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Deliverable 2.1.
Report on the assessment & validation of needs for Cu-oriented education chain selected groups

Annex 1 Competency profiles

The SkiComCu Project Partnership, as part of the WP2 work package has selected the following professions/areas of competence as key for the current functioning of the Cu sector and for its future:

1. Miner Self-propelled Mining Machine Operator (EQF level 3);
2. Solid Mineral (copper ore) Processing Technician (EQF level 4 & 5);
3. Mining Engineer Supervisor / Chief foreman (EQF level 6 & 7);
4. Mining Geologist (EQF level 6 & 7);
5. Metallurgical Engineer – Non-Ferrous Metallurgy (EQF level 6 & 7);
6. Copper Recycling Process Engineer (EQF level 6 & 7).

For the professions listed above, descriptions of competence profiles have been developed.

Summary and description of the profiles

Miner Self-propelled Mining Machine Operator – is responsible for operating the self-propelled mining machine in a safe and effective manner, including turning it on and off, maintaining control over its systems and monitoring the running status of the machine. The operator takes care of their own safety as well as the safety of other employees at the workplace by means of compliance with all safety regulations and operational procedures, regular testing and inspection of the machine, and reporting any irregularities. Beyond that, they are responsible for performing various mining tasks vital to the continued operation of the mine, which include: drilling, anchoring, dressing, loading, transporting, unloading the materials and other actions necessary for exploitation of the deposit. The operator is required to perform routine inspections of the machine and provide minor repairs and maintenance to ensure the continued performance and effectiveness of the machine. The operator should also be a competent communicator, capable of effectively interacting with other members of the mining team, reporting in all relevant information about the performance of the machine, accidents or irregularities, and collaborating with other employees to ensure the effectiveness of the mining process. In their line of work operators face many hazards, such as: moving machine parts, moving machinery and equipment, hydraulic fluids and pressurised water, substantive levels of dust in the air, limited illumination of the work area, possibility of natural hazards (rocks falling from the ceiling or sidewall, cave-ins, rock bursts, flooding, methane explosions, etc.).

Solid mineral (copper ore) Processing Technician – processes the extracted crude material, such as copper ore, in a manner aiming to maximise the amount of useful components by the means of mechanical, physicochemical and specialised processes, while preparing the material for further use. The profession revolves around operating different machines and equipment used for mechanical processing of the crude material. The technicians operate, diagnose and performs repairs of the ever renewing malfunctions of machines such as: the conveyor belt, the coil classifier, the flotation machine, the vibrating screen, the drum crusher and many more. Additionally, they organise and take active part in classification, crushing and enhancing solid material (copper ore). The material that has been segmented and enhanced is then prepared to be stored or transported. During the process of purification and enhancement, various physicochemical phenomena take place, which result in a substantial amount of sludge and polluted water. The technician decides the method of purifying the circulating water, so that it could be reused. Copper ore processing technicians are responsible for maintaining all machines and equipment, that are used in the entire facility, in good technical condition. They perform tasks that require a level of mental resilience due to frequent failures and being responsible for the safety of their subordinates.

Mining Engineer Supervisor (Chief Foreman) – is responsible for performing tasks that make up the technological process of copper ore extraction. The engineer plans out and supervises the work carried out by the brigade. They ensure that the works are performed in accordance with Health and Safety, fire protection, and environmental protection regulations. Furthermore, they are required to inform the employees about: hazards related to the works, the methods of eliminating, or reducing the risk posed by them, as well as upholding appropriate procedure in cases of emergency. The Mining Engineer operating in an underground mine is responsible for the safety of their subordinates. Performing work tasks that revolve around planning and carrying out mining activity, controlling the technical parameters of technological processes that are applied during the extraction of copper ores are also a part of their responsibilities. They also include execution of mining activities in accordance with developed

technologies and applicable regulations. They are also responsible for proper operation and maintenance of machines and equipment in use, controlling their technical status and documenting the results of the inspections carried out. The Mining Engineer prepares reports of the completed works and in a clear and comprehensible way explains the scope of the work to be carried out to the next shift. They continuously perform measurements of the composition, humidity and temperature of the mine air using appropriate tools and gauges and performs ongoing inspection of the housing and informing the relevant Mining Services about the potential, derived from observation, potential health, life or property hazards.

Mining Geologist – seeks out and identifies the geological structure of copper veins, estimates yield, its quality and sets out the geological conditions of exploitation. They collect samples for chemical, technological, stratigraphic, or various other types of testing. The Mine Geologist is aware of dangers present in exploitation of deposits and prepares documentation of geological works carried out in the mine. They conduct research on the presence and amount of water, and its physiochemical contents in areas of mining activity, as well as predicts and determines the water hazards and methods of circumventing them. They develop projects of dewatering mineral deposits and waterflooding (water injection) the rock mass. They prepare documentation and hydrogeological maps depicting groundwater resources. The Mine Geologist verifies the data provided by geophysicists who preside over preliminary mineral exploration through utilisation of magnetic, microseismic or various other methods. After the drilling is concluded, the Mine Geologist creates a borehole profile and on the basis of many such boreholes creates geological maps that illustrate the location of rocks and minerals present underground. The Mine Geologist prepares and updates geological and surveying documentation, checks the validity of the licenced mining operations, deposit management plan and other documents. Conducts structural, mineralogical and petrological research which is necessary to determine geological phenomena. Documents possible reasons for the losses of the deposit and studies the hydrographic conditions of the mining area and areas in its vicinity.

Metallurgical Engineer – Non-Ferrous Metallurgy – designs and develops crude non-ferrous metals (e.g. copper) utilising the latest developments and available metallurgical equipment. Supervises or directs metallurgical processes. They are responsible for the process of obtaining copper and other non-ferrous metals and secondary raw materials, enhancing and forming them to create a product of desired shape and properties. When dealing with technological issues, metallurgical engineer focuses not only on technical and technological issues, but also on the economics of the metallurgical processes, issues connected with environmental protection and work safety. Their duties include inspection and analysis of performance of metallurgical equipment, environmental protection equipment, quality of the fill, metallurgical products etc. This process is done with the help of control and measurement devices and specified procedures. The metallurgical engineer is also responsible for safety and health of employees, equipment and machines. In senior positions, the engineer is responsible for the functioning of the entire unit or even the entire facility.
Other activity that is considered to be a duty of the metallurgical engineer is forming non-ferrous metals. The primary reason for metal forming is to achieve the desired shape and quality of the product or intermediate product. Another duty of the metallurgical engineer specialised in non-ferrous metallurgy is designing and developing optimal technological solutions pertaining to, among others, the process of plate, rod and sections rolling, the process of open die forging, closed die forging, or automatic forging and the process of extrusion, drawing and stamping of copper products and other non-ferrous metals. The metallurgical engineer specialised in non-ferrous metallurgy also solves engineering, research and

innovation problems concerning industrial furnaces, their structure, modernisation and renovation, as well as power systems, auxiliary equipment, control systems, operating energy conversion devices, including efficient energy use, energy recovery systems and utilisation of waste energy.

Copper Recycling Process Engineer – designs and applies metallurgical and recycling technologies to copper-based materials, that can be found in post-exploitation industrial, technical and everyday products. Copper Recycling Engineer produces copper from secondary raw materials. They choose the appropriate production technology based on the contents of copper in the raw material, its level of impurity, chemical (oxidised/metallic) and physical form of the copper-bearing materials. Furthermore, they perform the operations of smelting copper-bearing secondary raw materials in various types of furnaces, for example: shaft furnace, rotary kiln furnace, mini-smelter, electric furnaces, ISASMELT furnace, reverberators, converters. The engineer's duties include making decisions about adding technological additives, such as: iron, coke, natural gas, fluxes. They use the process of fire refining to smelt pure scrap, whereas electrorefining secondary copper serves them in regaining precious metals and other valuable components, e.g. nickel. Additionally, they plan out and supervise the works that require preliminary preparation of secondary raw materials, which typically means removal of insulation from cables, the residue from integrated circuits or lead and zinc metals. The Copper Recycling Engineer utilises technologies that allow to reduce and control the emission of secondary raw materials involved in copper production: air emission, industrial wastewater and solid waste.
The recycling process engineer is involved in developing and implementing the latest methods for recycling copper, designing and optimising the operation of recycling plants to increase their productivity and efficiency. He/she may conduct research into new recycling technologies and processes.

Skills and social competences

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
1	**Miner Self-propelled Mining Machine Operator** Examples of representative job positions: – SMG driver; – bucket loader operator; – Transport vehicles driver (SWTm, SWTs); – Dozer operator; – Drilling Rig Operator; – anchor truck operator; – Delivery truck operator.	3	– Applies health, safety and fire regulations and rules applicable to operators of a self-propelled mining machinery; – Applies the environmental regulations and rules applicable to operators of a self-propelled mining machinery; – Distinguishes between natural and technological hazards in the position of a self-propelled mining machine operator; – Steers and controls self-propelled mining machinery; – Performs shift and periodic maintenance on self-propelled mining machines; – Reports self-propelled mining machinery for inspection and maintenance work; – Checks the correct operation of the electrical system of a self-propelled mining machine; – Checks the correct operation of all electrically powered equipment on a self-propelled mining machine; – Checks the correct operation of the hydraulic system of a self-propelled mining machine; – Performs the commissioning of a self-propelled mining machine including checking the correct operation of the starter; – Checks and interprets the indicators on the dashboard and pressure gauges in the operator's cab; – Tests the operability of a self-propelled mining machine's lighting intended to illuminate the path of travel and the working area of the machine;	– accepts responsibility for the professional information entrusted; – plans the execution of the task in a responsible manner; – takes responsibility for actions taken; – foresees consequences of improper performance of professional activities at the workplace, including the use of dangerous substances and improper operation of machinery and equipment at the workplace; – performs self-evaluation of the quality of the work performed; – suggests ways of solving problems related to the performance of professional tasks in unpredictable conditions; – respects the rules concerning the observance of secrecy related to the profession and the workplace; – expresses his/her emotions, feelings and opinions in accordance with generally accepted norms and rules of social co-existence; – applies techniques of dealing with stress; – applies the principles of interpersonal communication;

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
			– Tests the operability of a self-propelled mining machine's audible signal used when navigating intersections in underground mines; – Checks and operates the fire extinguishing system of a self-propelled mining machine; – Communicates the machine malfunction to his supervisor (foreman); – Performs minor repairs to self-propelled mining machinery; – Secures the damaged machine and informs the supervisor (foreman) if the machine needs to be repaired in the repair chamber or if the factory service needs to be called; – Maintains the operating book of the self-propelled mining machine on an ongoing basis	– applies methods and techniques of problem solving; – engages in the implementation of joint team activities; – modifies his/her behaviour taking into account the position worked out together with other team members; – willingly shares his/her knowledge with colleagues.
2	Solid mineral (copper ore) processing technician Examples of representative job positions: – Operator of processing machines; – operator of a set of machines and processing	4 & 5	– Applies health, safety and fire regulations and rules applicable to the processing of copper ore; – Applies the environmental regulations and rules applicable to the processing of copper ore; – Adheres to working conditions and organisation of work that ensures the required level of protection of health and life from hazards present in the working environment; – Uses the workplace in accordance with ergonomic requirements; – Applies individual and collective protection measures in the processing of copper ore; – Defines the rules for the use of machinery and equipment for grinding copper ore; – Operates machinery and equipment used in the copper ore classification and grinding process;	– Accepts responsibility for the professional information entrusted; – Plans the execution of the task in a responsible manner; – Takes responsibility for actions taken; – Foresees consequences of improper performance of professional activities at the workplace, including the use of dangerous substances and improper operation of machinery and equipment at the workplace; – Performs self-evaluation of the quality of the work performed;

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
	equipment in the flotation department; – operator of a set of machines and processing equipment in the dryer department; – operator of a set of machines and processing equipment in the grinding department		– Operates machines and devices used in the copper ore enrichment process; – Operates machines and devices in the concentrate drying process; – Reads the operating parameters of processing machinery and equipment from the indications of measuring instruments; – Performs adjustments to the operation of processing machinery and equipment; – Performs ongoing maintenance and inspections of machines and processing equipment; – Performs minor repairs of machines and processing equipment; – Operates a storage process for feedstock; – Carries out the pre-treatment and dosing of feedstock for the main processes of copper ore processing; – Leads the process of classifying copper ores; – Conducts the grinding of solid copper ores; – Operates a copper ores beneficiation process; – Assesses the quality of the copper ores beneficiation process; – Operates a storage and loading process for copper ores processing products; – Carries out the processes of dewatering, purification of circulating water, thickening and drying of the products of copper ore processing; – Monitors and controls the technical and technological parameters of copper ore processing	– Suggests ways of solving problems related to the performance of professional tasks in unpredictable conditions; – Respects the rules concerning the observance of secrecy related to the profession and the workplace; – Expresses his/her emotions, feelings and opinions in accordance with generally accepted norms and rules of social co-existence; – Applies techniques of dealing with stress; – Applies the principles of interpersonal communication; – Applies methods and techniques of problem solving; – Engages in the implementation of joint team activities; – Modifies his/her behaviour taking into account the position worked out together with other team members; – Willingly shares his/her knowledge with colleagues.
3	Mining Engineer (Chief Foreman)	6 & 7	– Applies health, safety and fire regulations and rules applicable to laboratory and production work;	– respects the principles of professional ethics;

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
	Examples of representative job positions: – Mining plant operations dispatcher; – Chief Engineer; – Chief Energy Engineer; – Mining Works Manager; – Traffic controller.		– Applies the environmental regulations and rules applicable to laboratory and production work; – Applies the intellectual property protection laws of mining companies; – Applies the principles of mining company economics; – Applies the principles of mining company logistics; – Applies the principles of mining enterprises; – Reads surveying, geological, drilling and geophysical documentation; – Prepares (independently or as part of a team) basic technical documentation related to the extraction of raw materials, including: deposit exploitation design, deposit development concept, work schedule, simplified economic analysis, etc. – Plans mining works using appropriate computer software; – Selects the appropriate machinery and equipment for the workplace depending on the dimensions and mining regulations; – Supervises and controls the quality of blast hole drilling and arming the holes with explosive charges; – Supervises and controls the quality of the execution of the anchor shoring; – Oversees and controls the quality of the stripping in the faces and pits; – Supervises the haulage of excavated material to branch dumps on conveyor belts; – Supervises the crushing of large lumps of rock (oversize) on the branch dump crag;	– demonstrates social activity and entrepreneurship in the workplace; – shows readiness to solve problems in the workplace in a flexible manner; – is ready to make decisions on assigned tasks; – is ready to take responsibility for the tasks assigned and decisions made; – motivates co-workers and subordinates, including to achieve goals effectively, comply with regulations, implement good practices and principles of professional ethics; – builds and maintains good relationships with different stakeholder groups (local communities, subordinates, customers and subcontractors) by strengthening mutual trust, respect and improving communication; – is willing to share its knowledge with colleagues; – is ready to assess the risks and consequences of undertaking mining activities on the natural and social environment; – is aware of the importance of the mining industry for socio-economic development; – is ready to initiate actions for sustainable development

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
			– Supervises the transport of ore by belt conveyors (or rail transport) to the crusher chambers at the shaft retention tanks; – Supervises the hauling of ore to the surface with skip equipment in the mining shafts; – Supervises the transport of ore by conveyor belt to the beneficiation plants; – Counteracts water hazards (manifested particularly during shaft sinking); – Counteracts the dangers of drowning during the mining process, the technical protection of the mine as well as the organisation of the work; – Counteracts thermal hazards by using technical solutions to ensure an appropriate microclimate.	
4	Mining Geologist Examples of representative job positions: – mining geologist; – specialist mining geologist; – senior mining geologist; – mining hydrogeologist;	6 & 7	– Applies health, safety and fire regulations and rules applicable to hydrological and exploration geological work; – Applies environmental regulations and rules applicable to hydrological and exploration geological work; – Applies the intellectual property protection laws of mining companies; – Applies the principles of economics of mining enterprises; – Applies the principles of mining company logistics; – Applies the principles of mining enterprises; – Organises and co-ordinates all issues related to the geological and hydrogeological service of the mining site; – Plans the work at the mining site in accordance with the provisions of the geological and mining law;	– respects the principles of professional ethics; – demonstrates social activity and entrepreneurship in the workplace; – shows readiness to solve problems in the workplace in a flexible manner; – is ready to make decisions on assigned tasks; – is ready to take responsibility for the tasks assigned and decisions made; – motivates co-workers and subordinates, including to achieve goals effectively, comply with regulations, implement good practices and principles of professional ethics;

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
	– specialist mining hydrogeologist; – senior mining hydrogeologist.		– Conducts periodic and planned inspections of underground works at the mine site; – Inspects and supervises the operating documents with regard to their compliance with geological and mining legislation; – Controls the implementation of the mining works geologically with the applicable Mining Plan; – informs the competent persons and authorities of any non-compliances found during the performance of mining works; – Conducts structural, mineralogical and petrographic studies to determine geological phenomena and anticipatory and reconnaissance studies; – Performs survey work in determining the presence and extent of underground water resources in areas affected by mining activities; – Carries out hydrogeological measurements, observations and tests to determine infiltration, porosity, water absorption and water permeability of rocks; – controls the quality and variability of water quality parameters in the copper ore mining process; – Performs ongoing analysis and assessment of the hydrogeological situation at mining operations; – Resolves groundwater inflow problems in mining operations; – develops projects for the drainage of copper ore deposits and the injection of water into rock masses; – Develops hydrogeological maps of groundwater resources; – Prepares and communicates warnings to public authorities of dangerous phenomena occurring in groundwater recharge and abstraction zones;	– builds and maintains good relationships with different stakeholder groups (local communities, subordinates, customers and subcontractors) by strengthening mutual trust, respect and improving communication; – is willing to share its knowledge with colleagues; – is ready to assess the risks and consequences of undertaking geological activities on the natural and social environment; – is aware of the importance of the extractive industry for socio-economic development; – is ready to initiate actions for sustainable development.

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
			– conducts exploration and appraisal of copper ores and estimates their size and reserves; – Identifies geometrical, hydrogeological, geological-engineering, gas and temperature conditions for copper ore mining; – Samples deposits in mine workings for chemical, mineral-petrographic, technological, stratigraphic, etc. studies; – Develops the design of mapping, profiling and testing of mining and drilling operations; – Supervises mining and drilling works, taking into account the rational use of minerals, the compliance of works with the concession and the deposit development project, the mining plant operation plan, the selective exploitation and the heaping of multi-commodity deposits; – Analyses, uses and updates the content of geological maps and photogrammetric materials to synthesise geological findings; – Prepares documentation of geological and mining work and a record of changes in copper ore reserves; – Conducts periodic analyses of ore management and documents the causes of losses in copper ore reserves; – Conducts the study and quality control of the ore body and investigates the variability of quality parameters in the copper ore mining process; – Assesses the environmental impact of planned copper ore mining; – Applies modern statistical and geostatistical methods to the assessment of deposits and uses modern computer software in documentation work;	

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
			– Draws up applications for the establishment of a mining area and site or its liquidation, and develops projects for the reclamation of areas after mine liquidation.	
5	Metallurgical Engineer – Non-Ferrous Metallurg Examples of representative job positions: – chief metallurgical technology engineer; – helmsman of metallurgical process lines; – chief engineer	6 & 7	– Applies health, safety and fire regulations and rules applicable to laboratory and production work; – Applies the environmental regulations and rules applicable to laboratory and production work; – Applies the intellectual property protection laws of metallurgical companies; – Applies the principles of economics of mining enterprises; – Applies the principles of mining company logistics; – Applies the principles of mining enterprises; – Applies knowledge of mathematics, physics and chemistry to the design of processes specific to materials and metallurgical engineering, in particular metallurgy and recycling and the processing and metallurgy of copper and other non-ferrous metals, taking into account process automation; – Designs technologies for the production of modern materials specific to the copper and other non-ferrous metal industries; – Designs and improves material processing processes in the non-ferrous metals industry, particularly in the areas of traditional and modern metallurgical process engineering, copper processing and materials engineering; – Directs the manufacturing processes of semi-finished copper and copper-based products and non-ferrous metal-based multi-material composites, using various synthesis techniques;	– respects the principles of professional ethics; – demonstrates social activity and entrepreneurship in the workplace; – shows readiness to solve problems in the workplace in a flexible manner; – is ready to make decisions on assigned tasks; – is ready to take responsibility for the tasks assigned and decisions made; – motivates co-workers and subordinates, including to achieve goals effectively, comply with regulations, implement good practices and principles of professional ethics; – builds and maintains good relationships with different stakeholder groups (local communities, subordinates, customers and subcontractors) by strengthening mutual trust, respect and improving communication; – is willing to share its knowledge with colleagues; – is ready to assess the risks and consequences of undertaking geological activities on the natural and social environment; – is aware of the importance of the extractive industry for socio-economic development;

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
			– Applies the basic techniques used in materials and process research related to the processing of copper and other non-ferrous metals; – Applies knowledge from the field of materials engineering to shape the properties and structure of materials from copper and other non-ferrous metals; – Applies basic IT techniques to develop measurement results from the field of materials engineering; – Applies the fundamentals of physics, mathematics and statistics necessary to interpret and process measurement data; – Analyses properties and selects non-ferrous metals for technical applications; – Operates measuring and testing apparatus during laboratory testing of copper and other non-ferrous metals; – Assesses the suitability of specific test methods for determining the structure and properties of copper and other non-ferrous metals; – uses advanced information and communication techniques to solve material problems in the metallurgical and copper industries; – Plans and organises individual and team work in solving material problems in the metallurgical and copper industry, also of an interdisciplinary nature; – Prepares, makes presentations and participates in discussions and seminars in the areas of non-ferrous metal engineering, fundamentals of economics, patent and copyright law and work organisation in non-ferrous metal plants and related industries;	– is ready to initiate actions for sustainable development.

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
			– Establishes cooperation with specialists and expert groups in the case of difficult technical and organizational problems in the workplace.	
6	**Copper Recycling Process Engineer** Examples of representative job positions: – chief metallurgical technology engineer; – helmsman of metallurgical process lines; – chief engineer.	6 & 7	– Applies health, safety and fire regulations and rules applicable to laboratory work, industrial processes and copper recycling; – Applies environmental regulations and rules applicable to laboratory work, industrial processes and copper recycling; – Applies the intellectual property protection laws of metallurgical companies; – Applies the principles of economics of mining enterprises; – Applies the principles of mining company logistics; – Applies the principles of mining enterprises; – Applies knowledge of mathematics, physics and chemistry to the shaping of processes in the field of materials and metallurgical engineering, in particular metallurgy and recycling and copper processing and metallurgy; – Designs and improves metallurgical technological processes and the recycling of anthropogenic materials containing copper, with the aim of maximising yields and profits within the company; – Applies the principles of environmentally friendly design of products and copper-based multi-material composites, taking into account different sourcing pathways; – Applies the basic techniques used to test raw materials and products within metallurgy and recycling; – Designs plants for the recycling and processing of copper and its alloys;	– respects the principles of professional ethics; – demonstrates social activity and entrepreneurship in the workplace; – shows readiness to solve problems in the workplace in a flexible manner; – is ready to make decisions on assigned tasks; – is ready to take responsibility for the tasks assigned and decisions made; – motivates co-workers and subordinates, including to achieve goals effectively, comply with regulations, implement good practices and principles of professional ethics; – builds and maintains good relationships with different stakeholder groups (local communities, subordinates, customers and subcontractors) by strengthening mutual trust, respect and improving communication; – is willing to share its knowledge with colleagues; – is ready to assess the risks and consequences of undertaking geological activities on the natural and social environment; – is aware of the importance of the extractive industry for socio-economic development;

Lp.	Name of the competence profile and representative job positions	EQF level	Skills	Social competence
			– Selects raw materials and materials to obtain copper and its alloys with defined properties and performance parameters; – Analyses metallurgical and recycling process pathways for the appropriate selection of raw materials for the synthesis of selected materials; – Operates measuring and testing apparatus during laboratory tests and assesses the suitability of specific test methods for determining the properties of non-ferrous metallic materials and their recyclability.; – Uses advanced ICT techniques to solve copper recycling problems; – Plans and organises individual and team work in solving material and recycling problems in the copper industry, also of an interdisciplinary nature; – Prepares, makes presentations and participates in discussions and seminars in the areas of non-ferrous metal engineering, fundamentals of economics, patent and copyright law and work organisation in non-ferrous metal plants and related industries; – Establishes cooperation with specialists and expert groups in the case of difficult technical and organizational problems in the workplace.	– is ready to initiate actions for sustainable development.