous modernisation of vocational education and training (VET) in Germany. It is important to develop and facilitate innovative approaches and models, to make the public aware of and to illustrate examples of best practice. This is the background against which the association '**Innovative Berufsbildung e.V.**' operates. Established in 1996 by the German Federal Institute for Vocational Education and Training (BIBB) and the W. Bertelsmann Verlag publishing house, the association's goal is to initiate, promote and publish innovative developments in the field of VET. To this end, since 1997 the association has annually awarded the '**Hermann Schmidt Prize**' <sup>(1)</sup>, always with a focus on a specific topic and the aim to reward special achievements and innovative approaches in the field of VET.

The award has been named in honor of **Prof. Hermann Schmidt**, who was president of the German Federal Institute for Vocational Education and Training (BIBB) from 1977 to 1997.

In 2014, the prize was awarded to projects and initiatives that have developed and successfully implemented exemplary models in the field of inclusive VET. The topic was 'Innovative business models of inclusion in the dual system of vocational education and training' <sup>(2)</sup>. The background was provided by the UN Convention on the Rights of Persons with Disabilities and its implementation in Germany.

The **first prize**, endowed with 3 000 €, was awarded to the **project 'Inklusion in der dualen Berufsausbildung ist keine Einbahnstraße – Neue Wege führen zum Ziel'** (Inclusion in the dual VET system is not a one-way street – New paths lead to the goal) carried out by the Annedore-Leber-Berufsbildungswerk (ALBBW – Vocational Training Centre) and Mondelez Deutschland Produktion GmbH und Co. KG in Berlin. Young people with disabilities completing a mechatronics vocational training programme at the ALBBW work in a company for one and a half years subsequent to their two-year training period at the vocational training centre. This ensures their inclusion into in-company training structures. In addition, the vocational training center supports with its technical equipment the company's training provision to the budding industrial mechanics. This cooperation links vocational training in a company and vocational education at the vocational training centre. The jury honoured the project for its innovative approach and concept of inclusion as well as for its transferability.

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<sup>(1)</sup> See <http://www.bibb.de/de/18700.php> [accessed 10.12.2014].

<sup>(2)</sup> Innovative betriebliche Modelle der Inklusion in der dualen Berufsausbildung.

Three special prizes endowed with 1 000 € each and were awarded to:

- **Special prize ‘Inklusion konkret’ (Concrete inclusion) – Fördern durch Spielmittel e.V., Berlin:**

Two Berlin-based crafts businesses are the partners behind this award-winning association: a joinery and a tailoring businesses. Eight out of 15 employees are severely disabled. In both businesses, people with and without disabilities work together on equal terms; adolescents with and without disabilities are being trained together.

- **Special prize ‘Seitentausch’ (Changing sides) – Lebenshilfe Braunschweig:**

Apprentices at Lebenshilfe Braunschweig with general learning disabilities spend part of their training in a company where they receive instruction by the (in-company) apprentices. In turn, the (in-company) apprentices spend three weeks at the Lebenshilfe workshop. This inclusive approach teaches both groups mutual respect. The groups also profit from this exchange in their further professional and personal development.

- **Special prize of the German Federal Ministry for Economic Affairs and Energy ‘Lebendige Inklusion gehörloser Menschen in der medizinischen Versorgung’ (Active inclusion of deaf people in medical care) – In Deaf Med e.V., Hamburg:**

Marianela von Schuler Alarcon, a dentist and founder of the association, has specialised in the treatment of deaf people. Since 2012, four deaf team members in her practice have been receiving regular training as qualified dental assistants. The vocational college lessons and examination requirements have been adapted and a ‘video lexicon’ has been developed to explain the dental terminology in sign language. <sup>(3)</sup>

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<sup>(3)</sup> See <http://www.bibb.de/de/18700.php> [ accessed 14 .12.2014].

## 2. Innovations and pilot schemes/projects

Commissioned by the German Federal Ministry of Education and Research (BMBF), the German Federal Institute for Vocational Education and Training (BIBB) is carrying out pilot schemes/pilot projects as per Article 90 Section 3 No 1d BBiG (German Vocational Training Act) to develop innovative solutions in reaction to the demand for change due to technological progress and new work structures.

These **pilot schemes/pilot projects** serve to develop and test **innovations** in the field of VET and to prepare them for implementation. They contribute to the VET qualitative improvement. <sup>(1)</sup>

The pilot projects help to develop solutions and to allow their transfer into practical application. The latter part is possible only by intensive exchange among research, policy and practice. This means that the responsible stakeholders in the field of practice are being involved in the pilot projects to establish acceptance of new ideas.

The terms of innovation and transfer provide the structural element of pilot schemes, since they reflect VET trends and initiate their practical further development with regard to content, methodology and structure. Pilot schemes provide impetus and modernise VET. They are being supported and evaluated by research. The implementation of these projects is integrated into an intensive cooperative dialogue among research, policy and practice.

Predetermined focus topics provide the framework for the pilot projects. A total of 34 pilot projects in three key development areas were carried out in 2013: 'Neue Wege in die duale Ausbildung – Heterogenität als Chance für die Fachkräftesicherung' (New pathways into dual VET system – Heterogeneity as an opportunity for ensuring the skilled labour supply), 'Qualitätsentwicklung und -sicherung in der betrieblichen Berufsausbildung' (Quality development and assurance for in-company vocational education and training) and 'Berufliche Bildung für eine nachhaltige Entwicklung' (VET for sustainable development) <sup>(4)</sup> (BIBB 2014a, p. 415). The results are currently being transferred into VET research and practical application (BIBB 2014a, p. 415).

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<sup>(4)</sup> This model programme meets great appreciation due to its recognition as an official measure in the UN Decade of Education for Sustainable Development. The key development area of 'Berufliche Bildung für eine nachhaltige Entwicklung' (BBNE - Vocational education and training for sustainable development; project period 2010 to 2013) closely ties in with the UN Decade of Education for Sustainable Development (2005 bis 2014) (BIBB 2014a, p. 417 et seq.). See <http://www.bibb.de/Modellversuche> [accessed 12 December 2014].

## Key development area 'Berufliche Bildung für eine nachhaltige Entwicklung' (BBNE – VET for sustainable development)

For several years now, climate change and energy transition have been placing new demands on VET. The focus on sustainable development has become an integral part also in the field of VET. This is why six pilot projects have targeted the development of solutions as to how IVET and CVET in selected industries can pursue the goal of sustainable development (BIBB 2014a, p. 417). Specifically, solutions have been drafted in the fields of metal working and electronics <sup>(5)</sup>, building and housing as well as chemistry and nutrition.

### 2.1 Nutrition

In the field of **nutrition**, the 'Institut für berufliche Lehrerbildung' (Institute for Vocational Teacher training) at the 'Fachhochschule Münster' (University of Applied Sciences Münster) have developed a comprehensive framework curriculum for occupations in the fields of nutrition and home economics, which modernises the learning content of these occupations. Various levels of qualification in the VET system have been included, from the levels of assistant to qualified employee, master craftsman and university programmes. The project <sup>(6)</sup> has been distinguished twice as a project in the field of VET within the UN Decade of Education for Sustainable Development (BIBB 2014a, p. 418).

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<sup>(5)</sup> With a focus on renewable energy.

<sup>(6)</sup> 'Rahmencurriculum Ernährung und Hauswirtschaft - Nachhaltigkeitsorientiertes Rahmencurriculum für die Ernährungs- und Hauswirtschaftsberufe' (Framework curriculum nutrition and home economics - Sustainability-oriented framework curriculum for occupations in the fields of nutrition and home economics). See [https://www.fh-muenster.de/ibl/projekte/IBL\\_BBNE/Berufliche\\_Bildung\\_fuer\\_eine\\_nachhaltige\\_Entwicklung\\_Startseite.php](https://www.fh-muenster.de/ibl/projekte/IBL_BBNE/Berufliche_Bildung_fuer_eine_nachhaltige_Entwicklung_Startseite.php) [accessed 10 January 2015].

## 2.2 Chemistry

The project <sup>(7)</sup> by Rhein-Erft Akademie (REA) Hürth was focused on introducing the idea of sustainability in VET and continuing education in the field of **chemistry**. Sustainability is of particular importance because sustainable chemistry is about minimising risks and threats as well as about aspects of utility, such as the contribution chemistry makes towards energy and resource efficiency, the transition to renewable raw materials and sustainable patterns of consumption and lifestyles. The project identified suitable indicators for describing sustainable action. The results provided the basis for developing concrete IVET and CVET modules. Practical guidelines for the process of providing VET and continuing education have been developed. These guidelines give practical implementation impulses for teachers and trainers in the field of VET (BIBB 2014a, p. 418).

## 2.3 Building and Housing

Links of different VET occupations in energy efficient building have been developed in the field of **building and housing**. This provided the basis for developing new learning modules that focus on aspects of sustainable development and in particular, aim at improving the quality of building construction. The project <sup>(8)</sup> has received distinction within the UN Decade of Education for Sustainable Development (BIBB 2014a, p. 418). <sup>(9)</sup>

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<sup>(7)</sup> 'NaBiKa - Nachhaltige Bildungskarrieren in der Chemieindustrie' (Sustainable educational careers in the chemical industry). See <http://www.nachhaltige-berufsbildung.de/nabika/home.html> [accessed 10 January 2015].

<sup>(8)</sup> BauNachhaltig - Netzwerk KOMZET Bau und Energie - Zukunftssicherung durch Nachhaltigkeit in der beruflichen Bildung (Safeguarding the future through sustainability in vocational education and training).

<sup>(9)</sup> See [http://www.komzet-netzwerk-bau.de/Projekt\\_BauNachhaltig\\_I11321.whtml](http://www.komzet-netzwerk-bau.de/Projekt_BauNachhaltig_I11321.whtml) [accessed 10.01.2015].



## 2.4 Electromobility and Renewable Energy

In the field of **electromobility and renewable energy**, the 'Institut für Mittelstandsforschung' (Institute for SME Research) at the University of Mannheim and the Metropol-Solar Rhein-Neckar e.V. have developed an information platform ([www.energiebildung.info](http://www.energiebildung.info)), <sup>(10)</sup> which provides information about the IVET and CVET programmes. The aim <sup>(11)</sup> was to investigate the demands placed on VET and on continuing education in the crafts sector by the expansion of electromobility and renewable energy sources and to develop a concept for the restructuring of educational training programmes. In addition, the focus was to improve the access requirements for small enterprises and to increase the attractiveness of VET especially for young people with higher educational qualifications (BIBB 2014a, p. 418).

The University of Oldenburg and the 'Bundestechnologiezentrum für Elektrotechnik in Oldenburg' (BFE – German Federal Technology Centre for Electrotechnology) have developed a chamber-certified continuing education and training programme for people without university entrance qualification to qualify as a 'Business Administrator – Renewable Energy and Energy Efficiency'. The programme teaches business administration and technical content. <sup>(12)</sup>

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<sup>(10)</sup> The platform can be accessed in the url: [www.energiebildung.info](http://www.energiebildung.info).

<sup>(11)</sup> 'BEE-Mobil - Berufliche Bildung im Handwerk in den Zukunftsmärkten Erneuerbare Energien und Elektromobilität' (Vocational Education and training in the crafts in the future markets of renewable energy and electromobility).

<sup>(12)</sup> See <http://www.uni-oldenburg.de/fee/> [accessed 10.01.2015].

## 2.5 Metal Working and Electronics

Important basics at a regulatory level have been developed for occupations in the field of **metal working and electronics**.

The wind power sector is steadily growing and new, modern technical demands are emerging in the field of offshore wind power.

Surveys among more than 50 experts in the sector have revealed that about **60%** of all investigated wind power enterprises currently suffer from **the lack of qualified personnel**. The demand for skilled workers is even higher in the field of constructing, commissioning and maintaining wind power stations on land and at sea. And: about **70%** of those interviewed people would support an **independent vocational education and training program for wind power** (BIBB 2013b, p. 14).

New job requirements in the construction, installation and operation of offshore wind farms create a demand for skilled professionals with a new qualification profile. This qualification profile must cover the skills required in the construction, operation and maintenance of offshore wind power stations and in the establishment of efficient work structures and organisation forms. The required competences have not yet been researched nor incorporated into existing curricula and thus they have not been part of VET of relevant occupational groups.

This is where the pilot project focusing on offshore wind farms (<sup>13,14,15</sup>) comes in. The project has developed the basic requirements for the potential new occupational profile of **'mechatronics engineer for wind power stations'** (<sup>16</sup>) **including professional expertise in the installation, commissioning and servicing of wind power stations**. It has also

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(<sup>13</sup>) The title reads 'Offshore-Kompetenz – Analyse und Sicherstellung beruflicher Kompetenzen und des Qualifikationsbedarfs von Fachexperten bei Montage, Inbetriebnahme und Service von Offshore-Windenergieanlagen sowie Entwicklung und Implementierung nachhaltiger regionaler Aus- und Weiterbildungsmaßnahmen' (Offshore competence – Analysis and safeguarding of occupational competences and the demand for qualifying skilled professionals for the installation, commissioning and servicing of offshore wind power stations as well as the development and implementation of sustainable regional vocational training and continuing education programmes).

(<sup>14</sup>) The regions under investigation were Cuxhaven and North Frisia.

(<sup>15</sup>) Project period: 01.11.2010 - 31.12.2013, project website: <http://www.offshore-kompetenz.net/> [cited 10.01.2015], project partners: Institute Technology and Education (ITB), University of Bremen, [www.itb.uni-bremen.de/](http://www.itb.uni-bremen.de/) pm|c - Projektmanagement & Consulting [www.pm-c.biz](http://www.pm-c.biz).

(<sup>16</sup>) The companies involved in the project have expressed their demand for skilled professionals in the installation, commissioning and maintenance of wind power stations. This makes an independent occupational profile reasonable, in addition to industry-specific CVET programs.

come to the conclusion that continuing education and training programmes require adaptation.

The job-related **work processes** regarding wind power stations on land and at sea were investigated to develop the training regulation. These processes define the content of the skilled work and the international standards regarding the installation, commissioning and maintenance of offshore wind farms and the issue of sustainability (BIBB 2013b, p. 13).

Further in the project, VET and training provision approaches and a corresponding draft version of the training regulation for the new occupational profile 'mechatronics engineer for wind power stations' were developed.

A demand for specialist continuing education and training in the offshore wind power sector was identified in addition to the IVET demand. Key qualifications such as 'communication and employee management in international teams' as well as 'efficient planning and implementation of project-oriented work' need to be taught (BIBB 2013b, p. 17). The pilot project excels by its numerous cooperation agreements and a wide network <sup>(17)</sup>, which in turn offers a significant transfer potential in the field of VET and continuing education. In addition, the results were implemented in the region of Cuxhaven and North Frisia by way of example already during the project period and have subsequently been further processed to make them relevant and usable also for other wind power and offshore sites <sup>(18)</sup>.

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<sup>(17)</sup> The target groups have been constantly included right from the start of the model test.

They include businesses, regional stakeholders in the wind power industry as well as vocational colleges / providers of continuing education and other trade and economy sponsors of note in the sector, social partners, other players and subordinate vocational education and training institutions (BIBB). They have contributed to the constant updating of results and the optimisation of the project's progression over the course of the entire project. This intensive integration of businesses and stakeholders in the offshore sector ensured that the target groups were not only immediately involved, but also that they are long term beneficiaries of the achieved results (BIBB 2013b, p. 14).

<sup>(18)</sup> Regions Bremerhaven and Bremen.

### **3. Conclusions**

Technical progress and modernisation in the labour market require changes in the fields of VET and continuing education. The development of new occupational profiles and the corresponding training regulations follow the demand and requirements of the world of work. This results in specific requirements being placed on skilled professionals and their qualifications.

Outstanding innovation in the field of VET is being awarded in Germany and thus receives a public attention; the Hermann Schmidt Prize is one example.

Moreover, special pilot projects receive government funding to ensure the adjustment of the VET provision to match the current and future framework conditions. These projects develop and test innovative instruments, methods, processes and curricula. The pilot project presented in this article deals with the occupational competences of skilled professionals for wind power stations on land and at sea, and may be viewed as an example of good practice regarding innovation in the field of VET. It highlights by way of example how technical innovation can influence VET and continuing education. Reflecting the current and future challenges, draft occupational profiles and training regulations are being developed or, respectively, adapted and modernised in an innovative manner involving the relevant stakeholders.

The transfer of these new and modernised VET and continuing education concepts requires active collaboration with VET providers.

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