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Competency Model for VETSD in the Food Crafts and Food Industry

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Introduction to the competency model for VETSD in the food Crafts and food industry

The present competency model for vocational education and training for sustainable development (VETSD) in the food crafts and food industry is one of the main results of the work of the scientific supervision of the pilot projects of the third funding line “Vocational Education and Training for Sustainable Development 2015–2019”. It takes into account the results of the pilot projects and considers their desire for a universal competency structure model. The present model could thus serve as a basis for the didactic conception and design of teaching/learning processes in the sense of VETSD in this funding line, but also in those in future. In addition, it can be used as a design aid for the creation of curricula or examination tasks and can serve as an implementation aid for the concretisation of the newly introduced theme “environmental protection and sustainability”, which is part of the nationwide standards applied in occupational programmes in Germany. The potential users of the competency model thus include not only school and company education personnel, but also employees from the field of regulatory work or textbook designers.

The competency model contains a competency matrix whose fields serve to structure the competencies, which should be considered in their overall context rather than in isolation. This matrix is filled with sustainability-relevant core competencies and associated competency goals.

The competency matrix (see figure on p. 3) is structured as follows.

- The top row describes the dimensions of action competence. These include professional competence as the ability to judge and act professionally in the respective occupational environment, social competence as the ability to judge and act in social, societal and political contexts, and self-competence as the ability to act responsibly for oneself. This universal model of professional action competency can also be related to the skills, knowledge and abilities relevant for professional action with the goal of sustainable development. In the present matrix, the competencies are described as the ability to act in a sustainable professional way, to act in a socially responsible way, and to act in a way that is meaningful and autonomous.
- In the left column there are different fields of action on three levels. The first level refers to the direct work process in which trainees are active and in which they have influence on the specific execution of work. For the food crafts or food industry, such processes refer to procuring and providing raw materials, processing, storage and packaging, as well as to developing and marketing products. The second level is the action level of the company or the company management. In the sense of comprehensive vocational education and training, it is also necessary to consider the associated implications for sustainability in education and training. Finally, the third level refers to the conditions laid out by the social and political framework that influence the scope of action of the company and the individual employee.

Linking the three dimensions of vocational action competence (professional, social, self-competence) with the three levels of action (work processes, company, society/politics), leads to the competency matrix. This can be filled with sustainability-relevant core competencies and topics specific to a profession or domain.

The core competencies in the model at hand comprise the sustainability-related competencies in the food crafts and food industry considered relevant by the scientific supervision work. The following pages contain specific competency targets for the identified core competencies (1.1.a–3.c). The listed competency targets do not claim to be complete; they are to be understood as examples and

suggestions for VETSD practice. At the same time, some of them go beyond the legal requirements of vocational education and training. In this way, the trainees are given scope for responsibility and creativity, thus promoting transformative competency development in the sense of VETSD.

Due to the diversity of professions in the food crafts and industry, for example with regard to relevant fields of action, raw materials used or products produced, the application of the competency model must be adapted to the respective context or to specific professions and their fields of action. This can be accompanied by a different prioritisation of core competencies. Not all competency targets therefore apply equally to all professions – both scope and requirement may vary depending on the profession.

Competency matrix and thematic areas

Competency dimension Fields of action		Sustainable action competency as the ability to take...		
		... sustainable professional action	... socially responsible action	... meaningful and self-responsible action
Job-related work processes	Procurement and provision of raw materials	1.1.a Selecting and providing raw materials as required	1.1.b Evaluating upstream working- and production-conditions and supply chains	1.1.c Creating a "from the field to the table" mindset
	Processing, storage, packaging	1.2.a Valorising raw materials and optimising working processes	1.2.b Producing in a resource and climate-conscious manner	1.2.c Promoting sustainable development through food production
	Product development, marketing	1.3.a Boosting sustainable product features	1.3.b Supporting sustainable eating habits	1.3.c Preserving traditions and setting trends
Entrepreneurial and organisational decisions		2.a Anchoring sustainability in the business model	2.b Advocating for the social and health concerns of employees	2.c Embracing the profession's possibilities
Social developments and political decisions		3.a Assessing the political framework of food production	3.b Supporting the regulative idea of sustainability	3.c Expressing lifestyles with food

Selecting and providing raw materials as required



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Competency targets

Trainees act according to demand in the ordering and storage process by avoiding food losses, optimising sub-processes, and paying attention to detailed specifications of their typical raw materials.

They can ...

- ... name specific sustainability aspects of their raw materials (e.g. related to economy, environment, society, animal welfare, health and culture), critically question them, and take them into account when selecting raw materials;
- ... research and document the information necessary for raw material procurement;
- ... define detailed raw material specifications to avoid incorrect purchases;
- ... and adjust order quantities and delivery dates to warehouse, production and sales planning to avoid over-purchasing.

Evaluating upstream working- and production-conditions and supply chains



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Competency targets

Trainees are aware of the position of their company in a longer value chain. They understand that especially the upstream work and production steps can have a considerable influence on sustainable development and thus have an impact on their own company's area of responsibility. They can ...

- ... use sustainability standards and labels relevant to their sector as a basis for decision-making when selecting raw materials. In doing so, they can critically assess the significance and credibility of these sustainability standards and labels and also explain in customer-oriented language what they mean for the assessment of production and transport conditions;
- ... research and evaluate the ecological conditions and consequences of the production of raw materials (including their preliminary stages), their storage and their transport (e.g. ecological footprint based on land, water and CO₂ footprint, use of pesticides, transport routes, place of origin):
- ... and research and evaluate social conditions and consequences of the production, pre-processing and transport of raw materials (e.g. compliance with occupational health and safety, health effects, wage justice).

Creating a “from the field to the table” mindset



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Competency targets

Trainees understand their responsible position in the long value chain from agricultural production to consumption (“from the field to the table”). They understand that professionals in food crafts and industry are an important link between access to biocapacity (the ecological “consumption of the world”) and the physical well-being of individuals.

They can ...

- ... highlight environmental and social impacts from primary production to disposal and take these into account when making decisions;
- ... develop pride and professional identity beyond their own work processes by placing them in the context of responsible, sustainable value creation;
- ... and recognise the meaningfulness of responsible raw material procurement and utilisation in terms of justice and represent this externally (also beyond their own company) (as “ambassadors for sustainable nutrition”).

Valorising raw materials and optimising working processes



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Competency targets

Trainees efficiently use equipment and materials such as raw goods and consumables in the context of refining raw materials. Trainees understand the particular importance of losses, waste and packaging loads for sustainable development and know strategies for avoiding or changing them. They can ...

- ... select and use processes, machinery and equipment in such a way that resources such as water, raw materials, consumables and energy are used effectively and efficiently;
- ... compare different cleaning and disinfection measures in terms of sustainability (e.g. with regard to quantities used, agents, procedures, environmental compatibility) and apply them safely;
- ... select and apply processes in manufacturing, packaging and storage to preserve valuable ingredients (e.g. vitamins, antioxidants). If necessary, they can adapt process parameters to the particular processing and storage properties of the respective raw materials;
- ... establish maintenance plans or apply predictive maintenance concepts for machines and systems to ensure their optimal service life and minimise unplanned downtimes;
- ... classify packaging components and their different functions (e.g. protective, transport, information, advertising or additional functions) and critically reflect on their impact on sustainability;
- ... differentiate packaging options in terms of sustainability (e.g. with low environmental impact, alternative packaging materials) and select sustainable packaging in consideration of their functionality and quality requirements (packaging material, packaging volume);
- ... determine data on the energy efficiency of plants and processes in manufacturing, packaging and storage (e.g. kWh/product unit, share of energy needed per work area). They can critically compare the energy efficiency of plants and processes in manufacturing, packaging and storage with values customary in the sector and identify possible causes for deviations;
- ... and develop and implement concepts for increasing energy efficiency.

Producing in a resource and climate-conscious manner



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Competency targets

Trainees understand that resource-conserving production is not only a question of operational costs, but – in the context of global climate change and social injustice – also a social responsibility. They develop proposals for measures to conserve resources. They can...

- ... compare the indirect CO₂ emissions caused by energy use in manufacturing, packaging and storage of different energy sources (renewable and conventional). In this context, they can explain the difference between renewable and fossil energy sources, evaluate the effects on the environment and present the consequences of climate change in a global context;
- ... assess the potential for saving costs and resources (e.g. raw materials, consumables and supplies, water, energy) and explain to what extent operational goals and climate goals coincide or conflict with each other;
- ... make arguments for an appreciative attitude towards food that go beyond the purely economic (e.g. respect for global biocapacity, social injustice in access to food, abundance versus hunger);
- ... and explain causes of food losses and waste, assess their impact (local, regional and global) and identify and implement measures to avoid and recycle food losses (e.g. selling as B-goods, passing on to charities).

Promoting sustainable development through food production



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Competency targets

Trainees see themselves as process designers in the responsible production of food. They are willing to share responsibility for the safety and quality of food products and base their profession on unconditional respect for life and health (“biological ethics”). They understand that all of their actions in manufacturing can be sustainable or unsustainable. They can ...

- ... use their leeway in the selection and design of processes for the manufacturing, storage and packaging of food in order to make an active contribution to the sustainable development of our global society;
- ... demonstrate their contribution to sustainability by choosing certain alternative actions when designing their work processes;
- ... describe the particular importance of the food sector for sustainable development and to what extent they want to use their personal values and talents to shape their professional role in terms of sustainable development.

Boosting sustainable product features



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Competency targets

Trainees know how to contribute to sustainable nutrition by (further) developing products and recipes. They can ...

- ... select and use appropriate raw materials with the lowest possible climate impact in product development (e.g. plant-based raw materials). They can optimise existing products with regard to their climate impact and adapt recipes (e.g. increase the proportion of plant-based raw materials, new products with insect proteins, e.g. replace salt with herbs and spices to optimise the sustainability of existing recipes, , use special local or historically significant raw materials, ...);
- ... include social aspects of raw material production as selection criteria when developing new products or revising existing recipes. In addition to the functional properties of the raw materials (e.g. technological processing properties), they consider other aspects such as work and production conditions (e.g. fair trade, global climate justice). When using animal products, they pay particular attention to aspects of animal welfare and species-appropriate husbandry. They are familiar with the corresponding labels and certifications (e.g. types of husbandry, seals such as MSC and organic standards);
- ... identify regional, seasonal and organically produced raw materials and justify if and when their selection is a sustainable option;
- ... and develop marketing and communication measures to highlight sustainable features in a way that promotes sales.

Supporting sustainable eating habits



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Competency targets

Trainees are prepared to reflect on their professional actions in the development and marketing of food with regard to sustainable and healthy nutrition and to question unsustainable eating habits. They understand that consumption expectations such as “healthy” and “tasty” can conflict with each other (e.g. salts and fats as common and cheap flavour carriers, but with little dietary value). They respect different consumption styles, but with reference to their professional knowledge and responsibility, they particularly advocate the development of sustainable and healthy foods. They can ...

- ... emphasise the marketing effect of fair-trade raw materials and climate-conscious products to superiors and colleagues, and communicate with customers in an understanding and responsible manner (including on food-related supply chains and production conditions);
- ... highlight the contribution of sustainable food to the preservation of cultural diversity and biocapacity as well as to health promotion;
- ... actively advocate for the health of consumers as part of their scope for action;
- ... Emphasise health aspects (sugar, fat, salt content, content of special ingredients) in communication with colleagues and customers, determine and communicate promotional arguments for sustainable products;
- ... reflect on reduction targets (fat, sugar, salt reduction) with reference to the typical dietary characteristics of their own products, assess them against the background of general labels (e.g. Nutri-Score, nutrient tables) and revise recipes for a health-promoting diet.

Preserving traditions and setting trends



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Competency targets

Trainees know that the spectrum of their profession can range from satisfying hunger to fulfilling widely differing consumer demands for pleasure. They see themselves as designers and providers of both nutritional and indulgence offers. They use recipes as a medium of cultural sustainability: as knowledge handed down, in which traditions worth preserving are expressed, and at the same time as creative scope for innovation. They recognise regional characteristics, cultural diversity and nutritional trends as opportunities for the development of sustainable products. They can ...

- ... assess what contribution to nutrition and indulgence they can (and want to) make with their professional actions and the specific products of their business;
- ... consider indulgence against the background of the regulative idea of sustainable development;
- ... consciously use special strengths and traditions of their craft or technology to preserve cultural values and intangible heritage (e.g. diversity of varieties and products, German bread culture as a world cultural heritage, purity law for German beer);
- ... and fulfil their professional role as ambassadors and modernisers of craft and industry, consciously balancing tradition and innovation.

Anchoring sustainability in the business model



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Competency targets

Trainees understand that sustainability and business success are not contradictory (considering the demand for sustainable products increasingly opens up market opportunities, to name one reason). They see the potential to increase turnover and develop unique selling points using sustainable and innovative products and services. They recognise that a range of sustainable products and services are a feature of responsible action and an opportunity to secure the competitiveness and future viability of their business. They can ...

- ... assess what contribution their company is currently making and can potentially make to sustainable development;
- ... propose how the business model of their company can be further developed along the strategies of “efficiency”, “consistency” and “sufficiency”;
- ... identify key characteristics of sustainability-oriented customer groups, consumption styles and trends and use them to co-develop and market sustainable products within their company’s business model;
- ... assess the benefits of reliable relationships with suppliers, customers and industry partners and reflect on how long-term and fair such relationships are in their companies;
- ... prioritise different corporate measures to promote sustainable development (e.g. reduce CO₂ emissions instead of making compensation payments);
- ... explain how sustainability-oriented companies fulfil their social responsibility as social actors;
- ... assess the potential of public welfare-oriented and employee-led forms of enterprise for their sector;
- ... determine the benefits and challenges of sustainability reporting and corporate social responsibility (CSR);
- ... derive conclusions for their own business from the requirements of sustainability certifications (e.g. product and management standards);
- ... and evaluate which sustainability communication measures are effective and honest (cf. greenwashing) and draft suggestions for the external presentation of sustainability activities.

Advocating for the social and health concerns of employees



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Competency targets

Trainees understand that employee social and health concerns are factors of sustainable development of work and society. They can ...

- ... identify aspects of workplace co-determination from the perspective of employees, works councils and employers;
- ... reflect on the extent to which workplace co-determination can be a corrective measure in terms of the exploitation of people and the environment and is in the long-term interest of companies, even if conflicts of interest have to be dealt with or endured in the short term;
- ... minimise their own physical and mental stress and that of their colleagues by taking health issues and family needs into account when planning their working hours;
- ... draft and implement suggestions for operational improvements as a contribution to sustainable development in exchange with colleagues and superiors;
- ... acknowledge occupational health and safety regulations and actively take measures to ensure their physical integrity;
- ... and support health promotion and addiction prevention for themselves and others. They are particularly aware of the dangers of the uncontrolled use of goods they produce themselves (e.g. alcohol addiction, obesity, diabetes). They are aware of specific campaigns in their sector (e.g. "Enjoy consciously", brewer's code of conduct) and are sensitive to dangers and stresses typical of their profession (e.g. postural problems, monotonous stress, allergies).

Embracing the profession's possibilities



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Competency targets

Trainees carry out their professional role and current position by actively contributing to their company. They strive to gradually expand their creative scope. They see themselves as part of a professional community that goes beyond their current situation in training and training company. They know and use their own “levers” in the profession, as trainees and as future skilled workers. They educate themselves and others by sharing knowledge and experience and contributing creative ideas. They can ...

- ... endure contradictions and conflicts in connection with the idea of sustainability if they cannot influence them;
- ... analyse inconsistencies between the ideals of sustainable development and prevailing work routines from different perspectives and derive long-term, sustainable solutions for their own actions from them;
- ... develop proposals for change to counteract sustainability-related conflicts of objectives (e.g. cost pressure versus environmental compatibility) and perceive them as design challenges – not as decision-making problems.
- ... recognise and evaluate the current and future possibilities of shaping their professional activity for sustainable work. They perceive professional work and entrepreneurial decisions as opportunities to help shape and sustainably change society;
- ... and set long-term professional goals, also beyond training, and develop their own entrepreneurial perspective if necessary.

Assessing the political framework of food production



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Competency targets

Trainees understand that their professional actions and the actions of their company are influenced by social and political frameworks. They recognise to what extent decisions in different policy fields (e.g. consumer, health, economic and social policy) can promote the transformation to a sustainable society and improve their working conditions. They know the relevant positions and activities of the different political actors as well as of professional and industry associations. They recognise their own opportunities for participation and make use of them. They can

- ... name political decisions that affect their profession and their company and take a position on them;
- ... distinguish and assess positions and initiatives of professional and industry associations on sustainability-related topics;
- ... name the possibilities and limits of their own company to act in a socially responsible manner;
- ... derive external costs (costs caused by the company but borne by society, e.g. health costs, costs of environmental damage) caused by their own production along the value chain and assess the relationships between production costs, external costs and the price of a food product;
- ... and describe the disadvantages of monopolistic structures – both for sustainable development and for a social market economy.

Supporting the regulative idea of sustainability



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Competency targets

Trainees know the guiding principle of sustainable development and the corresponding global sustainability goals of the United Nations and are able to apply these critically and constructively to their actions in the company. They can ...

- ... explain the main features of the idea of sustainable development (e.g. Brundtland definition, sustainability dimensions, planetary boundaries);
- ... reflect on individual sustainability goals for their sector, their own company and their own professional actions, recognise the need for action and translate these into options for action;
- ... explain the particular importance of climate targets to reduce climate change. They understand why greenhouse gas emissions lead to climate change and can also differentiate between the ecological and social consequences of global warming worldwide (inequality between “Global North” and “Global South”);
- ... and apply the guiding principle of sustainable development to private consumption decisions and political action. They see themselves as agents of change even beyond their professional activities.

Expressing lifestyles with food



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Competency targets

Trainees understand that nutrition has an existential importance in everyone's life and is experienced very differently, from biological necessity to lifestyle ideology. They understand that professionally designed food environments such as salesrooms, markets and cafés/restaurants, but also packaging and other marketing tools, have a strong influence on consumer behaviour. They recognise that the responsibility for sustainable eating habits therefore does not lie solely with the individual consumer. They know that food is more than purely commercial goods and are aware of the different value dimensions of food (e.g. as cultural goods that create identification, as renewable raw materials, as a human right, as creative expression, as a social focus when cooking and eating together). They also reflect on these values against the background of their own nutritional biography and eating habits. They can ...

- ... recognise the different values attached to food in their own business. They can critically reflect to what extent these values are in line with sustainable development. They understand that excessive commercialisation is a cause of non-sustainable developments. They know arguments and measures for strengthening non-commercial aspects of food (e.g. for a target group-oriented customer approach, lifestyle services such as cooking/baking courses/recipes);
- ... critically assess the extent to which consumption and lifestyle patterns and trends impact on personal well-being and sustainable development. They acknowledge the importance of sustainable and responsible consumption for themselves and in a global context and can present this argumentation to others;
- ... and assess their professional contribution to shaping the lives of consumers and draw pride from the awareness of how meaningful and consequential professional action can be in their profession.

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