

A comprehensive study to identify skills gap in the industry sector labour market



This publication was carried out with the support of “Skills for sustainable jobs in Kosovo” project, funded by the Grand Duchy of Luxembourg and implemented by the Ministry of Education, Science, Technology and Innovation, and Lux-Dev, the Luxembourg Development Cooperation Agency



Published by:

Ministry of Industry, Entrepreneurship and Trade

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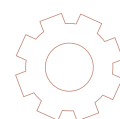
Supported by:

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December, 2024

TABLE OF CONTENTS

List of tables	5
List of figures and map	6
List of abbreviations.....	7
Executive Summary	8
1. General Introduction	10
2. Research methodology	11
3. A theoretical assessment of skills gap and future occupations in Europe	14
3.1 Future Occupations in the Processing Industries	16
4. Survey Data	17
4.1. General Results for Industrial Sectors	17
4.2. Employment in Industrial Sectors	18
4.3. Trainings and Training Providers	22
5. Sector Analysis	25
5.1. Food processing and beverage industry	28
5.2. Textile, clothing and leather products processing industry	36
5.3. Wood processing and products made from wood, paper, and paper products industry	42
5.4. Chemical products processing industry	50
5.5. Rubber and plastics processing industry	55
5.6. Non-metallic mineral products industry	62
5.7. Base metal and fabricated metal products processing industry	68
5.8. Furniture Processing Industry	74
5.9. Installation and Repair of Machinery and Equipment	80
6. Vocational Education and Training and Dual Education in Kosovo	84
6.1 Vocational Education and Training	84
6.2 Management of the VET System	84
6.3 Vocational Education and Training Institutions (VETI)	85
6.4 Dual Education	86
7. Concluding Remarks	90
8. Appendix A	97
Appendix B	107

LIST OF FIGURES, TABLES AND MAP

Table 1: Sample Distribution by Sectors	11
Table 2: Company turnover	17
Table 3: Employment at the sector level	18
Table 4: Level of education based on occupations	19
Table 5: Reasons for difficulties in finding employees	19
Table 6: Occupations with high demand	29
Table 7: Occupations with moderate demand	30
Table 8: Occupations with lower demand	32
Table 9: Future occupations in food and beverage production	33
Table 10: Occupations with high demand	37
Table 11: Occupations with moderate demand	38
Table 12: Future occupations in textile, clothing, and leather products manufacturing	39
Table 13: Occupations with high demand	43
Table 14: Occupations with moderate demand	44
Table 15: Occupations with lower demand	46
Table 16: Future occupations in the production of wood and wood products and the production of paper and paper products	47
Table 17: Occupations with high demand	51
Table 18: Occupations with moderate demand	52
Table 19: Future occupations in chemical products production	53
Table 20: Occupations with high demand	56
Table 21: Occupations with moderate demand	57
Table 22: Occupations with lower demand	58
Table 23: Future professions in the production of rubber and plastic products	59
Table 24: Occupations with high demand	63
Table 25: Occupations with moderate demand	63
Table 26: Occupations with lower demand	64
Table 27: Future professions in the production of non-metallic mineral products	65
Table 28: Occupations with high demand	69
Table 29: Occupations with moderate demand	70
Table 30: Occupations with lower demand	70
Table 31: Future professions in the production of metals and fabricated metal products	71
Table 32: Occupations with high demand	75
Table 33: Occupations with moderate demand	76
Table 34: Occupations with lower demand	77
Table 35: Future occupations in furniture manufacturing	78
Table 36: Occupations with high demand	81

Table 37: Occupations with moderate demand	81
Table 38: Occupations with lower demand	82
Table 39: Machinery and equipment repair and installation	82
Table 40: Levels and fields according to ISCED 2011 and ISCED-F 2013	84
Table 41: Public educational institutions by level and type	85
Table 42: Number of students in upper secondary education by type of school	86
Table 43: Schools and municipalities implementing Dual Education	87
Figure 1: Employees' recruitment channels in industrial sectors	20
Figure 2: Recruitment and human resource management practices	21
Figure 3: Analysis of employees' skills gap by companies	21
Figure 4: Employees left due to migration	22
Figure 5: The main obstacles regarding the cooperation between the company and the training providers	22
Figure 6: Expenditures for trainings by companies	23
Figure 7: Who covered the training costs?	23
Figure 8: Collaboration with training providers	24
Figure 9: Maximum days for a training course that would be acceptable to companies	24
Figure 10: Size of the industrial sector in Kosovo	25
Figure 11: Number of employees in the industrial sector in Kosovo	26
Figure 12: Trade exchanges in the food processing and beverage Industry (million euro)	28
Figure 13: Trade exchanges in the textile, clothing, and leather processing industry (million euro)	36
Figure 14: Trade exchanges in the wood and paper processing industry (million euro)	42
Figure 15: Trade exchanges in the chemical products processing industry	50
Figure 16: Trade exchanges in the rubber and plastics processing industry	55
Figure 17: Trade exchanges in the non-metallic mineral products industry	62
Figure 18: Trade exchanges in the base metals and metal processing industry	68
Figure 19: Trade exchanges in the furniture processing industry (million euro)	74
Figure 20: Trade in machinery and equipment installation and repair services	80
Map 1: Profiles offered in the production of food products and beverages	107
Map 2: Profiles offered in the production of textile, clothing and leather products	108
Map 3: Profiles offered in the production of wood products, paper and paper products	108
Map 4: Profiles offered in the production of chemical products	109
Map 5: Profiles offered in the production of rubber and plastic products	109
Map 6: Profiles offered in the production of mineral and non-metallic products	110
Map 7: Profiles offered in the production of metals and fabricated metal products	110
Map 8: Profiles offered in furniture production	111
Map 9: Profiles Offered in Machinery and Equipment Repair and Installation	111

LIST OF ABBREVIATIONS

AVETAE	Agency for Vocational Education and Training and Adult Education
CAD	Computer-Aided Design
CAPI	Computer-Assisted Personal Interviewing
CBK	Central Bank of Kosovo
CEDEFOP	European Centre for the Development of Vocational Training
CEFTA	Central European Free Trade Agreement
CNC	Computer Numerical Control
CoC	Centres of Competences
CPT	Centres for Professional Training
EARK	Employment Agency of the Republic of Kosovo
EU	European Union
GIZ	German Agency for International Cooperation
HRM	Human Resources Management
ILO	International Labour Organization
IoT	Internet of Things
ISCED/SNKA	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
KAS	Kosovo Agency of Statistics
MDE	Municipal Directorates of Education
MESTI	Ministry of Education, Science, Technology, and Innovation
MIET	Ministry of Industry, Entrepreneurship, and Trade
NACE rev.2	Nomenclature of economic activities in Europe
NAQ	National Authority for Qualifications
NQFRK	National Qualifications Framework of the Republic of Kosovo
OEK	Chamber of Commerce of Kosovo
OS	Occupation Standards
PET	Professional Education and Training
SIDBS	Strategy for Industrial Development and Business Support 2030
STEM	Science, Technology, Engineering, and Mathematics
TAK	Tax Administration of Kosovo
THS	Technical High School
VET	Vocational Education and Training
VETI	Vocational Education and Training Institutions
WBL	Work-based Learning

EXECUTIVE SUMMARY

This report presents a comprehensive analysis of skills gap in the labour market within Kosovo's industrial sector, providing an in-depth overview of the challenges and opportunities for developing this key sector of the country's economy. The report was prepared by the Institute for Development Research RIINVEST with the support of the Luxembourg Development Agency (KSV/023) Sustainable and Inclusive Growth in Kosovo. The need for such a study stem from the Industrial Development and Business Support Strategy 2030 (IDBSS), approved by the Government of Kosovo, which aims to address urgent challenges faced by the manufacturing sector, including the shortage of skilled workforce and the demand for technical and managerial profiles.

This study includes detailed sector analyses of the food processing and beverage industry, textiles and leather products, wood and paper processing, chemical products, rubber and plastics, non-metallic minerals, metal processing and furniture, as well as the installation and repair of machinery and equipment industry.

The study is based on a combined methodology, employing both quantitative and qualitative approaches for data collection and analysis. Quantitative data were collected through a face-to-face survey with 360 businesses operating in Kosovo's industrial sectors, including companies of all sizes. The sample was selected to be statistically representative of the industrial sectors, ensuring reliable and valid results. Meanwhile, the qualitative methodology included semi-structured interviews with representatives of sector associations, donors, and industry experts to complement and validate the survey results.

The report highlights that a significant percentage of businesses in Kosovo face substantial difficulties in finding qualified workers, particularly in technical and managerial professions. The majority of surveyed companies (43.5%) reported an increase in their turnover over the past year, with an average growth of 18.7%. However, the lack of adequate and qualified labour force remains a significant barrier to further development. The industrial sector in Kosovo is dominated by micro and small enterprises, where most employees have a secondary education level, indicating a pronounced lack of advanced expertise and specialized skills.

One of the main challenges highlighted in the report is the emigration of workers, a phenomenon affecting more than half of the surveyed businesses. The departure of qualified workers due to emigration poses a significant barrier to meeting business needs for labour force. Another challenge is the lack of standardized human resource management practices, with only a small portion of businesses having appropriate structures for recruiting and managing employees. Furthermore, survey results indicate that the majority of businesses (59.8%) do not conduct regular skills gap analyses, which could negatively impact the alignment of employee skills with specific business needs.

In particular, the food and beverage industry is identified as a sector with high potential for export and development, yet it faces significant challenges, including a lack of expertise in process technology and food safety. To capitalize on this potential, it is necessary to improve technological know-how and address challenges related to unfair competition from imported products.

Despite these challenges, the report emphasizes that the industrial sector is one of the fastest-growing sectors in Kosovo, with high export potential. However, to fully leverage this potential, further investments are needed to enhance technological knowledge and meet standards. The report also identifies the occupations and skills expected to be in high demand in the future within Kosovo's industrial sector.

The professions with the highest anticipated demand include those related to machinery operation and food processing, as well as roles associated with new technologies and production process management. This trend reflects the growing need for technical and digital skills, which are increasingly critical for the successful operation of industrial businesses. Specific professions for all industrial sectors that have high demand, as well as future professions, can be found in the 'concluding remarks' section.

On the other hand, the report highlights that one of the main reasons for skills gap is the mismatch between educational systems and industry needs. Many educational institutions are not updated with the current demands of the manufacturing sector, resulting in an insufficient supply of qualified workers in the labour market.

The report concludes by emphasizing the importance of improving the alignment between labour demand and supply in Kosovo's industrial sector. Investment in education, vocational training, and technology is crucial for the sustainable and competitive development of this sector, helping to meet industry needs. Only through an integrated and sustainable approach will Kosovo's industrial sector be able to realize its full potential and contribute to the country's economic development.

1. GENERAL INTRODUCTION

Analysing the skills gap is essential for understanding the current and future workforce needs in Kosovo's industrial sector. This analysis helps identify discrepancies between the skills required by employers and those available in the labour market, enabling targeted interventions to address these gaps. By aligning labour market demand with supply, it is possible to improve job quality, drive technological advancement, and create inclusive employment opportunities. The Industrial Development and Business Support Strategy 2030 (IDBSS), approved by the Government on June 29, 2023, addresses the priority challenges faced by the industrial sector in Kosovo. Key issues highlighted include a significant skills gap, a shortage of qualified workers, and a high demand for technical and managerial profiles. Strategic Objective 3 of the IDBSS focuses on creating better and more inclusive employment opportunities by aligning labour market demand with supply. By promoting technological advancements, this strategy aims to generate jobs that require higher qualifications and skills, thus improving job quality.

In line with this strategic objective, the 2023 action plan includes a comprehensive study to identify skills gap in the labour market within the industrial sector, as detailed in Activity 3.1.1. This study aims to understand the challenges employers face in finding qualified workers. The Ministry of Industry, Entrepreneurship, and Trade (MINT) has selected specific sectors for this research based on the NACE Rev. 2 classification. These sectors include: Production of food and beverages (codes 10 and 11); Production of textiles, clothing, and leather products (codes 13, 14, and 15); Production of wood and wood products, paper and paper products (codes 16 and 17); Production of chemical products (code 20); Production of rubber and plastic products (code 22); Production of non-metallic mineral products (code 23); Production of metals and fabricated metal products (codes 24 and 25); Production of furniture (code 31); Repair and installation of machinery and equipment (code 33).

The primary objective of this research is to conduct a comprehensive study to identify skills gap in the labour market within Kosovo's industrial sector and to understand the challenges employers face in finding qualified workers. This study will analyse sector trends over the past five years, evaluate the offerings and challenges of vocational education and training, assess the alignment between labour supply and demand, explore private sector collaboration with educational institutions, forecast future demand for occupations, and provide recommendations to meet workforce needs over the next 3-5 years.

The findings are based on secondary data, interviews, surveys, and relevant international studies, with the aim of informing policy creation and supportive mechanisms for businesses in addressing their workforce demands.

The rest of this report is organized as follows: Section 2 provides an overview of the research methodology used to analyse the skills gap in industrial sectors. Section 3 presents a theoretical assessment of European perspectives on skill analysis in industrial sectors. Section 4 explains the general results of the survey on the overall performance of the sectors. Section 5 provides a detailed analysis of skills gap across industrial sectors. Section 6 analyses vocational education and training in Kosovo and offers important information on dual education. The final section of the study presents the concluding remarks and specific professions for each sector.



2. RESEARCH METHODOLOGY

To fully understand the gaps in the market and the needs of businesses regarding market skills, this study utilizes primary sources from surveys with businesses as well as input from field experts and representatives of sector business associations. This section provides a comprehensive summary of the methodology used in this study, outlining the methods and procedures employed for data collection, analysis, and interpretation, ensuring the reliability and validity of the research. The quantitative aspect of the methodology involves data collection through surveys with businesses in industrial sectors, while the qualitative methodology includes data from semi-structured interviews with sector associations, donors, and field experts. Furthermore, the study analyses international practices and the offer of Vocational Education and Training (VET) in Kosovo as well as the offer of higher education institutions. Quantitative data were collected through a survey of 360 businesses across all municipalities in Kosovo, which is statistically representative at the industrial level, providing results with a +/- 5% margin of error at a 95% confidence level. The sample was drawn from the database of active businesses maintained by the Kosovo Tax Administration (KTA). Active status was determined when a business had submitted financial statements to the KTA as of December 2023.

This database contained all necessary information for sample stratification, including business profiles, operating sectors, size, location, and contact details. To ensure adequate representation of all sub-sectors classified according to NACE Rev 2, a random stratified sampling approach was used. This method allows for the inclusion of firms of various sizes, implying significant variation in firm composition within the sector.

By adhering to this approach, the study provided information to understand business development trends, assess the current situation within the sector, and forecast future demand for workers in specific and general occupations. In addition to sampling within industrial sectors, the project team decided to exclude businesses with two or fewer employees from the survey.

The rationale for excluding businesses with one or two employees is based on the argument that such businesses, with a relatively simple structure, are difficult to obtain information from for the purposes of this study. The distribution of the sample in this study is detailed in Table 1.

Table 1: Sample Distribution by Sectors

NACE Rev 2 Codes	Sectors	Number of Surveyed Businesses
13, 14, 15	Production of textiles, clothing, and leather products	37
16, 17	Production of wood and wood products and paper and paper products	39
10, 11	Food and beverages production	60
24, 25	Production of metals and fabricated metal products	43
23	Production of non-metallic mineral	40
22	Production of rubber and plastic products	40
20	Production of chemical products	30
31	Production of furniture	40
33	Repair and installation of machinery and equipment	30

¹ International Standard Industrial Classification of All Economic Activities

After determining the sample, the next step was to design the questionnaire, which involved a consultative process with all stakeholders. The first version of the questionnaire was prepared by the Riinvest Institute team and then presented at a one-day workshop with comprehensive participation from sector associations, officials from relevant ministries, the Luxembourg Development Agency, business associations, and field experts. All relevant suggestions and recommendations from the workshop were considered in preparing the final version. The questionnaire was organized into six main sections and is attached in Appendix 1.

The final step in designing the questionnaire was to pilot it with 20 businesses. This pilot aimed to identify unforeseen issues with the formulation and understanding of questions, ensure that respondents comprehended the questions, and address any potential problems to minimize errors during the survey. The survey team ensured that the questions and instructions were clear, aiming for respondents to feel comfortable so that they would be more motivated to answer the questions. The questions were arranged to generate interest and ensure valid responses from respondents, achieving an acceptable response rate.

For the purpose of the survey, the Riinvest team engaged and trained 20 enumerators. Two-day training was organized to familiarize the enumerators with the objectives, survey methodology, and the study's purpose. On the first day of training, the enumerators were introduced to the overall aim of the survey and the importance of its results, while the second day focused primarily on the survey methodology, questionnaire questions, and other data collection procedures. Data collection was conducted face-to-face using the Computer-Assisted Personal Interviewing (CAPI) method.

To check and monitor data collection in the field, small groups (up to 5 enumerators) were supervised by a field supervisor appointed by the survey manager. To ensure the quality of the collected data, the Riinvest Institute team employed several techniques: (i) telephone verification; about 20% of the surveys were re-verified by supervisors and the survey manager via telephone to ensure that the survey was conducted with the correct respondents and/or that the responses corresponded with those provided by the enumerators, and (ii) logical checking; which was used to verify if there were any irrational or inappropriate responses.

To ensure the accuracy of the data, Riinvest, in collaboration with MINT and LuxDev, have hired an external expert for data quality assurance. The external expert's final report indicates that the verified data provides a solid foundation for accurately identifying skills gap in the labour market within the industry, supporting the overall objectives of the study.

After the quality control of the data, they were coded using EXCEL tables containing data fields and corresponding codes. Subsequently, the data were analysed and interpreted using the statistical software SPSS. The analysis and interpretation in this research report are primarily based on descriptive statistics, utilizing the technique of cross-tabulations with data from various indicators.

Semi-Structured Interviews

The purpose of the semi-structured interviews with sector associations, donors, and experts was not only to validate the survey results but also to gather information on the challenges businesses face in the labour market, identify new profiles, obtain information on the implementation of dual education (dual vocational training), and determine the measures needed to strengthen collaboration between the private sector and VET. This effort aimed to reduce or ultimately fill the skill mismatch gap in the labour market within the analysed sectors.

The research team drafted the initial version of the questionnaire and presented it at a workshop to receive feedback and suggestions from participants. This feedback was then discussed separately with the MINT/Department of Industry team to ensure the relevance and appropriateness of the questions within the study's goals and objectives.

The questionnaire was prepared in several versions tailored to each interviewee; for instance, a different version was created for sector associations and another for donors and field experts.

Before starting the semi-structured interviews, permission was sought to record the sessions. All interviews were recorded to ensure that all necessary information was captured. The recorded data were transcribed and formatted into standardized forms.

After the verbatim transcription was completed, handwritten notes from the assistant were also considered. The analysis of qualitative interview data involves reviewing responses on each topic and drawing interpretive conclusions. After processing the data, the research team incorporated the collected data from the interviews into the final section of the report.

To analyze trends in European countries, the project engaged an international expert to conduct a detailed assessment of professions, skills, and trends that other countries are following to address this issue. This part of the study was prepared by reviewing reports, strategic documents, analyses from the European Commission, scientific literature, and any other necessary materials. The newly identified professions are presented at the sector level, while the skills for these professions are derived from the ISCO codes of the ILO. Another important point is that some of the newly identified professions do not have a standard figure according to the ISCO Code classification.

This analysis focused particularly on the German vocational education system. Data on professions can be found in the sectoral analysis section in the tables of future profiles.

² Participants in these interviews were: Arjeta Pozhegu (SHDPK); Astrit Rexhaj (KIMERK); Merita Sylaj (KAMA); Butrint Batalli (SHPPK); Hartim Gashi (PePeKo); Liza Marku (IREX); Njazi Musliu (Metal Processor).

3. A THEORETICAL ASSESSMENT OF SKILLS GAP AND FUTURE OCCUPATIONS IN EUROPE

This section of the study aims to provide a theoretical analysis of skills gap, the measures, and policies that European countries are implementing to address these issues in the manufacturing sector, and to identify new profiles/occupations that will be required in the future in this sector.

Currently, there are a number of interconnected challenges affecting labour markets, resulting in a significant shortage of workforce and their skills. These challenges include demographic changes, a high level of inactivity, relatively low levels of mobility within the EU, and a structural mismatch between skills, education, and training in relation to the labour market.

To address these issues, the EU announced the European Year of Skills, which emphasizes the importance of improving skills matching—something that can play a significant role in helping to address the skill shortages experienced by member states and sectors in one way or another in the labour market. On September 13, 2023, Commission President Von Der Leyen³ highlighted the shortage of workforce and skills as one of the main economic challenges for businesses and the top priority for the EU to address in the coming year. According to an analysis by the European Labour Authority⁴, there are several factors that determine labour shortages and surpluses.

Over the past two years, the EU economy and labour market have experienced a period of rapid change driven by COVID-19, disruptions in supply chains, and the energy crisis caused by Russia's invasion of Ukraine. Demographic changes and the transition to a digital and climate-neutral economy in the EU have also impacted the professional structure of employment and skills.

On the other hand, the BusinessEurope Survey⁵ identified concerns among employers regarding the dynamics of the local labour market, particularly the difficulties in replacing an aging workforce as people retire.

CEDEFOP's⁶ analysis of skill shortages also suggests that among high-qualification occupations, there will be particularly high shortages of professionals in science and engineering.

This gap is primarily characterized by a lack of technical and digital skills, as well as a shortage of workers skilled in STEM (Science, Technology, Engineering, and Mathematics) disciplines. Advanced manufacturing technologies, including automation, robotics, and artificial intelligence are becoming increasingly integral to modern manufacturing processes.

³ Commission kick-starts work on the European Year of Skills: https://ec.europa.eu/commission/presscorner/detail/en/ip_22_6086

⁴ ELA-eures-shortages-surpluses-report-2022.pdf (europa.eu)

⁵ 2023-10-23_analysis_of_labour_and_skills_shortages.pdf

⁶ 2023 Skills Forecast Technical Report. chrome- https://www.cedefop.europa.eu/files/2023_skills_forecast_technical_report.pdf

However, many workers lack the necessary technical skills to operate and maintain these technologies. Furthermore, the rapid pace of digital transformation demands competencies in data analysis, cyber security, and digital tools, which are often in short supply. Beyond technical skills, there is also a noticeable lack of soft skills such as problem-solving, critical thinking, and adaptability. These skills are essential for workers to thrive in complex manufacturing environments and to collaborate effectively. One of the main causes contributing to this issue is the mismatch between education systems and industry needs. According to CEDEFOP (2021), many educational institutions have out-dated curricula that do not align with the current demands of the manufacturing sector, resulting in graduates who are not adequately prepared for the labour market.

On the other hand, the rapid advancement of technology exacerbates this issue, as the speed at which new technologies develop exceeds workers' ability to adapt. Based on an analysis by the European Investment Bank (2019)⁷, it is highlighted that the adoption of new technologies creates a demand for new skills that are not immediately available in the labour market, leading to skill shortages until the broader education system (including employer training) can meet these new skill requirements. Another problem contributing to the skills gap in EU countries is the low reputation of VET schools compared to universities. Negative perceptions of VET have led young people to have lower self-esteem and to disengage from vocational education. Demographic changes, such as an aging workforce and inadequate replacement of retirees with young talents, also play a significant role.

Furthermore, geographic disparities in the availability of skilled workers create regional imbalances, affecting the overall efficiency and growth of the sector. According to the ILO (2019)⁸, there are several imbalances due to the low educational achievements of young workers, who are often forced to leave school and enter the labour market to support their families.

As a result, many young people in low-income countries lack the minimum skills required by the labour market and experience significant skills gap in their work.

Addressing the skills gap is crucial not only for the manufacturing sector but also for the broader European economy, which requires a multifaceted approach. European countries have implemented measures to tackle these issues, including educational reforms, opportunities for continuous learning, and collaboration between governments and industries. Updating educational curricula to reflect current industry needs, promoting STEM education, and fostering partnerships between educational institutions and industry are key strategies. This involves investing in new technologies and teaching methods to better prepare students for the demands of modern manufacturing. Additionally, many countries are encouraging partnerships between educational institutions and industry players to create more relevant and practical learning experiences, such as through dual education systems that combine classroom learning with hands-on work experience.

Another mechanism being used by these countries is the encouragement of lifelong learning and the provision of opportunities for upskilling and reskilling through online platforms and business-led training initiatives. This includes expanding access to online learning platforms, providing subsidies for professional training programs, and encouraging companies to invest in the continuous education of their employees. For example, the European Digital Skills and Jobs Coalition aims to address the digital skills gap by supporting initiatives that provide training and resources for workers at all stages of their careers. Countries like Germany and Switzerland have long been recognized for their successful internship models, which are now being adapted and expanded across Europe. Additionally, there are efforts to increase attractiveness for young people through targeted awareness campaigns and collaborations with schools to highlight the innovative and dynamic nature of the sector.

⁷ Skill shortages and skill mismatch in Europe: A review of the literature: https://www.eib.org/attachments/efs/economics_ëorking_paper_2019_05_en.pdf

⁸ Skills and jobs mismatches in low- and middle-income countries https://ëë.ilo.org/sites/default/files/ëcmsp5/groups/public/@ed_emp/documents/publication/ëcms_726816.pdf

In response to the demands for developing the production sector and the economy at large, European countries are seeking new occupations that will shape the future of work and enhance competitiveness. These occupations are primarily driven by technological advancements, including data analysts, artificial intelligence specialists, and robotics engineers. Additionally, new EU directives on green energy and environmental sustainability have led to the creation of jobs such as renewable energy technicians and sustainability consultants.

Future occupations in the processing industries require a gradual shift from traditional roles to those based more on new technologies, technical skills, and automation of manufacturing processes. For the purposes of this study, several new occupations have been identified that could contribute to the development of industrial sectors in Kosovo and assist in designing new curricula in the country. The tables for future professions in Europe can be found in separate sections of the sectoral analysis in the tables with the description “Future Professions”.

4. SURVEY DATA

4.1

General Results for Industrial Sectors

This section will describe and analyse the results of the quantitative part of the study, which involved a survey of 360 businesses operating in the industrial sectors in Kosovo. Subsection 4.1 describes and analyses business turnover and expectations for the coming years. It also provides data on company performance in exports and their expectations for business expansion. Subsection 4.2 provides important information regarding employment, challenges in hiring, and the education levels of employees. Subsection 4.3 presents data on practices and management of human resources. Subsection 4.4 analyses training aspects, including the duration of training programs and the need for various training modalities.

Over the past year, 43.5% of companies reported an increase in their turnover, with an average growth of 18.7%. On the other hand, 18% of companies experienced a decrease in turnover, with an average reduction of 27.9%. For 38.5% of companies, turnover remained stable with no significant changes. Looking ahead to the next three years, 8.8% of companies forecast a decrease in turnover of 31.9%, while 22.2% expect their turnover to remain unchanged. It is noteworthy that the majority, 69%, are optimistic about future growth, predicting an average increase of 21.7%. These data indicate an overall positive outlook for business development in the coming years, despite some anticipated challenges. Regarding export data, about 45% of companies in Kosovo exported during 2023, with approximately 27% of their annual turnover coming from exports.

Table 2: Company turnover

Company Turnover Over the Past Year	Annual growth		Average growth
Increased	43.5%	↑	18.70%
Decreased	18.0%	↓	27.90%
Remained the same	38.5%		
Expectations for company turnover in the next three years			
Expected to decrease	8.8%	↓	31.90%
Expected to remain unchanged	22.2%		
Expected to increase	69.0%	↑	21.70%

Source: Author’s calculations based on survey data (2024)

When businesses were asked about their plans for business expansion in the future, they outlined several key strategies. A significant portion, 36 percent, plans to invest in equipment, while 32 percent aim to hire more employees.

Additionally, 14 percent are focusing on investing in digitalization processes, 10 percent intend to invest in facilities, and 8% plan to introduce new products and services. These diverse approaches highlight the various methods companies are using to drive growth and development.

4.2

Employment in Industrial Sectors

Employment undoubtedly remains one of the key challenges facing businesses in recent years. Despite these challenges, the surveyed businesses continue to create job vacancies. The furniture and food and beverage sectors have been the most active in creating new job vacancies over the past three years, with over 50%. When asked whether these positions were new

jobs or replacements, all sectors, except for the food and beverage industry, reported that the positions were new jobs resulting from business expansion and sector growth. Most importantly, all sectors, with the exception of the food and beverage industry, expect to see an increase in employment over the next three years.

Table 3: Employment at the sector level

	What % of companies has opened new positions in the past three years?	Of these positions (in total), how many have been new job openings?	How much do you expect the number of employees to increase/decrease in the next three years?
Wood and paper	28.2%	52%	46%
Rubber and plastics	30.9%	64%	39%
Chemicals	43.0%	53%	31%
Base and fabricated metals	32.1%	54%	24%
Non-metallic minerals	30.3%	61%	38%
Furniture	51.5%	58%	59%
Repair and installation of machinery	31.0%	83%	48%
Textiles	42.9%	45%	27%
Food and beverages	60.9%	24%	29%

Source: Author's calculations based on survey data (2024)

Higher education, such as obtaining a bachelor's, master's, or doctoral degree, equips individuals with specialized knowledge and skills related to their occupations. Survey data presented in Table 4 show that approximately 55% of managers hold a bachelor's degree and only 9.7% of them have a master's level qualification. On the other hand, technicians and professional associates, machine operators, and

craft professionals, who are among the most sought-after profiles in the manufacturing industry, primarily hold a high school diploma, with about 85% of them having this level of education. These data indicate that the level of education in the processing industries should mainly focus on professional training levels.

Table 4: Level of education based on occupations

ISCO	No formal education	Primary education	Secondary education	Bachelor's degree	Master's degree	PhD	I don't know
1. Managers	0%	0.8%	33.1%	55.4%	9.7%	0.3%	0.8%
2. Professionals	0%	0.9%	20.5%	46.2%	26.5%	5.1%	0.9%
3. Technicians and professional associates	0%	0%	85.7%	14.3%	0%	0%	0%
4. Clerks and administrative assistants	1.3%	1.3%	55.7%	39.2%	2.5%	0%	0%
5. Service and sales employees	0.2%	2.9%	76.5%	17.1%	0.9%	0%	2.5%
6. Employees of crafts and similar occupations	0.8%	4.6%	84.0%	7.6%	0%	0%	3.1%
7. Stationary machinery and machine operators and assemblers	0%	0%	86.3%	13.7%	0%	0%	0%
8. Elementary occupations	0.5%	4.4%	83.5%	5.5%	0.5%	0%	5.5%

Source: Author's calculations based on survey data (2024)

Difficulties in finding a job can be challenging due to a combination of factors. A primary reason is the mismatch between the skills of jobseekers and the requirements of employers. When businesses were asked about the difficulties in finding qualified employees, they indicated that employees often lacked the necessary experience and skills required in the industry. Regarding managerial positions, around 22% percent reported a lack of experience, while approximately 26 percent stated that the required skills were missing.

Concerning technicians and associate professionals, the issues mainly relate to experience and job-specific skills. Additionally, other reasons include candidates demanding high salaries and preferring to work in the public sector rather than the private sector. These data clearly show a mismatch in the labour market between the skills required and the skills that employees possess. Addressing this gap will be crucial for designing educational curricula that focus more on enhancing these skills.

Table 5: Reasons for difficulties in finding employees

ISCO	Candidates Lacked Experience	Candidates Lacked Required Education	Candidates Lacked Required Skills	Suitable Candidates Demanded High Salaries	Suitable Candidates Prefer Working in	No Interested Candidates	Other
1. Managers	22.2%	7.8%	26.7%	20.0%	11.1%	8.9%	3.3%
2. Professionals	13.6%	13.6%	20.5%	34.1%	6.8%	4.5%	6.8%
3. Technicians and professional associates	50.0%	0%	50.0%	0%	0%	0%	0%

4. Clerks and administrative assistants	9.5%	16.7%	38.1%	21.4%	0%	11.9%	2.4%
5. Service and sales employees	14.1%	7.3%	39.6%	15.3%	1.3%	22.0%	0.3%
6. Employees of crafts and similar occupations	12.8%	20.9%	47.7%	7.0%	1.2%	8.1%	2.3%
7. Stationary machinery and machine operators and assemblers	11.1%	5.6%	22.2%	27.8%	5.6%	22.2%	5.6%
8. Elementary occupations	8.2%	15.5%	38.2%	9.1%	0%	28.2%	0.9%
Total	13.8%	11.2%	37.0%	15.7%	2.7%	17.9%	1.7%

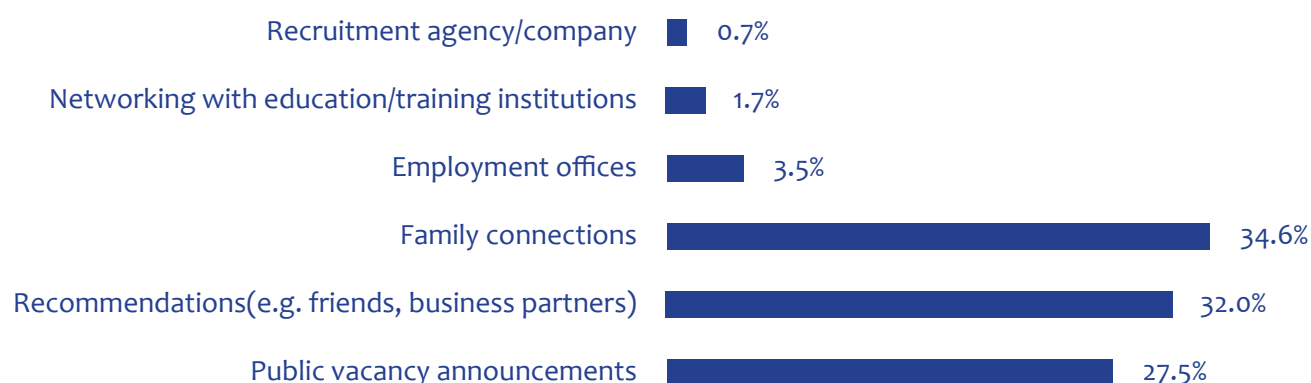
Source: Author's calculations based on survey data (2024)

Human Resource Management Practices

Human resource management practices are crucial for fostering a productive workforce. These practices encompass a range of activities, including recruitment, employee training and development, performance management, and employee relations. Despite their importance, businesses in the industrial sectors in Kosovo are not very familiar with these practices. Data show that most recruitment is conducted through personal and family connections, with referrals and family ties

constituting a significant proportion—approximately 32% and 34%, respectively. Public job advertisements are also an important method, accounting for 27.5%. Meanwhile, channels such as employment offices, networking with educational institutions, and recruitment agencies are used less frequently, indicating opportunities for improvement in diversifying recruitment methods.

Figure 1: Employees' recruitment channels in industrial sectors



Source: Author's calculations based on survey data (2024)

The data show that only a small portion of businesses have standardized processes and appropriate structures for recruiting and managing human resources. Only a few businesses offer initial and on-going training for employees, suggesting a

need to increase efforts for employee professional development. Furthermore, performance-based evaluations are used minimally, indicating room for improvement in utilizing these evaluations to manage employee performance.

Figure 2: Recruitment and human resource management practices

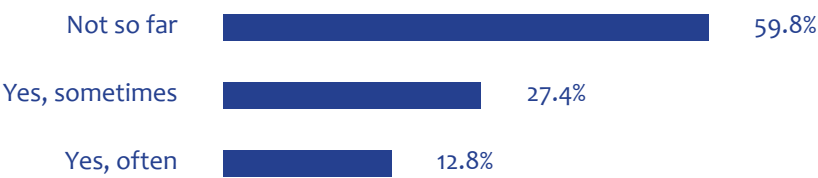


Source: Author’s calculations based on survey data (2024)

The data reveals that there is a lack of regular skills gap analyses in most businesses, with 59% indicating that they have not conducted such an analysis to date. This deficiency could negatively impact the alignment

of employees’ skills with the specific needs of the business. These results suggest a need for improvement in human resource management practices and strategies for employee retention.

Figure 3: Analysis of employees’ skills gap by companies

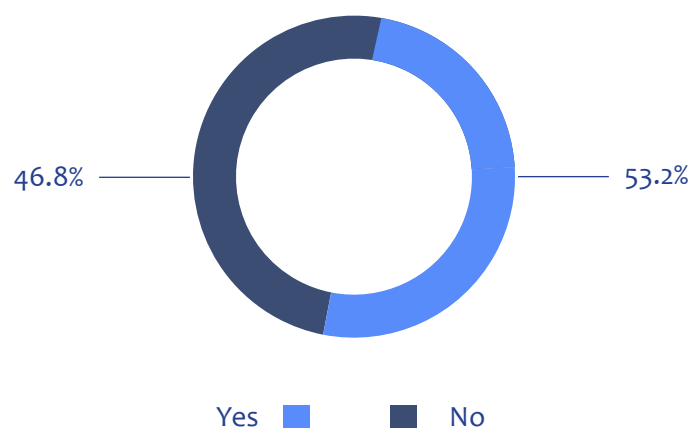


Source: Author’s calculations based on survey data (2024)

One of the current issues in human resource management is workforce migration, which refers to the process of moving employees from one place to another, often for work-related purposes. In Kosovo, this problem is highly pronounced, with data

indicating significant movement in the labour market. Survey data show that the departure of employees due to migration is a substantial problem for most businesses, with 53% of businesses reporting this phenomenon.

Figure 4: Employees left due to migration



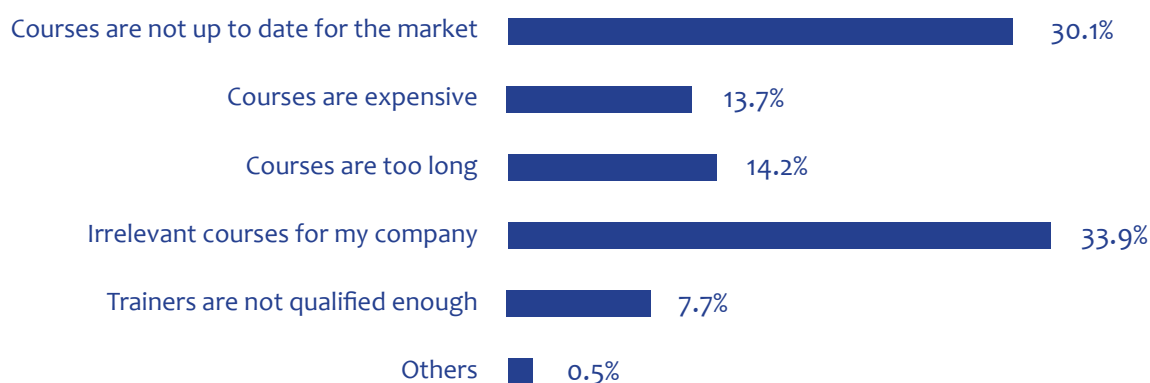
Source: Author's calculations based on survey data (2024)

4.3 Trainings and Training Providers

Training plays a crucial role in developing employees' skills and enhancing their performance in the workplace. On the other hand, training providers, whether internal or external, offer a variety of educational courses tailored to meet the specific needs of companies. The results show that the majority of businesses (59%) do not have a clear overview of the training opportunities offered by training providers, indicating a need for

improved communication and information regarding training opportunities. The main obstacles to better collaboration between businesses and training providers include the relevance of training (33.9%), updating training content (30.1%), and the duration and cost of training (14.2% and 13.7%, respectively). Addressing these challenges could help improve the collaboration and effectiveness of training programs for businesses in Kosovo.

Figure 5: The main obstacles regarding the cooperation between the company and the training providers

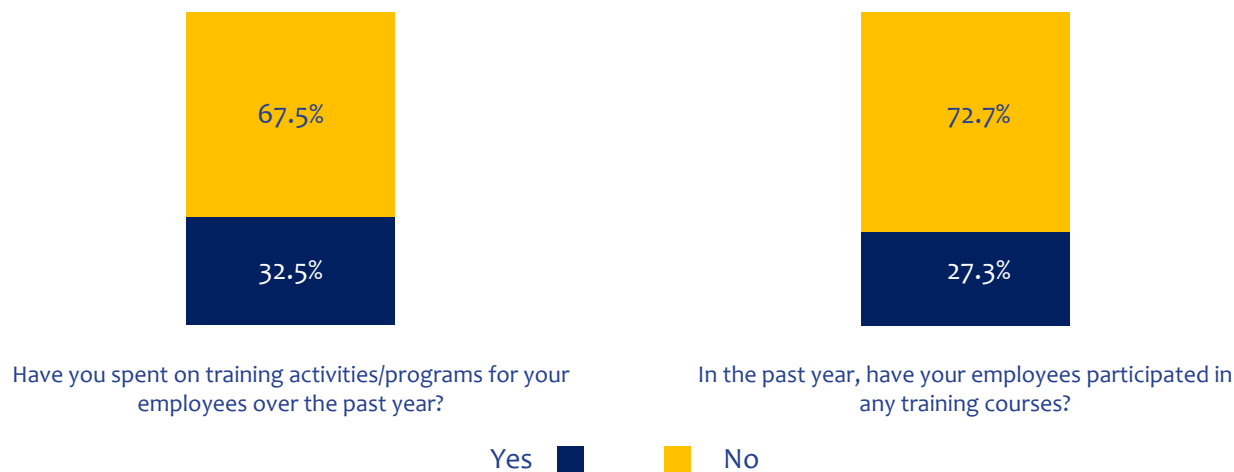


Source: Author's calculations based on survey data (2024)

The survey results reveal a low level of expenditure and participation in training and human resource management practices among businesses in Kosovo. Only 32.5% of businesses have invested in training, and just 27.3% of

employees have participated in such training programs. These findings suggest a need for increased investment and commitment to professional training to enhance employees’ skills and development.

Figure 6: Expenditures for trainings by companies

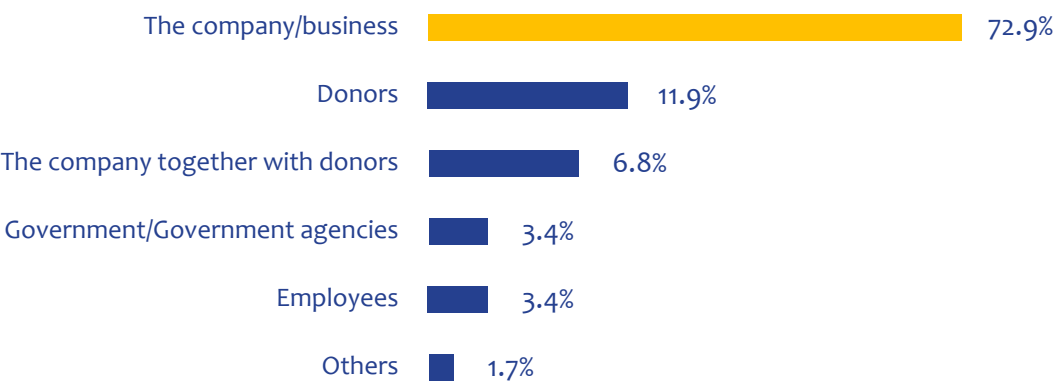


Source: Author’s calculations based on survey data (2024)

The majority of training expenses are covered by the companies themselves, with 72.9% indicating their commitment to employees’ skills development. Support from donors and collaborations with them also play a significant role, with 11.9% of training expenses funded by donors

and 6.8% covered through collaborations between companies and donors. Government support and employees’ own contributions are limited, suggesting potential opportunities for increased state involvement and self-funding in covering training expenses.

Figure 7: Who covered the training costs?

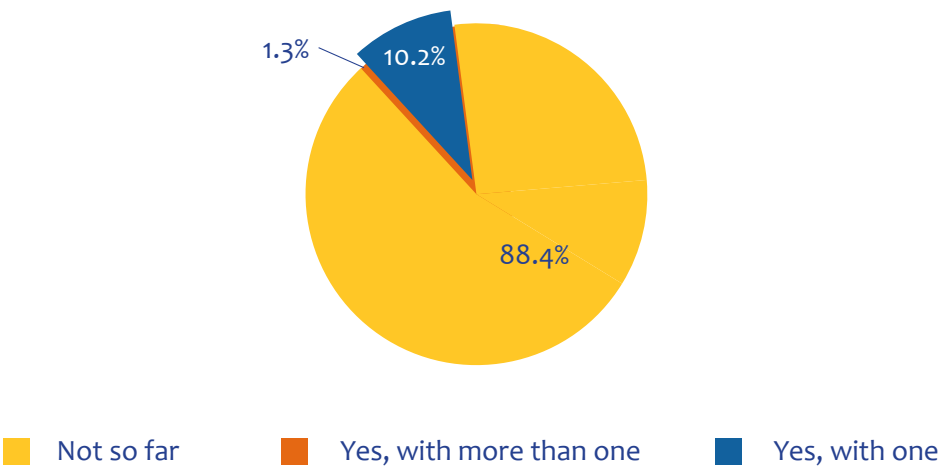


Source: Author’s calculations based on survey data (2024)

The data show that the majority of businesses, around 88.4%, have not collaborated with training providers so far, indicating a significant opportunity for improving collaboration in this area. On the other hand, a large portion of businesses, 71.9%, are willing to collaborate with other companies to jointly conduct trainings, while 25.4%

are uncertain due to competition-related issues. Only 2.7% of businesses currently have such collaborations. These results suggest substantial potential for increasing cooperation between businesses and training providers, as well as among businesses themselves, to enhance the effectiveness of the training offered.

Figure 8: Collaboration with training providers

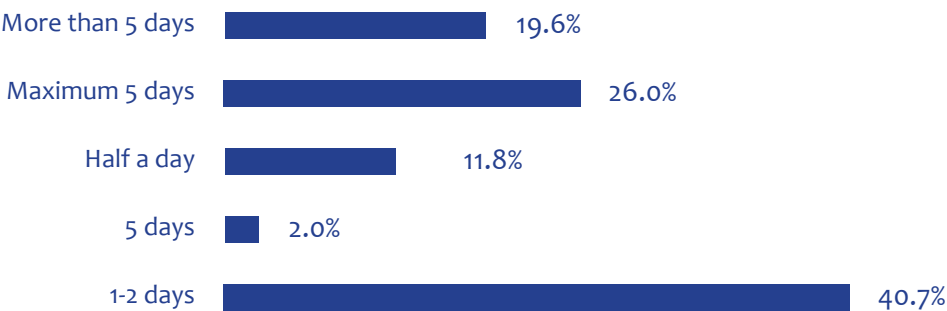


Source: Author’s calculations based on survey data (2024)

Regarding the duration of trainings, the data show that most businesses prefer training courses lasting 1-2 days (40.7%), suggesting a preference for short and intensive training. A significant percentage of businesses are open to trainings lasting up to 5 days (26.0%) and more than 5 days (19.6%). When it comes to the type of training,

the majority of businesses prefer sessions conducted outside working hours (54.5%), while a substantial portion prefers trainings during working hours (44.6%). These insights can assist training providers in tailoring their programs to better meet the needs and preferences of businesses.

Figure 9: Maximum days for a training course that would be acceptable to companies



Source: Author’s calculations based on survey data (2024)

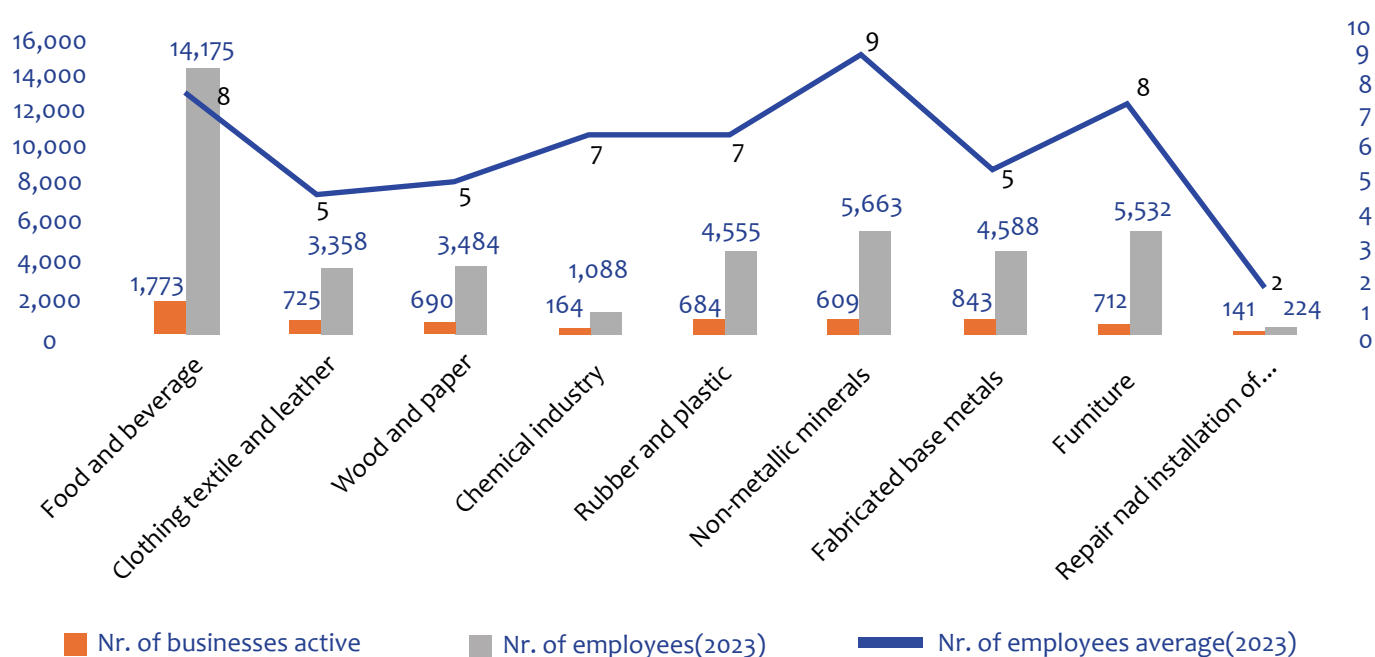
5. SECTOR ANALYSIS

This section provides a summary of data from secondary sources regarding the industrial sectors subject to this study. Data from the Tax Administration of Kosovo (TAK) have been utilized to measure the size of industrial sectors based on the number of employees, while data from the Kosovo Customs have been used for assessments related to exports and imports. Additionally, the focus of the next subsection is on the demand for occupations and, consequently, for skills. The demand for occupations is classified into three categories: high demand, moderate demand, and low demand. Occupations with high demand are characterized by an expected increase of over 30 percent, occupations with moderate demand by an increase between 20 and 30 percent, and occupations with low demand by an increase of less than 20 percent. This classification helps in understanding the varying levels of demand for skills in different roles and emphasizes the need for targeted training and development programs to effectively address these gaps. Furthermore, the remaining part analyses and provides information regarding future professions that industries in Kosovo should focus on. The tables contain information on the operating sector identified by NACE code, the name of the

occupations, the level of education, and the required skills. Data for these occupations have been obtained from reports, analyses, documents, and a number of indicators have been used to identify new professions. Overall, the industry in Kosovo has experienced a slight increase year by year, contributing to the growth of the economic structure in the country, impacting export growth, and increasing added value. “Made-in-Kosovo” products have now managed to penetrate export markets in the region, Europe, the United States, Asia, and even Africa. With the exception of a small number of businesses, the industrial sector in Kosovo is predominantly dominated by micro and small enterprises.

According to data from the Tax Administration of Kosovo (TAK), the average number of employees in selected sectors in 2023 was 7. Furthermore, according to official data from TAK, last year the selected sectors for this study accounted for approximately 80% of the total number of active businesses in the industry and 85% of the number of formal workers. The food and beverage processing industry leads the industrial sector both in terms of the number of businesses and the number of employees (Figure 11).

Figure 10: Size of the industrial sector in Kosovo

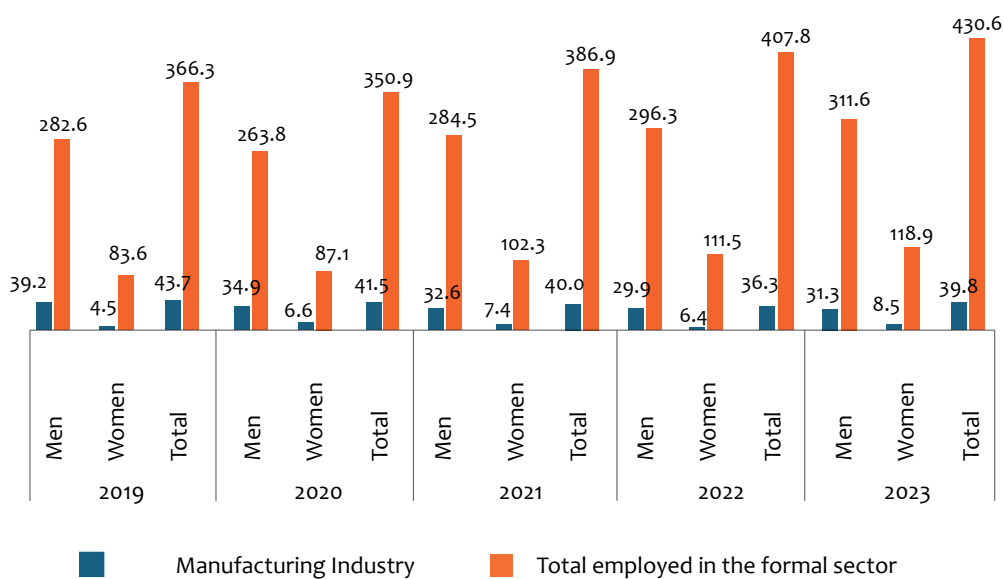


Source: TAK (2024)

On the other hand, among the smaller sectors in terms of the number of businesses are the chemical industry, metal processing, and machinery repair and installation. Conversely, the most employment-intensive industries are non-metallic minerals, food and beverages, and furniture manufacturing. In terms of gender, the industrial sector is still dominated by men, but recent years have shown a ris-

ing trend in female participation in employment. While in 2019 only 10% of employees in the industrial sector were women, in 2023 the participation increased to 21%⁹. On the other hand, the industrial sector’s contribution to overall employment in Kosovo remains low, with only about 10% of employed individuals working in this sector (Figure 12).

Figure 11: Number of employees in the industrial sector in Kosovo



Source: TAK (2024)

As the data above indicates, the industrial sector in Kosovo is characterized by the dominance of micro and small enterprises. The availability of adequate labour force remains an on-going challenge, while labour force migration poses a serious obstacle to meeting business needs. However, the industrial sector is continuously growing and has high export potential, with major destinations being countries

with significant diaspora concentrations. One of the main issues remains the current education system, which, both formal and informal, does not sufficiently address labour market demands. To address these challenges, it is essential investing in education and training the workforce as well as creating better working conditions to curb migration.

⁹ Labour market data published by the Kosovo Agency of Statistics (KAS)

FOOD PROCESSING AND BEVERAGE INDUSTRY

The food and beverage industry in Kosovo is dominated by micro and small enterprises, which make up the largest portion of the market and are a crucial part of the local economy. Most employees in this sector have a secondary education, indicating a lack of advanced expertise in many key areas. In 2023, there were 14,175 workers employed in this sector across 1,773 active enterprises in Kosovo. Knowledge and expertise in food processing technology, as well as requirements for food safety, are essential for the further development of the sector but are currently seen as barriers to growth. One of the biggest challenges this sector is facing is the availability of adequate labour force. Many companies struggle to find qualified employees who are necessary to meet production demands and ensure product quality. This shortage of adequate labour force constitutes a significant barrier to the growth and development of the food and beverage sector.¹⁰

Additionally, this sector, like others, faces challenges from unfair competition. Micro and small enterprises often encounter unfair competition from imported products due to subsidies for imported goods in their countries of origin or price reductions from producers (dumping prices). This competition threatens the sustainability and growth of businesses in this industrial sector. Nevertheless, despite these challenges, trade data suggest that the food and beverage sector is growing with high export potential. With the right investments in technology improvement and workforce training, this sector could achieve significant success in international markets.

To achieve this, it is crucial for the sector to focus on enhancing technological knowledge and meeting food safety requirements, making the food and beverage sector a key pillar of the national economy.

Figure 12: Trade exchanges in the food processing and beverage Industry (million euro)



Source: Kosovo Customs (2024)

¹⁰ Study on the Food Processing and Beverage Value Chain in Kosovo' (MINT & GIZ, 2023)
<https://mint.rks.gov.net/desk/inc/media/E360335D-5469-48BA-ACDF-E9DD77BBD147.pdf>

According to data from the Kosovo Customs, food and beverage products have experienced a continuous increase in the value of exported goods in recent years (Figure 11)¹¹. However, imports of goods in this sector have also increased, keeping the trade deficit at high levels. The main destinations remain the regional market (CEFTA) and the European Union (EU). It is noteworthy that the average growth rate of food and beverage exports from Kosovo to the EU is significantly higher than the growth rate of food and beverage imports into the EU (MINT & GIZ, 2023). This trend best reflects the sector's growth in the country despite the complex challenges it faces. Regarding the survey data on occupations and skills in this sector, the occupations with the

highest growth in demand are those directly involved in food processing and machine operation. Specifically, "751 - Food Processing Workers and Related Occupations" are projected to see a 40% increase in demand. These workers are essential for tasks such as food processing, fruit preservation, quality control, and recipe making. This high demand suggests a rapid expansion in food production capacities. Similarly, "816 - Food and Related Products Machine Operators" also have a projected growth of 40%. These operators are important for the operation of food machinery and ensuring safety protocols. The need for skilled operators underscores the industry's reliance on technology and automation in food production.

Table 6: Occupations with high demand

Codes	Occupations	% of Firms Employing in this Occupation	Projected Growth in Demand Over the Next Three Years	Relevant Skills for the Occupation
751	Food Processing Workers and Related Occupations	20.6	40	Make various types of food; Process and preserve fruits, vegetables, and similar foods; Distinguish different types of meat; Knowledge of recipes.
816	Food and Related Products Machine Operators	12.7	40	Operating and monitoring machinery; Adjusting, operating, and handling machinery and ovens; Mixing, extracting, pressing, combining, and separating food and liquids; Operating and maintaining equipment.

Source: Author's calculations based on survey data (2024)

¹¹ Trade data from Kosovo Customs, broken down into ten-digit tariff codes, have been converted from the Combined Nomenclature of the Harmonized System (HS) of trade data into the International Standard Industrial Classification (ISIC) using the official data harmonization tables from the World Integrated Trade Solutions of the World Bank. The conversion from ISIC to the Nomenclature of Economic Activities in the European Community (NACE Rev.2) has been applied. The same method has been applied across all the following sectors.

Occupations with moderate growth in demand are mostly related to management. “112 - Managing Directors and Chief Executives,” responsible for business leadership and planning, have a projected growth of approximately 22.37%.

However, occupations like “1211 - Financial Managers,” who possess skills related to financial management, are not expected to be in high demand in the coming years. This might be due to the already high number of graduates in these fields.

Table 7: Occupations with moderate demand

Codes	Occupations	% of Firms Employing in this Occupation	Projected Growth in Demand Over the Next Three Years	Relevant Skills for the Occupation
112	Managing Directors and Chief Executives	96.8	22.37	Management, planning, and work organization skills; Communication skills; Decision-making skills; Time management; Market knowledge; Ability to communicate in foreign languages.
94	Food Preparation Assistants	41.3	23.57	Food preparation; Kitchen safety; Basic cooking skills; Food safety and hygiene; Knowledge of kitchen equipment; Culinary knowledge.
1211	Financial Managers	23.8	20.87	Knowledge in finance; Skills in using accounting software; Knowledge of Excel; SKAK certification; Presentation skills.
6113	Food Technologist	20	21.79	Knowledge of food quality; Quality assurance; Laboratory skills.
243	Sales, Marketing, and Public Relations Professionals	19	20.77	Sales strategies; Consumer protection management; Data-driven analysis and decision-making; Event organization and public relations.
1321	Production Managers	7.9	24.28	Production Management; Process Improvement; Quality Control
421	Cashiers, Tellers, and Related Clerks	20.6	18.88	Money handling; Sales skills; Numerical skills; Attention to detail; Customer service skills.
332	Sales and Purchasing Agents	9.5	22.41	Sales negotiation; Customer relations; Market analysis; Market knowledge; Product knowledge; Time management and organizational skills.
1219	Business and Administration Services Managers, N.E.C.	3.2	21.07	Business administration; Strategic planning; Organizational skills; Knowledge of administration; Communication skills.

Occupations with lower growth in demand have relatively stable but slower projections, reflecting saturation in certain roles or slower expansion in smaller industry segments. For example, “512 - Cooks” have a projected growth of 19.64%, indicating that while cooks remain essential, the demand growth is slower, possibly due to saturation or automation in some culinary processes. “6130 - Mixed Crop Growers and Animal Breeders/Food Technologists of Plant and Animal Origin” show a growth of 14.29%, highlighting steady but not rapid expansion in primary food production. “1221 - Sales and Marketing Managers” have a growth rate of 13.77%, reflecting the need to lead sales and marketing strategies, although the growth is moderate. 95- Workers in sales and similar service roles show a growth rate

of 20.29%, indicating a sustained demand for sales and service workers who are essential for direct interactions with customers. 1324 - Supply, distribution, and related managers have a growth rate of 12.43%, reflecting a steady demand for efficient distribution. 242 - Management professionals show a growth rate of 15.58%, emphasizing the need for administrative professionals to ensure the smooth functioning of offices and communication. 1212 - Human resources managers show a growth rate of 15.77%, highlighting the need for human resource management focused on recruitment and employee relations. 1213 - Policy and planning managers show a growth rate of 17.77%, underlining the need for strategic planning and policy development to ensure the long-term success of the organization.

Table 8: Occupations with lower demand

Codes	Occupations	% of Firms Employing in this Occupation	Projected Growth in Demand Over the Next Three Years	Required skills for the occupation
512	Cooks	100	19.64	Food safety and sanitary practices; Menu design and recipe creation; Inventory control; Culinary skills; Creativity in food preparation.
6130	Mixed Crop Growers and Animal Breeders	25	14.29	Animal husbandry; Food safety and hygiene standards; Quality control and assurance; Packaging and labelling technologies; Knowledge of recipes; Food safety and hygiene standards; Quality control and assurance.
1221	Sales and Marketing Managers	15.9	13.77	Sales management; Marketing strategy; Customer relations; Sales strategy development; Market research and analysis; Digital marketing; Brand management; Promotional strategies
95	Street Workers and Similar Sales and Service Workers	15.9	20.29	Sales Techniques; Customer Service; Product Knowledge
1324	Supply, Distribution, and Related Managers	12.7	12.43	Supply Chain Management; Logistics; Inventory Control
242	Administration Professionals	11.1	15.58	Administrative Skills; Office Management; Communication Skills
1212	Human Resources Managers	7.9	15.77	Human resources management; Employee relations; Communication with workers; Knowledge of recruitment procedures; Motivational skills.
1213	Policy and Planning Managers	1.6	17.77	Policy Development; Strategic Planning; Analytical Skills

Source: Author's calculations based on survey data (2024)

Regarding new occupations in the food processing and beverage industry, they are mainly related to food safety, beverage production, and food packaging. As we see a gradual shift towards plant-based diets, specialists in this field will be in demand in the

coming years. Additionally, circular economy specialists will also be needed in this industry to design product life cycles. All these occupations require different levels of skills and education.

Table 9: Future occupations in food and beverage production

NACE Rev 2 Code ¹²	Code ISCO 08	Occupations	Required level of education	Required skills for the occupation
10	2263.2	Food Safety Specialist	Bachelor/VET	- Knowledge of HACCP standards (Hazard Analysis & Critical Control Point) - Ensuring compliance with regulations - Risk assessment of food products - Ability to communicate results - Maintaining accurate documentation related to quality assurance procedures
10	2265	Plant-Based Food Scientist	Master	- Advanced knowledge of food science (chemistry, microbiology, food processing technology) - Expertise in processing plant-based ingredients - Commitment to sustainable practices in food development and production
10	2163	Circular Economy Specialist	Bachelor	- Ability to understand and design systems considering the entire product lifecycle - Knowledge of sustainable materials - Creativity and innovation - Life cycle analysis of products - Design, planning, and organizing product testing
11	2145	Beverage Technologist	Bachelor	- Knowledge of beverage formulations - Ability to conduct laboratory analyses and experiments for quality, composition, and safety testing of beverages - Skills in creating and developing new products - Compliance with regulations - Evaluation and analysis of sensory characteristics of beverages, such as taste, aroma, and texture
11	2141	Packaging Specialist	Bachelor/VET	- Creating and developing effective packaging designs - In-depth knowledge of various packaging materials - Generating new packaging ideas using innovative technology and practices - Promoting environmentally friendly practices

¹² Nomenclature of economic activities in Europe

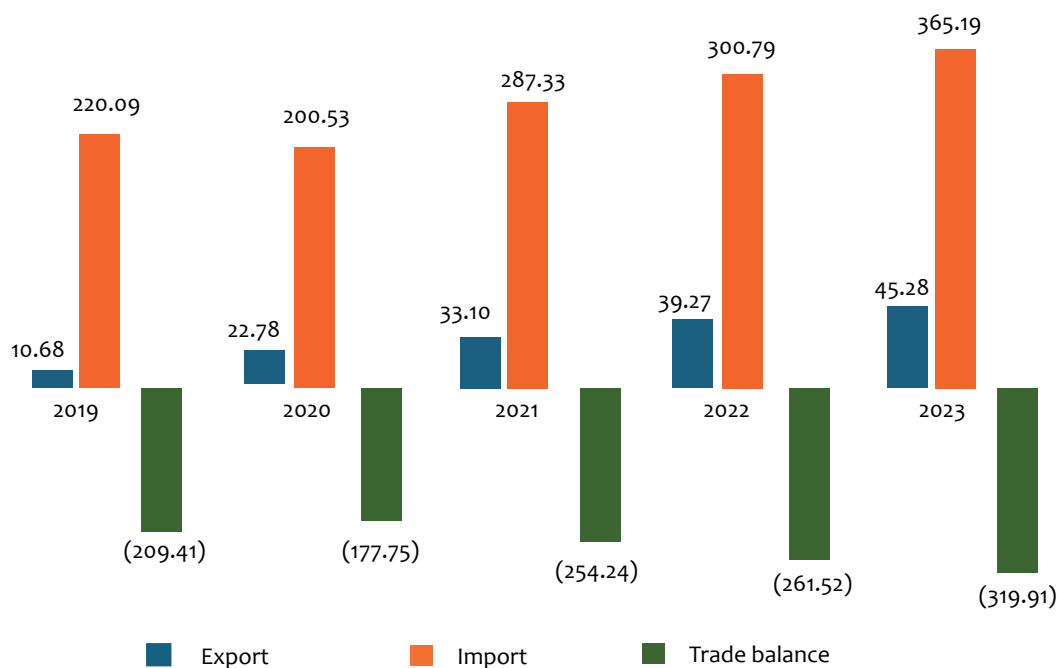
TEXTILE, CLOTHING AND LEATHER PRODUCTS PROCESSING INDUSTRY

Textile, clothing and leather products processing industry

Similar to the food and beverage sector, the textile, clothing, and leather products processing industry has also seen year-on-year growth in trade intensity. Exports have increased in recent years (from €10 million in 2019 to over €45

million in 2023), while imports have also risen, keeping the trade deficit in this industrial sector high (Figure 14). Additionally, this sector is dominated by micro enterprises, with 3,357 employees across 725 active enterprises in Kosovo (TAK, 2024).

Figure 13: Trade exchanges in the textile, clothing, and leather processing industry (million euro)



Source: Kosovo Customs (2024)

Despite its strong performance in export markets, the textile, clothing, and leather processing industry in Kosovo faces numerous challenges hindering its further development. One of the main obstacles is the lack of skilled and qualified human resources, a gap highlighted by past studies as well as data from the survey conducted for this study¹³. Many current workers lack the necessary skills to meet the producers' demands, creating a skills gap in the professional and technical abilities required to advance the sector. This issue is further complicated by the absence of adequate training and professional development programs that could enhance workers' competencies. In addition to the shortage of qualified human resources, the textile sector also struggles with challenges

related to raw material supply. This directly impacts productivity and efficiency in manufacturing enterprises, creating further barriers to industry growth. Companies frequently face delays and high costs associated with importing raw materials, which negatively affects their competitiveness in both domestic and international markets. Although the textile industry has made efforts to adapt to the latest trends and expand its presence in export markets, access to these markets remains challenging. Despite the efforts and results achieved, export potential is still limited due to restricted production capacities. Manufacturers often lack the necessary capacity to meet international market demands, affecting their ability to expand operations and increase profits.

¹³ Textile Industry Sector Profile <https://kiesa.rks-gov.net/desk/inc/media/7CAF0988-5BC9-4F9B-A7F4-BCE9D3733F33.pdf>

Textile products produced in Kosovo are primarily exported to European Union countries and CEFTA member states; however, the potential to expand these markets is limited. To improve this situation, further investments are needed in production capacities and in the training of human resources. Key regions where textile enterprises are concentrated include Prishtina, Ferizaj, Prizren, and Gjakova. These regions have a long history in the textile industry and offer a strong foundation for further sector development. However, to achieve sustainable growth, it is essential to address current challenges and implement clear strategies for human resource development

and improvement of production capacities. The survey data analysis shows that in the textile sector, high-demand occupations will include Leather Processing Workers (ISCO 7535), Sewing, Embroidery, and Related Workers (ISCO 7533), and Tailors, Dressmakers, and Hat Makers (ISCO 7531). These occupations are expected to experience significant growth rates of 35.07 percent, 40 percent, 33.68 percent, and 38.13 percent, respectively, over the next three years. The time to achieve full competence in these high-demand occupations typically ranges from 8 to 12 months.

Table 10: Occupations with high demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
7535	Leather Processing Workers	5.3	40	12	Sorting and classifying leather by colour, shade, size, and density; Cleaning the leather; Treating the leather and tanning them in a solution to turn them into finished leather; Tanning or dyeing the fur; Applying leather tempering
7533	Sewing, Embroidery, and Related Workers	100	33.68	10	Specialized skills in sewing and embroidery; Technical knowledge; Ability to monitor the quality of sewing and embroidery; Repairing defective or damaged parts; Mending holes, sewing tears, and torn seams
7531	Tailors, Dressmakers, and Hat Makers	100	38.13	12	Knowledge of different textile materials and processing techniques; Ability to create and modify clothing and accessory patterns; Ability to work with precision.

Source: Author's calculations based on survey data (2024)

Occupations with moderate demand in the textile sector include Sales and Marketing Managers (ISCO 1221), Textile, Fur, and Leather Machine Operators (ISCO 815), Plastic Products Machine Operators (ISCO 8142),

and Production Managers (ISCO 1321). These roles have predicted growth rates ranging from 22.06 percent to 30.71 percent. The time to achieve full competence for these roles typically ranges from 8 to 12 months.

Table 11: Occupations with moderate demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
1221	Sales and Marketing Managers	21.1	29.48	10	Sales planning and organization; Team management; Quality and safety control.
815	Textile, Fur, and Leather Machine Operators	7.9	30.71	12	Operating and monitoring machines that prepare fibres, spin, separate, twist, and wind threads and yarns from natural textile fibres; Operating and monitoring sewing machines to make, repair, stitch, and renovate textile garments; Operating and monitoring various machines that prepare leather or treat fur.
8142	Plastic Products Machine Operators	10.5	29.65	10	Technical and operational knowledge; Quality control; Operating and monitoring machines that cook and mix ingredients to create plastic materials.
1321	Production Managers	5.3	24.11	10	Planning and organizing; Team management; Quality and safety control.
3122	Production Supervisors	5.3	22.06	10	Production line management; Quality control; Efficiency and performance monitoring; Inventory and logistics management; Coordination and collaboration

Source: Author's calculations based on survey data (2024)

Future occupations in the textile, clothing, and leather products manufacturing sector will be characterized by a high integration of technology and innovation. Textile designers and stylists will use digital tools and artificial intelligence to create new and unique designs that cater to consumer tastes and needs.

Additionally, modern CNC machine operators will be in demand in the coming years to produce textile clothing. These new professions will require a combination of technical skills, creativity, and a commitment to sustainability and innovation.

Table 12: Future occupations in textile, clothing, and leather products manufacturing

NACE Rev 2 Code	Kodi ISCO 08	Occupations	Required level of education	Required skills for the occupation
13	2163	Textile Designer	Bachelor/VET	- Use of artificial intelligence in fashion design - Ability to create new fashion design ideas - Accuracy in analysing and creating design details - Understanding of textile production processes and materials - Knowledge of computer-aided design (CAD) software - Ability to predict and interpret future trends - Understanding written design and ability to communicate them
13	7340	CNC Machine Operator	VET	- Skills in operating and programming CNC machinery (torno or routers) - Understanding of machining principles, tools, and cutting parameters - Ability to read and interpret technical drawings, projects, and specifications - Use of CAD/CAM software and programming - Knowledge of maintenance techniques - Excellent attention to detail
14	3323	Stylist	Bachelor	- Analysing and interpreting market trends - Negotiating with buyers - Forecasting trends - Effective communication with clients - Analysing and managing client budgets
14	7543	Clothing Quality Control Inspector	Bachelor	- Ensuring clothing meet quality and safety standards - Careful analysis of clothing details - Expertise in materials and clothing characteristics - Effective communication with production team and management
15	2149	Leather Technologist	Bachelor	- Knowledge of leather processing - Implementation of quality control procedures - Analysing and interpreting data from leather testing - Knowledge of environmental regulations and standards related to leather processing

**WOOD PROCESSING AND PRODUCTS
MADE FROM WOOD, PAPER, AND
PAPER PRODUCTS INDUSTRY**

Wood processing and products made from wood, paper, and paper products industry

The wood processing industry in Kosovo has a unique structure, with 90% of businesses being micro (3,484 employees in 690 enterprises), primarily focusing on the production of kitchens and wooden furniture. These businesses play a crucial role in the local economy by providing employment and contributing to domestic production. One of the main challenges faced by the wood sector businesses in Kosovo is the alignment of candidate profiles with job requirements. Many businesses struggle to find workers with the necessary skills to meet their demands. This skills gap forces enterprises to invest in training and human resource development to enhance their production capabilities. Most employees in this sector have lower or secondary education, which may eventually affect production quality and efficiency.

This is because specialized skills like CAD software, CNC design and programming, and sawing are among the most in-demand in this sector (FEGO, 2022)¹⁴. These skills are essential for improving productivity and the quality of wood products. Companies that successfully utilize these technologies and skills gain a competitive advantage in the market. Although the sector faces challenges, it has high export potential, which has yet to be fully realized (Figure 14). Currently, German-speaking countries, where the Albanian diaspora is notably present, are the main destinations for exported products. This export potential could be better exploited if companies invest in enhancing skills and technology, thereby increasing competitiveness and the quality of their products in the international market.

Figure 14: Trade exchanges in the wood and paper processing industry (million euro)



Source: Kosovo Customs (2024)

¹⁴ Skill Needs Assessment of the Furniture Sector in Kosovo

<https://fego-kosovo.org/ep-content/uploads/2023/02/FEGO-Skills-Needs-Assessment-of-the-Furniture-Sector-in-Kosovo.pdf>

In conclusion, the wood processing industry in Kosovo faces significant challenges but also has substantial opportunities for growth. Investment in education and training of workers, as well as the adoption of new technologies, are crucial for the sector's expansion and success. In the wood and paper manufacturing sector, some occupations are expected to see significant growth over the next three years. Furniture Manufacturers and Similar Workers (ISCO 7522) are anticipated to experience a 40 percent increase in demand. Essential skills for this occupation include reading technical plans, manual dexterity, and technical skills related to programming and operating CNC machinery. Similarly, Woodworkers (ISCO 7521)

are expected to see a 39.11 percent increase in demand, emphasizing the need for skills in wood handling, technical expertise, and manual dexterity. Truck Drivers and Mobile Machinery Operators (ISCO 83) are also in high demand, with a predicted increase of 38.69 percent. Critical skills for these roles include vehicle operation, technical skills, and vehicle maintenance. Assemblers (ISCO 82), who require skills in reading technical drawings and sketches, technical skills, and the use of tools and machinery, are expected to see a 36.04 percent increase in demand. Factory Workers in Wood Processing and Paper Manufacturing (ISCO 817) are expected to see a 35.98 percent increase, requiring skills in wood processing, paper production, and technical abilities.

Table 13: Occupations with high demand

Codes	Occupations	% of firms employing in this occupation	Predicted demand increase for the next three years (%)	Time to full proficiency (months)	Required skills for the occupation
7522	Furniture makers and similar workers	13.5	40.00	12	Reading technical plans; Manual work; Programming and operating CNC machines; Furniture design skills; Painting wooden products
7521	Woodworkers	45.9	39.11	9	Wood treatment; Skills in using a saw; Operating equipment for wood treatment; Good knowledge of chemicals used in wood treatment; Skills in woodworking and carpentry
83	Drivers and mobile machinery operators	8.1	38.69	6	Vehicle operation; Technical skills; Vehicle maintenance
82	Assemblers	86.5	38.04	9	Reading technical drawings and sketches; Technical skills; Use of tools and machinery; Assembly skills; Organizational skills
817	Factory workers in wood processing and paper production	91.9	35.98	10	Wood processing; Assembly skills; Operation and maintenance of machinery; Quality control and assurance; Knowledge of materials; Knowledge of machinery

Source: Author's calculations based on survey data (2024)

The table also details the estimated time to reach full proficiency for each occupation in the high-demand category. This information provides insight into the duration required for workers to acquire the necessary skills and become fully competent in their roles. For example, Furniture Manufacturers and Similar Workers (ISCO 7522) are expected to require 12 months to reach full proficiency. Both Woodworkers (ISCO 7521) and Assemblers (ISCO 82) have an estimated proficiency time of 9 months. Truck Drivers and Mobile Machinery Operators (ISCO 83) can expect to reach full proficiency within approximately 6 months. Finally, Factory Workers in Wood Processing and Paper Production (ISCO 817) require an estimated 10 months to reach full proficiency. This additional information aids in planning targeted training and development programs to effectively address skill gaps. The demand for Sewing, Embroidery, and Similar Workers (ISCO 7533) is expected to grow by 34.93 percent. Key skills for this occupation include sewing, em-

broidery, using sewing machines, and creating designs. Machine Operators for Wood Processing (ISCO 7523) are expected to see a 29.71 percent increase, requiring skills in machine operation, wood processing, and technical expertise. Woodworkers, Furniture Makers, and Similar Workers (ISCO 752) are also expected to see a 28.9 percent increase in demand, highlighting the need for skills in wood handling, assembly, and manual dexterity. Operators of Stationary Machinery and Equipment (ISCO 818), who require skills in machine operation, quality control, and adherence to safety protocols, are expected to see a 28.36 percent increase in demand. Cleaners and Helpers (ISCO 91) will see a 25.29 percent increase, with important skills including cleaning, practical abilities, and manual dexterity. Paper Product Machine Operators (ISCO 8143) are expected to experience a 25.2 percent increase in demand, requiring skills in paper machinery operation, paper production, and quality control.

Table 14: Occupations with moderate demand

Codes	Occupations	% of firms employing in this occupation	Predicted demand increase for the next three years	Time to full proficiency (months)	Required skills for the occupation
7533	Sewing, embroidery, and similar workers	10.8	34.93	8	Sewing skills; Embroidery; Handwork; Use of sewing machines; Design creation.
7523	Workers for setting and operating wood processing machinery	94.6	29.71	10	Machine operation; Woodworking; Technical skills; Use of cutting tools; Reading technical drawings and sketches.
752	Woodworkers, furniture makers, and related occupations	51.4	28.9	10	Knowledge of materials; Wood treatment; Wood drying; Operating with cutting machinery; Time management.
818	Operators of stationary machinery and equipment	13.5	28.36	8	Machine operation; Quality control; Safety protocols
8143	Paper product machinery operators	2.7	25.2	9	Paper machinery operation; Paper production; Quality control

Source: Author's calculations based on survey data (2024)

Sewing, Embroidery, and Similar Workers (ISCO 7533) need approximately 8 months to reach full proficiency. Both Machine Operators for Wood Processing (ISCO 7523) and Woodworkers, Furniture Makers, and Similar Workers (ISCO 752) require around 10 months. Operators of Stationary Machinery and Equipment (ISCO 818) are expected to become fully competent in about 8 months, while Cleaners and Helpers (ISCO 91) need only 3 months. Finally, Paper Product Machine Operators (ISCO 8143) typically need 9 months to achieve full proficiency. Other occupations show more moderate demand growth. Administrative Professionals (ISCO 242), Sales Workers (ISCO 52), and Executive Managers (ISCO 112) are expected to see demand growth of 21.72 percent, 21.62 percent, and 20.86 percent, respectively. These roles emphasize administrative skills, office management, communication, leadership, strategic planning, and financial skills. Human Resources Managers (ISCO 1212) are expected to see a 19.42 percent increase in demand, focusing on skills in human resource

management, recruitment, and employee relations. Production Managers (ISCO 1321) are expected to see an 18.49 percent increase in demand, requiring skills in production management, process improvement, and quality control. Security Guards (ISCO 5414) are expected to see an 18.07 percent increase, with essential skills including security, supervision, and reporting. Financial Managers (ISCO 1211) will see a 17.7 percent increase, requiring skills in financial management, accounting, and analytical abilities. Sales and Marketing Managers (ISCO 1221) are expected to see a 16.4 percent increase, emphasizing sales management, marketing strategy, and customer relations.

Finally, Business and Administration Services Managers (ISCO 1219) are expected to see a 12.61 percent increase in demand, requiring skills in business administration, strategic planning, and organizational abilities. These moderate growth rates highlight the need for continued training and development in various administrative, managerial, and support roles in the wood and paper manufacturing sector.

Table 15: Occupations with lower demand

Codes	Occupations	% of firms employing in this occupation	Predicted demand increase for the next three years	Time to full proficiency (months)	Required skills for the occupation
242	Administrative professionals	27	21.72	6	Administrative skills; Office management; Communication skills
52	Sales workers	13.5	21.62	6	Sales; Customer service; Communication skills; Market knowledge
112	Managing directors and chief executives	97.3	20.86	12	Management, planning, and work organization skills; Communication skills; Decision-making skills; Time management; Market knowledge; Ability to communicate in foreign languages.
1212	Human resources managers	8.1	19.42	9	Human resources management; Recruitment; Employee relations
1321	Production managers	8.1	18.49	9	Production management; Process improvement; Quality control
5414	Security guards	2.7	18.07	2	Security; Supervision; Reporting
1211	Financial managers	8.1	17.7	12	Financial management; Accounting; Analytical skills
1221	Sales and marketing managers	10.8	16.4	9	Sales management; Marketing strategy; Customer relations
1219	Business and administration services managers, not elsewhere classified	8.1	12.61	6	Business administration; Strategic planning; Organizational skills

Source: Author's calculations based on survey data (2024)

Administrative Professionals (ISCO 242) and Sales Workers (ISCO 52) need approximately 6 months to reach full proficiency. Executive Managers (ISCO 112) and Financial Managers (ISCO 1211) require around 12 months. Human Resources Managers (ISCO 1212) and Production Managers (ISCO 1321) are estimated to need around 9 months. Security Guards (ISCO 5414) are expected to become fully competent within about 3 months. Sales and Marketing Managers (ISCO 1221) usually need 9 months, while Business and Administration Services Managers (ISCO 1219) require 6 months.

The wood and paper production industry will be defined by technological advancements and a commitment to sustainability. Wood technology and sustainability engineers will develop new technologies for processing wood and paper, creating more sustainable products with minimal environmental impact. In the paper production field, recycling and reuse specialists will develop new processes to maximize the use of recycled materials and minimize waste. However, quality assurance experts and production machinery operators will be crucial in this industry.

Table 16: Future occupations in the production of wood and wood products and the production of paper and paper products

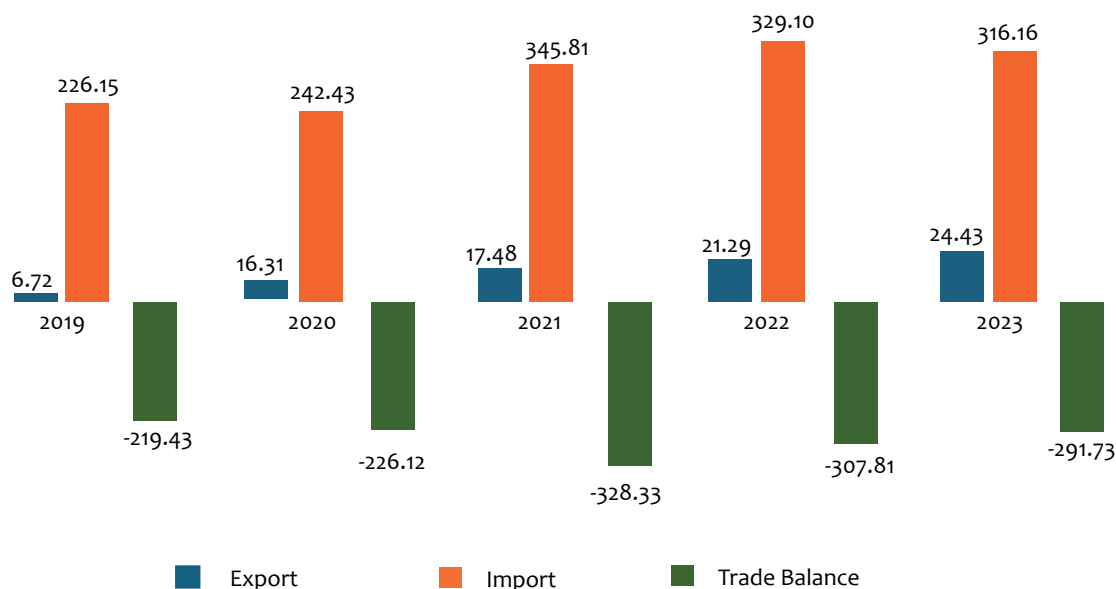
NACE Rev 2 Code	Code ISCO 08	Occupation	Required level of education	Required skills for the occupation
16	2142	Wood Technology Engineer	Bachelor	- Designing and analysing wooden structures. - Ability to use computer-aided design (CAD) programs. - Problem-solving skills..
16	2149	Wood Sustainability Technologist	Bachelor	- Implementing and promoting sustainable practices. - Knowledge of environmental regulations and standards. - Developing and implementing innovative technologies and practices. - Ensuring wood products meet quality standards and sustainability practices.
16	7543	Wood Quality Control Inspector	VET	- Ability to carefully analyse wood and identify defects. - Expertise in wood characteristics. - Problem-solving skills during quality control processes. - Effective communication with team and management.
17	2149	Paper Technologist	Bachelor	- Expertise in paper production processes and technologies. - Ability to perform tests and analyses in the lab. - Ensuring paper products meet quality standards and technical specifications. - Knowledge of sustainable practices and environmental regulations.
17	3139	Paper Machine Operator	VET	- Ability to operate and adjust paper production machinery. - Monitoring and analysing production process details. - Knowledge of paper characteristics. - Ability to follow and implement safety protocols.
17	2141	Paper Recycling Specialist	VET	- Expertise in paper recycling techniques and methodologies. - Knowledge of environmental laws and standards related to paper recycling. - Ability to identify and resolve issues during the recycling process.

CHEMICAL PRODUCTS PROCESSING INDUSTRY

The chemical industry in Kosovo is relatively small, with only 164 active enterprises and an average of 1,088 registered workers in 2023 (TAK, 2024). Currently, the industry faces critical challenges that hinder its development and full potential. One major issue is the lack of up-to-date technical knowledge and limited market understanding. Many producers lack access to the latest technological information and product improvement methods, making it difficult to compete in international markets. Another challenge is the quality of products in the chemical sector, which often falls short of standards. To meet international standards, manufacturers need to invest in improving their production processes and technologies. However, limited knowledge on technology enhancement and new product development remains a significant barrier. Producers need training and access to new innovations to improve product quality and competitiveness (MINT & GIZ, 2023b). Another factor negatively affecting the development

of the chemical industry is the education system. The current system is not prepared to meet the sector's future demands, lacking updated and practical lessons that could help train new, qualified professionals for the industry. This creates a gap between the demand for specific skills and the availability of qualified personnel in the labour market. However, the chemical sector in Kosovo is growing and has high potential to meet domestic needs and exploit export markets. According to recent trade data, over 24 million euros worth of goods were exported from this sector last year, with impressive growth in export value (Figure 15). This potential can be realized by taking appropriate steps to improve technical knowledge, product quality, and technological capabilities. Investments in education and training, collaboration with international experts, and the adoption of advanced technologies can help the sector achieve new levels of success and contribute to the country's economy.

Figure 15: Trade exchanges in the chemical products processing industry



Source: Kosovo Customs (2024)

¹⁵ Study of the Chemical Processing Value Chain in Kosovo
<https://mint.rks-gov.net/desk/inc/media/oACCD2C5-2FE3-415E-A6BE-1ACBDDFCE422.pdf>

Similar to food products and beverages, the average growth rate of chemical products exports from Kosovo to the EU during 2017-2021 was higher than the growth rate of imports of these products into the EU (MINT & GIZ, 2023b). In the chemical products sector, the occupation with the highest demand is factory and machinery operators for chemical products. (ISCO 8131). This occupation is expected to have a growth

rate of 32.49 percent over the next three years. The high demand for this role highlights the need for skilled operators in controlling chemical plants, with technical skills and adherence to safety protocols. These skills are essential to ensure the efficient and safe operation of chemical production facilities. The estimated time to achieve full competence for this role is 10 months.

Table 17: Occupations with high demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
8131	Chemical Plant and Machine Operators	80	32.49	10	Chemical plant control; Technical skills; Safety protocols

Source: Author’s calculations based on survey data (2024)

Occupations with moderate demand growth in the chemical products sector include Administrative Professionals (ISCO 242), Chemical Plant Controllers (ISCO 3133), Business and Administration Services Managers (ISCO 1219), and Cleaners and Helpers (ISCO 91). These roles are expected to grow between 20.44 percent and 27.39 percent over the next three years. Administrative Professionals (ISCO 242) and Business and Administration Services Managers (ISCO 1219) are essential for ensuring

efficient business operations and strategic planning. Chemical Plant Controllers (ISCO 3133) play a crucial role in managing financial aspects, accounting, and analytical tasks, while Cleaners and Helpers (ISCO 91) are important for maintaining hygiene and safety in chemical plants. The estimated time to achieve full competence for these roles ranges from 6 to 12 months, reflecting the complexity and diversity of the required skills.

Table 18: Occupations with moderate demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
112	Managing Directors and Chief Executives	100	24.11	12	Management, planning, and work organization skills; Communication skills; Decision-making skills; Time management; Market knowledge; Ability to communicate in foreign languages
3133	Chemical Processing Plant Controllers	28	20.44	10	Operating laboratory equipment (spectrometers, chromatography); Monitoring equipment for chemical analysis; Quality control
242	Administrative Professionals	24	27.39	6	Knowledge of administrative procedures; Knowledge of procurement procedures; Computer skills
91	Cleaners and Helpers	8	21.79	3	Cleaning skills; Physical abilities; Dedication to work
1219	Business and Administration Services Managers, not elsewhere classified	4	20.46	12	Analytical skills; Business management skills; Knowledge of administration; Communication skills

Source: Author's calculations based on survey data (2024)

Occupations with the lowest demand growth in the chemical products sector include Chemical Engineering Technicians (ISCO 3116), Production Supervisors (ISCO 3122), Financial Managers (ISCO 1211), Chemical and Physical Science Technicians (ISCO 3111), and Executive Managers (ISCO 112). These roles are expected to have growth rates between 10.06 percent and 18.5 percent over the next three years. These occupations are vital to the overall functioning of the sector, involving tasks such as supervision, financial management, laboratory work, and strategic leadership. The time to achieve full competence for these roles is generally longer, reflecting the

higher levels of expertise and experience required, with estimated times ranging from 8 to 12 months. Environmental chemists and chemical process engineers are expected to develop processes and products that minimize the use of harmful substances and reduce toxic waste by using renewable and environmentally friendly chemicals. Green chemistry specialists will be crucial in ensuring that materials and processes are sustainable and have minimal environmental impact. Additionally, professionals in hazardous metal removal will work to decommission and clean up all hazardous materials according to strict safety and environmental standards.

Table 19: Future occupations in chemical products production

NACE Rev 2 Code	Code ISCO 08	Occupation	Required level of education	Required skills for the occupation
20	2145	Chemical Processes Engineer	Bachelor	- Ability to analyse and improve chemical processes to enhance efficiency. - Expertise in using analytical techniques to monitor and analyse materials. - Capability to identify and resolve issues occurring during chemical processes.
20	2113	Environmental Chemist	Bachelor	- Knowledge of laws and standards governing environmental protection. - Monitoring and analysing environmental pollutants. - Ability to identify and assess potential risks to the environment and public health.
20	2143	Green Chemistry Specialist	Bachelor	- In-depth knowledge of sustainable chemicals. - Understanding of green chemistry strategies to minimize waste. - Ability to conduct life cycle assessments to evaluate the environmental impact of products. - Knowledge of relevant standards and certifications, such as ISO 14001, related to environmental management.
20	3119	Hazardous Materials Removal Worker	VET	- Management of hazardous materials. - Knowledge of safety and health protocols. - Use of personal protective equipment (PPE). - Decommissioning and cleaning. - Knowledge of regulations for hazardous materials.

RUBBER AND PLASTICS PROCESSING INDUSTRY

The rubber and plastics industry in Kosovo plays a significant role in the local industry, offering a wide range of products including construction items, table and kitchen equipment, packaging materials, and other plastic products. Major products in this sector include doors and windows, followed by window blinds, pipes, and profiles. In 2023, the sector employed 4,555 workers across 684 businesses throughout Kosovo (TAK, 2024). The sector has seen substantial growth in recent years and holds

high export potential. The main exports in this industry are doors and windows, which make up the largest portion of exports, followed by window blinds, pipes, and profiles. The total value of exported processed rubber and plastic products in 2023 was over 100 million euros, with an average annual growth rate of about 30% over the past five years (Figure 16). This development indicates a high demand for products from this industry in international markets, especially in the construction sector.

Figure 16: Trade exchanges in the rubber and plastics processing industry



Source: Customs of Kosovo (2024)

Despite experiencing steady growth, the sector faces significant challenges that hinder further expansion and competitiveness in foreign markets. One major challenge is the shortage of skilled workers, which negatively impacts businesses' ability to increase production capacities and meet export market demands. Additionally, workforce migration poses a substantial barrier to fully exploiting the sector's potential. Many skilled workers are leaving the country in search of better opportunities abroad, creating a significant gap in the labour market. Nevertheless, the rubber and plastics industry in Kosovo has high potential for further development and expanding

its presence in international markets. Regarding the survey data on high-demand occupations in the rubber and plastics sector, the occupations with the highest demand include Plastic Machine Operators (ISCO 8142), Packaging Machine Operators (ISCO 8183), Assemblers (ISCO 82), and Rubber Machine Operators (ISCO 8141). These roles are expected to experience a significant increase in demand over the next three years, with estimated growth rates of 41.21 percent, 40.55 percent, 36.81 percent, and 34.82 percent, respectively. The high demand for these occupations underscores the growing need for skilled workers in production and packaging processes.

Plastic Machine Operators (ISCO 8142) and Packaging Machine Operators (ISCO 8183) are crucial for ensuring efficient production lines, requiring expertise in machine operation, technical skills, and adherence to quality standards. Assemblers (ISCO 82) play a vital role in constructing and fitting various components, requiring strong technical skills and problem-

solving abilities. Rubber Machine Operators (ISCO 8141) are essential for producing high-quality rubber products, necessitating experience in machine operation and quality control. The increasing demand for these occupations highlights the importance of technical skills and operational efficiency in the rubber and plastics sector.

Table 20: Occupations with high demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
8142	Plastic Machine Operators	95	41.21	12	Putting plastic machines into operation; Skills in plastic coating of materials; Monitoring the production process
8183	Packaging, Wrapping, and Labelling Machine Operators	25	40.55	10	Operating with packaging machines; Packaging and labelling; Packaging knowledge
8141	Rubber Machine Operators	42.5	34.82	10	Operating with rubber machinery; Production of rubber products; Quality control
723	Machine Mechanics and Repairers	2.5	31.77	8	Repairing machinery; Knowledge about electricity; Knowledge related to engine operation

Source: Author's calculations based on survey data (2024)

Occupations with moderate demand growth in the rubber and plastics sector include Machine Repair and Maintenance Workers (ISCO 723), Plastic Machine Operators (ISCO 2141), Production Managers (ISCO 1321), Sales and Marketing Professionals (ISCO 243), Waste Collectors and Elementary Workers (ISCO 96), Industrial Engineers (ISCO 8142), and Mechanical Engineering Technicians (ISCO 3115). These roles are expected to see demand growth ranging from 21.9 percent to 31.77 percent over the next three years. Machine Repair and Maintenance Workers (ISCO 723) are essential for maintaining operational efficiency, requiring skills in machine repair, technical expertise, and problem-solving. Plastic Machine Operators (ISCO 2141) need to ensure quality control and technical precision in their operations.

Production Managers (ISCO 1321) oversee the entire production process, focusing on process improvement and quality assurance. Sales and Marketing Professionals (ISCO 243) are vital for driving business growth, requiring strong marketing strategies and customer relationship management skills. Waste Collectors and Elementary Workers (ISCO 96) play an important role in maintaining cleanliness and environmental standards. Industrial Engineers (ISCO 8142) and Mechanical Engineering Technicians (ISCO 3115) are critical for designing and maintaining efficient production systems. The sustained demand for these occupations emphasizes the need for a balanced mix of technical, managerial, and operational skills in the sector.

Table 21: Occupations with moderate demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
2141	Plastic Machine Operators	15	25.02	8	Plastics machinery operation; Quality control; Testing and job specification skills; Plastics plant skills
1321	Production Managers	45	24.66	12	Production management; Process improvement; Quality control
243	Sales, Marketing, and Public Relations Professionals	10	24.06	9	Marketing; Sales strategy; Public relations; Knowledge of market analysis; Advertising; Customer relationship management
96	Waste Collectors and Other Elementary Workers	12.5	23.06	6	Waste collection; Ability to distinguish recyclable waste from non-recyclable waste
8142	Industrial and Production Engineers	10	21.9	12	Setting up plastic machines; Skills in coating materials with plastic; Monitoring the production process
3115	Mechanical Engineering Technicians	20	21.81	9	Repair and maintenance of machines; Computer operation to set up equipment; Mechanical and electrical diagnostics.

Source: Author's calculations based on survey data (2024)

Occupations with the lowest demand growth in the rubber and plastics sector include Cleaners and Helpers (ISCO 91), Financial Managers (ISCO 1211), Executive Managers (ISCO 112), Sales and Marketing Managers (ISCO 1221), Administrative Professionals (ISCO 242), and Finance Professionals (ISCO 241). These roles are expected to see growth rates between 14.02 percent and 19.07 percent over the next three years. Cleaners and Helpers (ISCO 91) are essential for maintaining workplace hygiene and safety, requiring practical cleaning skills and attention to detail. Financial Managers (ISCO 1211) and Finance Professionals (ISCO 241) play a critical role in financial planning, accounting, and analysis, en-

suring the financial health of the organization. Executive Managers (ISCO 112) and Sales and Marketing Managers (ISCO 1221) are responsible for strategic planning, leadership, and driving business growth. Administrative Professionals (ISCO 242) support various business functions through effective office management and communication skills. Despite the lower predicted demand growth, these roles remain vital for the overall functioning and strategic direction of the sector. The stable but lower growth rate reflects the on-going need for these occupations while indicating that demand is more consistent compared to high and moderate demand categories.

Table 22: Occupations with lower demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
1211	Financial Managers	30	18.45	12	Financial management; Accounting; Analytical skills
112	Managing Directors and Chief Executives	92.5	16.62	12	Leadership; Strategic planning; Financial skills
1221	Sales and Marketing Managers	10	15.8	9	Sales management; Marketing strategy; Customer relations
242	Administrative Professionals	95	14.47	6	Administrative skills; Office management; Communication skills
241	Finance Professionals	2.5	14.02	6	Finance; Accounting; Analytical skills
91	Cleaners and Helpers	7.5	19.07	3	Cleaning; Practical skills; Manual dexterity
1211	Financial Managers	30	18.45	12	Financial management; Accounting; Analytical skills

Source: Author's calculations based on survey data (2024)

The table for the rubber and plastics sector includes an additional column detailing the estimated time required for workers to achieve full competence in their respective roles. This information provides valuable insights into the duration needed to acquire essential skills and become proficient in these occupations. It also aids in designing education programs and training courses. For example, Plastic Machine Operators (ISCO 8142) and Industrial Engineers (ISCO 8142) need approximately 12 months to achieve full competence. These roles require a comprehensive understanding of industrial processes, machine operation, and quality control, necessitating a longer training period. Packaging Machine Operators (ISCO 8183) and Rubber Machine Operators (ISCO 8141) are estimated to need around 10 months to become fully competent, reflecting the technical skills and operational expertise required. Assemblers (ISCO 82), who need about 9 months, must develop strong technical skills and problem-solving abilities to efficiently assemble components. Cleaners and Helpers (ISCO 91) require only 3 months to achieve full competence due to the practical nature of their tasks.

Financial Managers (ISCO 1211) and Executive Managers (ISCO 112) typically need 12 months to reach full competence, considering strategic planning, financial management, and leadership skills.

In addition to the aforementioned occupations currently existing in businesses in Kosovo, future occupations in the production of rubber and plastic products will focus on innovation and sustainability, including roles such as Polymer Specialist, Sustainable Packaging Engineer, and Recycling Specialist. Polymer Specialists will need skills in recognizing and understanding the structure of polymers and developing laboratory analyses designed to reduce environmental impact.

Sustainable Packaging Engineers will create packaging solutions that minimize the use of single-use plastic materials and maximize the use of recyclable materials. Recycling Specialists will concentrate on improving the processes of collecting, sorting, and reusing rubber and plastic products by developing new technologies that increase recycling efficiency and reduce landfill waste.

Table 23. Future professions in the production of rubber and plastic products

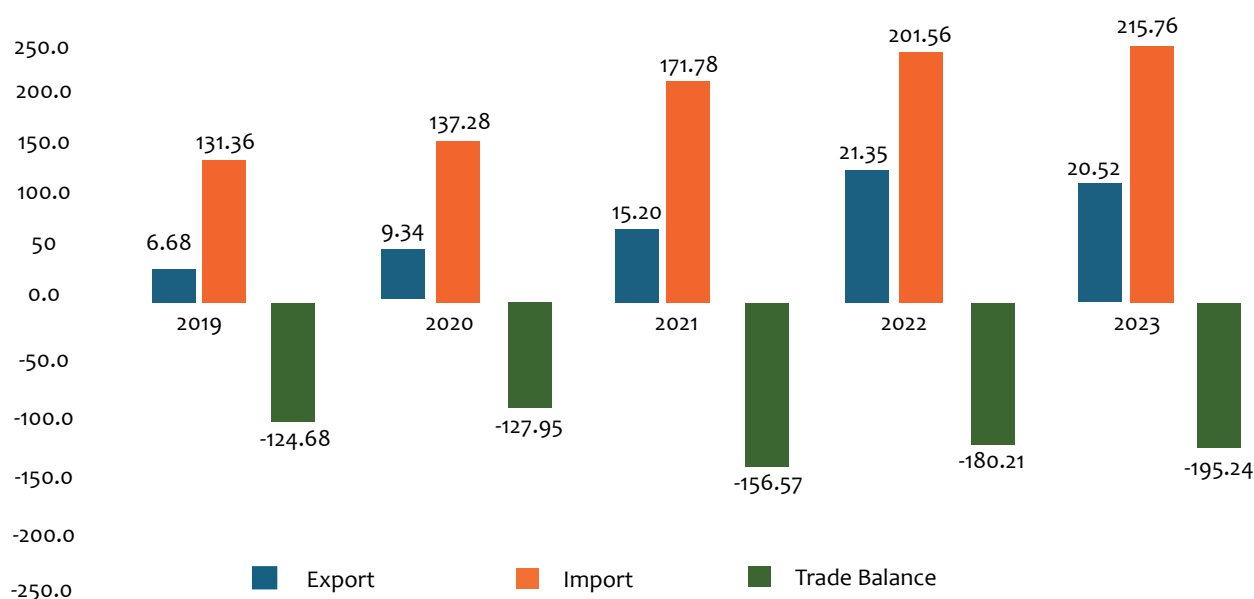
NACE Rev 2 Code	Code ISCO 08	Occupation	Required level of education	Required skills for the occupation
22	2113	Polymer Specialist	Bachelor/VET	- Expertise in the structure, syntax, and characteristics of polymers - Proficiency in using laboratory equipment to analyse polymer materials - Ability to perform various tests to assess quality, performance, and durability
22	2141	Sustainable Packaging Engineer	Bachelor/Master	- Ability to develop and design packaging that is functional, attractive, and suitable for products - Knowledge of types of materials used in packaging - Ability to integrate sustainability principles into packaging design
22	N/A	Recycling Specialist	Bachelor	- Expertise in recycling techniques and methodologies - Knowledge of laws and standards related to recycling and waste management - Ability to effectively communicate with teams, stakeholders, and the public

NON-METALLIC MINERAL PRODUCTS INDUSTRY

Non-metallic mineral products in Kosovo are relatively under-researched, and official data on this sector are also incomplete and often inaccurate. This sector includes the production of glass and glass products (e.g., flat glass, hollow glass, fibres, technical glassware, etc.), ceramics, tiles, and fire clay products, as well as cement, ranging from raw materials to finished products. According to official data from the Tax Administration of Kosovo (TAK), there were 609 active businesses in this sector in 2023, employing 5,663 workers.

However, a more detailed analysis of the data reveals that the figures from the TAK include businesses producing various products in the construction sector that do not fall into the aforementioned categories. Regarding trade data, exports from active enterprises in these categories over the past two years were over 20 million euros per year, while imports were ten times higher, creating a significant deficit in this sector (Figure 18). This deficit may reflect the significant potential of this sector to meet local demand initially, as well as to increase its presence in export markets.

Figure 17: Trade exchanges in the non-metallic mineral products industry



Source: Kosovo Customs (2024)

High-demand occupations in the non-metallic minerals sector include Sheet Metal Workers, Metal Structure Preparers, and Related Workers (ISCO 721). These roles are expected to show growth rates of 42.63 percent, over the next three years. These positions are essential for tasks involv-

ing metalworking, vehicle operation, and assembly work. The estimated time to achieve full competence for these high-demand occupations typically ranges from 8 to 12 months due to the required technical skills and practical experience.

Table 24: Occupations with high demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
721	Sheet Metal Workers, Structural Metal Preparers, Welders, and Related Workers	82.8	42.63	12	Skills in cutting, shaping, and processing metals; Knowledge of welding techniques; Ability to understand and apply required sketches in necessary operations; Knowledge of standards and aligning products with them; Minimizing risks through the application of safety protocols.

Source: Author's calculations based on survey data (2024)

Occupations with moderate demand (predicted growth between 20 and 30 percent)

Sales and Marketing Managers (1221) are in high demand, with a predicted growth of 29.43 percent over the next three years. Currently, 10.3 percent of firms have workers in this occupation, and the time to achieve full competence is 10 months. Mechanics and Machinery Repairers (723) also show a high demand growth of 29.16 percent, with a presence in 13.8 percent of firms and a training time of 10 months. Information and Communi-

cation Technology Services Managers (133) have a predicted growth rate of 22.02 percent, are present in 3.4 percent of firms, and require 12 months for full training. Mining and Metallurgical Technicians (3117) have a predicted growth of 21.51 percent, with a presence in 20.7 percent of firms and a training time of 12 months. Financial Managers (1211) show a demand growth of 20.87 percent, are present in 34.5 percent of firms, and require 10 months for full training.

Table 25: Occupations with moderate demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
1221	Sales and Marketing Managers	10.3	29.43	10	Knowledge of economics; Managerial skills; Communication skills; Ability to communicate in foreign languages
723	Mechanics and Machinery Repairers	13.8	29.16	10	Ability to identify and diagnose technical problems; Knowledge of specific production processes; Repair and maintenance of machinery; Skills in implementing safety procedures
133	Information and Communication Technology Services Managers	3.4	22.02	12	Managerial skills; Knowledge of the latest ICT systems; Communication skills; Ability to manage networks, servers, and databases

3117	Mining and Metallurgical Technicians	20.7	21.51	12	Knowledge of mining, cutting, processing, and refining of minerals; Ability to operate specialized machines and equipment such as conveyors, crushers, and mineral refining installations; General engineering knowledge
1211	Financial Managers	34.5	20.87	10	Knowledge in finance; Ability to use accounting software; Knowledge of Excel; SKAK Certificates

Source: Author's calculations based on survey data (2024)

Occupations with lower demand include Mining, Construction, Production, and Transport Workers (ISCO 93), General Administrative Officers (ISCO 411), Cleaners and Helpers (ISCO 91), Production Managers (ISCO 1321), Process Control Technicians (ISCO 3139), Chief Executive Officers (ISCO 112), Human Resources Managers (ISCO 1212), Supply, Distribution, and Related

Managers (ISCO 1324), Production Supervisors (ISCO 3122), and Administrative Professionals (ISCO 242). These roles have predicted growth rates below 20 percent over the next three years. The time to achieve full competence for these occupations usually ranges from 6 to 12 months.

Table 26: Occupations with lower demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
93	Mining, Construction, Production, and Transport Workers	44.8	20.3	12	Physical skills and endurance; Ability to operate excavator machinery and stone equipment; Quality control of extracted products; Classification, loading, unloading, and storage of materials
411	General Administrative Officers	27.6	19.83	10	Organizational skills; Communication skills; Knowledge of foreign languages
1321	Production Managers	24.1	19.19	12	Managerial skills; Communication skills with workers; Knowledge of production processes; Knowledge of machinery; Understanding of the physical and chemical properties of mineral materials.
1324	Supply, Distribution, and Related Managers	3.4	15.99	10	Planning, execution, and supervision of the entire supply chain process; Inventory management; Ability to plan and optimize logistics processes; Communication skills.
3122	Production Supervisors	37.9	12.92	10	Skills for organizing the production process; Staff supervision; Communication skills; Knowledge of non-metallic mineral production processes; Cutting and shaping techniques.

Source: Kosovo Customs (2024)

Non-metallic mineral products engineers will be crucial in this industry in the coming years. Their expertise should focus on optimizing processes to assess environmental impact and employing advanced microscopic techniques

and thermal analyses. Sustainability engineers will ensure that the extraction and processing of materials are sustainable and comply with environmental regulations, minimizing negative impacts on the environment and promoting the circular economy.

Table 27: Future professions in the production of non-metallic mineral products

NACE Rev 2 Code	Code ISCO 08	Occupation	Required level of education	Required skills for the occupation
23	2149	Non-Metallic Materials Engineer	Bachelor	- Expertise in the characteristics and uses of non-metallic materials - Optimization of processes - Ability to assess the environmental impact of non-metallic materials - Expertise in advanced techniques such as electron microscopy, spectroscopy, and thermal analysis
23	N/A	Sustainability Engineer	Bachelor/Master	- In-depth knowledge of material types and their characteristics - Understanding and application of environmental protection regulations and standards - Ability to promote and implement sustainable practices and strategies to minimize environmental impact

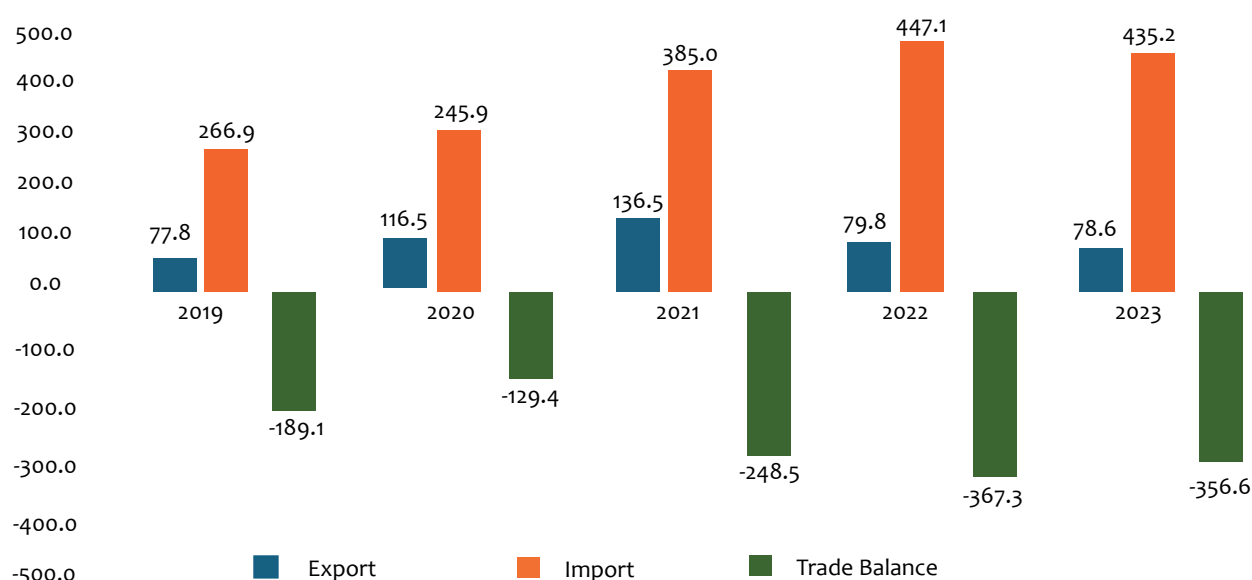
**BASE METAL AND FABRICATED
METAL PRODUCTS PROCESSING
INDUSTRY**

5.7 Base metal and fabricated metal products processing industry

Although the metal processing sector has shown positive development in recent years, it remains relatively fragile. The sector is undergoing noticeable transformation, with global value chain models, involving many local enterprises are changing (MINT & GIZ, 2023c)¹⁶. The total number of active businesses in metal processing industry last year was 843, with 4,588 employees. Despite being considered a growing sector, in 2023 goods worth approximately 79 million euros were exported, based on data from the Customs of Kosovo (Figure 19). However, this sector also faces various challeng-

es that hinder the full exploitation of its potential. Most products and parts produced in this sector have limited added value, affecting their ability to significantly contribute to the national economy. On the other hand, a major competitive advantage of this sector is the quality and price of the produced and parts products. These aspects make Kosovo's metal processing industry attractive to international markets. At the same time, the sector is highly dependent on international trends and external demands, which can impact its long-term stability and sustainability.

Figure 18. Trade exchanges in the base metals and metal processing industry



Source: Customs of Kosovo (2024)

This sector in Kosovo offers a wide range of products, meeting various market demands. This diversity gives the sector a competitive advantage globally, allowing it to adapt to market changes and demands. However, one of the main challenges facing this sector is the shortage of skilled workforce (MINT & GIZ, 2023c).

This shortage can negatively impact the industry's ability to meet market demands and maintain product quality at the levels required by international markets. Despite these challenges, metal production in Kosovo represents a sector with good growth and development opportunities, particularly in terms of exports.

¹⁶ Analysis of the Metal Processing Value Chain in Kosovo
<https://mint.rks-gov.net/desk/inc/media/905AE2CF-3CF3-4EE8-9A5A-833198A36CDA.pdf>

In the metal processing sector, the occupations with the highest demand include Blacksmiths, Toolmakers, and Related Workers (ISCO 722), Sheet Metal Workers, Structural Metal Preparers, and Related Workers (ISCO 721), and Metal Processing and Finishing Plant Workers (ISCO 812). These occupations are expected to see significant demand growth over the next three years, with predicted increases of 36.48 per-

cent, 36.31 percent, and 35.03 percent, respectively. These roles are critical in the production and finishing of metal products, requiring skills in blacksmithing, tool making, sheet metal work, and quality control. The estimated time to achieve full competence for these high-demand occupations ranges from 9 to 12 months, reflecting the technical skills and precision needed in these fields.

Table 28: Occupations with high demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
722	Blacksmiths, Toolmakers, and Related Workers	2.5	36.48	12	Blacksmithing; Tool making; Adjuster (metalworking); Technical skills
721	Sheet Metal Workers, Structural Metal Preparers, Welders, and Related Workers	97.5	36.31	10	Sheet metal work; Welding; Manual work; Welding inspection; Adjuster (metalworking)
812	Metal Processing and Finishing Plant Workers	92.5	35.03	9	Metal processing; Product finishing; Welding; Quality control

Source: Author’s calculations based on survey data (2024)

Occupations with moderate demand growth in the metal processing sector include Financial Managers (ISCO 1211), Executive Managers (ISCO 112), Production Managers (ISCO 1321). These roles are expected to see growth between 20.49 percent and 24.84 percent over the next three years. These managerial positions are essential for over-

seeing financial planning, strategic direction, production processes, and business administration. The time to achieve full competence for these occupations is generally around 12 months, reflecting the need for extensive knowledge in management, strategic planning, and financial analysis.

Table 29: Occupations with moderate demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Required skills for the occupation	Time to full competence (months)
1211	Financial Managers	7.5	24.84	Knowledge in finance; Skills in using accounting software; Knowledge of Excel; SKAK certificates; Presentation skills	12
112	Managing Directors and Chief Executives	92.5	24.58	Management, planning and work organization skills; Communication skills; Decision-making skills; Time management; Market knowledge; Ability to communicate in foreign languages	12
1321	Production Managers	10	22.57	Management, planning and work organization skills; Communication skills; Decision-making skills; Quality control	12

Source: Author's calculations based on survey data (2024)

Occupations with lower demand growth in the metal processing sector include Mechanical Engineering Technicians (ISCO 3115), Metal Production Process Controllers (ISCO 3135), and Mechanical Technicians (ISCO 3118). These roles are expected to have growth rates between 12.68 percent and 18.04 percent over the next three years.

These technical positions are vital for maintaining and repairing machinery, controlling production processes, and ensuring operational efficiency. The time to achieve full competence for these roles is usually between 10 and 12 months, reflecting the technical expertise and problem-solving skills required.

Table 30: Occupations with lower demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Required skills for the occupation	Time to full competence (months)
1211	Mechanical Engineering Technicians	10	18.04	Mechanical engineering; Technical skills; Repair and maintenance	12
112	Metal Production Process Controllers	27.5	17.35	Production process control; Technical skills; Problem-solving	10
1321	Mechanical Technicians	30	12.68	Mechanics; Technical skills; Metal construction design; Repair and maintenance	12

Source: Author's calculations based on survey data (2024)

The time to achieve full competence varies across different occupations within the metal processing sector. High-demand occupations, such as blacksmiths and sheet metal workers, require approximately 12 months achieving full competence due to the specialized technical skills needed. Managerial roles with moderate demand also typically require 12 months of training to develop the necessary strategic and financial management skills. Technical occupations with lower demand, while still requiring substantial training, generally reach full competence within 10 to 12 months, reflecting the complex technical skills and problem-solving abilities needed in these positions. This detailed information is essen-

tial for designing effective training programs to ensure that the workforce is adequately prepared to meet the demands of the metal processing sector. Metallurgical engineers, in addition to understanding the structure and characteristics of metals, they should also have skills in using techniques to interpret the results of metallurgical tests. A bachelor's degree is required for this role. On the other hand, metal turning technicians, although currently in demand, will continue to be needed in the future, but with enhanced skills and creativity. In the future, a profession related to 3D printing will be very valuable, as it will be responsible for creating new technologies for modelling and designing products.

Table 31. Future professions in the production of metals and fabricated metal products

NACE Rev 2 Code	Code ISCO 08	Occupation	Required level of education	Required skills for the occupation
24	2146	Metallurgical Engineer	Bachelor	- Knowledge of the structure and characteristics of metals - Improvement of efficiency and effectiveness in metallurgical processes - Use of techniques to understand and interpret metallurgical test results - Monitoring and inspecting the quality of metallurgical products
24	8121	Metal Twisting Technician	High school diploma/VET	- Understanding processes such as mold cooling and hot forging - Attention to detail during the metal twisting process - Inspection and testing of twisted metal products - Problem-solving during the metal twisting process
25	8219	Metal Fabricator	High school diploma/VET	- Knowledge in methods such as TIG, MIG, and arc welding - Skills in using CAD software - Understanding of the characteristics and composition of metallic materials - Abilities in planning, organizing, and supervising metal production projects
25	7223	CNC Machine Operators	High school diploma/VET	- Includes creating and modifying code for CNC - Skills in operating and maintaining CNC machines - Proficiency with CAD/CAM software - Ensuring that processed products are accurate and defect-free - Problem-solving during CNC machine operation
25	7214	Welding Technician	High school diploma/VET	- Proficiency in various welding techniques - Attention to detail to ensure welds are accurate and meet project specifications - Ensuring welds meet quality standards and technical specifications
25	3115	3D Metal Printing Specialist	Bachelor	- Use of 3D printing technologies - Understanding of various metal processing and construction methods - Skills in using CAD/CAM software

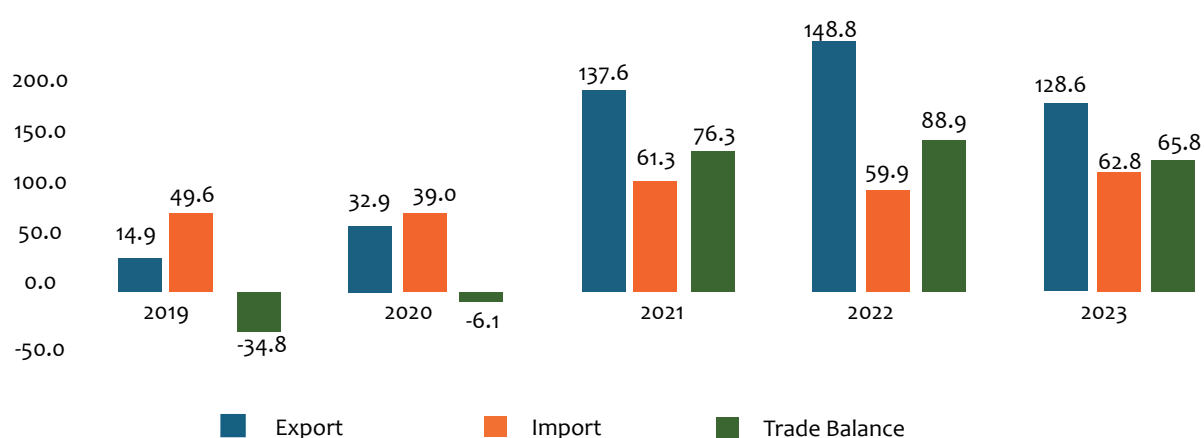
FURNITURE PROCESSING INDUSTRY

5.8 Furniture Processing Industry

The furniture sector in Kosovo has demonstrated outstanding performance, being the only industrial sector with a positive trade balance over the past three years (Figure 19). This achievement is primarily due to the export of specific products, with mattresses being the leading item. This narrow focus on particular products has allowed companies to concentrate on improving quality and increasing pro-

duction capacities, making them competitive in the international market. Furniture manufacturing is considered the most labour-intensive sector, with an average of 8 employees per enterprise in 2023, totalling 5,532 employees in 712 companies (TAK, 2024). Compared to 2022, this sector has experienced a slight decrease of approximately 20 million euros.

Figure 19: Trade exchanges in the furniture processing industry (million euro)



Source: Customs of Kosovo (2024)

Advanced manufacturing technology is another key factor contributing to the sector's success. Facing global competition, Kosovar companies have been compelled to adopt new technologies and improve their production processes. This includes process automation, which requires advanced computer skills from workers. To meet this demand, many companies have initiated training and upskilling programs for their employees, often in collaboration with trade partners to ensure that international standards are met. One of the current challenges facing the sector is high employee turnover, which can create instability and negatively impact overall business productivity.

This phenomenon makes it difficult to maintain a stable and skilled workforce, potentially affecting production continuity and quality. To address this challenge, it is crucial for compa-

nies to offer better working conditions and professional development opportunities to increase employee retention and strengthen the sector overall. In the furniture sector, high-demand occupations include Woodworkers (ISCO 7521), Machine and Stationary Plant Operators (ISCO 818), Drivers and Mobile Machinery Operators (ISCO 83), Wood Machine Operators (ISCO 7523), and Furniture Makers and Related Workers (ISCO 7522). These occupations are expected to experience growth rates of 38.91 percent, 37.61 percent, 36.48 percent, 36.3 percent, and 35.92 percent, respectively, over the next three years.

These roles are essential for various functions in the wood and furniture industry, including wood treatment, machine operation, and furniture production. The time to achieve full competence for these high-demand occupation typically ranges from 8 to 12 months.

Table 32: Occupations with high demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
7521	Woodworkers	50	38.91	10	To have a good knowledge of the qualities of wood; To know how to use the saw; Operating equipment for wood treatment; Good knowledge of the chemicals used for wood treatment
818	Machine and Stationary Plant Operators	46.9	37.61	12	Knowledge of machine programs; Operating machinery; Ability to read and interpret technical manuals; Identifying technical problems and solving them
7523	Wood Machine Operators	50	36.3	12	Assembly skills; Operation of woodworking machinery; Use of cutting tools; Reading technical drawings and sketches
7522	Furniture Makers and Related Workers	96.9	35.92	8	Furniture designer with CAD software; Assembly skills; Quality control and assurance; Maintenance and operation of machinery

Source: Author's calculations based on survey data (2024)

Moderate-demand occupations include Production Managers (ISCO 1321), Woodworkers, Furniture Makers, and Related Occupations (ISCO 752), Assemblers (ISCO 82), Sales, Marketing, and Public Relations Professionals (ISCO 243), and Production Supervisors (ISCO 3122). These roles have predicted growth rates ranging from 27.01 percent to 30.95 percent.

The time to achieve full competence for these roles typically ranges from 8 to 12 months, reflecting the need for specific skills and practical experience in various fields, including production management, wood processing, assembly, marketing, and supervision of production processes.

Table 33: Occupations with moderate demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
1321	Production Managers	28.1	30.95	12	Knowledge of all business operation processes; Coordination of workers; Production control; Identifying problems and solving them; Communication skills
752	Woodworkers, Furniture Makers, and Related Occupations	68.8	28.82	10	Knowledge of materials; Wood treatment; Wood drying; Operating with cutting machinery; Time management
82	Assemblers	93.8	28.4	10	Assembly skills; Reading technical drawings and sketches; Using of tools and machinery; Organizational skills
243	Sales, Marketing, and Public Relations Professionals	6.3	27.75	12	Communication skills; Creativity; Designing advertisements
3122	Production Supervisors	9.4	27.01	10	Good coordination among workers; Planning and organizing of work

Source: Author's calculations based on survey data (2024)

Lower-demand occupations include Administrative Professionals (ISCO 242), Financial Managers (ISCO 1211), Sales and Marketing Managers (ISCO 1221), Chief Executive Officers (ISCO 112), Finance Professionals (ISCO 241), Business and Administration Services Managers (ISCO 1219), and Cleaners and Helpers (ISCO 91).

These roles have predicted growth rates below 20 percent, ranging from 10.41 percent to 22.93 percent. The time to achieve full competence for these occupations typically ranges from 6 to 12 months, reflecting the need for general skills and less specialized training.

Table 34: Occupations with lower demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
242	Administrative Professionals	18.8	22.37	10	Knowledge of Microsoft Office; Communication skills; Well organized; Good time management
1211	Financial Managers	21.9	20.5	12	Knowledge in finance; Skills for using accounting software; Knowledge of Excel; SKAK certificate; Presentation skills
1221	Sales and Marketing Managers	31.3	17.17	10	Product sales skills; Market knowledge; Advertising and sales skills; Customer communication skills
112	Managing Directors and Chief Executives	93.8	15.45	12	Management, planning and work organization skills; Communication skills; Decision-making skills; Time management; Market knowledge; Ability to communicate in foreign languages
241	Finance Professionals	6.3	15.4	10	Good knowledge of finance; Knowledge of Excel; Knowledge of economics; Managerial skills
1219	Business and Administration Services Managers, not elsewhere classified	6.3	15.05	12	Skills in business management; Knowledge of administration; Communication skills

Source: Author's calculations based on survey data (2024)

Future occupations, such as smart furniture engineers and 3D printing technicians, will be at the forefront of transforming the furniture and manufacturing industry. Smart furniture engineers will design and integrate intelligent technologies into furniture, creating interactive and automated environments that enhance comfort and functionality in living and work spaces. These professionals will work

with sensors, home automation systems, and IoT-connected technologies to develop furniture that can monitor and respond to the environment and user preferences. On the other hand, the 3D printing technicians will utilize advanced additive manufacturing technologies to create customized furniture and components, enabling complex designs and products tailored to specific client requirements.

Table 35: Future occupations in furniture manufacturing

NACE Rev 2 Code	Code ISCO 08	Occupation	Required level of education	Required skills for the occupation
31	2152	Smart Furniture Engineer	Bachelor	- Knowledge in design and implementation of electronic systems - Skills and knowledge in programming languages such as C++, Python, or Java - Familiarity with Internet of Things (IoT) technology - Proficiency in CAD software - Skills in engineering mobile devices
31	3118	3D Printing Technician	Bachelor	- Understanding and knowledge of manufacturing processes - Knowledge of engineering technology and applications - Skills in operating and controlling 3D printing equipment - Analytical and problem-solving skills - Ability to collaborate and communicate effectively within a team - Skills in quality analysis and performance evaluation

INSTALLATION AND REPAIR OF MACHINERY AND EQUIPMENT

5.9 Installation and Repair of Machinery and Equipment

This sector includes the specialized repair of goods produced in the manufacturing sector to restore machinery, equipment, and other products to operational condition. Although categorized among the industrial manufacturing sectors according to NACE activity

classification, businesses registered in this sector in Kosovo primarily provide repair services for vehicles and electrical equipment. According to the business registry, as of 2023, there are 141 registered businesses with a total of 224 employees.

Figure 20: Trade in machinery and equipment installation and repair services



Source: Kosovo Customs (2024)

The small weight of this sector within Kosovo's industry is also illustrated by trade data in services. According to data on trade in machinery and equipment installation and repair services (Figure 20) published by the Central Bank of Kosovo (CBK), businesses in this sector did not export any services during the years 2018-2022. On the other hand, the import of such services exceeded 6 million euros in 2022, which may indicate a lack of well-established businesses providing specialized machinery and equipment installation and repair services in the manufacturing process.

In the equipment repair and assembly sector, high-demand occupations include Machine and Stationary Plant Operators (ISCO 818) and Mechanics and Machinery Repairers (ISCO 723). These occupations are expected to experience growth rates of 38.94 percent and 30.13 percent, respectively, over the next three years. These roles are essential for machine operation, quality control, and ensuring safety protocols. The time to achieve full competence for these high-demand occupations typically ranges from 8 to 12 months.

Table 36: Occupations with high demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
818	Machine and Stationary Plant Operators	81.00%	38.94	10	Skills in the maintenance of stationary engines; Knowledge in furnace monitoring; Knowledge of electrical cables
723	Mechanics and Machinery Repairers	90.50%	30.13	12	Machinery maintenance; Machinery repair

Source: Author's calculations based on survey data (2024)

Moderate-demand occupations include Sales, Marketing, and Public Relations Professionals (ISCO 243), Mechanical Engineering Technicians (ISCO 3118), Electronics Engineering Technicians (ISCO 3114), Electrical Engineering Technol-

ogists (ISCO 215), Chief Executive Officers (ISCO 112), and Financial Managers (ISCO 1211). These roles have predicted growth rates ranging from 21.16 percent to 29.33 percent. The time to achieve full competence for these roles typically ranges from 8 to 12 months.

Table 37: Occupations with moderate demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
3118	Mechanical Engineering Technicians	4.80%	23.28	10	Computer operation to activate the equipment; Mechanical and electrical diagnostics
3114	Electronics Engineering Technicians	14.30%	22.37	12	Knowledge of electrical technology; Ideas for developing new systems
215	Electrical Engineering Technologists	9.50%	21.73	10	Knowledge of electrical technology; Ideas for developing new systems
112	Managing Directors and Chief Executives	95.20%	21.25	12	Management, planning and work organization skills; Communication skills

Source: Author's calculations based on survey data (2024)

Lower-demand occupations include Administrative Professionals (ISCO 242) and Mechanical Engineering Technicians (ISCO 3115). These roles have predicted growth rates below 20

percent, ranging from 14.04 percent to 16.43 percent. The time to achieve full competence for these occupations typically ranges from 6 to 12 months.

Table 38: Occupations with lower demand

Codes	Occupations	% of firms with workers in this occupation	Predicted demand growth for the next three years	Time to full competence (months)	Required skills for the occupation
242	Administrative Professionals	9.50%	16.43	8	Organizational skills; Communication skills; Event planning; Knowledge of industry practices
3115	Mechanical Engineering Technicians	4.80%	14.04	10	Maintenance and repair techniques Equipment installation and configuration

Source: Author's calculations based on survey data (2024)

Mechanical engineering technicians, field service engineers, and machinery and equipment repair and installation specialists will be crucial for supporting and advancing industrial and manufacturing infrastructure. Mechanical engineering technicians will specialize in diagnosing, maintaining, and improving mechanical systems, using advanced technology and analytical tools to ensure the efficient and safe operation of industrial equipment. Field service engineers

will be responsible for troubleshooting and providing on-site technical support, ensuring that machinery and equipment operate optimally and minimizing production disruptions. Machinery and equipment repair and installation specialists will play a key role in installing and configuring new machinery, as well as repairing existing equipment, ensuring that all systems meet the highest performance and safety standards.

Table 39: Machinery and equipment repair and installation

NACE Rev 2 Code	Code ISCO 08	Occupation	Required level of education	Required skills for the occupation
33	3115	Mechanical Engineering Technicians	VET	- Ability to use and maintain mechanical parts and systems - Skill in analysing and solving technical problems - Knowledge of the function and structure of machinery - Skills in control and preventive maintenance - Knowledge of Safety Protocols implementation
33	3115	Field Service Engineer	Bachelor	- Skills in identifying and solving technical problems for machinery and equipment - Ability to communicate with clients - Customer service skills for handling specific requests - Knowledge of machinery operation and maintenance - Problem-solving and analytical skills
33	3115	Robotics Maintenance Specialist	Bachelor	- Knowledge of electronic systems and components - Ability to diagnose and resolve technical issues

6. Vocational Education and Training and Dual Education in Kosovo

6.1 Vocational Education and Training

Industrial trends and increasing market competition demand a skilled and professional workforce with the competencies needed to meet market demands. Vocational Education and Training (VET) institutions, in collaboration with businesses, play a key role in preparing new professionals for the labour market. Based on these developments, the VET system in Kosovo has received significant attention in recent years, not only from policymakers but also from the private sector, business associations, and development partners. The educational system in Kosovo is regulated through primary and secondary legal acts (administrative instructions) and strategic documents.

The Education Strategy (2022-2026) is the main document for the development of education, including VET as one of the most important sectors in upper secondary education. This section provides an overview of the current VET system in Kosovo, including the governing and providing institutions within this system, as well as the fields and profiles offered by VET institutions. Additionally, through a detailed analysis, this chapter offers a snapshot of the current state of implementing Dual Education as a new model in the VET field in Kosovo. Finally, this analysis reflects some of the key challenges faced by the VET system from both educational and business perspectives.

6.2 Management of the VET System

Theoretical learning in VET institutions and professional practice in businesses are two key components on which the VET concept is based. For effective regulation and management of

the VET system, relevant institutions at both central and local levels have specific roles and responsibilities, including:

- Ministry of Education, Science, Technology, and Innovation (MESTI)
- National Qualifications Authority (NQA)
- Agency for Vocational Education, Training, and Adult Education (AVETA)
- Employment Agency of the Republic of Kosovo (EARK)
- Municipal Directorates of Education (MDE)

Vocational Education and Training primarily refers to levels 3 and 4 according to the National Qualifications Framework of the Republic of Kosovo (NQF) and the International Standard Classification of Education (ISCED). Currently, there are 113 approved Occupation Standards

(OS) by the National Qualifications Authority (NQA) for various profiles and qualification levels. VET institutions offer profiles depending on the market needs in the region/municipality where they operate. These profiles can be categorized into seven fields and levels.

Table 40: Levels and fields according to ISCED 2011 and ISCED-F 2013

Program	Level	Code	Fields and Codes According to ISCED/NQF
Upper Secondary Education - Vocational Education and Training	ISCED 3/ISCED 4	353/354	Business, Administration & Law 04 Information and Communication Technology (ICT) 06 Engineering, Manufacturing & Construction 07 Agriculture, Forestry, Fishing & Veterinary 08 Health & Welfare 09 Services 10 Arts and Humanities 02

* ISCED/SNKA: International Standard for Classification of Education (ISCED)

6.3 Vocational Education and Training Institutions (VETI)

The primary aim of Vocational Education and Training (VET) institutions is to prepare individuals for the labour market, aligning with both national and broader economic development needs. Currently, the VET sector operates through a network of 72 public schools and six Centres of Competence (CoCs), representing approximately 59% of public educational institutions in upper secondary education, as well as several private providers accredited by the National Qualifications Authority (NQA). In addition to the Centres of Competence managed by the Agency for Vocational Education, Training, and Adult Education (AVETAE), VET institutions (schools) are, according to legal provisions, under the authority of the Municipal Directorates of Education (MDE). These institutions primarily offer three-year formal qualifications (grades 10, 11, and 12) but also provide level 5 qualifications according to the National Qualifications Framework (NQF).

Additionally, these institutions offer adult education in specific profiles depending on the needs and demands of young people. This form of education addresses specific categories of adults who need to enhance their skills due to new labour market requirements or to upgrade their existing knowledge through formal certification facilitated by the VET system. As public institutions, these are financed by the state budget, and the majority of them provide instruction in the Albanian language. However, it is important to note that in regions with students from minority communities in Kosovo, instruction is also provided in other languages depending on ethnic affiliation and the number of students. This represents an equitable and inclusive approach, offering opportunities for the development of professional skills and competencies of students, with the aim of addressing labour market needs.

Table 41: Public educational institutions by level and type

Level and Type of Institution	No.	%
Number of public educational institutions at the pre-university level	1,004	
Number of educational institutions at the upper secondary level	121	11.6%
Number of public vocational educational institutions	72	59%
Number of Centres of Competence	6	
Number of Adult Education Centres	7	N/A

Source: Education Statistics in Kosovo (2022-2023)

Regarding the number of students, unlike previous years when vocational schools were a second choice for students (and parents), they have now become the most sought-after institutions.

Currently, 54% of students have chosen vocational schools for their further education compared to only 46% continuing their studies in general high schools, as shown in the following table:

Table 42: Number of students in upper secondary education by type of school

	Total	%	Gymnasium	%	Public VETI	%
No. of students in higher secondary education	63,029	100%	29,023	46%	34,006	54%
Male	31,799	N/A	12,177	N/A	19,622	58%
Female	31,230	N/A	16,846	N/A	14,384	42%

Source: Education Statistics in Kosovo (2022-2023)

6.4 Dual Education

Dual Education refers to a model that combines classroom learning with practical work experience in businesses. In this approach, students spend part of their educational time receiving theoretical instruction at school, while the other part is dedicated to practical work in a business setting. This model has proven highly successful in various countries, particularly in German-speaking ones. Based on these international practices, Kosovo has incorporated the Dual Education model into its legal framework. Specifically, Article 6, paragraph 3.4 of the Vocational Education and Training (VET) Law stipulates that “the implementation of dual forms of education and vocational training is permitted in VET institutions...” Despite this legal provision, which has been in effect since 2013, Kosovo did not start implementing Dual Education until 2022.

Prior to this, practical work was predominantly conducted within school workshops. In 2020, an administrative instruction was issued to regulate and implement Work-Based Learning (WBL) as a model combining theoretical and practical education. This step marks a significant shift towards integrating practical experience with academic learning in Kosovo’s vocational education system.

Given the favourable new conditions in the business environment, Kosovo began piloting Dual Education in the 2022/2023 academic year with four profiles: 1. Chef; 2. Hairdresser; 3. Host/hostesses; 4. Bricklayer. Starting from the 2023/2024 academic year, Dual Education has expanded to include eight additional profiles, bringing the total number of profiles implementing Dual Education to twelve:

1. Carpenter
2. Auto Mechanic
3. Chef
4. Metal Processing
5. Hairdresser
6. Bricklayer
7. Hospitality and Tourism
8. Plumbing, Sanitation, and Heating
9. Electrician
10. Textile – Tailor
11. Aesthetics
12. Retail and wholesale

A reform-oriented approach to the current system, creating appropriate conditions and opportunities for the implementation of Dual Education, has resulted in this model being relatively successfully applied in VET institutions. In the 2023/2024 academic year, Dual

Education was offered in 12 profiles across 22 schools in 14 municipalities. Despite the challenges faced by this new education model in Kosovo, approximately 700 students have been placed in nearly 200 companies, where they continue to benefit from Dual Education.

Table 43: Schools and municipalities implementing Dual Education

1	VETI “Shtjefen Gjeçovi”	Prishtina
2	VETI “Pjeter Bogdani”	Ferizaj
3	THS “Lutfi Musiqi”	Vushtrri
4	VETI “Arkitekt Sinani”	Mitrovica
5	VETI “Adem Gllavica”	Lipjan
6	Fan Noli	Podujeva
7	7 Shtatori	Prishtina
8	Skender Luarasi	Suhareka
9	11 Marsi	Prizren
10	Qendra e Kompetencës	Skenderaj
11	Tafil Kasumaj	Deçan
12	VETI “Faik Konica”	Ferizaj
13	Zenel Hajdini	Ferizaj
14	VETI “Kadri Kusari”	Gjakova
15	IAAP “Sahit Baftiu”	Gjilan
16	Mehmet Isai	Gjilan
17	VETI “Fehmi Ldrovci”	Drenas
18	VETI “Hasan Prishtina”	Mitrovica
19	VETI “QK 11 Marsi”	Prizren
20	VETI Abdyl Ramaj	Suhareka
21	VETI Bahri Haxha	Vushtrri
22	Ymer Prizreni	Prizren

Transitioning from the existing traditional education system to the Dual Education model primarily requires the adaptation and alignment of curricula and other educational materials to meet the demands of the Dual Education format and ensure quality throughout the process. Based on the analysis of the profiles mentioned earlier, curricula for these profiles have been largely updated and adapted through close collaboration with representatives from various enterprises.

The process of revising curricula necessarily involves the development of additional pedagogical documents to operationalize Dual education in a comprehensive and successful manner. Therefore, in addition to focusing centrally on deepening involvement and collaboration with the private sector, the development and drafting of relevant guides to assist educational teachers and instructors in enterprises must be an integral part of the full implementation of Dual Education. In addition to the necessary reforms in teaching and learning and the development of pedagogical materials, to further strengthen Dual Education, the Government of the Republic of Kosovo established the Executive Commission for the Development of the Vocational Education and Training (VET) System in 2022. This commission is primarily composed of ministers from relevant education and labour ministries. Within this commission, two task forces have been established: one for Governance of Vocational Education and Training and the other for the Development and Implementation of Dual Education.

To benefit from the experiences of developed countries, a memorandum of cooperation was signed with the Besa Foundation based in Germany. Starting in 2023, an awareness campaign has begun (though not yet sufficient), and to enhance private sector engagement and collaboration, a cooperation agreement has been signed between the Kosovo Chamber of Commerce (OEK) and the Ministry of Education, Science, Technology, and Innovation (MESTI). As the largest business representative organization in the country, the Kosovo Chamber of Commerce

This ensures that the curricula are in line with current labour market needs and pedagogical requirements. Based on international practices, representatives from the private sector within relevant industries consistently assist in identifying the competencies and skills required by employers. They also help determine the technologies and work methods, ensuring that curricula reflect current developments in their industries.

(OEK), through its membership, should play a crucial role in raising awareness among businesses about the importance of their active involvement in implementing Dual Education and encouraging close collaboration with educational institutions. This will ensure that businesses address the issue of professional workforce and the gaps between their needs and the skills acquired through educational institutions.

The contractual relationship between students and businesses for practical training in companies, along with the coverage of accident insurance by central and local institutions (Municipal Directorates of Education), as provided for, will ease the burden on businesses and motivate them to participate in this system.

As demonstrated by practices in various countries, the implementation of Dual Education requires a comprehensive approach involving policymakers, educational institutions, business associations, and enterprises, and Kosovo cannot be an exception in this process. Collaboration with the private sector and the involvement of enterprises in the Dual Education system remains one of the key areas in this process.

At the same time, this remains one of the challenges faced not only by Kosovo as a new implementer of this system but also by countries with extensive experience in this field. In addition, monitoring the profiles implemented in this system and continuously reviewing them, with the possibility of adding or removing a profile depending on labour market demands, is another challenge that the managing and providing institutions of VET will face.

Survey results related to Dual Education show that awareness of the dual education system in Kosovo is relatively high, with 63.9% of respondents being aware of it. The current involvement of businesses in this system is lower, with only 22.2% of businesses participating. However, the interest in hosting students within this system is high, with 76.2% of respondents expressing interest. These results indicate a good basis for increasing business involvement in the Dual Education system in Kosovo, with

considerable interest from them to support this initiative. The survey results also highlight a lack of awareness about vocational and educational training programs that include work-based learning in Kosovo, with 67.8% of respondents not informed about these opportunities. However, a large majority of respondents (72.2%) are interested in participating in these programs, suggesting significant potential for increasing participation and support for these initiatives if they become more widely known and accessible.

7. Concluding Remarks

Analysing skills gap in the labour market is essential for designing policies aimed at addressing challenges and improving mechanisms for aligning supply and demand in the labour market. This study aims to provide

a clear overview of business needs through a detailed sector analysis, highlighting skills gap across nine different sectors in Kosovo's industry. The key findings from this study are as follows:

- The industrial sector in Kosovo is dominated by micro and small enterprises, with the majority of employees having a secondary education level, indicating a significant lack of advanced expertise and specialized skills.
- The industrial sector is one of the fastest-growing sectors in Kosovo, with high export potential. Exports in the industrial sectors included in this analysis have increased in recent years despite the challenges faced by the industry overall in the country. Specifically, the food and beverage industry is identified as a sector with high export and development potential but faces significant challenges, including a lack of expertise in process technology and food safety. To fully capitalize on the export potential, further investments are needed to improve technological know-how and meeting standards.
- The report highlights that a significant portion of businesses in Kosovo face major difficulties in finding qualified workers, especially in technical and managerial occupations. Despite many surveyed businesses reporting increased turnover over the past year, the lack of adequately qualified labour force remains a major barrier to further development.
- Evidence from primary data reveals a lack of systematic analysis of skills gap among most businesses, which could negatively impact the alignment of employee skills with specific business needs.
- While about one-third of the surveyed businesses aim to increase employment, data also show that most recruitment is made through personal and family connections, with recommendations and family ties constituting a large percentage. Public job advertisements are also an important method, whereas channels such as employment offices, networking with educational institutions, and recruitment agencies are less frequently used.
- According to survey results, most businesses prefer training courses that last a maximum of 5 days, indicating a preference for short, intensive training sessions.
- One of the major challenges highlighted in this study is work force migration, a phenomenon affecting more than half of the surveyed businesses. Work force departure due to migration is a significant issue for most businesses, with over half reporting this problem.

- Results show that most businesses (59%) lack a clear overview of the training offered by providers in Kosovo, highlighting a need for improved communication and information about training opportunities. Key barriers to better cooperation between businesses and training providers include trainings relevance, content updates, duration and cost of training, and trainers' qualification. Addressing these barriers could enhance collaboration and the effectiveness of training programs for businesses in Kosovo.
- The lack of standardized human resource management practices remains a long-lasting issue for businesses in the country; only a small number of businesses have suitable structures for recruiting and managing employees.
- Awareness of the dual education system in Kosovo is relatively high; nearly two-thirds of surveyed businesses are aware of its implementation in Kosovo. However, business participation in this system is relatively low, with only 22% of surveyed businesses across all sub-sectors involved. On the other hand, interest in hosting students within this system is high, with over three-quarters of surveyed businesses expressing interest in participating in the dual system. These results indicate a solid foundation for increasing business involvement in Kosovo's dual education system.
- The survey results also indicate a lack of awareness about vocational and educational training programs that include work-based learning in Kosovo. However, the majority of businesses are interested in participating in these programs, suggesting significant potential for increasing participation and support for these initiatives if they become more well-known and accessible.
- To meet the demands for advancing the production sector and overall economic growth, European countries are identifying emerging professions that will shape the future labour market and enhance competitiveness. These roles are primarily driven by technological innovations, including data analysts, artificial intelligence specialists, and robotics engineers. Additionally, new EU policies on green energy and environmental sustainability have led to jobs such as renewable energy technicians and sustainability consultants. Future professions in the production industry will require a shift from traditional roles to those focused on new technologies, technical expertise, and automation of production processes.
- Specific occupations in high demand in the food and beverage sector are; (ISCO 751) Food processing workers; (ISCO 816) Food and related products machine operators; (ISCO 6113) Food Technologist. On the other hand, the occupations of the future in this industry are expected to be: (ISCO 2263.2) Food safety specialist; (ISCO 2265) Plant-based food scientist; (ISCO 2163) Circular economy specialist; (ISCO 2145) Beverage technologist; (ISCO 2141) - Packaging specialist.

- In the textile, clothing, and leather industry, the specific occupations demanded by businesses are: Leather processing workers (ISCO 7535), Sewing and embroidery workers (ISCO 7533), and Tailors, Apprentices, and Hat Makers (ISCO 7531); Operators of textile, fur, and leather product machines (ISCO 751). Meanwhile, future occupations expected to have a promising perspective in this industry are: (ISCO 2163) Textile Designer; (ISCO 3323) Stylist; and (ISCO 2149) Leather Technologist.
- The wood processing industry and wood products, paper and paper products require specific occupations such as: Furniture Manufacturers and Similar Workers (ISCO 7522); Woodworkers (ISCO 7521); Fitters (ISCO 82); Factory Workers in Wood Processing and Paper Production (ISCO 817). Meanwhile, future occupations that will have a perspective in this industry are: (ISCO 2142) Wood Technology Engineer; (ISCO 7543) Wood Quality Control Inspector; (ISCO 2149) Paper Technologist; (ISCO 2141) Paper Recycling Specialist.
- Businesses in the chemical products sector require specific occupations such as Chemical Plant and Machine Operators (ISCO 8131); Chemical Processing Plant Controllers (ISCO 3133). This industry is expected to have a demand in the coming years for several occupations such as: (ISCO 2145) Chemical Process Engineer; (ISCO 2113) Environmental Chemist; (ISCO 2143) Green Chemistry Specialist; (ISCO 3119) Hazardous Material Removal Workers.
- Specific occupations in demand in the rubber and plastics sector that are in the highest demand include: Plastics Machine Operators (ISCO 8142), Packaging and Labelling Machine Operators (ISCO 8183), and Rubber Machine Operators (ISCO 8141); (ISCO 2141) Plastics product machine operators. On the other hand, future occupations that are expected to be in demand in this industry include: (ISCO 2113) Polymer professional; (ISCO 2141) Sustainable packaging engineer and (ISCO N/A) Recycling specialist.
- The non-metallic industry, similar to other industries, requires several occupations to meet market needs such as; Sheet Metal Workers, Metal structure Fabricators and Related Workers (ISCO 721), (ISCO 723) Machinery Mechanics and Repairers; (ISCO 3117) Mining and Metallurgical Technicians. While future occupations in this industry that are also in demand in other countries are related to (ISCO 2149) Non-metallic Materials Engineer and (ISCO N/A) Sustainability Engineer.
- In the metal processing sector, the occupations with the highest demand include Blacksmiths, Toolmakers and Related Workers (ISCO 722), Sheet Metal Workers, Metal Fabricators and Related Workers (ISCO 721) and Metal Processing and Finishing Plant Workers (ISCO 812); (ISCO 3135) Metal Production Process Controller. In addition to these current occupations, several other occupations will be very important in the future such as: (ISCO 2146) Metallurgical Engineer; (ISCO 8121) Metal Bending Technician; (ISCO 8219) Metal Fabricator; (ISCO 7223) Machine Operators (CNC Programming); (ISCO 7214) Welding Technician and (ISCO 3115) Metal 3D Printing Specialist.
- Specific occupations in the furniture sector include: Woodworkers (ISCO 7521), Wood Machine Operators (ISCO 7523); Furniture Manufacturers and Similar Workers (ISCO 7522) and (ISCO 82) Assemblers. As for future occupations, they are mostly related to advanced technologies such as: (ISCO 2152) Smart Furniture Engineer and (ISCO 3118) 3D Printing Technician.
- In the repair and assembly of equipment sector, the occupations with high demand include Operators of Machinery and Static Installations (ISCO 818); Mechanics and Machine Repairers (ISCO 723); (ISCO 3118) Mechanical Technicians (ISCO 3114) Electronic Engineering Technicians. Meanwhile, future occupations in this industry that will be in demand include (ISCO 3115) Mechanical Engineering Technicians (ISCO 3115) Field Service Engineers, and (ISCO 7421) Robotics Maintenance Specialist.

Recommendations:

For the Ministry of Industry, Entrepreneurship, and Trade (MIET):

- MINT, together with the KIESA agency, should financially support the private sector in covering part of the expenses for worker training.
- MINT should design policies to financially support the private sector in the internal digitalization of production processes and technological knowledge.
- MINT, specifically the Department of Industry, should closely cooperate and financially assist sectoral associations of processing industries to increase their administrative and financial capacities.
- Encourage collaboration between businesses, VET institutions, and private training providers to co-design modular, updated, and practical training content.
- Conduct regular labour market assessments to identify evolving workforce needs in the RE and EE sectors.

For the Ministry of Education, Science, Technology and Innovation (MESTI):

- MESTI should take initiatives to update curricula in vocational education and training and in higher education institutions to align them with the demands of the private sector.

- Support existing VET providers by incorporating modern technology and industry standards into the curriculum. Collaboration with businesses to design training modules that reflect the practical needs of the sector can help ensure that graduates are ready for immediate employment.
- Partnership with private training providers to enhance their skills and offer accessible short-term training programs across Kosovo. This collaboration could include providing technical support, updating curricula to align with the latest industry trends, and offering accreditation to ensure the credibility of training programs.

For the Vocational Education and Training Institutions (VETI):

- VETI should develop a comprehensive strategy to inform and raise awareness among businesses about the benefits of vocational and dual education and make efforts to involve as many businesses as possible.
- VETI should update the profiles in the processing industry to meet the needs and demands of the private sector. The profiles that are expected to be in high demand in the coming years and are recommended to be offered by VETI are categorized by sectors as follows:

Food and Beverage: (ISCO 751) Food Processing Workers; (ISCO 816) Operators of Food and Related Products Machinery; (ISCO 6113) Food Technologist; (ISCO 2265) Food Safety Specialist; (ISCO 2141) Packaging Specialist.

Textile: (ISCO 7535) Leather Processing Workers; (ISCO 7533) Sewing, Embroidery Workers (ISCO 2163) and Tailors, Apprentices, and Hat Makers; (ISCO 2163) Textile Designer.

Wood and Paper: (ISCO 7522) Furniture Manufacturers and similar Workers; (ISCO 7521) Woodworkers; (ISCO 82) Assemblers; (ISCO 7543) Wood Quality Control Inspectors; (ISCO 3139) Paper Machinery Operators; (ISCO 2141) Paper Recycling Specialist.

Chemicals: (ISCO 8131) Chemical Plant Operators; (ISCO 3133) Chemical Plant Machine Controllers; (ISCO 3119) Hazardous Material Removal Workers.

Rubber and Plastics: (ISCO 8142) Plastic Machine Operators; (ISCO 8183) Packaging, Labelling, and Packaging Machine Operators; (ISCO 8141)

Rubber Machine Operators; (ISCO 2141) Plastic Products Machine Operators; (ISCO 2113) Polymer Specialist.

Non-Metallic Industry: (ISCO 721) Sheet Metal Workers; (ISCO 723) Machinery Mechanics and Repairers; (ISCO 3117) Mining and Metallurgical Technicians.

Metal Processing: (ISCO 722) Blacksmiths, Toolmakers, and Similar Workers; (ISCO 721) Sheet Metal Workers, Metal Structure Preparers, and Similar Workers; (ISCO 812) Metal Processing and Finishing Plant Workers; (ISCO 8219) Metal Spinning Technician; (ISCO 7223) Metal Fabricator; (ISCO 7214) Welding Technician.

Furniture: (ISCO 7521) Woodworkers; (ISCO 7523) Wood Machine Operators; (ISCO 7522) Furniture Manufacturers and Related Workers; (ISCO 82) Assemblers; (ISCO 3118) 3D Printing Technician.

For the Higher Education Institutions (HEIs):

- HEIs at the bachelor's and master's level should consider offering new fields of study that will be necessary to increase competitiveness for the processing industries in Kosovo. The new profiles are as follows:

— **Bachelor's Level:**

- (ISCO 2163) Circular Economy Specialist
- (ISCO 3323) Stylist
- (ISCO 2149) Leather Technologist
- (ISCO 2142) Wood Technology Engineer
- (ISCO 2145) Chemical Process Engineer
- (ISCO N/A) Recycling Specialist
- (ISCO 2149) Non-Metallic Materials Engineer
- (ISCO N/A) Sustainability Engineer
- (ISCO 3115) 3D Metal Printing Specialist
- (ISCO 2152) Smart Mobile Engineer
- (ISCO 7421) Robotics Maintenance Specialist

For the Private Sector:

- Businesses operating in the industrial sector in Kosovo should strengthen human resource management practices in order to have a better understanding of their needs for new professions, the skills required, and the training they need to follow in order to adapt to changes in the labour market.
- Businesses should invest more in the digitalization of internal production processes, technological knowledge, and meeting standards to improve the quality of products in the market.
- Businesses should allocate a specific annual budget for increasing investments and engagement in professional training to improve the skills and development of employees.

— **Master's Level:**

- (ISCO 2265) Plant-Based Food Scientist
- (ISCO 2141) Sustainable Packaging Engineer
- (ISCO N/A) Export Manager

For the Private Training Providers:

- Private training providers should improve the training content in order to meet the needs of businesses. Additionally, they should focus on building long-term relationships with businesses and explore the possibility of delivering training sessions at the workplace.
- Private training providers should design their content in a way that ensures the training does not last more than 5 days.

QUESTIONNAIRE

A COMPREHENSIVE STUDY TO IDENTIFY SKILLS GAP IN THE INDUSTRY LABOUR MARKET

I. General information

1. Name of the company _____
2. Location (address) _____
3. Municipality _____
4. Sector of operation (NACE 4digit _____) (to be filled in by Riinvest)
5. Have you exported in 2023?
 1. Yes
 2. No (go to question 7)
6. What was the share of exports to turnover in 2023?
_____ % (PP)
7. What was annual turnover of your company in 2023?
 - a. € 0 - € 9,999
 - b. € 10,000 - € 49,999
 - c. € 50,000 - € 99,999
 - d. € 100,000 - € 199,999
 - e. € 200,000 - € 499,999
 - f. € 500,000 - € 999,999
 - g. € 1,000,000 - € 2,000,000
 - h. € 2,000,000 - € 5,000,000
 - i. Above € 5,000,000
8. In what aspects do you plan to expand your business over the next three years? (circle)
 - a. Hire more people
 - b. Invest in equipment
 - c. Invest in buildings
 - d. Introduce new products and services
 - e. Invest in digitalization process
9. What was your company's turnover over the past year?
 - a. Increased by ____%
 - b. Decreased by ____%
 - c. Remained unchanged ____
10. What are your expectations for your company's turnover over the next three years?
 - a. Increase by ____%
 - b. Decrease by ____%
 - c. Remain unchanged ____

II. EMPLOYMENT (Number of employees (Men _____ Women: _____))

Occupations (write only the number of the occu- pation from the list)	No. of employees with this occupation	Expected number of employees with this oc- cupation in 3 years (mark only the dif- ference; - if reduction is expected)	Most frequent level of edu- cation 1. No educa- tion 2. Primary 3. Secondary – general (gymnasi- um) 4. Secondary – vocational 5. University - undergrad- uate 6. Master 7. PhD	How many times did you have vacancies for this occupa- tion in the past three years?	How many of these positions (in total) have been newly created jobs (i.e. not replacing previous em- ployees)?	How difficult was it to fill such vacan- cy? (1-4, where 1-very easy, 4-very diffi- cult, 5. I do not know	If it was difficult (3- 4), what was the reason? (select up to 2 options) 1. Candidates lacked expe- rience 2. Candi- dates lacked required education 3. Candi- dates lacked required skills 4. Suitable candidates required high salaries 5. Suitable candidates prefer to work in the public sector 6. There were no interested candidates 7. Other _____	After gradu- ation and ini- tial contract with your employee, how many months are needed for them to be able to work on the job with satisfac- tory required performance (no. of months?)
1								
2								
3								
n...								

11. Have you spent on training activities/programs for your employees over the past year?
1. Yes
 2. No
12. In the past year, have your employees participated in any training courses?
1. Yes
 2. No (Skip to question 17)
13. What percentage of your workforce has received training in the past 12 months? _____ %
14. Who covered the training costs?
- a. The company/business
 - b. [Other options if applicable]
 - c. Government/Government agencies
 - d. The company together with donors
 - e. Employees
 - f. Other (Please specify) _____
15. Who provided these trainings?
- a. Vocational Training Centres (VTC)
 - b. Vocational Education and Training (VET) schools
 - c. Higher Education Institutions/Universities
 - d. Business Associations
 - e. The business itself
 - f. Training providers
 - g. Other (Please specify) _____
16. What percentage of the trained employees was recruited from your competitors?
_____ %
17. In the past 12 months, has any of your employees left their job due to emigration?
- a. Yes
 - b. No
18. If yes, how many employees have left your company to emigrate abroad for work in the past 12 months? _____ (number of employees)

19. Do you agree with the following statements?

	Yes	No
Our employees are paid adequately for the work they do		
Our company pays employees a higher wage compared to that of employees doing similar work in other companies		
Our company offers better working conditions (Working contracts, safety at work, health insurance) compared to other companies?		

III. SKILLS NEEDED AND EXPECTATIONS OF COMPANIES

20. Could you name the main OCCUPATION RELATED skills the employee needs to have in order to meet the expected job performance?

Occupations (write only the occupation num- ber from the list)	Skill/s write the corresponding skill/s)	Importance (1-not important; 5 very im- portant)	Current level (1-low level; 5 – high level)	Skills to be learned: 1. At school 2. On-the-job 3. Both at School and on-the-job 4. I don't know	Will this skill be- come more im- portant in the future? (3 years from now)	Will this skill be- come more im- portant in the future? (5 years from now)
	I	I	I	I	I	I
	II	II	II	II	II	II
	III	III	III	III	III	III
	IV	IV	IV	IV	IV	IV
	V	V	V	V	V	V
	I	I	I	I	I	I
	II	II	II	II	II	II
	III	III	III	III	III	III
	IV	IV	IV	IV	IV	IV
	V	V	V	V	V	V
	I	I	I	I	I	I
	II	II	II	II	II	II
	III	III	III	III	III	III
	IV	IV	IV	IV	IV	IV
	V	V	V	V	V	V
	I	I	I	I	I	I
	II	II	II	II	II	II
	III	III	III	III	III	III
	IV	IV	IV	IV	IV	IV
	V	V	V	V	V	V
	I	I	I	I	I	I

21. When thinking about the future of your business do you think some new occupations will become very important for your business? (List up to three new occupations)

Type of occupation(s)	3 years from now	5 years from now

22. Does your company make skills gap analyses for its employees, aligned to certain needs (technology challenges etc.)

1. Yes, often
2. Yes, sometimes
3. Not so far

IV. Human Resources Management of the company

23. Has your company hired employees using the following channels in the last 3 years? (Select all that apply)

1. Public vacancy announcements
2. Recommendations (e.g. friends, business partners)
3. Family connections
4. Employment offices
5. Networking with education/training institutions (universities, VET schools, etc.)
6. Recruitment agency/company (e.g., Headhunter, Human Power, etc.)
7. Other (specify) _____

24. Does your company apply the following practices? (Select all that apply)

- a. The recruitment process for hiring new staff is standardized
- b. HR planning is done by a designated staff
- c. Our firm regularly forecasts personnel requirements
- d. We provide initial training (upon starting work) for all employees
- e. We provide initial training (upon starting work) for some employees
- f. We provide regular training for all employees
- g. We provide regular training for some employees
- h. Our firm uses performance praised appraisal
- i. Supervisors frequently provide feedback on performance to subordinates

25. Regarding HRM issues, on which fields would your company, be open for external support, when this would be both very competent and has a neutral and independent position?

1. Recruitment of new employees by using different channels
2. Retaining contracted employees (onboarding etc.)
3. Implementation of skills gap analyses
4. Selection of suitable training courses
5. Information from employment offices
6. Networking with other employers (employee sharing)
7. Other ways (specify)

26. From your experience and point of view, which external partners/institutions would be competent enough to help and advice your company regarding HRM issues?

	Very competent	Competent	Not Competent	I do not know
Business associations	1	2	3	99
Vocational Training Centres	1	2	3	99
VET providers	1	2	3	99
Other training providers	1	2	3	99
Higher Education Institutions/Universities	1	2	3	99
Employment offices	1	2	3	99
Foreign donors (GIZ, LuxDev, USAID etc.)	1	2	3	99
Trade unions	1	2	3	99
External HR adviser	1	2	3	99
Sector associations	1	2	3	99
Others _____(Specify)	1	2	3	99

V. Support from training providers

27. Does your company have a sufficient overview of all relevant courses within your industry provided by training providers?

- a. Yes, fully
- b. Yes, more or less
- c. Not really

28. In terms of cooperation with training providers, what are main obstacles for a better cooperation between your company and them?

- a. Irrelevant courses for my company
- b. Courses are not up to date for the market
- c. Courses are too long
- d. Courses are too short
- e. Courses are too expensive
- f. Trainers are not qualified enough
- g. Others (specify)

29. Does your company have a current cooperation with training providers?
- a. Yes, with one
 - b. Yes, with more than one
 - c. Not so far
30. In case of necessary training for your workers, would your company be open to collaborations with other companies to hold joint trainings and mutual cooperation
- a. Yes, we have one already
 - b. Yes, why not
 - c. Probably not because of competition issues
31. In case of needed training for your employees, what would be the maximum of days for a training course that would be acceptable for your company, if employees cannot work during courses?
- a. Half a day
 - b. 1-2 days
 - c. Maximum 5 days
 - d. More than 5 days
 - e. Other (specify) _____?
32. What type of training do you prefer to be offered by training providers?
- a. on-the-job training
 - b. off-the-job training
 - c. others (Please specify)

VI. Dual Education

33. Are you aware of dual education system being piloted in Kosovo?
- a. Yes
 - b. No
34. If yes, is your business part of the dual system?
- a. Yes
 - b. No
35. Would you be interested to host high school students from the dual education in your business?
- a. Yes
 - b. No

VII. Vocational and educational trainings

36. Are you aware that Kosovo offers vocational and educational training that includes learning at the workplace?

- a. Yes
- b. No

37. If yes, is your business part of these programs?

- a. Yes
- b. No

38. Are you interested in participating in workplace learning as a form of vocational training and education in Kosovo?

- a. Yes
- b. No

VIII. Other questions

39. Can you tell us how challenging are the following factors for your business growth?
(Rank on a scale of 1 to 5 (1-not a barrier, 2-small barrier, 3-neutral, 4- barrier, 5- big barrier))

	Barrier	Small barrier	Neutral	Barrier	Big barrier
Unfair competition due to corruption or informality	1	2	3	4	5
Skills of current employees	1	2	3	4	5
Access to finance or cost of financing	1	2	3	4	5
Emigration of the workforce	1	2	3	4	5
Strong competition	1	2	3	4	5
Others _____ (specify)	1	2	3	4	5

40. In your line of business, what percentage of employees does a typical company report for tax purposes?

_____ %

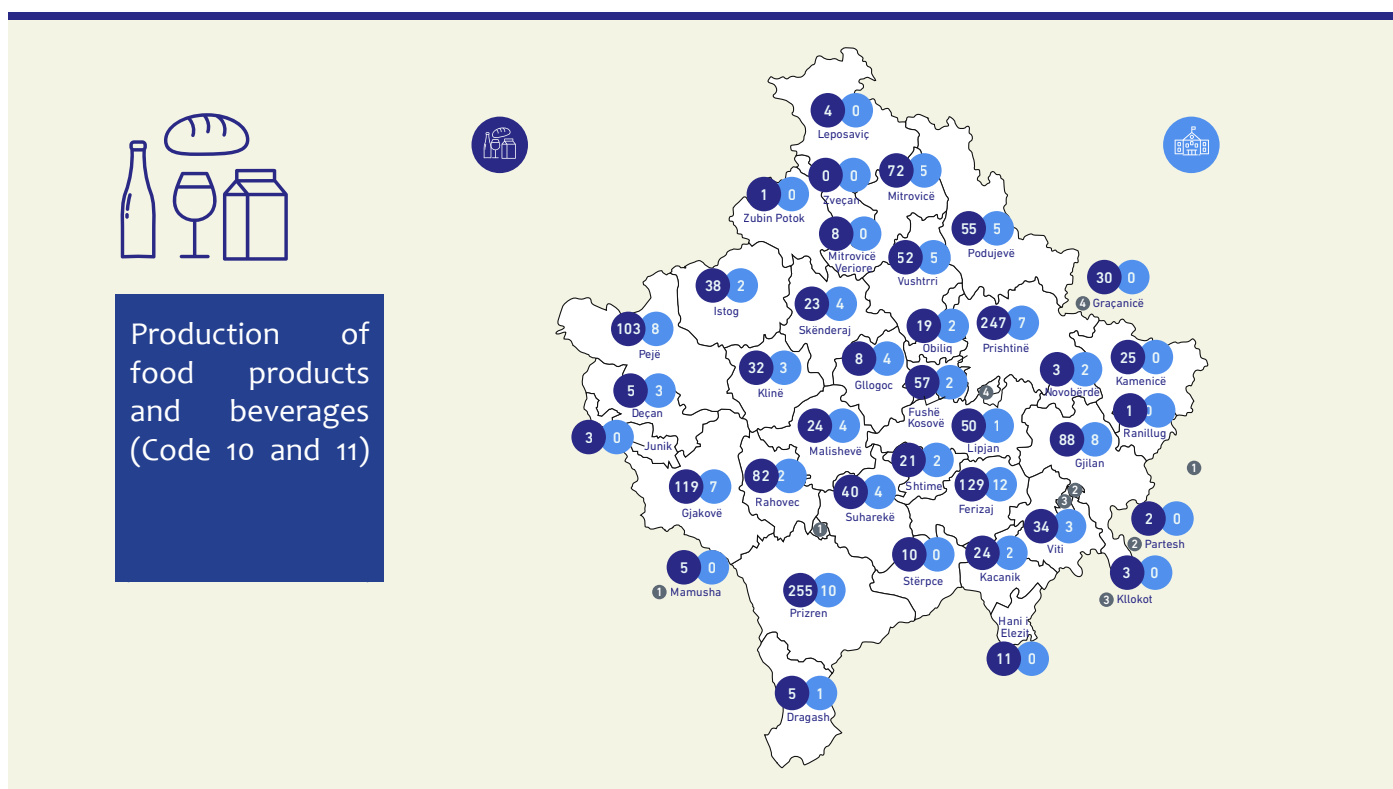
41. Please provide the amount your company spent in 2023 for each of the following:

New buildings:	_____ €
Machinery and equipment:	_____ €
Research and development	_____ €
Training, consulting, support	_____ €
Advertising and marketing	_____ €

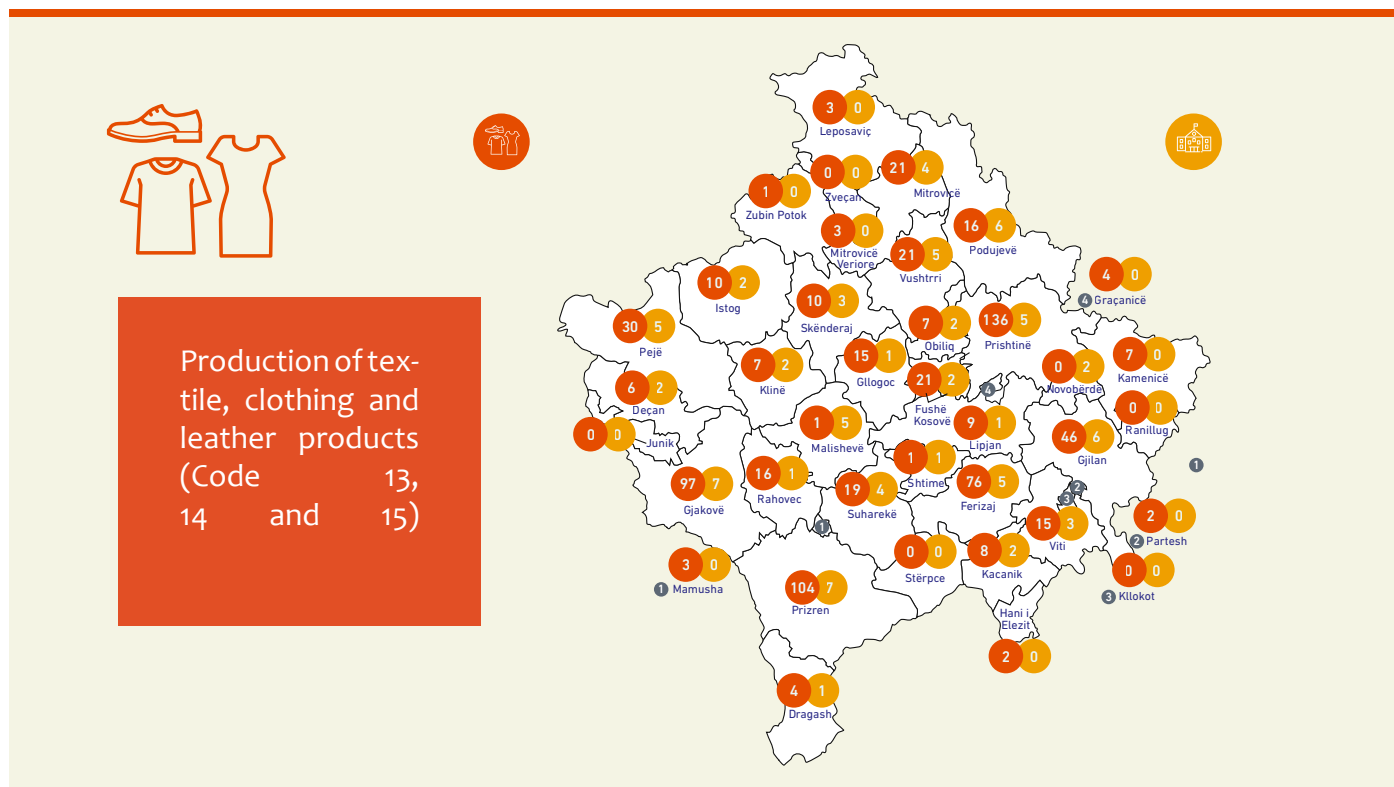
Appendix B

In order to obtain a clear overview of the profiles offered by all vocational and education and training schools, competency centres, vocational training centres, and others, we have cross-referenced data on the number of businesses operating in those municipalities with the profiles offered. The maps below show the number of profiles offered across all municipalities in Kosovo and the businesses operating in those municipalities, categorized by specific sectors. Data represented with darker colours indicate the number of profiles offered in the municipalities, while data represented with lighter yellow colours indicate the number of businesses in those municipalities. For example, interpreting Map 1 for the food and beverage sector, we observe that in the Municipality of Pristina there are 247 profiles offered, whereas there are only 7 businesses in this sector. On the other hand, there are a total of 25 profiles offered in Kamenica, but there are no businesses operating in this sector. Similarly, these data are interpreted across all sectors without exception.

Map 1: Profiles offered in the production of food products and beverages

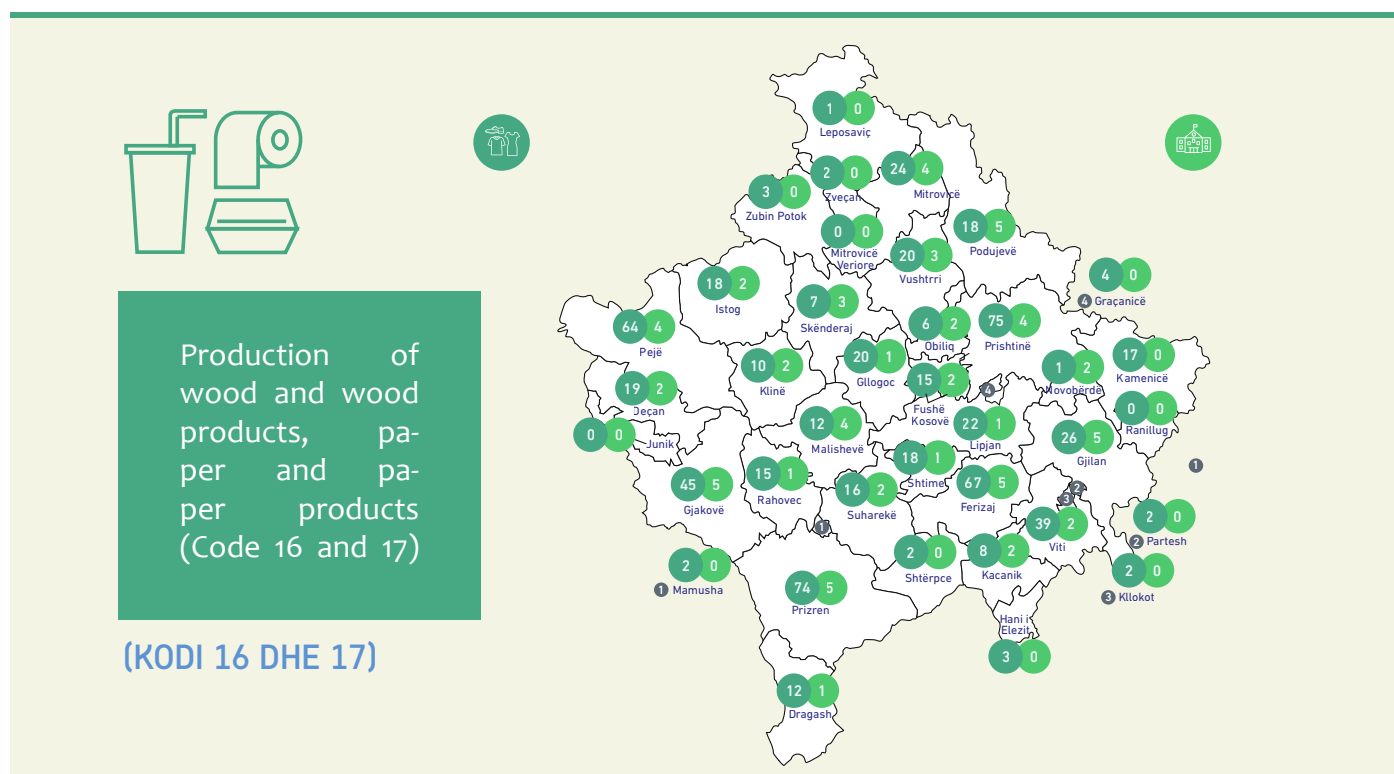


Map 2: Profiles offered in the production of textile, clothing and leather products



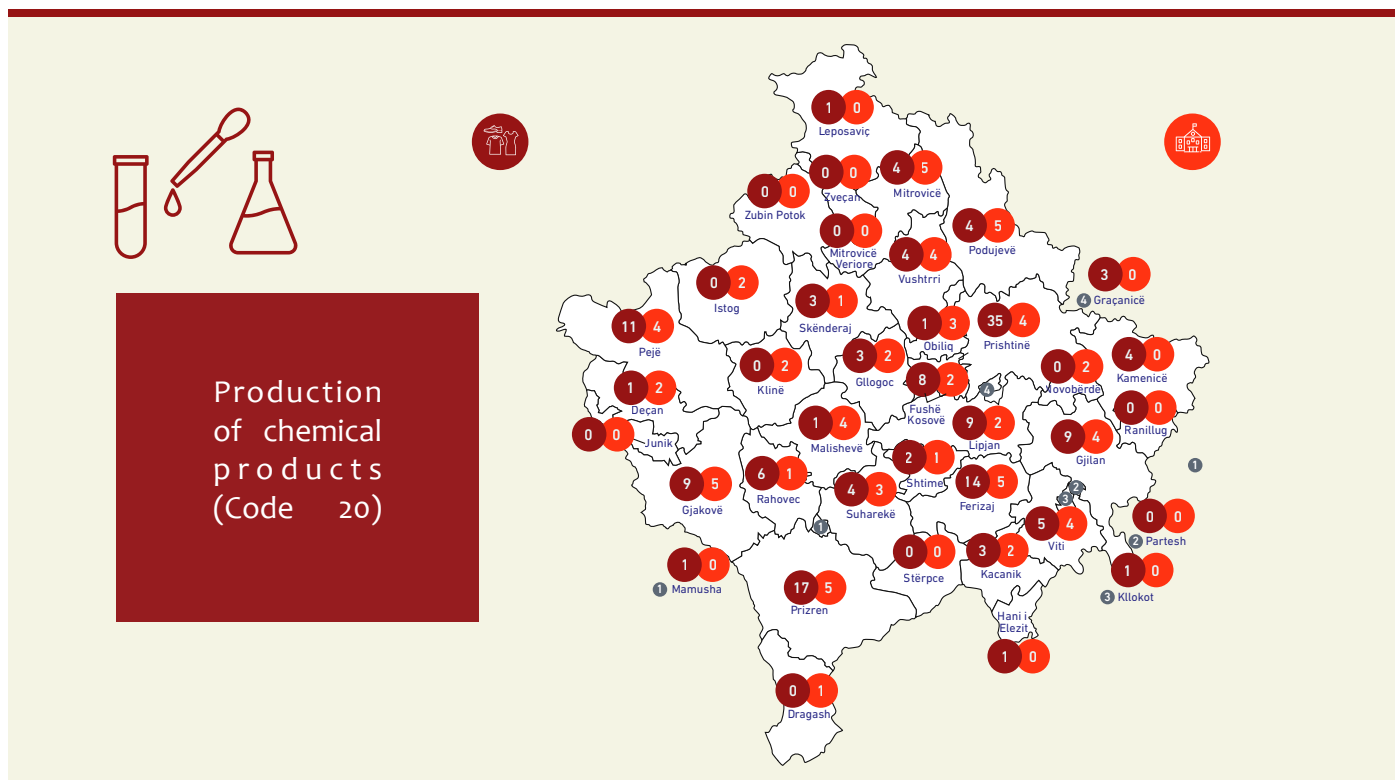
Source: Author's calculations based on MEST administrative data

Map 3: Profiles offered in the production of wood products, paper and paper products



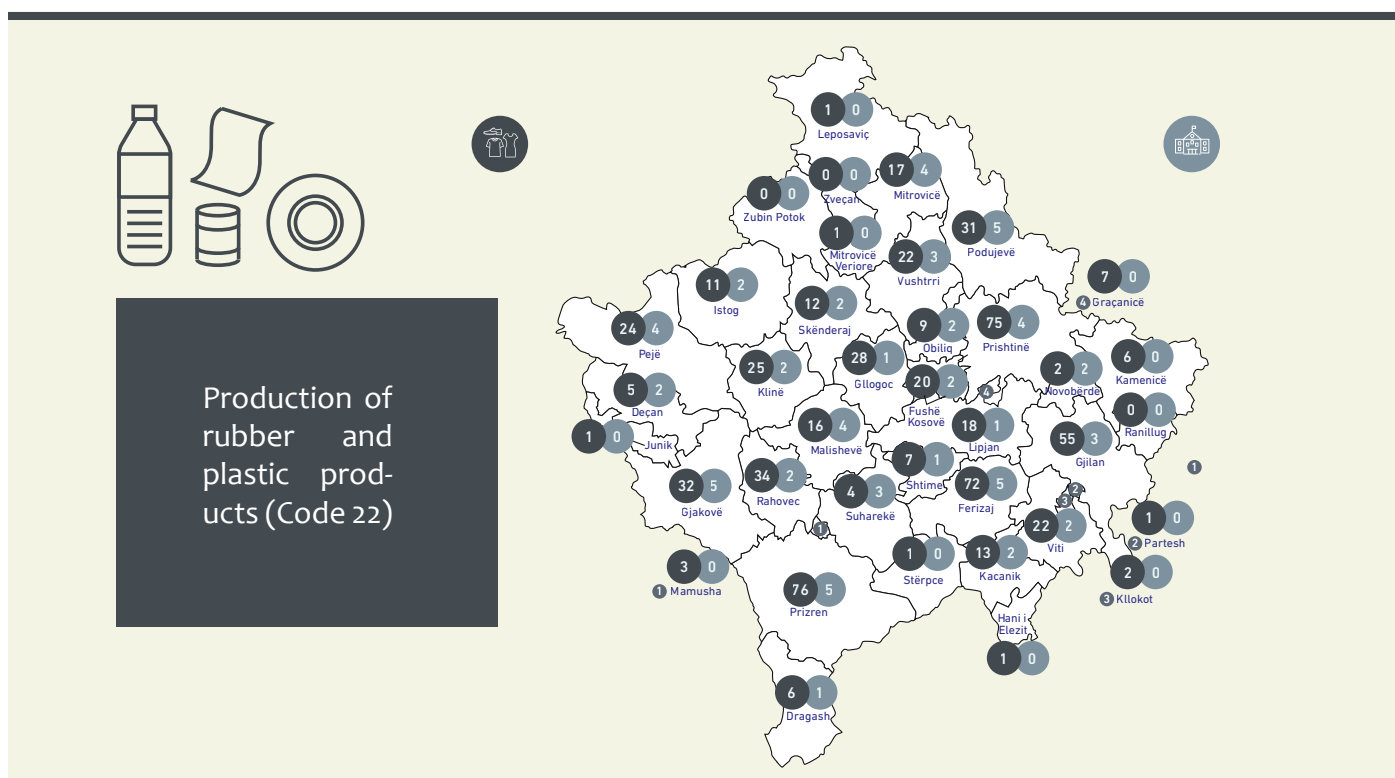
Source: Author's calculations based on MEST administrative data

Map 4: Profiles offered in the production of chemical products



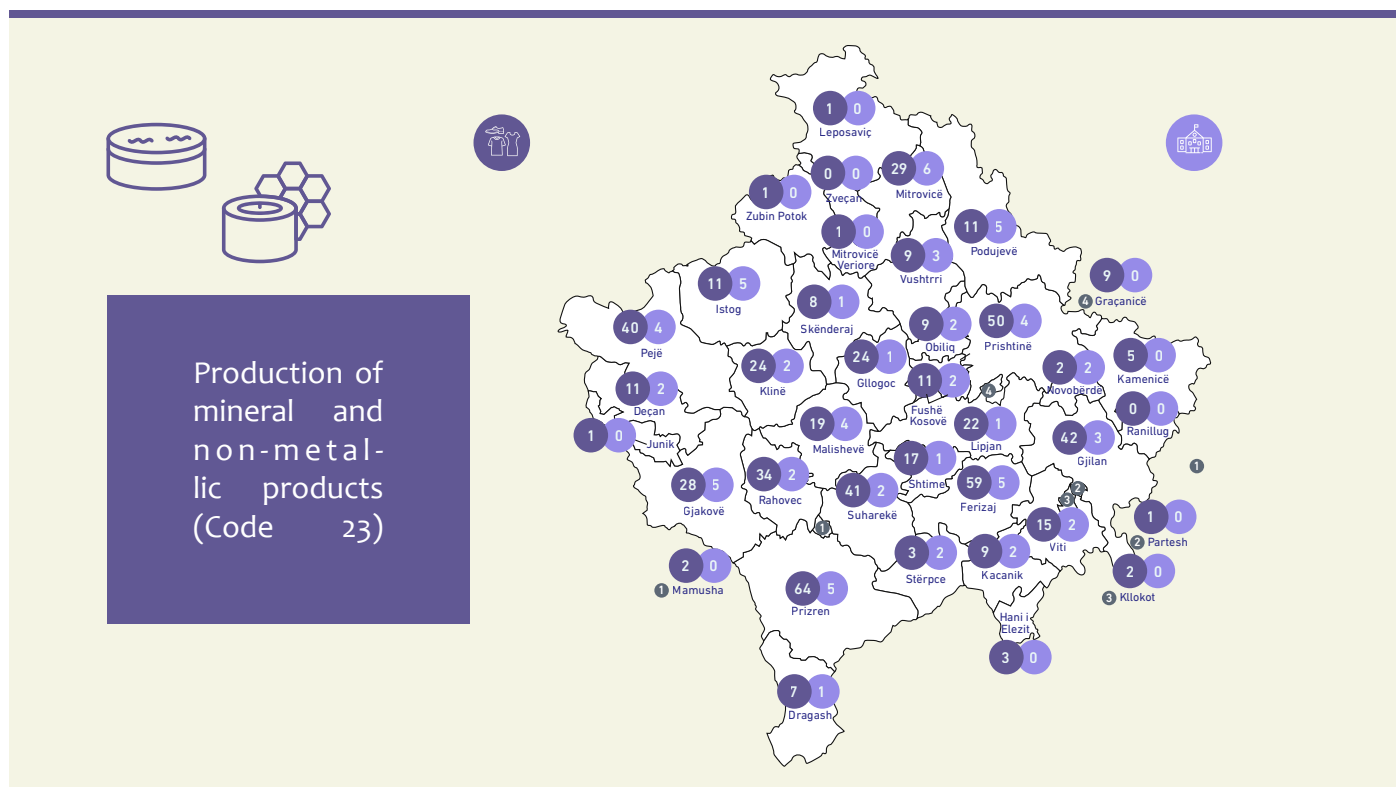
Source: Author's calculations based on MEST administrative data

Map 5: Profiles offered in the production of rubber and plastic products



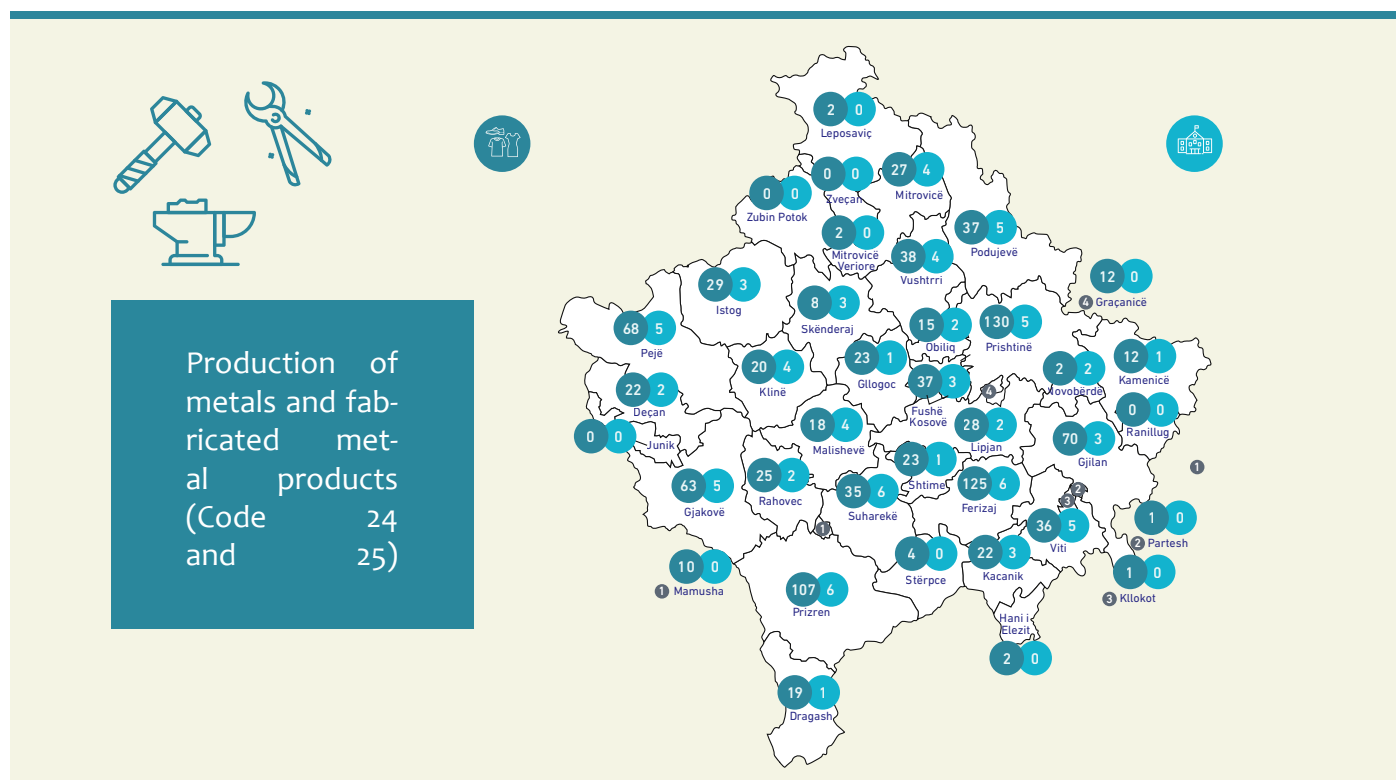
Source: Author's calculations based on MEST administrative data

Map 6: Profiles offered in the production of mineral and non-metallic products



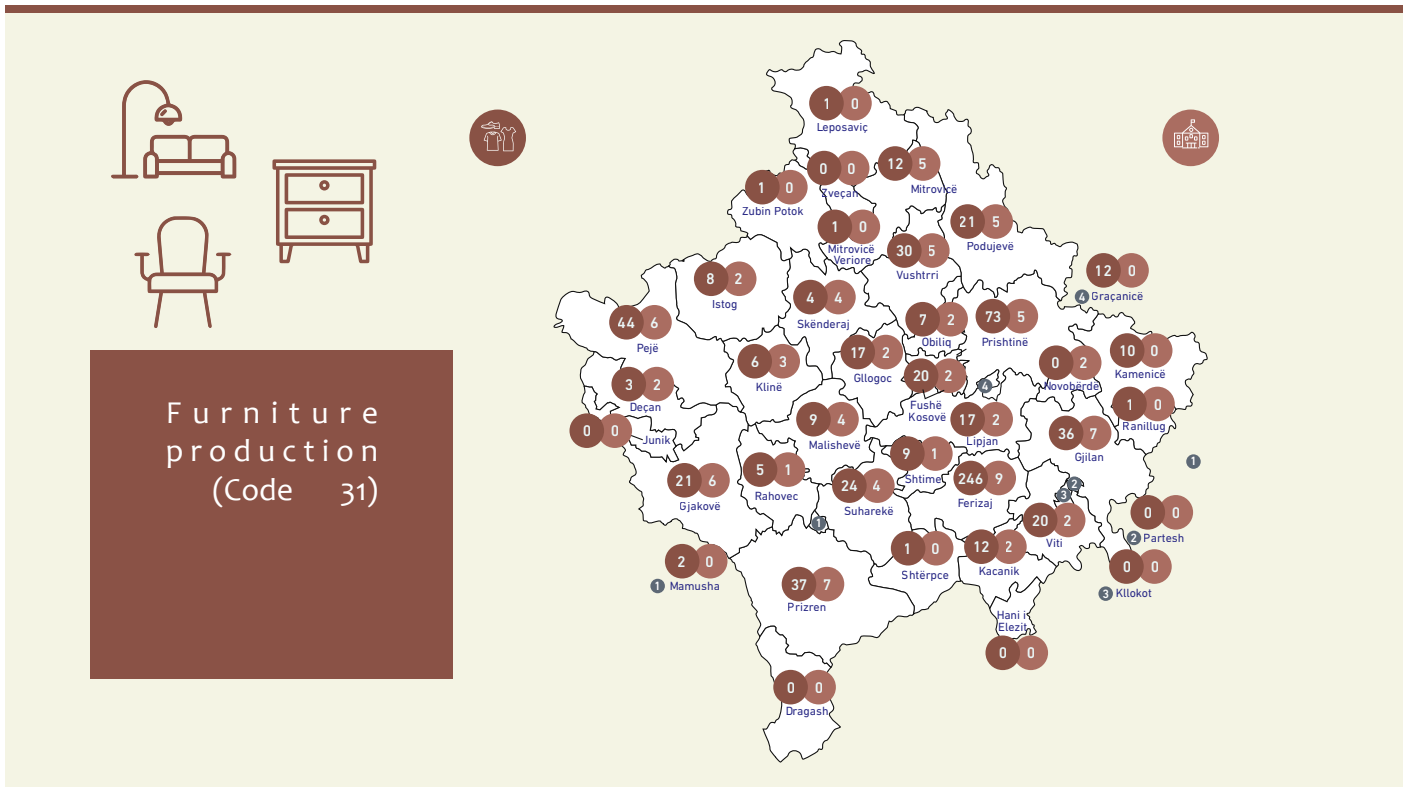
Source: Author's calculations based on MEST administrative data

Map 7: Profiles offered in the production of metals and fabricated metal products



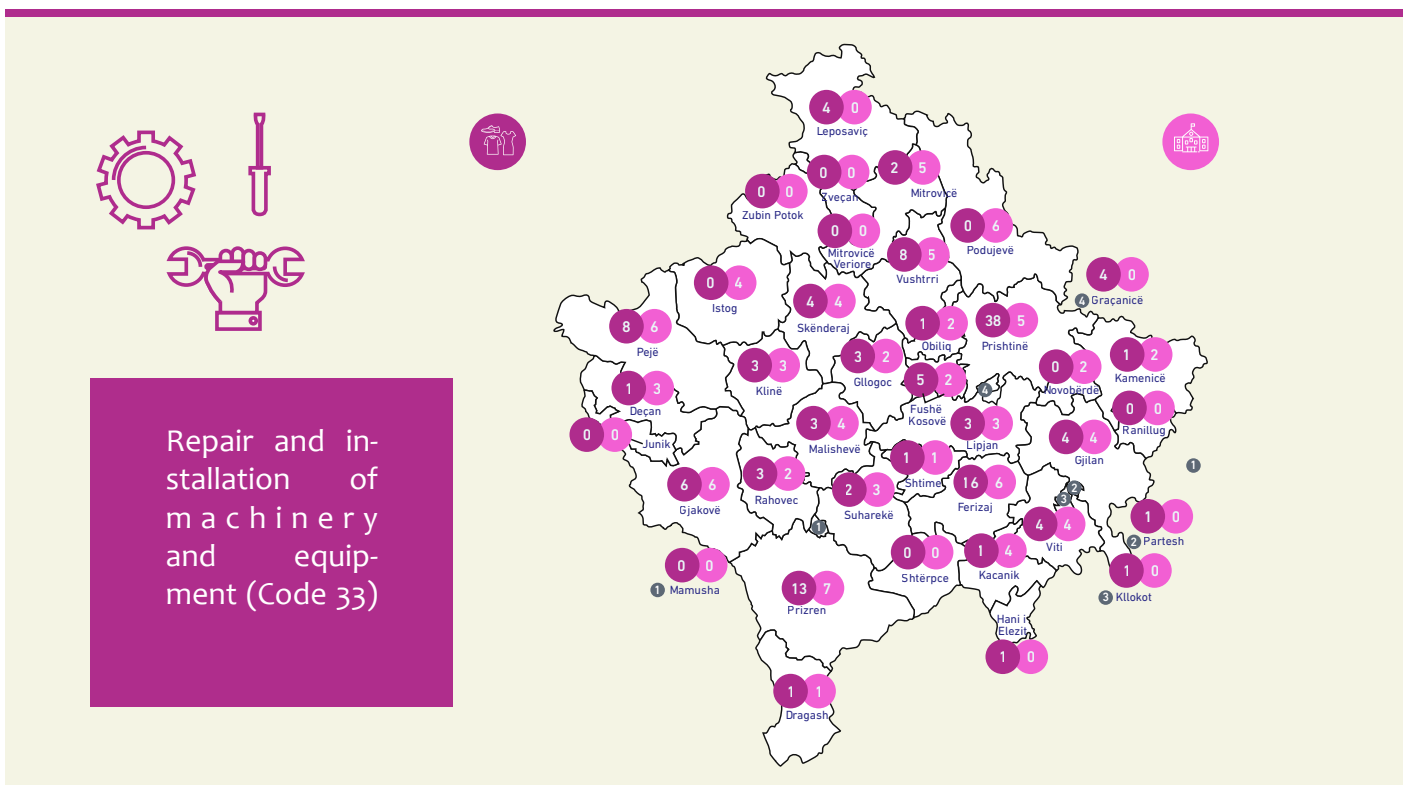
Source: Author's calculations based on MEST administrative data

Map 8: Profiles offered in furniture production



Source: Author's calculations based on MEST administrative data

Map 9: Profiles Offered in Machinery and Equipment Repair and Installation



Source: Author's calculations based on MEST administrative data