

2.3 Identifying skills needs – Green competencies



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Alliance of Centres of Excellence in
Vocational Training for Sustainable Habitat



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Introduction - Green competencies

Section 2.3 of the Quality Apprenticeship Programme outlines the skills apprentices need to practise their trade. A distinction is made between technical, digital and green skills/competencies. This document focuses on green competencies.

It is intended to serve as a point of reference to help define the relevant competencies for the specific apprenticeship training programme within the company.

The competencies described below are neither exhaustive nor applicable without adaptation. They are intended merely to provide a rough overview of what falls under the term 'green competencies' and to serve as a starting point for defining the competencies appropriate to the company's specific situation.

Green competencies are a combination of technical knowledge, technical skills and soft skills that are needed to work sustainably and support a green economy. It's like a toolbox, where competencies are the tools for building a green future both in personal and professional life. In this context, green refers to sustainability, and competencies are the combination of theoretical knowledge and the ability to apply this knowledge through technical and soft skills.

Alternatively, green competencies can also be described as a multidimensional construct of green knowledge, green skills, green abilities, green attitudes, green behaviours and green awareness.

This document provides examples for each category (technical knowledge, technical skills & soft skills). These are intended to serve as a starting point for defining the relevant skills for each occupation.

When compiling a list of green competencies within an organisation, it makes sense to distinguish between fundamental competencies and competencies specific to the profession. This provides a clearer overview and can also help to determine later which skills are primarily taught within the company or at the TVET centre. It may also be useful to divide the skills into three categories – technical knowledge, technical skills and soft skills – to maintain a clearer overview. However, when dividing skills into individual groups, it is important to bear in mind that these are still interrelated, and that the overlaps between knowledge and skills must be taken into account when planning training.

The Habitat sector integrates a wide group of professional occupations from the sectors of infrastructure construction, housing and installations, activities related to wood and furniture manufacturing, home textiles, electricity and lighting installations, etc.

Technical knowledge

Technical knowledge encompasses expertise in a wide range of sustainable materials, technologies, and processes. This knowledge forms the basis for sustainable development. It is therefore extremely important that apprentices are taught specialist knowledge in the field of sustainability during their training. This specialist knowledge varies depending on the profession and activity, but it is important that the relevant knowledge is taught for each field.

The following topics are divided into general topics that are universally relevant to all professions, as well as technical knowledge tailored to the Habitat sector.

General technical knowledge

Sustainability

- Basics of sustainability
- Effects of sustainability
- Renewable vs non-renewable materials
- Water and land management

Environmental systems

- Climate change and its consequences
- Climate mitigation and adaptation
- Pollution pathways
- Earth systems (Atmosphere, hydrosphere, biosphere)
- Ecosystems

Circular Economy

- Principles and strategies
- Waste reduction and recycling
- Sustainable product design

Energy systems

- Renewable energy technologies
- Energy storage systems
- Energy management (efficiency, etc.)

Sustainable manufacturing

- Cleaner production technologies
- Process optimization
- Digitalisation

Policies and standards

- Environmental regulations
- Sustainability standards (ISO 14001)
- Other relevant standards (ISO 50001, etc.)

Effects of digital technology on environment

- Energy consumption and carbon footprint
- Sustainable use of digital technologies
- Eco-friendly alternatives (Ecosia, etc.)

Technical knowledge for Habitat sector

The Habitat sector is a combination of many different professions. This means that there are no precisely defined areas of knowledge that everyone in this sector must have. A furniture maker needs different basic knowledge than a plumber, and a woodworker needs different knowledge than an electrician. This should make it clear that the following knowledge areas are not universally relevant for every profession in the Habitat sector and should be adapted to the respective activity. In addition, these areas of knowledge are constantly changing as the industry continues to evolve. That being said, the following knowledge is generally required in the Habitat sector.

Sustainable building materials

- Sustainable wood sourcing (FSC, PEFC)
- Low-emission and non-toxic building materials
- Reuse and recyclability of materials

Sustainable construction and building systems

- Sustainable Design
- Sustainable and green building
- Low-impact construction methods
- Building physics (sustainable materials)
- Passive house technologies
- Nearly zero-energy building

Building energy systems

- Energy efficient design
- Heating and cooling technologies
- Smart home technologies
- Electrical safety and monitoring

Water and sanitary installations

- Water efficiency standards in buildings
- Water saving and reuse

Sustainable interior planning

- Eco-design principles for furniture and interior
- Indoor air quality (Low VOC materials, ventilation, etc.)
- Surface treatments and dyes for indoor use
- Sustainable textile fibres
- Eco-labels and standards

Building related regulations and standards

- Building energy codes
- Green building certifications

Urban planning

- Planning concepts

Technical skills

Technical knowledge forms the basis, while technical skills are the application of this knowledge. It is very important to have knowledge, but if one does not learn how to apply this knowledge, its usefulness remains limited. This is where technical skills come into play. As a rule, skills are best learned through practical application, and they can be improved through frequent repetition. This means that the best way to teach these skills is to give apprentices the opportunity to practice until they have mastered them.

As before, the skills are divided into two categories: general skills that are relevant to a wide range of applications, and skills that are specifically tailored to the Habitat sector.

General technical skills

Sustainability strategies

- Development and implementation of sustainability strategies

Environmental impact

- Conducting impact assessments
- Calculating carbon footprints
- Applying greenhouse gas accounting methodologies

Performing life cycle assessments

- Considering all phases of the life cycle

Data analysis

- Collecting, analysing and validating (sustainability) data

Energy systems

- Integrating and implementing energy efficient measures
- Implementing renewable energy solutions

Circular Economy

- Implementing Circular Economy into the company
- Management of waste and recycling

Sustainable business

- Managing sustainable supply chains
- Conducting sustainability audits
- Defining and monitoring KPIs
- Preparing ESG (Environmental, Social & Governance) and sustainability reports

Policies and standards

- Implementing environmental management systems (ISO 14001) and other standards (ISO 50001, etc.)
- Ensuring compliance with environmental regulations

Technical skills for Habitat sector

Sustainable production

- Sustainable and customer-oriented product design
- Applying climate-resilient design solutions in buildings
- Selecting low-impact and sustainable building materials
- Optimising material use to reduce waste in construction and manufacturing
- Lean manufacturing
- Implementation of safety procedures

Sustainable construction

- Applying sustainable construction techniques on site
- Implementing energy-efficient building solutions
- Application of energy efficient techniques (e.g. insulation)
- Managing construction and demolition waste sustainably

Building energy systems

- Integrating renewable energy systems into building
- Conducting building energy simulations and performance optimisation
- Sustainable energy management (demand vs supply) and monitoring
- Installing energy-efficient lighting and smart control systems

Water and sanitary installations

- Implementing water-saving systems and installations

Sustainable interior planning

- Designing eco-efficient furniture and interior products
- Improving indoor environmental quality (air, light, thermal comfort)

Urban planning

- Consideration of economic, social, and environmental aspects

Building related regulations and standards

- Developing Environmental Product Declarations (EPDs)
- Ensuring compliance with environmental and building regulations

Soft skills

Unlike technical knowledge and skills, where it is clear what they are needed for, soft skills are not intended for a specific application but can be used universally. On the one hand, this carries the risk that they will be considered less important because their advantages are not immediately apparent. On the other hand, this means that soft skills have great potential because they can be applied in a variety of situations. Soft skills should be seen as the ability to apply technical knowledge and skills in the best possible way.

Due to their broad applicability, soft skills are almost universal and do not need to be classified separately for specific occupational groups. As might be expected, some soft skills are sometimes more or less relevant to certain professions, but a broad range of soft skills is always an advantage.

Self-management

- Willingness to learn
- Being open-minded
- Being responsible

Adaptability

- Adapting to new situations
- Being flexible
- Being resilient

Communication

- Working in teams
- Facilitating (cross-functional) collaboration
- Communicating (sustainability goals and achievements) effectively
- Proper language in the workplace

Intercultural skills

- Understanding and adapting to people from different cultural backgrounds
- Empathy

Critical thinking

- Critical thinking in assessing environmental and social impact
- Ethical thinking

Problem-solving

- Decision-making skills
- Creative and innovative thinking

Leadership

- Leading teams
- Training and coaching teams
- Transformation management
- Managing (sustainable) projects
- Participative techniques
- Driving change towards a more sustainable behaviour
- Integrating stakeholder/other's perspectives (into sustainability strategies)

Convincing power

- Influencing stakeholders to adopt sustainable practices
- Influencing organizational culture towards greener practices
- Negotiating sustainability priorities with colleagues, suppliers, partners and clients
- Building awareness
- Advocating sustainable solutions

Strategic thinking

- Balancing cost, quality and sustainability
- Systems thinking – thinking through the different steps of the production process
- Entrepreneurship

Planning and Organisation

- Scenario thinking
- Organisation of projects