Sectoral Qualifications Framework for

TELECOMMUNICATIONS

(SQF TELE)

European Funds
Knowledge Education Development

IBE kwalifikacje dla każdego

European Union
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Introduction

An indispensable condition for modern, knowledge-based socio-economic development is the continuous improvement and adaptation of employees' skills for a dynamically changing labour market. In 2014, 80% of surveyed employers conducting recruitment activities reported problems in finding workers who met their expectations for the job positions offered (Kocór et al., 2015). School and academic education is not enough to keep up with the pace of change, making lifelong learning all the more important today. The principles of lifelong learning include an appreciation of learning in various forms and places at every stage of life, the validation of learning outcomes regardless of the way, place and time of their achievement, effective investments in learning and the general availability of such activities (*Perspektywa uczenia się przez całe* życie, 2013).

This is the context of the implementation of Poland's Integrated Qualifications System (IQS), whose functioning is governed by the Act of 22 December 2015 (Journal of Laws of 2016, item 64).

One of the main tools of the IQS is the Polish Qualifications Framework (PQF). The PQF has eight levels of qualifications, as does the European Qualifications Framework (EQF). Each PQF level is characterised by general statements about the learning outcomes required for a given qualification level. These general statements are called "descriptors". In determining a qualification's PQF level, it does not matter whether its required learning outcomes are attained within a structured education system or in another way.

PQF descriptors refer to the full range of qualifications' required learning outcomes in the categories of knowledge, skills and social competence. The descriptors of successive PQF levels reflect the increasing requirements in these areas (Chłoń-Domińczak, Sławiński, Kraśniewski, Chmielecka, 2016). PQF level descriptors are initially described at two stages of detail. The first stage generic descriptors, or "universal descriptors", are the most general and apply to all types of qualifications. These are then further detailed (second stage generic descriptors) for the different types of qualifications that are typically awarded in general, vocational and higher education.

The Integrated Qualifications System enables the various qualifications in our country to be collected in one system and ordered. Because qualifications are awarded by different entities, institutions and organisations, on the basis of various regulations and laws, it was difficult to compile them according to uniform criteria until now. The ability to include qualifications operating in the free market in the IQS is especially valuable, to have them described in the language of learning outcomes and their quality guaranteed by the state through the regulations on their inclusion and functioning, as well as through the principles of validation and quality assurance. The functioning of the IQS should therefore intensify the processes of implementing lifelong learning policies in Poland, making it easier to attain competences in line with one's own interests or the needs of the labour market.

Art. 11 of the IQS Act enables the further elaboration of PQF descriptors through the development of sectoral qualifications frameworks (SQF). A sectoral qualifications

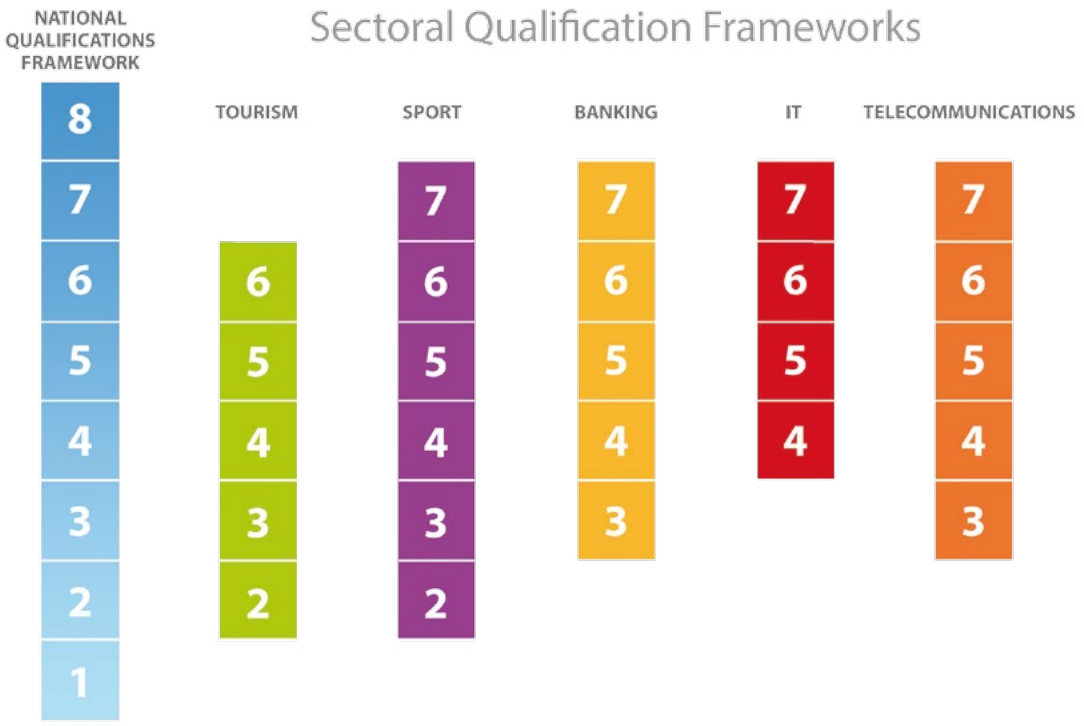
framework is defined in the IQS Act as a description of the levels of qualifications functioning in a particular sector or industry. SQFs are developed for those areas of activity where such a need arises.

The main principle adopted in developing sectoral qualifications frameworks is that they be developed by the sector for the sector. This means the involvement of a wide range of stakeholders representing different entities functioning in the sector – companies, industry chambers and organisations, representatives of higher education and professional bodies, as well as regulatory authorities. Developing a framework is initiated by discussions on the competences and standards in a given sector, enabling an exchange of information among industry representatives and coming to agreement on contested issues. Industry stakeholders are therefore both the creators as well as the recipients of the solutions developed for the sectoral framework.

A team of sectoral experts develops a proposed SQF, which is then consulted with their professional stakeholders' community. One of the most important elements of the work on the SQF is defining the sectoral determinants, the key areas of the sector's activities. This then helps in determining the descriptors of each level.

SQF levels must match specific PQF levels, but the level descriptors should be sector specific. While it is theoretically possible for a sectoral framework to cover all PQF levels, past work indicates that the number of described levels depends on the specific nature of the industry. So far, five proposed SQFs have been developed, for banking, IT, sport, tourism and telecommunications. Work is currently underway to have them included in the Integrated Qualifications System.

Figure 1. The levels of various sectoral qualifications frameworks



Source: IBE.

Sectoral qualifications frameworks are incorporated into the IQS by means of a regulation issued by the minister responsible for education. The inclusion process is begun by the minister with jurisdiction over the sector, either at his/her initiative or at the request of an interested party.

There are many benefits to developing a sectoral qualifications framework. First and foremost, the framework is the result of dialogue among industry representatives who work together to establish a common vision of their field of business and needed competences. Such cooperation allows many universal solutions to be developed. The framework also facilitates work on describing and including qualifications in the IQS, as it translates the language of the PQF into a language specific to the sector. With an SQF, it is easier to understand how to reference PQF descriptors to a particular sector. This in turn makes it easier to accurately assign a PQF level to a specific qualification.

Work is currently underway at the Educational Research Institute with the aim of developing additional sectoral frameworks. It is worth pointing out that the concept of developing multiple sectoral qualifications frameworks and integrating them into a national qualifications system is unique in Europe. Soon, SQFs could be a showcase for Polish industry in the European market.

This publication presents information on the development of the sectoral qualifications framework for the telecommunications industry, carried out as part of a pilot project in 2013–2015.

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1. The Sectoral Qualifications Framework for Telecommunications (SQF Tele) – basic information

Socio-economic development requires, among other things, effective, modern, and generally accessible telecommunications systems. Telecommunications is one of the most dynamically developing business sectors today. A vitally important factor determining the quality of telecommunications systems are its employees, who build, operate and maintain its infrastructure, as well as provide services and sell telecommunications equipment. The currently functioning forms of education, validation and certification in Poland do not fully satisfy the needs of the telecommunications industry. Even newly emerging educational opportunities – resulting from market changes and technological developments – are used locally, sporadically and for the needs of the moment. Therefore, they do not contribute to advancing the overall achievements of the sector. Developing a sectoral qualifications framework for the telecommunications industry (referred to as SQF Tele) was aimed at filling this gap.

SQF Tele is targeted to persons who represent the telecommunications sector in different areas: science and education, public administration, non-governmental organisations (associations, chambers), telecommunications operators, service and manufacturing companies. The main users of the framework could be, however, representatives of institutions performing certification, validation, training or developing education and training programmes. It is intended to meet the needs of the sector, as it allows education and employee training programmes to be adapted to the requirements of the labour market. As a standardised tool, it also enables the quality of non-formal education to be assessed, thus also of continuing education in all its forms, such as, for example, the training provided by private companies as a commercial activity.

The fundamental aim of SQF Tele is to provide a standardised tool for the needs of the telecommunications industry, which can serve as the basis for:

1) developing a map of the qualifications in the telecommunications industry,

2) developing training programmes and validation processes,

3) defining the detailed requirements of certification processes,

4) identifying the competences of job candidates,

5) the professional development choices made by employees or other people interested in working in telecommunications,

6) developing the professional mobility of employees.

In 2014–2015, through a systemic project entitled *The development of terms of reference for the implementation of the National Qualifications Framework and the National Qualifications Register for lifelong learning*, the Educational Research Institute together

with the Telecommunications Builders Association (Stowarzyszenie Budowniczych Telekomunikacji – SBT) implemented a project to develop the *Sectoral Qualifications Framework for Telecommunications*, in cooperation with experts and employees of such companies, organisations and institutions as:

- ELMAT Sp. z o.o. – a telecommunications company,
- Lewiatan Confederation – an employers' organisation,
- Netia S.A. – a telecommunications company,
- Warsaw University of Technology – a higher education institution,
- Łódź University of Technology – a higher education institution,
- POLKOMTEL Sp. z o.o. – a telecommunications company,
- Technitel Polska S.A. (Technitel Group) – a telecommunications company,
- Teraport Telekom Sp. z o.o. – a telecommunications company,
- Office for Electronic Communications – the telecommunications regulator,
- URS Sp. z o.o. – a telecommunications company.

The information in this publication is divided into three chapters: a general introduction about SQF Tele, a description of distinguishing sets of key competences for the most important areas of activity in the telecommunications sector (sectoral determinants) and the process of developing the SQF Tele level descriptors. An annex presents the industry-verified version of the proposed *Sectoral Qualifications Framework for Telecommunications*, containing the level descriptors along with references to example qualifications for the identified telecommunications areas.

2. Areas of activity and key competences in the telecommunications sector

The *Sectoral Qualifications Framework for Telecommunications* is a further elaboration of the Polish Qualifications Framework (second stage level descriptors for vocational education) for two, differing variants of level descriptors, typical of both basic areas of activity in telecommunications: infrastructure, and services and user equipment. These areas, identified during work on the draft framework, are defined as follows:

- **telecommunications infrastructure** – including the design and construction of telecommunications facilities, also consisting of the use of products, assembly and measurements of lines, networks, installations and systems, as well as the maintenance and management of telecommunications facilities;

- **services and user equipment** – including the sale, provision and management of services, manufacturing, assembly, installation, commissioning, testing, maintenance and servicing of telecommunications user equipment.[1]

SQF Tele level descriptors were developed for the areas of telecommunications infrastructure, and services and user equipment, for levels 3 to 7 and 3 to 6 respectively. A model of how the SQF Tele level descriptors are referenced to the PQF is shown in Figure 2 (see Chapter 3.1).

The definition of the sector and established sets of key competences are presented in the next chapters.

2.1. Identifying the fields of activity (areas) in the telecommunications sector

Definition of the telecommunications sector

The proposed fields of activity (areas) in the telecommunications sector have their origin in legal regulations, such as the recommendations and findings of the European Commission contained in the directives of the European Union (EU) on the telecommunications sector [21].[2] In all of the documents, the telecommunications sector is divided into two main fields of activity (areas): the area generally understood as infrastructure and the area of services and user equipment.

[1] More information on the areas of activity in the telecommunications sector can be found in section 2.1.

[2] References to publications and legal acts are provided in brackets. The number in the bracket refers to an item in the list of references with that number.

The ongoing transposition of EU recommendations into the regulations of national law brought about the introduction of regulations on telecommunications activities,[3] with a division into the above-mentioned areas.[4]

Standards corresponding to those areas, as well as standards relating to professional competences (qualifications) in the telecommunications industry (described below) were also determined and adopted.

The normative acts relevant here, which define and regulate both areas of telecommunications in Poland, are the Telecommunications Act and the Construction Act, as well as a series of related acts and implementing regulations cited in the text [22].

Analysis of the activities in the telecommunications sector

The results of the analysis of relevant national and European regulations were used to identify key competences for the areas of activity in the telecommunications sector. During the introduction and harmonisation of telecommunications regulations in Poland, a series of actions were undertaken, including:

1) Defining and characterising relevant issues in the Polish legal system in accordance with EU principles and recommendations, such as:

   - the process of preparing, designing and constructing telecommunications infrastructure;
   - the management of real property with telecommunications facilities;
   - the maintenance of telecommunications facilities.

Important principles relating to user equipment and telecommunications services were also defined in terms of:

- their introduction to the market and use of telecommunications equipment;
- the provision of telecommunications services: retail, wholesale, between operators.

[3] The legislative process – carried out in 2004–2014 – also included regulations on zoning, environmental protection, cultural assets, fire protection, occupational health and safety, standardisation and certification, public roads, water and energy law, forest and agricultural law, real property management, system of compliance assessment and well over one hundred other related acts and implementing regulations. In 2010, an additional legal act was also passed – the Act of 7 May 2010 on supporting the development of telecommunications services and networks (Journal of Laws 2010, No. 106, item 675, as amended), commonly called the "Mega-Act."

[4] The indicated areas of the telecommunications sector are determined and regulated by the Telecommunications Act and related acts.

All of the work described above contributed to identifying sets of key competences for the areas of activity (fields) in the telecommunications sector. So, for example, the following processes were identified for the telecommunications infrastructure area:[5]

1. designing, verifying architectural and construction designs, and supervising the execution of the designs;
2. managing the construction site and work;
3. managing the production of structural construction elements, and supervising and exercising technical control over the production of such elements;
4. acting as the investor's supervisor;
5. exercising technical control over the maintenance of facilities;
6. construction expertise.

2) In addition, subsequent fields in the subareas of lines, networks, installations and systems, resulting from the characteristics of telecommunications, were identified. They include:[6]

1. wired telecommunications, with telecommunications infrastructure;
2. radio telecommunications (including mobile) with accompanying infrastructure.

The above division was determined by the type of technology used when developing telecommunications infrastructure and reflects the specificity of telecommunications services, as well as user equipment (terminals). This pertains to the services provided in both mobile and landline networks.

The key competences of the telecommunications sector result from the continuous development and change in the telecommunications market, as well as changes in the supply and demand for telecommunications services and equipment. This is undoubtedly a dynamically developing business sector, which is significantly ahead of the domain of legislation and legal regulations. We cannot forget that new areas of professional activity are constantly being developed in this sector, while already existing ones are continuously changing, and their impact on the market is forcing the introduction of new legal regulations. Thus, the sector is under the constant supervision of advisory groups of the European Commission and the Body of European Regulators of Electronic Communications (BEREC), which are introducing a number of up-to-date manuals, guidebooks and regulations to the EU regulatory system. The main areas of activity in the telecommunications sector defined below and the sets of competences determined on their basis are important elements in the design of the *Sectoral Qualifications Framework for Telecommunications*.

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[5] This is defined by the Construction Act and related acts [22], stating that each of the listed [...] *processes constitutes an "independent technical role in construction" [which] is understood to mean an activity relating to the need for the professional assessment of technical phenomena or an independent solution of architectural, technical and technical-organisational issues, in particular, an activity including [the above processes]* (Construction Act, Article 12.1).

[6] According to the acts: Telecommunications Act, Construction Act [22], the Act on facilitating access to certain professions [24] and the regulation on independent technical roles in construction [25], [26].

Defining the fields of activity (areas) in the telecommunications sector

Based on an analysis of EU and national laws, the following areas of telecommunications activities (fields) relating to the defined subareas and processes were identified and then verified, to design the framework:[7]

- the area of infrastructure, including:

  1. the design and construction of facilities: telecommunications (including radio telecommunications) lines and station facilities, including those under construction;

  2. the assembly and measurement of lines, networks, installations and systems: installation and implementation, development and research, measurements and testing, use and maintenance of telecommunications switches and equipment;

  3. maintenance and management of telecommunications facilities: lines, networks, installations and systems, as well as systems and access to the telecommunications network (physical interfaces) and access to the local subscriber loop.[8]

  In addition, the process of "using products" concerns all of the above points.

- the area of services and user equipment, including:

  » for services:

  1. the provision of publically available telecommunications services;

  2. services of telecommunications companies, own services or outsourcing, such as: tasks in the field of logistics (e.g. distribution, transport, warehousing), commerce, customer service offices, telemarketing, training and support, research and development;

  3. services between operators, relating to market placement (resale), in order to ensure competition in telecommunications markets – provision of a telecommunications network, access to the local subscriber loop, telecommunications access, or access to markets of the right telecommunications retail and warehouse services (including those for end clients);

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[7] This division was proposed on the basis of the concepts introduced and regulated by EU and national laws governing the telecommunications industry (see subsequent notes in the text). It was then verified in the course of the subsequent work of the expert team.

[8] The scope is determined by the Telecommunications Act, the Construction Act, related acts and implementing regulations [22]. The general principles in this area are provided by the following EU regulations:

- Regulation of the European Parliament and of the Council (EU) No. 305/2011 of 9 March 2011 laying down harmonised conditions for the marketing of construction products and repealing Council Directive 89/106/EEC (L 88/5);
- Council Directive 93/68/EEC of 22 July 1993 amending directive 89/106/EEC (construction products) (OJ L 220 of 30.8.1993, p. 1);
- Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of the Member States relating to construction products.

» for user equipment:

1. tasks in manufacturing and assembly, installation and commissioning, testing, maintaining, servicing and using equipment, as well as tasks relating to commerce, logistics and support, research and development, marketing, training, customer service, etc.[9]

SQF Tele level descriptors were developed by identifying the typical professional competences for the defined areas and processes in the telecommunications sector.[10]

2.2. Identifying sets of key competences

The premises of identifying sets of key competences

This section discusses the premises agreed to for identifying sets of key competences for the telecommunications fields of activity, using the example of telecommunications infrastructure.

The fields of activity of the telecommunications sector and related processes defined in the prior chapter are based on the typical professional activities of persons responsible for the design, construction, and supervision of telecommunications facilities, their maintenance and management (including the dismantling of telecommunications facilities).

Therefore, in order to identify sets of key competences for the fields of activity – starting with the recommendations of the EU directive and the areas and processes in the telecommunications sector defined on that basis, the following were considered as the basic professional roles in the area of infrastructure:

1) designer,

2) site/work manager,

3) investor's supervisory inspector.

These are typical roles in "construction site management" ensuing from the legal regulations on the independent technical functions in construction. Obviously, people working "in telecommunications construction," or more broadly – in the

[9] The scope is determined by the Telecommunications Act and related acts [22]. The area of "services and user equipment" for the needs of the SQF Tele project was deemed as one common area of the telecommunications system due to the fact that the provision of telecommunications services (publically available), which includes, e.g., the voice and audio-video services included in phone and Internet services, always takes place with the use of specific telecommunications equipment, i.e. devices, cables, and user terminals (user equipment), e.g. telephones, mobile phones, computers, tablets, etc. On the other hand, selecting specific equipment determines the range of using different services. Thus it was considered desirable to include this – from the point of view of determining the qualifications and professional competences for the proposed SQF Tele – in one common area – services and equipment. The concept of "user equipment" is used to differentiate it from the concept of "system", which in the context of "networks, lines, installations" constitutes a distinct segment of the equipment of, e.g., telecommunications switches, and was included in the area of telecommunications infrastructure.

[10] It should be noted that the telecommunications sector thus defined is consistent with the description in the document *European ICT Professional Profiles* [41]. The telecommunications areas with subareas and processes: design, construction, services, maintenance, and management, defined in the proposed SQF Tele correspond directly with the concepts used in the ICT Professional Profiles e-CF Dimension 1: *plan, build, run, enable, manage*, respectively (cf. Figure 2, Figure 3).

area of telecommunications infrastructure – have other professional roles, such as, e.g. assembly worker, installer, worker connecting fibre optic cables, machine and equipment operator, personnel, who, according to the cited regulations, work under the supervision of persons with the previously mentioned professional roles. These roles do not ensue from specific regulations, but from the current needs of the labour market in telecommunications infrastructure and are "regulated" on an ongoing basis by the employers in the provider, design, construction or manufacturing companies of the sector.

In terms of the subareas of lines, networks, installations and systems (hereinafter referred to as the installation subarea),[11] two specialties were identified: landline telecommunications and radio telecommunications. Each of these specialties is divided in turn into specific specialisations.[12] Based on the professional roles, specialties and specialisations in the telecommunications sector, we can identify sets of key competences (which also serve as the sectoral determinants) for both main areas of activity included in the framework. In the area of infrastructure, they are determined by its existing subareas and processes, such as:

- the design and construction of facilities, including the use of products, assembly and measurement of lines, networks, installations, and systems;
- the maintenance and management of telecommunications facilities.

Selected groups of key competences for the most important areas in the telecommunications sector – selection criteria

In the section above, we presented the basis on which the key competences of the telecommunications sector were identified from the point of view of the "substance," that is the specific characteristics of the field and the very essence of telecommunications activities. As Fryczyńska wrote in her report on the qualifications and competences of different sectors [45], such competences belong to the category of professional competences. Of course, telecommunications competences, or even the whole category of professional competences, is just one element of the broad area of competences.[13, 14]

Fryczyńska's report contains an extensive analysis of professional competences in telecommunications and the functional competences for a given role or position,

[11] For the purposes of the SQF Tele project, the subarea of lines, networks, installations and systems was named "the installation subarea of the infrastructure area".

[12] In accordance with the Telecommunications Act, the Construction Act [22] and the Regulation on independent technical roles in construction [25], [26].

[13] EU Commission Task Force on basic skills proposes eight basic areas of key competences [6]. These are:
- communicating in one's native language,
- communicating in a foreign language,
- digital competence,
- mathematical, scientific, and technological competence,
- sense of initiative and entrepreneurship,
- social and civic competences,
- the skill of learning,
- cultural awareness and expression.

[14] A similar distinction between 'generic' and 'subject specific' competences, i.e. generic (transferrable) and specific (relating to the particular field) is introduced in *A Tuning Guide to Formulating Degree Programme Profiles Including Programme Competences and Programme Learning Outcomes, PR4_Generic subject specific competences* [12], which analyses the formal education system (European education).

e.g. as a specialist, independent worker or managerial employee [45]. At the same time, personal competences were also considered important, such as: team work, communication skills, involvement, effectively taking action, innovation, problem solving, and knowledge of English.[15]

The following professional competence categories were identified [45]:

- ICT competences, which include the breadth and depth of knowledge, skills and social competences required for each position specified in the industry;
- sales/business competences, which include activities that change telecommunications technology and equipment into telecommunications products/services;
- customer service competences, i.e. activities maintaining the functionality of telecommunications services for customers;
- conceptual competences, i.e. activities requiring the development of new solutions for situations that arise;
- implementation competences, i.e. activities ensuring the performance of previously agreed to schemes and action plans.

Thus, sets of key competences for the most important areas of activity in the sector (sectoral determinants) were derived from the following categories of competences: professional, personal, and functional.

2.3. Distinguishing sets of key competences for the most important areas of the sector

Sets of key competences for the most important areas in the sector (also referred to as sectoral determinants) were distinguished on the basis of professional competence standards and the requirements presented in the publications and references listed in the bibliography. The telecommunications infrastructure area again serves as an example to describe the process.

Based on an analysis of activities in this area (Chapter 1), sets of processes were determined for the professional roles, specialties and specialisations in the sector (Table 1),[16] showing how they determine and identify, in their mutual relations, the professional roles, and then specialties and specialisations. This list should be treated holistically, as a type of database in determining and verifying sets of key competences for SQF Tele in the area of telecommunications infrastructure.

[15] The report [45, p. 34] states: *The telecommunications sector mainly seeks people who are goal oriented. Given this point of view, employers are willing to employ ambitious [persons] (64% of advertisements), who have a very good command of English (60%), are communicative (44%), work effectively in teams (35%), are flexibly available and independent (25%), think analytically (20%), are ready to work under pressure (16%) and professional (16%). Work experience is a requirement included in 68% of job advertisements and specialist knowledge in 62%, whereas higher education in only one out of three advertisements (36%).*

[16] The tabular presentation was developed for the purposes of implementing the proposed SQF Tele on the basis of the Telecommunications Act, the Construction Act, and implementing regulations, e.g. regulations governing the independent technical roles in construction [25], [26].

Table 1. List of processes, professional roles, specialties and specialisations using the example of telecommunications infrastructure

Processes for SQF Tele in the area of infrastructure	Professional roles	Specialties in the installation subarea of the infrastructure area in the telecommunications sector	Specialisations
1. designing, verifying architectural and construction designs and supervising the execution of the designs; 2. managing the construction site and other construction work; 3. managing the production of structural construction elements, supervising and exercising technical control over the production of such elements; 4. acting as the investor's supervisor; 5. exercising technical control over the maintenance of facilities; 6. construction expertise.	1. designing 2. construction site management 3. investor's supervision	1. wired telecommunications with telecommunications infrastructure	1.1. lines, installations and line equipment
			1.2. station equipment
		2. radio telecommunications with accompanying infrastructure	2.1. radio and terrestrial TV broadcasting facilities
			2.2. transmitting and receiving radio communication facilities
			2.3. transmitting and receiving mobile network facilities

Identifying the set of key competences for the infrastructure area was done in the following manner:

a. each telecommunications installation specialty was assigned to a professional role, together with a specialisation;

b. the separate group established in this way determined the elementary set of SQF Tele competences;

c. by grouping and combining appropriate professional roles, specialties and specialisations, the relevant sets of key competences (sectoral determinants) for SQF Tele in the installation subarea of telecommunications infrastructure were identified;

d. each set of key competences corresponds to an appropriate group of competences or sets of learning outcomes, which were used as the basis for formulating the SQF Tele level descriptors. These descriptors were formulated in a manner ensuring the consistency of SQF Tele with the PQF, as presented in Figure 2 (see Chapter 3.1);

e. in addition, the learning outcomes of selected exemplary qualifications[17] were written, based on the PQF level descriptors. Thus, the final SQF Tele levels are attributed to identified, representative qualifications of the sector (confirmed by decisions, diplomas, certificates, licenses, etc.).[18] They are presented together with the SQF Tele level descriptors.

The final input for identifying sets of key competences occurred during the stage of consulting and verifying the initial version of the proposed SQF Tele with the industry. This was accomplished by conducting a survey questionnaire of stakeholders. As a result of all of these activities, the processes and professional roles in the telecommunications sector were defined, along with the necessary key competences presented in Table 2.

Groups of key competences

The key competences in telecommunications are those which are specific to the field, i.e. the essence of the subject, the content and specificity of telecommunications. Of course, telecommunications competences intertwine with others, such as those mentioned earlier, and their combined picture results from the context in which a given job, position or role exists in the telecommunications market. Thus, broadly understood professional competences, or even competences classified as functional and personal competences, were analysed and included in the project together with telecommunications competences.[19] This was determined by the team of experts and during consultations with industry representatives, who considered the established degree of practical importance to the telecommunications industry of the identified competences.

The sets of key competences were, therefore, based on the professional competences required in the telecommunications industry. Based on the areas (fields of activity) of infrastructure, and services and user equipment, as well as the subareas and processes defined above, selected groups of competences for the most important areas of telecommunications were defined and verified (Table 2). Further development of the proposed SQF Tele were based on the results of this work.

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[17] This was done in addition to developing the proposed SQF Tele. The qualifications used in this process were a starting point. Subsequent qualifications will be able to be referenced to the SQF Tele. This is then an example of the practical use of a sectoral framework as a tool significantly facilitating the descriptions of qualifications, their placement in a hierarchy and the development of new qualifications.

[18] The process was verified by the team of experts during the work on the proposed SQF Tele, based on their experiences and knowledge as well as an analysis of relevant regulations and documents determining the requirements for professional telecommunications qualifications identified in the bibliography.

[19] Such as personal competences, including those belonging to the so-called "soft" competences, and those relating to the special working conditions in telecommunications, e.g.:

- appropriate psychophysical predispositions (working at heights, working in confining and deep spaces, e.g. cable chambers);
- good eyesight, high manual skills (needed to connect cables), good hearing (calling pairs in cables, circuits), ability to tolerate outdoor working conditions (weather conditions, lighting, poor work ergonomics, etc.);
- team work, independence, creativity, communication skills, responsibility, problem solving, flexibility, conscientiousness, perceptiveness, reasoning skills, patience, oriented towards development;
- ability to tolerate variable and difficult conditions, to multitask and cope with the stress relating to this.

Table 2. Sets of key competences for the areas identified in the telecommunications sector

Selected groups of competences	Areas	Subareas and processes
– conceptual, design, analytical, construction and assembly; – training, supervision, independent work, managerial (including the competences of inspectors, managers, coordinators, and administrators); – sales and business, customer services.	Infrastructure	– design and construction of facilities, including the use of products, assembly and measurement of lines, installations and systems; – maintenance and management of telecommunications facilities.
	Services and user equipment	– sales, provision and management of services; – manufacturing, assembly, installation, commissioning and testing; – maintenance, servicing and operation of telecommunications user equipment.

3. Developing level descriptors

3.1. The premises for developing SQF Tele level descriptors

In accordance with the premises of the Polish Qualifications Framework, the implementation and outcomes of the SQF Tele project were based on the process of referencing the Polish Qualifications Framework (PQF) to the European Qualifications Framework (EQF) [15].

The SQF Tele is a further elaboration of the PQF. Thus:

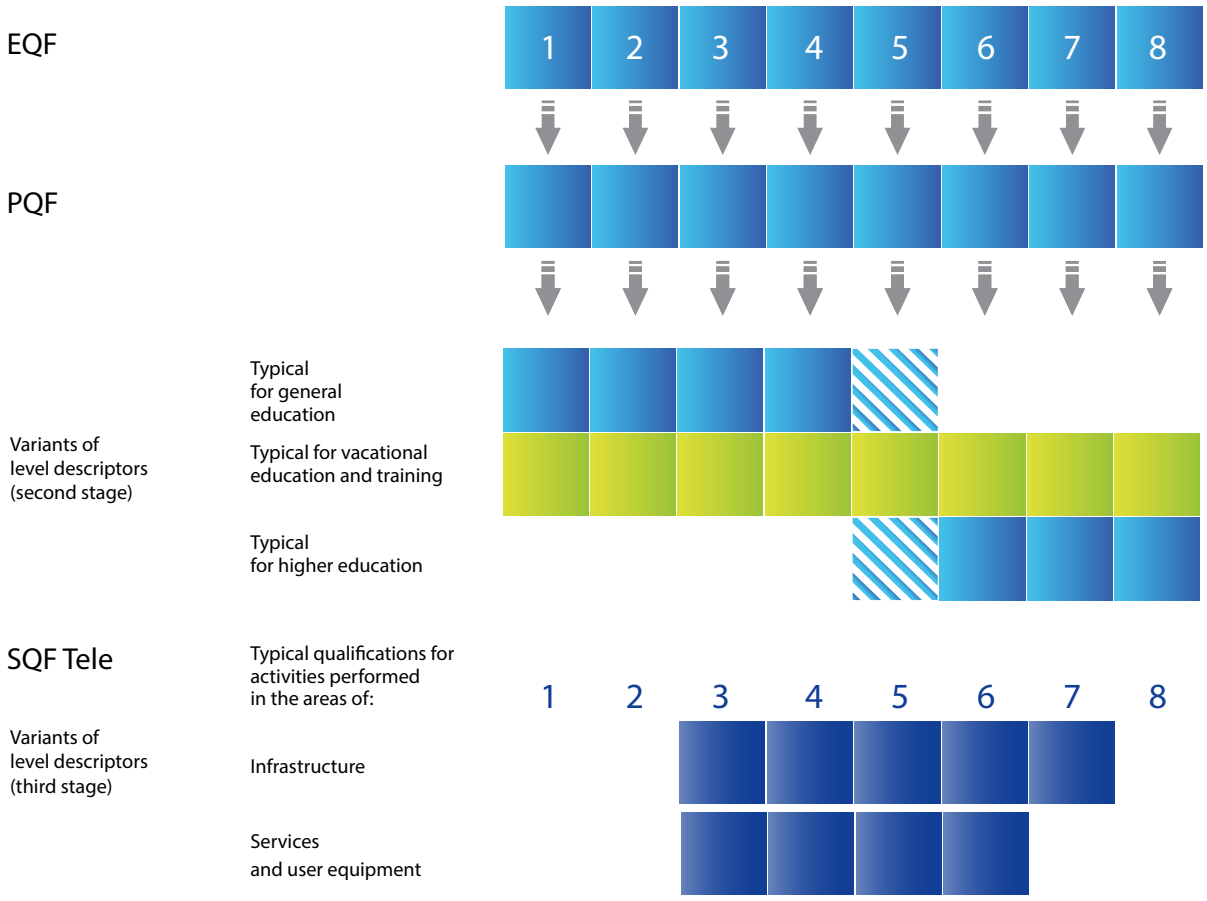
1) The *Sectoral Qualifications Framework for Telecommunications* was developed – just like the PQF – by describing the levels of qualifications functioning in telecommunications, which consists of the fields (areas of activity) of infrastructure, and services and user equipment.

2) Each of the above areas has specific subareas and processes. They, in turn, determine the basic professional roles of SQF Tele. All these elements form the basis of identifying groups of competences in SQF Tele.

3) On this basis, sets of key competences were determined, for which SQF Tele level descriptors were subsequently written.

To meet the above assumptions, it was agreed to develop SQF Tele level descriptors according to the model presented in Figure 2.

Figure 2. SQF Tele level descriptors referenced to the PQF



Based on sources from IBE.

The presented model of SQF Tele level descriptors (third stage) constitutes an extension of PQF level descriptors (second stage) for two different variants (the previously identified two telecommunications areas of activity).

The proposed structure of the SQF Tele is – with reference to the EQF-PQF model – a continuation (extension) of PQF level descriptors for the partial and compound qualifications[20] in telecommunications attained outside the formal general, vocational and higher education systems [15, *Chapter 6.5.1. The relationship between various stages of generic descriptors in the Polish Qualifications Framework, Diagram D*].

Reference materials used in developing SQF Tele are provided in the bibliography. They formed the basis for determining important SQF Tele level descriptors for each identified area of the telecommunications sector.

In the course of working on the draft, relevant SQF Tele levels were also assigned to the most important telecommunications qualifications, typical for the performance of activities in the areas of infrastructure, and services and equipment. They were determined by the decisions, diplomas, certificates, rights and privileges and other

[20] A compound qualification is one made up of discrete (constituent) qualifications, all of which must be attained before the compound qualification can be awarded.

documents currently in place in the Polish qualifications system (formal[21] and non-formal education systems), which confirm that a professional qualification has been awarded or that qualifications, rights and privileges have been attained in another country.[22]

This concept and its premises were presented to the expert team for further implementation of the SQF Tele project. The expert team – at the stage of developing the initial SQF Tele draft – used the proposals and models developed by SBT to work together on developing appropriate SQF Tele level descriptors.

3.2. Comparative analysis of the PQF and SQF Tele

At the onset of work on SQF Tele, it was assumed that its level descriptors will further elaborate PQF level descriptors. Then it was determined that the SQF Tele descriptors will primarily elaborate the PQF descriptors typical for vocational education and training (second stage), as well as those typical for higher education (second stage), as presented in the SQF Tele model (Figure 2). Thus, an analysis was performed of PQF level descriptors for qualifications typical for vocational education and training and higher education. The relationship between the descriptions of required learning outcomes of SQF Tele descriptors and PQF descriptors was described in a separate document.[23]

3.3. Method of developing SQF Tele level descriptors

The method of developing SQF Tele level descriptors was based on the following premises:

1) It was assumed that universal level descriptors and second stage descriptors form an integral whole and should be read together in conjunction with the third stage SQF Tele level descriptors.

2) The integrity of the above was the fact that SQF Tele level descriptors (third stage) are based on qualifications levels typical for vocational education and training and higher education.

3) Pursuant to the postulates of the Polish Qualifications Framework and the SQF Tele project, SQF Tele level descriptors are referenced to the PQF and constitute an elaboration of two different variants of level descriptors (infrastructure and services and user equipment).

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[21] The Act on facilitating access to certain regulated professions [24] is intended to make it easier to attain qualifications, and to be able to take examinations for the awarding of construction rights, partially within formal education by higher education institutions.

[22] Outside of the formal general, vocational and higher education systems, the proceedings for such matters are conducted by authorised organisational units of self-governed professional groups (chambers, associations, etc.). Specific regulations include: The Act on the professional self-governed entities for architects, engineers, civil engineers and city planners [23], the Act on facilitating access to certain regulated professions [24], which limit access to the performance of certain roles, especially managerial/independent ones, in a given field only to members of the professional self-governed entities.

[23] There is an obvious relationship between the descriptions of required learning outcomes for SQF Tele descriptors and PQF level descriptors – shown in the example of a selected higher education qualification, "Engineer – electronics" [15, Table 13], which constitutes the foundation for many qualifications in telecommunications.

The SQF Tele project incorporated the most important exemplary, partial or compound qualifications for the sector. Moreover, the expert team compared SQF Tele level descriptors with the everyday practice of the telecommunications sector occupations.

The process of identifying sets of key competences for the most important areas of the telecommunications sector was a critical part of the method of developing SQF Tele level descriptors, since they form the basis of the determinants distinguishing specific sectoral qualifications. This process was described in Chapter 2.2. Table 2 also presents sets of key competences for the most important areas in the telecommunications sector. On their basis, SQF Tele level descriptors were determined and referenced to PQF descriptors.

This was done using materials provided in the bibliography, especially the *Referencing Report* [15] and other publications [2], [3], [6], [11], [28], [30], [36], [40], [41]. The integral descriptive categories used and aspects of major importance for completeness of the description of knowledge, skills and social competences at a given level of advancement were analysed. Thus, the analysis concerned: phrases, time limits, words describing key activities/actions (action verbs) appropriate for a given level of responsibility, independence, cooperation and management, creativity, assessment, self-development, etc. Such an analysis ended when we found the relationships or ascertained that the learning outcomes of a given PQF level correspond to groups of identified competences. In addition, a comparative analysis was performed of sets/groups of key competences in the telecommunications sector and the learning outcomes described in the EQF.

3.4. Aligning telecommunications infrastructure qualifications to SQF Tele

In the context of finding and determining the mutual relations (references) between PQF and SQF Tele levels and, as a consequence, of developing SQF Tele level descriptors, aligning selected qualifications to SQF Tele was a valuable experience. This is a classic example of analysing and presenting the requirements of qualifications and the conditions for attaining qualifications governed by separate legal provisions, awarded outside the formal general, vocational and higher education systems. This type of work significantly supported implementation of the SQF Tele project.

Qualifications were selected from the area of infrastructure,[24] including the subareas and processes presented in Table 1. Just as a reminder, these are:

- designing and constructing telecommunications facilities, including the use of products, the assembly and measurement of lines, networks, installations and systems;
- maintenance and management of telecommunications facilities.

An analysis of legal regulations was performed for those subareas and processes, which led to the identification of examples of representative SQF Tele[25] sectoral (partial) qualifications in the area of infrastructure, such as:

[24] The entire further description is of example qualifications of SQF Tele for the infrastructure area.
[25] The (partial) qualifications of the SQF Tele telecommunications sector are also referred to as "sectoral qualifications."

- Designer – awarded by a decision on granting a limited scope of construction rights in a telecommunications specialty,
- Site manager – awarded by a decision on granting a limited scope of construction rights in a telecommunications specialty,
- Investor's supervisory inspector – awarded by a decision on granting a limited scope of construction rights in a telecommunications specialty.[26]

The example under discussion also defines the foundation requirements of the sectoral qualifications, which are the relevant, full qualifications at PQF levels 6 or 7, depending on the type (specialty) of attained education. In addition, the next stage of professional development was identified for each SQF Tele qualification in the infrastructure area, consisting of the attainment of subsequent sectoral qualifications at PQF level 7:

- Designer, site manager, and investor's supervisory inspector with unlimited construction rights in a telecommunications specialty;
- Construction Appraiser in telecommunications.

At the same time, SQF Tele level descriptors for the infrastructure area were developed (corresponding to PQF levels 6 and 7) and assigned to example SQF Tele qualifications. Important learning outcomes for knowledge, skills and social competences were determined, so that they would:

- describe all the requirements of the analysed normative legal acts and available documents,
- exactly reflect the structure of the SQF descriptors, constituting the further elaboration of PQF descriptors.

The example serves as an essential reference for developing SQF Tele level descriptors. What is important in such a structure is ensuring consistency with the general principles of assigning PQF levels to qualifications [15] and [13].

Preliminary remarks on assigning PQF levels to qualifications

The *Referencing Report* [15] outlines the general principles of assigning PQF levels to qualifications. The process developed there was described in the diagram *The five stages of assigning a PQF level to qualifications* [15, Annex 4]. In addition, according to the principles of including qualifications in the Integrated Qualifications Register (IQR) [13]:

1) PQF levels are first assigned to qualifications represented by the diplomas and certificates attained in formal education – general, vocational education and higher education;[27]

[26] These qualifications also use abbreviated names, such as: "Designer," "Site Manager" and "Investor's Supervisory Inspector."

[27] It is also possible to assign SQF levels to partial qualifications awarded in the formal education system, e.g. diplomas of qualifications attained in vocational upper secondary schools and basic vocational schools or in postgraduate studies.

2) then, qualifications attained outside formal education, awarded by different institutions and organisations, such as sectoral ones, are aligned with the PQF or SQF;

3) other qualifications not included in the Register may function as they have in the past as long as there still is public demand for them, but they cannot be assigned a PQF level [13].

SQF Tele sectoral qualifications are those attained outside of formal education, awarded by different institutions and organisations, such as sectoral ones, thus aligning sectoral qualifications with SQF Tele was a significant step in the process of developing SQF Tele level descriptors.

After analysing the process of aligning PQF and SQF Tele levels with qualifications for the example under discussion, we can conclude that it meets the basic conditions set out in the *Referencing Report* [15]: a specific set of information for a given qualification was developed, and the requirements for the qualification were written in the language of learning outcomes.

The material resulting from this example was used in producing SQF Tele level descriptors. The completeness and consistency of these processes were verified with the team of experts.

3.5. Additional premises and conditions

Starting with the processes, professional roles, specialties and specialisations of specific SQF Tele qualifications, the structure of SQF Tele level descriptors was developed. During implementation, the following conditions were taken into account:

1) each of the SQF Tele level descriptors was based on:

   - an analysis of sources (legal acts, standards, national, EU and international classifications),

   - the results of analytical research on selected job positions;

2) level descriptors contain descriptions of knowledge, skills and social competences consistent with the PQF that take into account the significant elements of the occupational qualifications:

   - elements of the work position,

   - scope of work and method of performance,

   - areas of its occurrence,

   - work environment (working conditions, machines and equipment, existing hazards, organisation of work),

- elements of psychophysical and health requirements needed for its performance; contraindications for performing the work,
- education and rights required to perform the work of a given occupation,
- other requirements identifying and determining professional development, including how specific qualifications are confirmed,
- list of performed occupational tasks and description of occupational qualifications,
- list and description of key competences required to perform the tasks of a given position.

3.6. Level descriptors

The proposed *Sectoral Qualifications Framework for Telecommunications* contains the SQF Tele level descriptors for both areas (infrastructure, services and user equipment), which take into account sets of key competences required for working in the telecommunications industry.

The proposed SQF Tele also has level descriptors, referenced to the most important (according to the team of experts) qualifications of the telecommunications sector in both areas. The qualifications were selected and edited from the perspective of the draft SQF Tele on the basis of the materials and the requirements of company employers, the main actors in this market [33], [34], [45], [46]. They reflect the demand for specific occupations in the current telecommunications labour market.

The qualifications discussed represent SQF Tele levels equivalent to levels 3, 4, 5, 6, and 7 of the PQF. Other PQF levels were considered irrelevant for both areas of the telecommunications sector.

The verified, final outcomes of the SQF Tele project, including the verified *Sectoral Qualifications Framework for Telecommunications* for the abovementioned levels, can be used in developing the integrated qualifications system and determining PQF levels for given qualifications, according to the principle that *during the period of implementing the new solutions, the authorised minister or institution under his/her jurisdiction will be responsible for determining the proper PQF level for qualifications under his/her authority* [15, Part 4. Referencing criteria, 4.4. Criterion 4].

To summarise, the starting point for structuring the SQF Tele were the areas, subareas, professional roles and sets of key competences in the telecommunications sector, identified in Chapter 2. They formed the determinants for developing the SQF Tele descriptors appropriate for a given level and to identify the most important sectoral qualifications.

In working on the proposed framework, detailed learning outcomes were developed for the specific character of the industry and for the relevant qualifications framework

levels. The final, industry-verified product – the *Sectoral Qualifications Framework for Telecommunications* is presented in the attachment.

Bibliography

The documents and materials used in the project are divided into:

- **general** ones, containing formal and legal requirements of a universal nature and relating to all types of education (first stage), as well as those typical for general education, vocational education and training, and higher education (second stage);
- **subject-related**, on the requirements of the telecommunications sector/industry for professional qualifications and competences;
- **business-related**, defining the current requirements of employers with respect to their employees in service and manufacturing companies in the telecommunications industry and the necessary qualifications and competences for performing work in given jobs.

In addition, in order to develop third stage SQF Tele level descriptors, auxiliary materials were selected and used on the basis of other indicators, which ensured:

- clarity about the subject matter and specification of the priorities of the described requirements,
- obtaining the right hierarchy of requirements (regulations, recommendations, instructions, analyses, opinions, information, etc.),
- determining the interrelationships, connections between requirements (detailed, general, subordinate, superior, independent, etc.).

Finally, below is a categorised list of selected auxiliary materials:

1) Documents determining the general conditions – included in EU and national legal regulations

1. Decision of the European Parliament and of the Council of 15 December 2004 on a single Community framework for the transparency of qualifications and competences (Europass) (2241/2004/EC).
2. Recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning (2008/C 111/01).
3. Cedefop (2014). *Criteria and procedures for referencing national qualifications levels to the EQF*, Ref. Ares (2014)17551 – 07/01/2014. European Centre for the Development of Vocational Training.
4. Report on referencing the Luxembourg qualifications framework (Cadre Luxembourgeois des Qualifications – CLQ): *The education and vocational training system in the Grand Duchy of Luxembourg* (2012).

5. Others provided on the website: European Commission/ European Qualifications Frameworks/ Documentation: http://ec.europa.eu/eqf/documentation_pl.htm

6. Fundacja Rozwoju Systemu Edukacji (2005). *Kompetencje kluczowe – Realizacja koncepcji na poziomie szkolnictwa obowiązkowego*. Warszawa.

Polish legal acts

7. The Act of 26 June 1974 – Labour Code (uniform text Journal of Laws 2016, item 1666).

8. The Act of 27 July 2005 Higher Education Law (uniform text Journal of Laws 2016, item 1842).

9. The Act of 20 April 2004 on promoting employment and labour market institutions (uniform text Journal of Laws 2016, item 645).

10. The Act of 7 September 1991 on education system (uniform text Journal of Laws 2016, item 1943).

11. The Act of 23 June 2016 changing the act – Higher Education law and certain other acts (Journal of Laws 2016, item 1311).

Other sources

12. *A Tuning Guide to Formulating Degree Programme Profiles Including Programme Competences and Programme Learning Outcomes* (2010). Bilbao, Groningen and The Hague.

13. NQF Library of IBE:
http://biblioteka-krk.ibe.edu.pl/opac_css/index.php?lvl=categ_see&id=93

14. *Słownik podstawowych terminów dotyczących krajowego systemu kwalifikacji* [*A Glossary of Key Terms related to the National Qualifications System*], *opracowanie zespołowe* (2014). Warszawa: IBE.

15. *Raport referencyjny – Odniesienie polskiej ramy kwalifikacji na rzecz uczenia się przez całe życie do europejskiej ramy kwalifikacji* [*Referencing Report. Referencing the Polish Qualifications Framework for lifelong learning to the European Qualifications Framework*] (2013). Warszawa: IBE.

16. Requirements for education areas 1 – Qualifications Frameworks for higher education – Draft of the Ministry of Science and Higher Education "Krajowe Ramy Kwalifikacji w szkolnictwie wyższym jako narzędzie poprawy jakości kształcenia", Priority IV HC OP, Measure 4.1. Submeasure 4.1.3 (Chapter 1.3).

17. Chmielecka, E. (2011). *Krajowe Ramy Kwalifikacji dla polskiego szkolnictwa wyższego*. Presentation at Bologna Seminary, University of Applied Sciences in Piła, 31 May 2011.

18. *Propozycje wdrożenia i rozwoju Sektorowych i Krajowych Ram Kwalifikacji* (2009). A guidebook on the development of national and sectoral qualifications frameworks in countries – draft EQF-Spread, 2009-1167-167277-LLP-1-ES-KAI-KAI1EQF.

19. Krajowe standardy kwalifikacji zawodowych (2007). Draft "Opracowanie i upowszechnienie Krajowych Standardów Kwalifikacji Zawodowych", implemented by the Ministry of Labour and Social Policy, Labour Market Department, Warszawa.

20. M. Kubryń (ed.). *Krajowe Ramy Kwalifikacji – Krok po Kroku – Poradnik*. SSPW Komisja Dydaktyczna.

2) Documents determining the subject matter of the telecommunications sector/industry in legal regulations and other EU and national documents

21. EU Directives:

a. 2002/21/EC of 7 March 2002 on a common regulatory framework for electronic communications networks and services (OJ EC L 108 of 24.4.2002);

b. 2002/20/EC of 7 March 2002 on the authorisation of electronic communications networks and services (OJ EC L 108 of 24.4.2002);

c. 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (OJ EC L 108 of 24.4.2002);

d. 2002/22/EC of 7 March 2002 on universal service and users' rights relating to electronic communications networks and services (OJ EC L 108 of 24.4.2002);

e. 2002/58/EC of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (OJ EC L 201 of 31.7.2002);

f. 2002/77/EC of 16 September 2002 on competition in the markets for electronic communications networks and services (OJ EC L 249 of 17.9.2002);

g. 1999/5/EC of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (OJ EC L 91 of 7.4.1999);

h. 2004/108/EC of the European Parliament and of the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC (OJ L 390/2431.12.2004); [Directive 89/336/EEC of 3 May 1989 on the approximation of laws of the Member States relating to electromagnetic compatibility (OJ L 139 23.05.89)].

22. Polish legal acts relating to the subject matter:

a. The Act of 16 July 2004 Telecommunications Act (uniform text Journal of Laws 2016, item 1489);

b. The Act of 7 July 1994 Construction Act (uniform text Journal of Laws 2016, item 290);

c. Related laws and implementing regulations relating to: zoning, environmental protection, cultural assets, fire protection, occupational health and safety, standardisation and certification, public roads, water and energy law, forest and agricultural law, real property management, system of compliance assessment;

a. The Act of 7 May 2010 on supporting the development of telecommunications services and networks (uniform text Journal of Laws of 2016 item 1537), commonly referred to as the "Mega-Act."

23. The Act of 15 December 2000 on professional self-government of architects, civil engineers and city planners (uniform text Journal of Laws 2016, item 1725).

24. The Act of 9 May 2014 on facilitating access to certain regulated professions (Journal of Laws 2014, item 768).

25. Regulation of the Minister of Infrastructure and Development of 24 September 2014 on independent technical roles in construction (Journal of Laws 2014, item 1278).

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28. Polish presentations:

a. Frankowicz, M. (2013). Sektorowe ramy kwalifikacji: perspektywa międzynarodowa. Systemic project "Development of substantial and institutional assumptions of implementation of National Qualifications Frameworks and National Register of Qualifications for lifelong learning," Warszawa: IBE. Downloaded from: http://biblioteka-krk.ibe.edu.pl/opac_css/doc_num.php?explnum_id=527

b. Szymańska-Koszczyc, M. (2013). Sektorowa Rama Kwalifikacji dla rynku pracy sektor bankowy. Systemic project "Development of substantial and institutional assumptions of implementation of National Qualifications Frameworks and National Register of Qualifications for lifelong learning," Warszawa: IBE. Downloaded from: http://biblioteka-krk.ibe.edu.pl/opac_css/doc_num.php?explnum_id=525

29. *Projekt Sektorowej Ramy Kwalifikacji dla Sektora Bankowego (Projekt współfinansowany ze środków Unii Europejskiej w ramach Europejskiego Funduszu Społecznego)* (2013). Final report with attachments. Warszawa: IBE.

3) Documents determining the principles for business (in particular), resulting from the requirement of employers and on the occupations used in practice, including in the telecommunications sector

Legal regulations and other national documents

30. The Act of 22 March 1989 on crafts (uniform text Journal of Laws 2016, item 1285).

31. Regulation of the Minister of Labour and Social Policy of 7 August 2014 on classification of professions and specialties for the needs of the labour market and the scope of its application (Journal of Laws 2014, item 1145, as amended).

32. Regulation of the Minister of National Education of 13 December 2016 on classification of occupations for vocational education (Journal of Laws 2016, item 2094).

33. Regulation of the Minister of National Education of 7 February 2012 on the core curriculum for vocational education (Journal of Laws 2012, item 184, as amended).

34. Regulation of the Minister of National Education of 10 January 2017 on apprentice examination, master examination, and verification examination, carried out by examination boards of chambers of crafts (Journal of Laws 2017, item 89).

Publications on related topics (e.g. on sectoral qualifications frameworks in other countries, the taxonomy of educational goals, etc.)

35. *Evaluation of the European Qualification Framework (EQF). Implementation of the Recommendation of the European Parliament and the Council on the Establishment of the European Qualifications Framework for Lifelong Learning* (19.12.2013) – Report from the Commission to the European Parliament and the Council, COM/2103/0897 final.

36. *Learning Opportunities and Qualifications in Europe, Information about courses, work-based learning and qualifications*. Downloaded from: http://ec.europa.eu/ploteus/

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Analyses, lists, requirements of professional organisations and institutes, academic units, and service and manufacturing companies (position related, servicing systems, networks, installations and equipment) that determine the current labour market supply and demand for professional qualifications in telecommunications

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43. Requirements of occupational qualifications awarded by: PCBC, PCA, PKN, etc.

44. Fryczyńska, M. (2012). Raport 2 – desk research analysis – telecommunications sector, telecommunications activities (pkd 61), Project "Bilans kwalifikacji i kompetencji w wybranych sektorach [Balance sheet of qualifications and competences in selected sectors]." Project co-financed by the European Social Fund of the European Union, 3.4.1.

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46. Curricula for university studies in technology with a specialisation in telecommunications:

    a. Portal of Faculty of Electronics and Information Technology of Warsaw University of Technology: http://www.elka.pw.edu.pl/pol/Studia/Zalaczniki-i-formularze/Zalaczniki/Wymagania-programowe-1/Telekomunikacja

    b. Portal Studia.net: http://www.studia.net/elektronika-i-telekomunikacja

Annex 1

SQF Tele level descriptors – Telecommunications infrastructure

Level 3 Telecommunications infrastructure

Tele SQF Level 3 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:
- the basic conditions and dependencies at work at the level of one's company department;
- the principles of teamwork under the supervision of a superior;
- the basic principles of occupational health and safety (OHS) requirements relating to assigned tasks.

GENERAL SKILLS – IS ABLE TO:
- apply the skills of:
  – working under pressure, working in a group,
  – organising one's own working time,
  – planning, forecasting.

GENERAL SOCIAL COMPETENCE – IS READY TO:
- act in accordance with laws, regulations, best practices and professional ethics;
- systematically raise professional qualifications through self-improvement, participation in training, courses, presentations and fairs.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:
- the provisions of the Construction Act and industry standards and the basic principles of performing installations;
- the methods and techniques of the design, construction and operation of telecommunications networks;
- basic safety principles in construction work.

OCCUPATIONAL SKILLS – IS ABLE TO:
- perform assigned tasks in the assembly and repair of telecommunications lines, installations and equipment effectively, in a timely manner and in compliance with relevant regulations;
- use proper materials and tools;
- care for the materials and equipment used;
- plan for and notify of needed materials and tools.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:
- assume responsibility for the performance of the assigned tasks in the assembly and repair of telecommunications lines, installations and equipment;
- maintain good interpersonal relations with customers, other company employees and subcontractors;
- comply with work regulations and OHS regulations applicable to the construction (assembly), repair, maintenance and technical support of telecommunications lines and equipment.

Profile of a person with a sectoral qualification at PQF level 3

level of an employee carrying out activities relating to the assembly and repair of telecommunications lines, installations and equipment.

Performs assigned tasks under the supervision of a superior. Understands the basic conditions and dependencies at work at the level of the company's contracting department; solves routine problems, as requested. Cooperates in a team. Observes time schedules as required by the tasks being carried out. Raises his/her qualifications through self-improvement and participation in training, courses, etc.

Example of a position requiring qualifications at this level: Installations Specialist

PQF Level 3 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:
- basic facts and concepts as well as the dependencies between selected natural and social phenomena and the products of human thought;

furthermore,
- a broader scope of selected facts, concepts and dependencies in specific areas;
- the basic conditions of conducted activities.

SKILLS – IS ABLE TO:
- perform moderately complex tasks following general instructions under partially variable conditions;
- solve simple, routine problems under partially variable conditions;
- understand moderately complex statements, formulate moderately complex statements;
- understand and formulate very simple statements in a foreign language.

SOCIAL COMPETENCE – IS READY TO:
- be a member of various types of communities, function in various social roles and assume the basic obligations ensuing from this;
- act and cooperate with others partially autonomously under structured conditions;
- evaluate one's own actions and those of the team; take responsibility for the results of those actions.

Example of an occupational qualification at SQF level 3

1. **Sectoral qualification at SQF level 3:** Telecommunications Network Assembly and Repair **Certificate**

   Scope of the sectoral qualification: rights to perform the assembly and repair of telecommunications lines, installations and equipment.

   Foundation: full qualifications at PQF level 3 – typical for vocational education and training in telecommunications or a related field, confirmed by a qualification at PQF level 3, i.e.:

   – a certificate confirming a qualification in the occupation,

   or

   – a diploma confirming occupational qualifications.

2. **The next level of professional development in a specialist or management path**

   Foundation: full qualifications at PQF level 4 – typical for vocational education and training in telecommunications or a related field, confirmed by a qualification at PQF level 4, i.e.:

   – the vocational upper secondary school leaving certificate (matura),
   or
   – a certificate confirming a qualification in the occupation,
   or
   – a diploma confirming occupational qualifications,

   in order to attain, e.g.:

   1) A sectoral qualification at SQF level 4: Telecommunications Network Development Supervision **Certificate**

   Scope of the sectoral qualification: rights to supervise and work in the assembly and repair of telecommunications lines, installations and equipment.

   2) Positions – Independent Specialist, Installations Supervisor

Level 4 Telecommunications infrastructure

Tele SQF Level 4 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:
- the basic conditions and dependencies in the organisation and activities of the company, also as they relate to the construction work being carried out;
- the basic principles of safety relating to the occupation and construction work;
- the principles of directing a team of subordinate employees.

GENERAL SKILLS – IS ABLE TO:
- effectively motivate subordinate employees;
- use technical documentation;
- work under pressure, work in a group;
- organise one's own working time, plan, forecast;
- solve problems influencing the scope, quality or timeliness of the tasks being carried out;
- comply with the requirements of company confidentiality;
- apply OHS regulations and employment regulations.

GENERAL SOCIAL COMPETENCE – IS READY TO:
- direct employees so that they act according to laws, regulations, best practices and professional ethics;
- improve the work performance of other company departments by analysing observed errors, irregularities;
- systematically raise professional qualifications through self-improvement, participation in training, courses, presentations and fairs;
- motivate subordinate employees.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:
- the basic provisions of the Construction Act;
- the general principles of the investment process, including the rights and obligations of the participants;
- the methods and techniques of constructing telecommunications networks;
- basic health and safety requirements within the scope of assigned tasks;
- the rules and procedures of the quality assurance system;
- the requirements and standards in force in telecommunications.

OCCUPATIONAL SKILLS – IS ABLE TO:
- perform assigned tasks in the assembly and repair of telecommunications lines, installations and equipment effectively, in a timely manner and in compliance with relevant regulations;
- skilfully assign tasks to subordinate employees and enforce their timely and proper performance;
- cooperate with subcontractors;
- plan for and notify of needed materials and tools.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:
- assume responsibility for assigned tasks in the assembly and repair of telecommunications lines, installations and equipment, performed in a timely manner, in compliance with applicable standards and with the proper quality;
- comply with employment and OHS regulations;
- ensure that employees are paid for the hours worked outside standard working time;
- care for the provided materials, funds and equipment;
- establish and maintain good interpersonal relations with customers, subordinate employees and subcontractors.

PQF Level 4 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:
- a broadened set of basic facts,
- moderately complex concepts, theories and the dependencies between selected natural and social phenomena and the products of human thought;

furthermore,
- a broader scope facts, moderately complex concepts and theories from specific fields and the dependencies between them;
- the basic conditions of conducted activities.

SKILLS – IS ABLE TO:
- complete moderately complex tasks, partially without instructions, often under variable conditions;
- solve moderately complex and somewhat non-routine problems often under variable conditions;
- learn autonomously in a structured form;
- understand complex statements, formulate moderately complex statements on a broad range of issues;
- understand and formulate simple statements in a foreign language.

SOCIAL COMPETENCE – IS READY TO:
- assume responsibility for participating in various communities and functioning in various social roles;
- act and cooperate with others autonomously under structured conditions;
- evaluate one's own actions and those of the persons one is directing; take responsibility for the results of one's own actions as well as those of the persons one directs.

Profile of a person with a sectoral qualification at PQF level 4

– level of a team manager carrying out activities relating to the assembly and repair of telecommunications lines, installations and equipment.

Effectively performs assigned tasks. Understands the basic conditions and dependencies within the organisation and the functioning of the department. Solves simple, non-routine problems as requested. Cooperates in a team. Manages a team of employees, determines and controls the performance of their tasks. Conducts basic training, provides instructions to the employees in the team. Raises his/her qualifications through self-improvement and participation in training, courses, etc.

Example of a position requiring qualifications at this level: Installations Supervisor

Example of an occupational qualification at SQF level 4

1. **A sectoral qualification at SQF level 4:** Telecommunications Network Development Supervision **Certificate**

   Scope of the sectoral qualification: rights to manage the performance of work and installations

   Foundation: full qualifications no lower than PQF level 4 – typical for vocational education and training in telecommunications or a related field, confirmed by a qualification no lower than PQF level 4, i.e.:

   – a vocational upper secondary school leaving certificate (matura),
   or
   – a certificate confirming a qualification in the occupation,
   or
   – a diploma confirming professional qualifications.

2. **The next level of professional development in a specialist or management path**

   Foundation: full qualifications typical for vocational higher education, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in telecommunications or a related field. in order to attain, e.g.:

   1) A sectoral qualification at SQF level 5: Technical Documentation Handling and Supervision Certificate

   Scope of the sectoral qualification: rights to perform tasks relating to the technical documentation of telecommunications infrastructure

   Foundation: full PQF level 6 qualifications

   – Completion of vocational higher education required, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in telecommunications or a related field.

   in order to attain, e.g.:

   2) Position – Independent Specialist, Project Engineer, Project Manager

   3) SQF level 6 qualifications

   Design Engineer and/or Site Manager, Investor's Supervisory Inspector – **Decision on granting** limited construction rights in the telecommunications specialty

   Scope of the sectoral qualifications: rights to design telecommunications facilities and/or manage construction work, act as the investor's supervisor; specialty of construction rights – Installation of telecommunications infrastructure networks, integration and commissioning of network equipment

Level 5 Telecommunications infrastructure

Tele SQF Level 5 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- the legal provisions relating to construction;
- the principles of handling technical documentation;
- the methods and dependencies relating to the design, development and maintenance of telecommunications facilities;
- the application of methods and techniques, in the context of actions resulting from the requirements of different sectors, to improve construction processes.

GENERAL SKILLS – IS ABLE TO:

- perform tasks relating to handling technical documentation;
- learn autonomously by participating in training, courses, presentations, fairs and other ways;
- think analytically, work under time pressure, work in a group, organise one's own working time.

GENERAL SOCIAL COMPETENCE – IS READY TO:

- perform tasks reliably and in a timely manner;
- establish good interpersonal relations and undertake initiatives to improve and increase the effectiveness of the tasks being carried out.
- perform work with accuracy, thoroughness and under the pressure of time.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- the structure of telecommunications networks;
- the basics of telecommunications networks and systems design;
- the variety of impacts of the external environment on the operation of telecommunications infrastructure;
- the legal provisions relating to telecommunications infrastructure, the industry and company regulations of the design and construction of telecommunications infrastructure;
- OHS regulations on the construction and operation of telecommunications networks and equipment;
- the principles of the construction process in telecommunications; the terminology used in telecommunications.

OCCUPATIONAL SKILLS – IS ABLE TO:

- autonomously perform tasks relating to the documentation of telecommunications infrastructure resources; prepare the technical framework of the conditions for constructing telecommunications networks and connections;
- use IT tools dedicated to the design and documentation of telecommunications infrastructure resources;
- develop the technical and economic framework for constructing a telecommunications network;
- analyse and provide opinions on the technical documentation accepted for further approval.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:

- record and maintain the technical documentation of telecommunications infrastructure in a timely manner and ensure its good quality;
- take responsibility for properly handling the technical documentation of telecommunications infrastructure;
- comply with regulations and instructions relating to the documentation of telecommunications network resources;
- systematically raise one's qualifications by participating in different forms of training, courses, and seminars.

PQF Level 5 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:

- a broad scope of facts, theories, methods and the dependencies between them;
- the diverse conditions of conducted activities.

SKILLS – IS ABLE TO:

- complete tasks without instructions under variable, predictable conditions;
- solve moderately complex and non-routine problems under variable, predictable conditions;
- learn autonomously;
- understand moderately complex statements, formulate moderately complex statements using specialised terminology;
- understand and formulate very simple statements in a foreign language using specialised terminology.

SOCIAL COMPETENCE – IS READY TO:

- assume basic professional and social responsibilities, evaluate and interpret them;
- independently act and cooperate with others under structured conditions, direct a small team under structured conditions;
- evaluate one's own actions and those of others and the teams one directs;
- assume responsibility for the results of those actions.

Profile of a person with a sectoral qualification at PQF level 5

– level of an Independent Specialist who prepares, updates and supervises the documentation of telecommunications infrastructure.

Effectively acts in the variable environment of construction, telecommunications and related industries. Understands the perspective of the telecommunications sector. Solves complex, non-routine problems relating to telecommunications infrastructure. Proposes new solutions. Prepares and supervises the handling of the technical documentation of telecommunications infrastructure. Plans his/her own learning and the learning of subordinate employees, conducts training, and provides instructions. Is able to transfer knowledge. Makes autonomous decisions, manages a team of employees and takes responsibility for this. Raises his/her qualifications through self-improvement and participation in training, courses, etc.

Example of a position requiring qualifications at this level: Independent Specialist

Example of an occupational qualification at SQF level 5

1. **A sectoral qualification at SQF level 5:** Technical Documentation Handling and Supervision **Certificate**

   Scope of the sectoral qualification: rights to perform tasks relating to the technical documentation of telecommunications infrastructure

   Foundation: full qualifications typical for:

   1) vocational higher education required, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in telecommunications or a related field.

2. **The next level of professional development in a specialist or management path**

   Foundation: full PQF level 6 qualifications – vocational higher education required, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in information and communications technology, telecommunications or a related field,

   in order to attain, e.g.:

   1) Position – Project Engineer, Project Manager

   2) A sectoral qualification at SQF level 6:

   a) Telecommunications Construction Project Management and Supervision **Certificate**

   Scope of the sectoral qualifications: rights to manage the telecommunications investment of a project;

   b) Design Engineer and/or Site Manager, Investor's Supervisory Inspector – **Decision on granting** limited construction rights in the telecommunications specialty

   Scope of the sectoral qualification: rights to design telecommunications facilities and/or manage construction work, act as the investor's supervisor; specialty of construction rights – Installation of telecommunications infrastructure networks, integration and commissioning of network equipment

   3) A sectoral qualification at PQF level 7

   Foundation: full PQF level 7 qualifications – vocational higher education required, confirmed by a PQF level 7 qualification, i.e. completed second cycle studies in a field relevant to the given specialty; second cycle higher education programmes relevant to the given specialty:

   – telecommunications,

   – electrical engineering or electronics or electronics and telecommunications, enabling the attainment of knowledge and skills in telecommunications,

   – electrical measurements and telecommunications,

   in order to attain, e.g.:

   a) A decision on granting – unlimited construction rights in the telecommunications specialty; to design telecommunications facilities and/or manage the construction work of:

   – wired telecommunications with telecommunications infrastructure and

   – radio telecommunications with accompanying infrastructure,

   b) A decision on granting – the title of construction appraiser [within the scope of designing telecommunications facilities and/or managing construction work] in [wired and/or radio] telecommunications.

Level 6 Telecommunications infrastructure

Tele SQF Level 6 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- the details of the structure and principles of operating telecommunications networks and systems;
- the operation of the telecommunications sector and national and local government institutions relating to the telecommunications infrastructure;
- the complex dependencies between ensuring the safety and functionality of the solutions applied in constructing and operating telecommunications networks and economic effectiveness;
- communicative English relating to the telecommunications construction sector.

GENERAL SKILLS – IS ABLE TO:

- prepare non-standard project solutions in accordance with current engineering practices and the requirements of laws and norms;
- respond to constant changes in the external environment of the telecommunications sector:
- transfer one's knowledge on the construction process to other participants and subordinate employees;
- acquire new orders for services and new subcontractors;
- work under pressure, work in a group, plan, forecast;
- autonomously perform functions and actions relating to leading projects, including:
  – using IT tools in the design process,
  – using English in the process of designing, constructing and operating telecommunications infrastructure;
  – organising and settling the work and services performed.

GENERAL SOCIAL COMPETENCE – IS READY TO:

- assume responsibility, demonstrate innovativeness in the assigned tasks;
- motivate employees to comply with regulations, best practices and professional ethics;
- establish and maintain good interpersonal relations with customers and subcontractors;
- undertake initiatives to improve the effectiveness of projects and the financial results of one's organisation;
- systematically raise professional qualifications through self-improvement, participation in training, courses, presentations and fairs;
- autonomously make decisions.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- the provisions of the Construction Act, Telecommunications Act, related and industry laws on the design, construction and operation of telecommunications infrastructure;
- the principles of the investment process, including the rights and obligations of its participants; the principles of real estate management of telecommunications facilities;
- the specialised requirements in telecommunications relating to the applied methods, technologies and standards;
- the application of methods and techniques of the telecommunications sector to improve the processes of designing, building, maintaining, managing, and dismantling telecommunications facilities.

OCCUPATIONAL SKILLS – IS ABLE TO:

- design telecommunications networks in different technologies in a manner consistent with the requirements of the Construction Act, Telecommunications Act, related and industry laws, and the principles of technical knowledge;
- autonomously perform technical functions in construction, including:
  – designing and supervising the construction of one's design,
  – verifying architectural and construction project designs,
  – supervising the technical aspects of maintaining telecommunications facilities;
- acquire new orders for services and new subcontractors relating to the design, construction and operation of telecommunications infrastructure;

PQF Level 6 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:

- an advanced level of facts, theories, methods and the complex dependencies between them;
- the diverse, complex conditions of conducted activities.

SKILLS – IS ABLE TO:

- innovatively complete tasks and resolve complex and non-routine problems under variable and not fully predictable conditions;
- autonomously plan one's lifelong learning;
- communicate in one's environment, substantiate one's position.

SOCIAL COMPETENCE – IS READY TO:

- cultivate and disseminate models of good practice in the workplace and beyond;
- make decisions independently; critically evaluate one's own actions, those of the team one directs and the organisations in which one participates; assume responsibility for the results of those actions.

- accept the completed technical construction of telecommunications facilities;
- coordinate, monitor and settle the work of subcontractors engaged in project implementation.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:

- assume responsibility and demonstrate innovativeness in the design, construction and operation of telecommunications infrastructure;
- apply the provisions of the Construction Act, Telecommunications Act, related and industry laws and best practices;
- assume responsibility for the proper implementation of projects.

Profile of a person with a sectoral qualification at PQF level 6

– level of an expert carrying out independent activities relating to telecommunications construction projects.

Effectively acts in the variable environment of construction and telecommunications and related industries. Understands the perspective of the telecommunications sector. Solves complex, non-routine problems in the area of telecommunications infrastructure. Proposes new solutions. Manages, controls and assesses projects and their implementation. Plans his/her own learning and the learning of subordinate employees, conducts training and provides instructions. Is able to transfer knowledge. Makes autonomous decisions, cooperates in a team and manages a team of employees. Raises his/her qualifications through self-improvement and participation in training, courses, etc.

Example of a position requiring qualifications at this level: Project Engineer

Example of an occupational qualification at SQF level 6

1. **A sectoral qualification at SQF level 6**: Telecommunications Construction Project Management and Supervision **Certificate**
   Scope of the sectoral qualification: rights to manage the telecommunications investments of a project.

   Foundation: full PQF level 6 qualifications – vocational higher education required, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in telecommunications or a related field.

2. **The next level of professional development in a specialist or management path**

   Foundation: full PQF level 6 qualifications – as in item 1

   in order to attain, e.g.:

   1) Position – Contract Manager

   2) Sectoral qualifications at SQF level 6

   Design Engineer and/or Site Manager, Investor's Supervisory Inspector – A decision on granting limited construction rights in the telecommunications specialty

   Scope of the sectoral qualifications: rights to design telecommunications facilities and/or manage construction work, perform supervision for an investor; specialty of construction rights – Installation of telecommunications infrastructure networks, integration and commissioning of network equipment

   3) Sectoral qualifications at SQF level 7

   in order to attain, e.g.:

   a) Telecommunications Construction Investment Management and Supervision **Certificate**
   Scope of the sectoral qualifications: rights to manage the telecommunications investments of a contract.

   Foundation: full PQF level 6 qualifications – vocational higher education required, confirmed by a qualification at preferred PQF level 7 (min. PQF 6), i.e. preferred completed second cycle studies (minimum of completed first cycle studies) in telecommunications or a related field

   Foundation: full PQF level 7 qualifications – vocational higher education required, confirmed by a PQF level 7 qualification, i.e. completed second cycle studies in a field relevant to the given specialty; second cycle higher education programmes relevant to the given specialty:

   – telecommunications,

   – electrical engineering or electronics or electronics and telecommunications, enabling the attainment of knowledge and skills in telecommunications,

   – electrical measurements and telecommunications,

   in order to attain, e.g.:

   b) Decision on granting – unlimited construction rights in the telecommunications specialty; to design telecommunications facilities and/or manage the construction work of:

   – wired telecommunications with telecommunications infrastructure and

   – radio telecommunications with accompanying infrastructure,

   c) Decision on granting – the title of construction appraiser in [designing telecommunications facilities and/or managing construction work] in [wired and/or radio] telecommunications.

Level 7 Telecommunications infrastructure

Tele SQF Level 7 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- various conditions of the functioning of the telecommunications sector and state and local government institutions relating to telecommunications infrastructure;
- the complex dependencies between ensuring the safety and functionality of work and the effectiveness of the processes relating to contracts;
- methods of using IT tools;
- communicative English and translates technical texts relating to the telecommunications construction sector.

GENERAL SKILLS – IS ABLE TO:

- prepare unique projects in accordance with current engineering practices and the requirements of laws and norms;
- autonomously solve various problems relating to the implementation of assigned tasks;
- communicatively transfer one's knowledge to others;
- acquire new orders, submit new contracts for acceptance and acquire new subcontractors;
- organise one's own working time and that of subordinate persons, plan, forecast;
- independently perform functions and activities relating to contract management, including:
  – using IT tools,
  – using English;
- effectively obtain the timely performance of work as well as services of good quality from subordinate employees and subcontractors.

GENERAL SOCIAL COMPETENCE – IS READY TO:

- take responsibility and demonstrate innovativeness;
- present high standards in ensuring compliance with the Construction Act, Telecommunications Act, related and industry laws and best practices;
- work under pressure, work in a group;
- motivate employees to comply with professional ethics;
- apply best practices and establish good interpersonal relations with the surrounding environment;
- undertake initiatives aimed at improving effectiveness and financial results.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- in depth, the structure and principles of the functioning of telecommunications networks and systems;
- the regulations of economic laws, commercial laws, Civil Code, Administrative Code, Public Procurement Act, regulations on business activity, tender procedures and entering into and implementing contracts;
- the provisions of the Construction Act, Telecommunications Act, related laws and the implementation of regulations relating to contracts (i.e. on the design and building of telecommunications facilities and their maintenance and management);
- the norms and requirements of the construction and telecommunications industries and similar industries, as they relate to contracts;
- the health and safety requirements relating to the specifics of the contract being implemented;
- the principles of the investment process, including the rights and obligations of the participants in the construction process;
- the principles of real estate management of telecommunications facilities;
- requirements of the telecommunications specialisation relating to:
  – applied methods, technologies and standards;
  – specific provisions of the law relating to the aforementioned scope.

PQF Level 7 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:

- an in-depth level of selected facts, theories, methods and the complex dependencies between them, also in relationship to other fields;
- the diverse, complex conditions and axiological context of conducted activities.

SKILLS – IS ABLE TO:

- complete tasks as well as formulate and solve problems with the use of new knowledge, also from other fields;
- independently plan one's own lifelong learning and direct others in this area;
- communicate with various target groups, appropriately substantiate one's position.

SOCIAL COMPETENCE – IS READY TO:

- establish and develop models of good practice in the environments of work and life;
- initiate actions, critically assess oneself as well as the teams and organisations in which one participates;
- lead a group and take responsibility for it.

OCCUPATIONAL SKILLS – IS ABLE TO:

- autonomously perform technical functions in construction including:
  – designing and supervising the implementation of the design,
  – verifying architecture and construction plans,
  – managing the construction site or other construction work,
  – managing the production of the constructed elements of the facilities and supervising and controlling the technical production of those elements,
  – exercising technical control of the maintenance of telecommunications; telecommunications facilities should be controlled by the owner or an administrator during the time of their use;
- prepare contracts and technical documentation in a manner consistent with the provisions of the Construction Act, Telecommunications Act, related laws and implementation regulations as well as the principles of technical knowledge;
- organise the work of constructing and operating telecommunications infrastructure in accordance with the legal provisions and industry norms.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:

- assume responsibility and demonstrate innovativeness in the design, construction and operation of telecommunications infrastructure;
- organise the participation of persons with relevant knowledge, qualifications and competence in preparing contracts;
- assume responsibility for the proper construction process;
- fully use one's specialised knowledge and skills in the design, construction and operation of the telecommunications infrastructure;
- properly assess opportunities and counteract various threats in the construction and operation of telecommunications infrastructure.

Profile of a person with a sectoral qualification at PQF level 7

– level of a team manager implementing telecommunications construction contracts.

Effectively acts in the variable environment of construction, telecommunications and related industries. Understands the perspective of the telecommunications sector. Solves complex, non-routine problems relating to telecommunications infrastructure. Proposes new solutions. Manages, controls and assesses contracts for projects, construction work and their implementation. Plans his/her learning and the learning of subordinate employees, conducts training and provides instructions. Is able to transfer knowledge. Makes autonomous decisions, manages a team of employees and takes responsibility for this. Raises his/her qualifications through self-improvement and participation in training, courses, etc.

Example of a position requiring qualifications at this level: Contract Manager

Example of an occupational qualification at SQF level 7

1. **A sectoral qualification at SQF level 7**: Telecommunications Construction Investment Management and Supervision **Certificate**

   Scope of the sectoral qualification: rights to manage contracts for telecommunications investments.

   Foundation: full PQF level 7 qualifications – vocational higher education required, confirmed by a qualification no lower than PQF level 7, i.e. preferred completed second cycle studies in telecommunications or a related field.

2. **The next level of professional development in a specialist or management path**

   Foundation: full PQF level 7 qualifications – as in item 1.

   in order to attain, e.g.:

   1) Position – Investment Director

   2) Sectoral qualifications at SQF level 7

   Foundation: full PQF level 7 qualifications – vocational higher education required, confirmed by a PQF level 7 qualification, i.e. completed second cycle studies in a field relevant to the given specialty; second cycle higher education programmes relevant to the given specialty:

   – telecommunications,

   – electrical engineering or electronics or electronics and telecommunications, enabling the attainment of knowledge and skills in telecommunications,

   – electrical measurements and telecommunications,

   in order to attain, e.g.:

   a) Decision on granting – unlimited construction rights in the telecommunications specialty; to design telecommunications facilities and/or manage the construction work of:

   – wired telecommunications with telecommunications infrastructure and

   – radio telecommunications with accompanying infrastructure,

   b) Decision on granting – the title of construction appraiser in [designing telecommunications facilities and/or managing construction work] in [wired and/or radio] telecommunications.

Annex 2

SQF Tele level descriptors – Telecommunications services and user equipment

Level 3 Telecommunications services and user equipment

Tele SQF Level 3 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:
- the basic conditions and dependencies at work at the level of one's company department;
- regulations on occupational health and safety, fire safety, environmental protection and ergonomics;
- threats relating to the harmful substances present in the work environment;
- the principles of teamwork.

GENERAL SKILLS – IS ABLE TO:
- perform moderately complex tasks following general instructions under partially variable conditions;
- solve simple, routine problems under partially variable conditions;
- learn partially autonomously under guidance in a structured form;
- understand moderately complex statements, formulate moderately complex statements;
- understand and formulate very simple statements in a foreign language.

GENERAL SOCIAL COMPETENCE – IS READY TO:
- be a member of various types of communities, function in various social roles and assume the basic obligations ensuing from this;
- act and cooperate with others partially autonomously under structured conditions;
- evaluate one's own actions and those of the team; take responsibility for the results of those actions.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:
- IT tools;
- the general principles of the functioning of user equipment (subscriber terminals) in telecommunications networks;
- parameters characterising subscriber terminals;
- phenomena associated with direct current and alternating current;
- electrical and electronic components and systems;
- effects of electric current on the human body.

OCCUPATIONAL SKILLS – IS ABLE TO:
- use IT tools;
- find and remove mechanical and electronic defects in telecommunications user equipment;
- perform diagnostic activities required to make repairs; competently use the technical documentation of the devices being repaired;
- exchange or update the software of the devices being repaired;
- prepare quotes and cost estimates of repairs.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:
- autonomously and systematically:
  - raise one's professional qualifications through self-improvement and participation in training and courses,
  - maintain a clean and orderly work station;
- cooperate with the work group while repairing, servicing, and assembling equipment.

PQF Level 3 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:
- basic facts and concepts as well as the dependencies between selected natural and social phenomena and the products of human thought;

furthermore,
- a broader scope of selected facts, concepts and dependencies in specific areas;
- the basic conditions of conducted activities.

SKILLS – IS ABLE TO:
- perform moderately complex tasks following general instructions under partially variable conditions;
- solve simple, routine problems under partially variable conditions;
- learn partially autonomously under guidance in a structured form;
- understand moderately complex statements, formulate moderately complex statements;
- understand and formulate very simple statements in a foreign language.

SOCIAL COMPETENCE – IS READY TO:
- be a member of various types of communities, function in various social roles and assume the basic obligations ensuing from this;
- act and cooperate with others partially autonomously under structured conditions;
- evaluate one's own actions and those of the team; take responsibility for the results of those actions.

Profile of a person with a sectoral qualification at PQF level 3

– level of an employee performing simple repairs of telecommunications user equipment.

Performs assigned tasks under the supervision of a superior. Understands the basic conditions and dependencies at work at the level of a service unit of the company. Solves routine problems, as requested. Cooperates in a team. Observes the time schedule required by the tasks being performed. Raises his/her qualifications through self-improvement and participation in training, courses, etc.

Example of a position requiring qualifications at this level: Technician

Example of an occupational qualification at SQF level 3

1. **A sectoral qualification at SQF level 3**: User Equipment Servicing and Repair Management **Certificate**

   Scope of the sectoral qualification: rights to perform simple repairs of user equipment (subscriber terminals) of a mobile telecommunications network.

   Foundation: full qualifications at PQF level 3 – typical for vocational education and training in electronics or a related field, confirmed by a qualification at PQF level 3, i.e.:

   – certificate confirming a qualification in the profession.

2. **The next level of professional development in the specialist path**

   Foundation: full qualifications no lower than PQF level 4 – typical for general or vocational education, confirmed by a qualification no lower than PQF level 4, i.e.:

   – the upper secondary school leaving certificate (matura),
   or
   – a certificate confirming a qualification in the profession,
   or
   – a diploma confirming professional qualifications,

   in order to attain, e.g.:

   1) A sectoral qualification at SQF level 4: Customer Service **Certificate**

   Scope of the sectoral qualification: rights to sell telecommunications services and provide customer services

   Foundation: full qualifications no lower than PQF level 4 – typical for vocational education and training in electronics or a related field, confirmed by a qualification no lower than PQF level 4, i.e.:

   – the vocational upper secondary school leaving certificate (matura),
   or
   – a diploma confirming professional qualifications,
   or
   – a diploma confirming professional qualifications, in order to attain, e.g.:
   2) Position – Seller-Consultant

Level 4 Telecommunications services and user equipment

Tele SQF Level 4 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- the role and significance of modern electronic means of communication;
- the principles of selling services and providing professional customer services within the scope of:
  – sales and negotiation techniques and methods of acquiring new customers,
  – the role of building relationships and customer service in sales,
  – responding to complaints and customer services in different situations,
  – procedures of settling customer complaints and the actions to be taken after receiving a complaint,
  – assertiveness in contacts with customers, coping with criticism and counteracting manipulation.

GENERAL SKILLS – IS ABLE TO:

- easily establish contact with people;
- improve knowledge autonomously and by participation in training and courses;
- effectively and diligently carry out assigned tasks;
- conduct negotiations, work under pressure, work in a group;
- organise one's own working time, plan, forecast;
- establish and strengthen long-term customer relationships;
- manage:
  – the negotiation strength of a customer, customers with different personalities and views, customer objections and criticism,
  – difficult situations with a customer.

GENERAL SOCIAL COMPETENCE – IS READY TO:

- work independently and in a group, where he/she:
  – is hard-working and diligent,
  – assumes responsibility for the tasks carried out within a group,
  – establishes good interpersonal relationships,
  – demonstrates initiative,
  – observes the principles of community life and professional ethics,
  – updates knowledge,
  – cares about aesthetics and a neat appearance,
  – identifies with the company and looks after its positive image,
  – complies with the requirements of company confidentiality.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- the principles of the sales of telecommunications services and professional customer services within the scope of:
  – the telecommunications market and products,
  – rules of providing services and price lists,
  – new technologies and the principles of the functioning of the Internet;
- legal rules of handling complaints, including:
  – the most important legal acts relating to complaints and legal terminology,
  – the rules of warranty and guarantee in B2B turnover – differences between the legal provisions relating to consumers and entrepreneurs and the differences between warranty and guarantee,
  – forms of an entrepreneur's responsibility,
  – responsibility of the seller in cases when the consumer product does not comply with the agreement,
  – rights of the consumer and seller,
  – applicable deadlines to submit and consider complaints, rules of submitting complaints on discounted products,
  – responsibility for the guarantee – guarantee of the seller and service provider, and the guarantee of the manufacturer,

PQF Level 4 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:

- a broadened set of basic facts;
- moderately complex concepts, theories and the dependencies between selected natural and social phenomena and the products of human thought;

furthermore,

- a broader scope facts, moderately complex concepts and theories from specific fields and the dependencies between them;
- the basic conditions of conducted activities.

SKILLS – IS ABLE TO:

- complete moderately complex tasks, partially without instructions, often under variable conditions;
- solve moderately complex and somewhat non-routine problems often under variable conditions;
- learn autonomously in a structured form;
- understand complex statements, formulate moderately complex statements on a broad range of issues;
- understand and formulate simple statements in a foreign language.

SOCIAL COMPETENCE – IS READY TO:

- assume responsibility for participating in various communities and functioning in various social roles;
- act and cooperate with others autonomously under structured conditions;
- evaluate one's own actions and those of the persons one is directing; take responsibility for the results of one's own actions as well as those of the persons one directs.

– performance of the service and responsibility of the service provider for the defective performance of the service,
– advance payments and deposits in cases when the consumer product does not comply with the agreement,
– consumer organisations, courts.

OCCUPATIONAL SKILLS – IS ABLE TO:

- skilfully conduct sales and service customers, i.e.:
  – effectively acquire new customers of telecommunications services,
  – easily communicate with customers and in a clear manner present offers to them for: fixed and mobile telephone services, access to the Internet and data transmission, user equipment,
  – actively and correctly identify customer needs relating to telephone services, Internet access, user equipment;
- explain to customers:
  – the advantages and technological limitations of particular types of services and user equipment,
  – the rules of service provision and price lists,
  – the operation of the offered user equipment such as: fixed line telephones, mobile phones, smartphones, tablets, modems, routers and other related equipment;
- autonomously update knowledge on the offered telecommunications services and products;
- efficiently use IT applications and software in the sales and customer service processes;
- maintain paper documentation in an orderly manner;
- apply enforceable standards, legal provisions and regulations relating to entrusted duties.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:

- perform assigned tasks together with other employees in telecommunications services sales and customer service;
- establish good interpersonal relations with customers;
- demonstrate initiative in improving telecommunications services sales and customer service processes;
- improve professional skills – teamwork skills – relating to the sale of telecommunications services and professional customer service;
- observe legal provisions and regulations relating to the provision of telecommunications services.

Profile of a person with a sectoral qualification at PQF level 4

– level of an employee carrying out activities relating to the sale of telecommunications services and customer services for the market segment of individual customers and small and medium-sized enterprises.

Independently performs routine assigned tasks. Understands the basic conditions and dependencies at work at the level of a services sales department. Cooperates in a team. Performs tasks in a timely manner and in compliance with applicable standards. Efficiently uses IT applications and software in sales and customer service processes. Raises his/her qualifications by autonomous learning and participation in training, courses, etc.

Example of a position requiring qualifications at this level: Seller-Consultant

Example of an occupational qualification at SQF level 4

1. **A sectoral qualification at SQF level 4:** Customer Service **Certificate**

   Scope of the sectoral qualification: rights to sell telecommunications services and customer services

   Foundation: full qualifications no lower than PQF level 4 – typical for general or vocational education, confirmed by a qualification no lower than PQF level 4, i.e.:

   – the upper secondary school leaving certificate (matura),
   or
   – a certificate confirming a qualification in the profession,
   or
   – a diploma confirming professional qualifications.

2. **The next level of professional development in a specialist or management path**

   Foundation: full PQF level 6 qualifications – vocational higher education required, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in information and communications technology, telecommunications or a related field,

   in order to attain, e.g.:

   1) A sectoral qualification at SQF level 5: Sales and Logistics Management **Certificate**

   Scope of the sectoral qualifications: rights to manage sales tasks in telecommunications

   2) Positions – Sales Representative, Sales Point Manager

Level 5 Telecommunications services and user equipment

Tele SQF Level 5 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- provisions of the Economic Act, Commercial Act, Civil Code, Public Procurement Act, regulations on business activity, tender procedures and concluding and implementing contracts;
- the complex dependencies between ensuring safety at work and functioning, and the effectiveness of sales and logistics processes;
- the application of methods and techniques of the telecommunications sector, in the context of actions resulting from the requirements of other sectors, to improve sales and logistics processes;
- the methods of using tools to work in sales and logistics, including IT tools;
- communicative English and translates technical texts relating to the services sector for telecommunications entrepreneurs.

GENERAL SKILLS – IS ABLE TO:

- acquire new suppliers and customers;
- learn autonomously;
- report on the implementation of plans and outcomes for sales and logistics;
- autonomously prepare drafts of sales agreements and letters relating to sales;
- conduct negotiations, work under pressure, work in a group, organise one's own working time;
- plan and forecast customer behaviour and attitudes;
- use IT tools;
- use English relating to the telecommunications sector.

GENERAL SOCIAL COMPETENCE – IS READY TO:

- manage employees so that they act in accordance with the law, regulations, best practices and professional ethics;
- establish good interpersonal relations with customers;
- demonstrate initiative in: the effectiveness of sales and logistics activities, autonomous decision-making, being systematic, punctuality, timeliness in the execution of tasks, caring about aesthetics and a neat personal appearance.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- various conditions of companies' activities relating to the area of services for telecommunications entrepreneurs;
- the provisions of the Telecommunications Act, the implementation of provisions relating to the technology of constructing telecommunications networks;
- the principles of the project investment process;
- the specifics of telecommunications services, the influence of technology on developing services and networks;
- requirements of the telecommunications specialisation relating to:
  – applied methods, technologies and standards;
  – specific provisions of the law in the aforementioned scope.

OCCUPATIONAL SKILLS – IS ABLE TO:

- perform independent tasks, such as:
  – actively search for new sales markets, customers and develop offers for external and internal customers,
  – conduct materials management, quality and quantitative audits,
  – analyse the offers of providers of services and goods,
  – plan purchases and develop sales plans,
  – handle customer orders and maintain good customer relationships,
  – supervise the documentation of offers and sales as well as maintain transportation documentation,
  – organise presentations and conferences and actively participate in trade fairs and industry events,
  – manage the operation of machines, devices and vehicles.

PQF Level 5 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:

- a broad scope of facts, theories, methods and the dependencies between them;
- the diverse conditions of conducted activities.

SKILLS – IS ABLE TO:

- complete tasks without instructions under variable, predictable conditions;
- solve moderately complex and non-routine problems under variable, predictable conditions;
- learn autonomously;
- understand moderately complex statements, formulate moderately complex statements using specialised terminology;
- understand and formulate very simple statements in a foreign language using specialised terminology.

SOCIAL COMPETENCE – IS READY TO:

- assume basic professional and social responsibilities, evaluate and interpret them;
- independently act and cooperate with others under structured conditions, direct a small team under structured conditions;
- evaluate one's own actions and those of others and the teams one directs;
- assume responsibility for the results of those actions.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:

- ensure the timeliness and good quality of the sales and logistics tasks being performed;
- assess and take responsibility for:
  - managing materials, tools, machines, means of transport and orders,
  - the costs related to the above,
  - updating timesheets on an ongoing basis,
  - the proper closure of settlement accounts and the issuance of documents.

Profile of a person with a sectoral qualification at PQF level 5

– level of a Specialist or Sales Manager carrying out activities relating to the purchase, sales and logistics of services for telecommunications enterprises.

Effectively acts in the variable environment of construction, telecommunications and related industries. Understands the perspective of the telecommunications sector. Solves complex, non-routine problems in the area of services in the sector. Proposes new solutions. Supervises and assesses materials management and logistics. Plans his/her learning and the learning of subordinate employees, conducts training and provides instructions. Is able to transfer knowledge. Makes autonomous decisions, manages a team of employees and takes responsibility for this. Raises his/her qualifications through self-improvement and participation in training, courses, etc.

Example of a position requiring qualifications at this level: Sales Representative

Example of an occupational qualification at SQF level 5

1. **A sectoral qualification at SQF level 5:** Sales and Logistics Management **Certificate**

   Scope of the sectoral qualifications: rights to manage sales tasks in telecommunications

   Foundation: full PQF 6 level qualifications – vocational higher education required, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in information and communications technology, telecommunications or a related field.

2. **The next level of professional development in a specialist or management path**

   Foundation: full PQF 6 level qualifications – vocational higher education required, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in information and communications technology, telecommunications or a related field,

   in order to attain, e.g.:

   1) Position – Sales Manager, Sales Director

   2) A sectoral qualification at SQF level 6: Corporate Services and Sales Management **Certificate**

   Scope of the sectoral qualification: rights to sell telecommunications services to the market segment of large companies and operators.

   3) Sectoral qualifications at SQF level 6

   Design Engineer and/or Site Manager, Investor's Supervisory Inspector – **Decision on granting** limited construction rights in the telecommunications specialty

   Scope of the sectoral qualifications: rights to design telecommunications facilities and/or manage construction work, perform supervision for an investor; specialty of construction rights – Installation of telecommunications infrastructure networks, integration and commissioning of network equipment

   4) Sectoral qualifications at SQF level 7

   Foundation: full PQF level 7 qualifications – vocational higher education required, confirmed by a PQF level 7 qualification, i.e. completed second cycle studies in a field relevant to the given specialty; second cycle higher education programmes relevant to the given specialty:

   – telecommunications,

   – electrical engineering or electronics or electronics and telecommunications, enabling the attainment of knowledge and skills in telecommunications,

   – electrical measurements and telecommunications,

   in order to attain, e.g.:

   a) Decision on granting – unlimited construction rights in the telecommunications specialty; to design telecommunications facilities and/or manage the construction work of:

   – wired telecommunications with telecommunications infrastructure and

   – radio telecommunications with accompanying infrastructure,

   b) Decision on granting – the title of construction appraiser in [designing telecommunications facilities and/or managing construction work] in [wired and/or radio] telecommunications.

Level 6 Telecommunications services and user equipment

Tele SQF Level 6 Descriptors

GENERAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- the functioning of the information society;
- English at the B2 level;
- the role and significance of modern electronic means of communication;
- the principles of services sales and professional services for the market segment of large companies, including:
- sales and negotiation techniques and methods of acquiring new customers,
  – the role of building relationships and customer service in sales,
  – responding to complaints and customer service in different situations.

GENERAL SKILLS – IS ABLE TO:

- autonomously perform one's own work;
- easily establish contacts with the surrounding environment;
- improve knowledge autonomously and by participation in training and courses;
- solve complex problems to effectively and diligently carry out assigned tasks;
- conduct negotiations, work under pressure, work in a group;
- organise one's own working time, plan, forecast;
- use the language of commercial advantages and persuasion;
- communicate easily in English.

GENERAL SOCIAL COMPETENCE – IS READY TO:

- assume responsibility for the activities of the groups one directs;
- establish and maintain good interpersonal relations with subordinates and the surrounding environment;
- strive to diligently and consistently achieve the objectives of the subordinate team;
- demonstrate initiative and entrepreneurship.

OCCUPATIONAL KNOWLEDGE – KNOWS AND UNDERSTANDS:

- the functioning of the telecommunications services market;
- the legal rules of handling complaints, including:
  – the most important legal acts relating to complaints and legal terminology,
  – the rules of warranty and guarantee in B2B turnover – differences between the legal provisions relating to consumers and entrepreneurs as well as the differences between warranty and guarantee,
  – forms of an entrepreneur's responsibility;
- principles of the functioning of telecommunications services (voice, audio, video) and the technology of applied equipment;
- technical English relating to telecommunications.

OCCUPATIONAL SKILLS – IS ABLE TO:

- professionally manage a sales and customer service team;
- organise and prepare:
  – seminars, presentations, exhibition stands and their operations,
  – projects, procedures, processes, instructions and guidelines relating to the services being implemented;
- efficiently and communicatively use technical English relating to telecommunications.

PQF Level 6 Descriptors

KNOWLEDGE – KNOWS AND UNDERSTANDS:

- an advanced level of facts, theories, methods and the complex dependencies between them;
- the diverse, complex conditions of conducted activities.

SKILLS – IS ABLE TO:

- innovatively complete tasks and solve complex and non-routine problems under variable and not fully predictable conditions;
- autonomously plan one's lifelong learning;
- communicate in one's environment, substantiate one's position.

SOCIAL COMPETENCE – IS READY TO:

- cultivate and disseminate models of good practice in the workplace and beyond;
- make decisions independently; critically evaluate one's own actions, those of the team one directs and the organisations in which one participates; assume responsibility for the results of those actions.

OCCUPATIONAL SOCIAL COMPETENCE – IS READY TO:

- professionally sell telecommunications services to the market segment of large companies and telecommunications operators, including to:
  – systematically raise one's professional qualifications through self-improvement, participation in training, courses, seminars, exhibitions and fairs,
  – undertake initiatives to improve telecommunications services sales and customer service processes,
  – make decisions and assess the actions of the group one directs in the sales of telecommunications services.

Profile of a person with a sectoral qualification at PQF level 6

– level of an Expert or Sales Manager independently performing activities relating to sales and services for the market segment of large companies and operators.

Effectively acts in the variable environment of large companies and operators. Understands the perspective of the telecommunications sector. Solves complex, non-routine problems in the area of telecommunications services and infrastructure. Proposes new solutions. Prepares projects of technical and commercial solutions and oversees their implementation. Organises and conducts presentations, shows, training and provides instructions. Makes mostly independent decisions and assessments, and is responsible for the actions of the team under his/her direction.

Example of a position requiring qualifications at this level: Sales Manager

Example of an occupational qualification at SQF level 6

1. **A sectoral qualification at SQF level 6:** Corporate Services and Sales Management **Certificate**

   Scope of the sectoral qualification: rights to sell services to the market segment of large companies and operators.

   Foundation: full PQF 6 level qualifications – vocational higher education required, confirmed by a PQF level 6 qualification, i.e. completed first cycle studies in information and communications technology, telecommunications or a related field.

2. **The next level of professional development in a specialist or management path**

   in order to attain, e.g.:

   1) Position – Sales Director, Sales and Services Manager

   2) Sectoral qualifications at SQF level 6

   Design Engineer and/or Site Manager, Investor's Supervisory Inspector – **Decision on granting** limited construction rights in a telecommunications specialty

   Scope of the sectoral qualifications: rights to design telecommunications facilities and/or manage construction work, perform supervision for an investor; specialty of construction rights – Installation of telecommunications infrastructure networks, integration and commissioning of network equipment

   3) Sectoral qualifications at SQF level 7

   Foundation: full PQF level 7 qualifications – vocational higher education required, confirmed by a PQF level 7 qualification, i.e. completed second cycle studies in a field relevant to the given specialty; second cycle higher education programmes relevant to the given specialty:

   – telecommunications,

   – electrical engineering or electronics or electronics and telecommunications, enabling the attainment of knowledge and skills in telecommunications,

   – electrical measurements and telecommunications,

   in order to attain, e.g.:

   a) A decision on granting – unlimited construction rights in the telecommunications specialty; to design telecommunications facilities and/or manage the construction work of:

   – wired telecommunications with telecommunications infrastructure and

   – radio telecommunications with accompanying infrastructure,

   b) A decision on granting – the title of construction appraiser in [the design of telecommunications facilities and/or managing construction work] in [wired and/or radio] telecommunications.