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ANALYSIS OF LABOUR MARKET TRENDS AND DEMANDS IN PROJECT PRIORITY PROFILES (ICT, RENEWABLE ENERGY AND ENERGY EFFICIENCY, WOOD PROCESSING, FOOD PROCESSING)

PREPARED BY:
INSTITUTE FOR DEVELOPMENT RESEARCH RIINVEST

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LUXDEV
Luxembourg Development Agency

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LIST OF ABBREVIATIONS

ASOO	ASOO-Agency for Vocational Education and Training and Adult Education
AI	Artificial Intelligence
AWC	AWC-American Wood Council
CAWP	Centre for Advanced Wood Processing
CAD	Computer-Aided Design
CNC	Computer Numerical Control
EE	Energy Efficiency
ESIF	European Structural and Investment Funds
EU	European Union
FPSC	Food Processing Skills Canada
GDP	Gross Domestic Product
GVA	Gross Value Added
ICT	Information and Communication Technology
IVET	Initial Vocational Education and Training
KAS	Kosovo Agency Statistics
KTA	Kosovo Tax Administration
LLL	Life-Long Learning
LLW	Lifelong Learning Week
MCC	Millennium Challenge Corporation
MESTI	Ministry of Education, Science, Technology and Innovation\
MFK	Millennium Foundation Kosova
MINT	Ministry of Industry, Entrepreneurship and Trade
NQF	National Qualifications Framework
PLL	Promotion of Lifelong Learning
RE	Renewable Energy
TVET	Technical and Vocational Education and Training
VET	Vocational Education and Training

EXECUTIVE SUMMARY

Kosovo's labour market is characterized by a young and dynamic workforce, but it faces challenges such as skill mismatches, low level of labour force participation especially among women, and limited access to targeted vocational training. Employers increasingly seek technical expertise, digital proficiency, and industry-specific competencies to drive innovation and productivity. Addressing these trends requires tailored education programs, modular training courses, and occupational standards that align with market needs, enabling workers to adapt to evolving demands and contribute to sustainable economic development. This report provides a comprehensive analysis of labour market trends and demands in key sectors in Kosovo, namely Information and Communication Technology (ICT), Renewable Energy (RE) and Energy Efficiency (EE), Wood Processing, and Food Processing. Conducted by Riinvest Institute and supported by "Skills for Sustainable Jobs in Kosovo" project and funded by LuxDev (KSV/021), this study aims to inform project's activities in bridging the gap between workforce skills and market needs. The primary objective is to identify key profiles and occupations, as well as targeted, short modular training courses tailored to the dynamic requirements of the targeted sectors. By aligning educational offerings with labour market demands, the report seeks to empower Kosovo's workforce, enhance employability, and contribute to sustainable economic growth. Furthermore, it emphasizes addressing current and future skill shortages, fostering innovation, and strengthening the country's capacity to compete in regional and global markets. A key focus of the study is to identify the main labour market barriers women face in these sectors. By examining systemic challenges such as access to training, workplace policies, and cultural factors, the analysis aims to highlight actionable pathways to improve opportunities for women in these sectors.

The study employed a mixed-method approach, integrating quantitative and qualitative data collection and analysis. Quantitative data were collected through a business survey of 250 businesses across the priority sectors, representing companies of various sizes to ensure a representative sample. On the other hand, qualitative data were gathered through semi-structured interviews with representatives of sector associations, donors, and industry experts, as well as focus groups with women to explore barriers and challenges to their entry into the labour market.

Key Findings

The main findings stemming from different sources that the study employed are summarized and divided by sector as follows. When it comes to labour market barriers that women face, most of the barriers are rather structural and not sector specific. General findings from the survey were validated by focus group discussion as well as in-depth interviews with sectoral association representatives. However, there were some additional sector specific findings, mainly barriers that women face, that will be further elaborated for each sector.

ICT

• The ICT sector in Kosovo has demonstrated notable growth in service exports, with more than one third of surveyed companies exporting abroad. Despite the increase, about 56 percent of businesses reported that their employees have left their jobs due to migration.

• Existing Vocational Education and Training (VET) Institutions in Kosovo offer seven profiles relevant for the sector, including Business Information Technology Technician, ICT Systems Technician, and Software Application Developer, among others. These programs are available across 25 schools in 23 municipalities. Despite this infrastructure, female enrolment in ICT programs remains significantly lower than that of males.

• Private training providers offer 12 profiles with varying qualifications, lasting from 3 to 48 months depending on credits and intensity. Businesses highlighted the most common occupations in the ICT sector, such as Database Designers and Administrators, ICT Installers and Servicers, and Applications Programmers. However, there is a growing demand for new professions like Computer Network Professionals, Software Developers, Digital Marketing Specialists, and Artificial Intelligence Specialists.

• Despite the sector's growth, 51% of businesses reported no spending on employee training. Key barriers include high training costs and outdated content. Most businesses expressed a preference for short training sessions (up to five days) conducted on-site or online. On the other hand, as findings from the focus group discussion suggests, employees' (supply side) preferences, especially women with no prior experience in the sector, contradicts those of businesses (demand side); they rather prefer 6-12 months training programs to be ready to embark as new hires in the sector.

• Persistent biases regarding women's roles and abilities in technology discourage them from pursuing ICT careers derived from societal stereotypes.

• Women often lack awareness of the flexibility and career opportunities the ICT sector offers, such as remote work options. However, mothers face challenges balancing family obligations with training and work, despite ICT's potential for flexible arrangements.

RE and EE

• Vocational Education and Training Institutions in the energy sector offer only two profiles: Electrical Installer and Energy Technician, both predominantly attended by male students. Similarly, private training providers offer only the Electrical Installer profile across seven training centres in Kosovo, with program durations ranging from 3 to 9 months.

• Survey data revealed that the key occupations in the RE and EE sectors include Building Electricians, Electrical Line Installers, and Repair Technicians. Businesses also identified emerging needs for roles such as Photovoltaic Systems Technicians, Energy Auditors, Building Efficiency Technicians, and Power Generation Plant Operators.

• Approximately one-third of businesses in the RE & EE sectors plan to expand their workforce within the next three years. While 70 percent of businesses reported no dedicated training budget last year, 83 percent indicated that their employees participated in training, which was largely funded by the companies themselves. The cost of training remains a significant challenge, with one-quarter of respondents citing it as prohibitive.

• Training opportunities often fail to address the specific skills required for specialized roles in renewable energy. In addition, maternity leave policies increase costs for private sector employers, discouraging them from hiring women.

• Perceptions that women are more suited for administrative rather than technical roles restrict their access to advanced positions.

• A mismatch between available training programs and the technical demands of the EE & REE sectors further exacerbate barriers for women employment in such sectors.

Wood Processing

• Survey results reveal that approximately 41 percent of businesses in the wood processing sector export their products to EU markets, with over 90 percent anticipating increased turnover within the next three years. Key investment priorities include acquiring modern equipment, enhancing employment opportunities, and improving infrastructure. Despite these promising trends, the sector faces significant challenges, including the migration of workers, which has resulted in layoffs for approximately 50 percent of employee. The sector exhibits a pronounced gender disparity, with women mainly in the sales roles.

• Vocational Education and Training Institutions offer three specialized profiles: Computerized Machine Operation, Woodworker, and Interior Carpentry Design and Wood Technology. These programs are primarily available in Ferizaj, the hub of Kosovo's wood industry, but exhibit a notable gender imbalance. Private training providers, on the other hand, only offer a single profile—Carpentry.

• Common professions in this field include Manufacturing Managers, Wood Processing and Papermaking Plant Operators, woodworking machine Tool Setters and Operators, Assemblers, Wood Treaters, and Cabinetmakers.

• Approximately 75 percent of businesses reported no expenditures on workforce training, reflecting a lack of emphasis on skill development in this sector. When training does occur, it is often funded by donors or occasionally by the businesses themselves. The main barriers to training include the perceived irrelevance of available programs and outdated content. Businesses recommend that even if training programs are implemented, they should be short (no longer than one week).

• Low level of participation of women in vocational education creates a gap in qualifications for production roles due to low enrolment of women in VET schools. The underrepresentation of women in these educational pathways limits their ability to meet the demands of industries seeking skilled labour, further perpetuating gender disparities in employment opportunities.

• While women are increasingly present in university programs, vocational training opportunities for them remain limited. This imbalance means that many women lack access to the practical, hands-on training needed to enter technical roles in the labour market. The limited availability of vocational training options tailored to women also reinforces traditional gender roles, discouraging them from exploring non-traditional career paths.

• Some production roles involve physically demanding tasks that may not align with the physical capacities of all workers. This factor discourages women from participating fully in these stages of production, especially when workplace accommodations, tools, or training to mitigate physical strain are not provided. Without such support, the perception of these roles as male-dominated persists, further narrowing women's opportunities to engage in the sector.

• The lack of targeted internships and training programs for women in technical fields exacerbates the challenges they face in acquiring industry-relevant experience. Without practical exposure, women struggle to build the confidence and skills needed to compete in production roles.

Food Processing

• Compared to other priority sectors, based on the survey data, the food processing sector has a relatively lower extensive margin of exporting, with only around 14 percent of businesses exporting their products. Despite this, 50 percent of the businesses reported increased turnover and anticipate growth in the coming years. Investments in equipment, along with staff development and training, are highlighted as key areas of focus. However, migration remains a pressing concern, potentially exacerbating workforce shortages.

• The food processing sector exhibits a gender disparity, with women underrepresented in leadership and technical roles while being concentrated in traditionally perceived accessible positions like baking and confectionery making.

• The most common occupations in the food processing sector include Manufacturing Managers, Food Preparation Assistants, Bakers, Pastry Cooks, Confectionery Makers, and Dairy-Products Makers. While leadership roles exhibit significant gender disparity, professions such as Bakers and Pastry Cooks demonstrate comparatively higher female participation, with women accounting for 37 percent of employees in these roles.

• Emerging professions in the food processing industry include Food Preparation Assistants, Dairy-Products Makers, Food and Beverage Tasters and Graders, alongside traditional roles like Bakers and Pastry Cooks.

• Despite the sector's potential, 72 percent of businesses reported no spending on training programs. However, 40 percent of workers have participated in training initiatives funded by donors or businesses themselves. High training costs and outdated curricula are the primary obstacles to more widespread adoption of training programs

• The absence of advanced training options in particular limited specialization programs, such as Level 5 specialization, restricts access to higher-level roles of women in the sector. In addition, the lack of incentives to attract and retain women in the sector is source of low involvement of women in the sector.

• Training programs and industry requirements are not fully aligned, leaving a skills gap for potential female workers. This misalignment stems from outdated curricula, limited industry input in program design, and inadequate emphasis on practical, job-relevant skills. Consequently, many women seeking employment find themselves underprepared for roles that require specific technical or professional competencies, which perpetuates underrepresentation in key sectors and limits their career progression opportunities.

Other Cross-Sectoral Challenges

• Women face persistent barriers to entering the labour market and starting careers, which do not differ significantly across sectors. Findings suggest that low self-confidence, often linked to a lack of skills and training opportunities, plays a crucial role in deterring women from entering the workforce. Moreover, the lack of effective awareness campaigns leaves many women uninformed about potential career opportunities in these sectors, further limiting their participation.

• Findings also suggest that insufficient family support, lack of transportation, inadequate childcare infrastructure, limited networking opportunities, absence of awareness campaigns, and inflexible working hours—all of which significantly discourage women from pursuing careers. The scarcity of affordable childcare services creates significant barriers for women, particularly those in rural areas where such facilities are often unavailable or too distant to access easily. This lack of support infrastructure disproportionately affects women, as they are traditionally expected to take on primary caregiving roles, limiting their ability to engage in formal employment or educational opportunities. The issue is exacerbated by inadequate transportation networks in rural regions, which further restrict access to childcare centres in urban or semi-urban areas. This dual challenge of inadequate services and inaccessibility maintains gender inequality and reduces the potential for inclusive economic and social development.

• In addition, relying on a single incentive is unlikely to improve the number of women in the sector, thereby, the combination of initiatives based on the barriers mentioned above may lead to significant improvements in increasing the representation of women in these sectors.

• The feedback from businesses across all sectors indicates a clear preference for short, intensive training sessions lasting couple of days. These are seen as highly effective for upskilling or reskilling existing employees, particularly when conducted on-site. This approach minimizes disruptions to operations while ensuring the training is tailored to the specific needs of the company.

Recommendations:

Building on the general insights as well as sector-specific findings derived from the diverse sources utilized in this study, the following recommendations are proposed to address labour market frictions and mitigate gender imbalances within the selected priority sectors. These recommendations aim to foster a more inclusive and equitable workforce while enhancing overall sectoral efficiency and competitiveness.

ICT Sector

• The project to collaborate with VET institutions to design and introduce new profiles aligned with emerging demands. These profiles should focus on Electrotechnology Engineers, Software and Applications Developers, Application programmers, Database and Network Professionals, Digital Marketing Specialists, and Artificial Intelligence Specialists.

• Encourage collaboration between businesses, VET institutions, and private training providers to co-design modular, updated, and practical training content.

• To address the differing preferences between businesses and potential employees, a hybrid training approach should be implemented. Offer short, focused training sessions (up to five days) for current employees and on-site needs, while simultaneously establishing longer, 6–12-month programs for new entrants, particularly women with no prior experience, to prepare them thoroughly for employment in the sector. This dual approach ensures alignment with business needs while fostering workforce inclusivity and readiness.

• Develop flexible training schedules and online learning platforms that accommodate mothers and other caregivers. In addition, design scholarships, mentorship programs, and incentives for girls in ICT programs, especially in underrepresented areas.

• Initiate campaigns showcasing successful women in ICT to combat stereotypes and inspire others. Furthermore, conduct awareness campaigns targeting young women and parents, emphasizing the flexibility, career opportunities, and remote work potential in ICT.

Renewable Energy (RE) & Energy Efficiency (EE)

• Collaborate with the Ministry of Education, Science, Technology, and Innovation (MESTI) and Vocational Education and Training (VET) institutions to develop new, industry-relevant profiles for the energy sector, specifically EE & RE. Key roles to prioritize include Research and Development Managers, Power Generation Plant Operators, Transport Clerks, and Photovoltaic Systems Technicians.

• Partner with private training providers to enhance their capabilities and offer accessible short-term training programs throughout Kosovo. This collaboration can include providing technical support, updating curricula to align with the latest industry trends, and offering accreditation to ensure the credibility of the training programs.

• Conduct regular labour market assessments to identify evolving workforce needs in the RE and EE sectors.

• Provide awareness and diversity training for employers to combat stereotypes about women's suitability for technical roles. In addition, launch public awareness campaigns highlighting career opportunities in RE and EE, emphasizing inclusivity and the demand for skilled professionals.

• Provide grants for companies investing in employee training, with additional benefits for those supporting women in technical roles.

Wood Processing

• The project, in coordination with vocational schools and private training providers, should expand the variety of training profiles offered, focusing on regions with high concentrations of wood-processing businesses (i.e. Prishtina, Ferizaj, and Prizren region).

• Training programs for this sector should adopt a modular structure and be delivered on-site to maximize accessibility and relevance. Each module should be designed to last no longer than one week, ensuring flexibility for businesses and trainees.

• Implement targeted outreach to women, particularly in technical fields. This could include scholarship programs, mentorship opportunities, and gender-sensitive training content to encourage female participation in production roles.

• Increase awareness and remove stigma around non-traditional roles for women. Gender stereotypes in vocational education must be challenged through awareness campaigns and initiatives that highlight the viability of technical careers for women. Encouraging women to take on leadership roles in technical fields will contribute to a more diverse and dynamic workforce in the wood processing sector.

• Support existing VETs incorporating modern technology and industry standards into the curriculum. Collaboration with businesses to design training modules that reflect the practical needs of the sector could help ensure that graduates are ready for immediate employment.

Food Processing

• Although public vocational schools already offer several profiles in food processing, new courses are needed to address business demands. The project should focus on creating programs for roles such as Bakers, Pastry-Cooks, Confectionery Makers, Food Preparation Assistants, Dairy-Products Makers, and Food and Beverage Tasters and Graders.

• Ensure that training programs are closely aligned with the specific needs of the food processing sector. Engage businesses in the development of curricula to ensure that training delivers the skills necessary for success in the industry, particularly for women seeking to enter technical roles. Implement tailored training programs that cater to the specific needs of the food processing industry, with an emphasis on specialized roles such as Dairy-Products Makers and Food Tasters.

• Address the lack of specialized training programs by developing Level 5 specialization courses, particularly in technical fields where women are underrepresented.

• Increase efforts to close the gender gap in leadership and technical positions by creating mentorship programs, and leadership training initiatives that support women's professional growth. This could involve scholarships for women in technical training programs and targeted recruitment campaigns for leadership roles.

Other Cross-Sectoral Recommendations

• Develop mentorship initiatives between unemployed and employed women, helping the former build confidence and navigate career pathways across all sectors.

• The project to collaborate with institutions, other donors and stakeholders to address workplace barriers, such as promoting flexible working hours (e.g., remote and part-time work), addressing gender pay gaps, ensuring reliable transportation, and providing affordable childcare options.

• Support selected institutions such as Shtjefën Gjeçovi and Gjin Gazulli vocational schools in Pristina in accreditation of their programs. Addressing this need will strengthen the education infrastructure and improve the quality of vocational training programs.

• To address the training needs across priority sectors, it is recommended to develop a dual approach to workforce development. For existing employees, prioritize short, intensive training sessions lasting a few days, ideally conducted on-site to minimize operational disruptions. These sessions should be customized to address specific skills gaps and business needs. For new entrants and jobseekers, especially women, particularly those with no prior experience, develop longer (ideally 6-12 months), more comprehensive training programs. These programs should provide foundational knowledge and hands-on experience, ensuring participants are adequately prepared for their roles. This approach will help businesses effectively upskill their current workforce while also preparing a capable pool of new talent to enter the labour market.

1. INTRODUCTION

This report presents an in-depth analysis of labour market trends and demands in priority sectors—Information and Communication Technology (ICT), Renewable Energy (RE), Energy Efficiency (EE), wood processing, and food processing. The findings aim to support the KSV/021 project, "Skills for Sustainable Jobs in Kosovo," with a particular focus on Result 4: fostering lifelong learning to enhance skills and knowledge, especially among women, in these industries. The project is a strategically designed initiative to address Kosovo's evolving labour market needs while promoting gender equality, diversity, and inclusiveness. By reskilling and upskilling the workforce, the project strives to create sustainable employment opportunities and reduce gender disparities in sectors traditionally dominated by men.

This analysis explores the challenges faced by women in accessing employment opportunities and examines the obstacles employers encounter in sourcing skilled workers. A comprehensive evaluation of labour market trends over the past three years provides insights into the dynamics of these sectors and their growth potential. Additionally, the study examines the role of Vocational Education and Training (VET) providers and private training providers in meeting market demands, particularly within the identified priority sectors. A key component of the report is its gender analysis, which investigates the current state of the private sector labour market in Kosovo and the barriers preventing equitable participation. The findings highlight systemic challenges and opportunities for fostering greater inclusivity in the workforce.

The report is organized as follows: Section 2 outlines the research methodology employed in the study. Section 3 offers a theoretical review of regional and international perspectives, with a focus on education and lifelong learning practices in European countries. Section 4 discusses the general results of the survey, including an overview of the ICT sector and the training programs offered by VET and private providers. Sections 5 provide information for the renewable energy and energy efficiency sectors, sections 6 for the wood processing, and 7 provide detailed analyses of the food processing, respectively.

2. RESEARCH METHODOLOGY

This section provides a summary of the methodology used in this study, outlining the methods and procedures employed for data collection, analysis, and interpretation. To fully understand the labour market trends and demands in Kosovo, specifically the ICT, renewable energy and energy efficiency sectors, wood and food processing, this study utilizes primary sources from surveys with businesses, semi-structured interviews with business associations, and focus group discussions. Furthermore, the study analyses the offerings from Vocational Education and Training (VET) providers and Private Training Providers in Kosovo, particularly in the priority sectors.

2.1 Quantitative data

Quantitative data are collected through a survey with 254 businesses across all municipalities in Kosovo. 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[1], 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 priority 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
10	Food and beverages production	94
16,31	Wood and furniture production	64
35,41,43	RES and Energy Efficiency	48
61,62,63	ICT (Information and Communication Technology) industry	48

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 participation from sectors associations, officials from MESTI, the Luxembourg Development Agency, business associations, and field experts. All relevant suggestions and recommendations from the workshop were addressed while preparing the final version. The final step in designing the questionnaire was to pilot it with 30 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. A short report from the pilot survey was send to LUXDev.

For the purpose of the survey, the Riinvest team engaged and trained 20 enumerators. Following recruitment, a one-day, in-person training session was conducted to prepare the enumerators for fieldwork. The training covered essential topics such as survey methodology, ethical considerations, and a thorough review of the questionnaire. For those who could not attend the group session, personalized one-on-one training sessions were organized, ensuring all enumerators were equally prepared and well-versed in the survey requirements. This approach helped maintain a uniform understanding and execution of the survey. Data collection was conducted face-to-face with business.

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. 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.

2.2 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 MESTI and LuxDev/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.

2.3 Focus Group discussion

To gather clearer and more detailed insights into women's employment opportunities, readiness for education and training, and the barriers they face in entering the labour market, we organized a focus group involving women from selected sectors, representatives of women's business associations, and experts. The Riinvest Institute team initially developed a focus group guide outlining its purpose, objectives, and other key details. Participants were invited via email and phone, where the discussion topic and its objectives were explained. To facilitate participation, the focus group was conducted online in October. Before starting, the team requested participants' permission to record the session to capture all relevant information. The recorded data were transcribed verbatim and analysed by an experienced researcher in quantitative methods.

2.4 Case study

To document and showcase success stories, we conducted two case studies of individuals who have transitioned from unemployment to employment through skill development. These case studies are selected based on criteria such as diversity, impact, and relevance to project objectives. The stories are compiled into a report to illustrate the potential for skill development initiatives.

3. INTERNATIONAL AND REGIONAL PERSPECTIVE

This section briefly provides international and regional experiences in ICT, renewable energy, wood processing, and food processing, particularly from the European Union, showcasing best practices in lifelong learning. The focus is on challenges that strategies countries adopted to cope with skill mismatches, by focusing on labour market development, lifelong learning models, and sector-specific examples.

Information and Communication Technology (ICT) sector

Digital skills and the use of digital technologies are reshaping labour markets, with ICT job opportunities for software testers, security specialists, and developers rapidly increasing (Cedefop, 2023). This demand has also boosted ICT service exports, showing significant growth despite some fluctuations (World Bank, 2023). ICT employment is projected to grow by over 6 percent by 2023, driven by AI and automation (Cedefop, 2024). The highest demand for ICT professionals is in the administrative and support sectors, with notable country-specific trends. For example, the Netherlands had the highest demand for Software Developers in 2023 at 70.7 percent, followed by Poland at 68.4 percent, and Lithuania led in demand for Database Professionals at 22.1 percent. The gender gap remains significant, with men making up 84.4 percent of ICT-educated employees in the EU while women 15.6 percent. Thanks to EU policy initiatives, women participation has increased in 2016 and 2022 (Eurostat, 2022). The Estonia model demonstrates a strong focus on strengthening ICT and engineering vocational education and training (VET) through initiatives launched by the IT Academy and Engineering Academy in 2023. These programs aim to modernize VET at EQF levels 4 and 5 by integrating technological solutions and promoting IT and engineering education, with an emphasis on increasing female participation. These initiatives have increased the collaboration between public authorities, educational institutions, businesses, and professional associations. Reducing dropout rates, mentoring systems are being introduced, and the engineering curriculum is being updated to meet Industry 4.0 demands, emphasizing interdisciplinary learning. Furthermore, flexible learning opportunities are supporting businesses' digital and green transitions, with a focus on ICT skills and cybersecurity. Ongoing updates to professional qualification standards and continuing training programs aims to prepare the workforce for the green economy (Kukk, 2024).The labour markets in the Western Balkans become more flexible, new forms of employment are emerging, and skill demands are evolving. Workers are increasingly shifting career paths and migrating between traditional and online labour markets, highlighting the need for flexible education and lifelong learning systems. The ICT sector, known for its higher productivity and global competitiveness, is particularly significant in this context (ETF, 2023). Prioritizing ICT skills in training programs is crucial as the WB6 economies transition to digital economies. However, challenges such as widespread emigration, inadequate infrastructure, and low innovation capacity threaten to hinder labour productivity, which in 2023 averaged only 36 percent of the EU's (OECD, 2024).

Renewable Energy and Energy Efficiency (RE & EE) sector

The global energy crisis has driven governments to invest heavily in clean energy, with a 40 percent increase in investments over the last two years, significantly boosting demand for workers in the sector (International Energy Agency, 2023). The shift toward low-carbon jobs, driven by climate commitments and technological advancements in digitalization and AI, is reshaping the labour market and requiring workers to acquire new skills while phasing out high-carbon activities (Saussay et al., 2022). This transition challenges education and training systems to integrate technical and transversal skills related to the green transition at all qualification levels (Cedefop, 2023). The energy sector demands highly skilled workers—36 percent of energy jobs fall into this category, compared to 27 percent in the broader economy—faces labour shortages, particularly in construction, which will account for half of new energy-related jobs by 2030 (International Energy Agency, 2023). The rising demand is estimated to be engineers, technicians, and specialists in renewable energy technologies, energy efficiency, and emerging technologies like hydrogen and smart grids. Skills in digital tools, data analytics, R&D, and innovation are increasingly crucial for advancing renewable energy technologies as well (EUREC, 2024). The rapidly growing solar energy sector, particularly in solar photovoltaic (PV) and solar thermal technologies, is driving a significant increase in labour demand, requiring specialized skills across its value chain. Expertise is needed in advanced research, manufacturing, and multidisciplinary areas, including chemistry, material science, electronics, project management, and financial planning. Large-scale solar projects also require coordination across various domains, from technical design to legal and financial negotiations (Unevoc, 2020).

Addressing skill gaps in the clean energy sector can be achieved by reorienting workers from the fossil fuel industry, as an estimated 50 percent of workers have transferable skills to clean energy with minimal additional training. For example, 1.2 million workers could transition from fossil fuel heating to heat pump installation, while 4 million could shift from internal combustion engine manufacturing to electric vehicles (International Energy Agency, 2023). Expanding Technical and Vocational Education and Training (TVET) programs is crucial, especially in areas like solar PV and thermal system installation, where skill shortages are evident. Enhancing certification and qualification mechanisms is also necessary to meet the rising demand for skilled labour, with an emphasis on creating a competitive workforce that increasingly includes women, who currently represent 15 percent of the energy sector (ILO, 2013; International Energy Agency, 2023). Lifelong learning models, such as Project SEED, which partners with VET providers across Europe to offer practical courses in sustainable energy, and the UK's Energy Institute training in wind turbine maintenance, solar energy, and workplace safety, are helping to address these gaps. Additionally, micro-credentialing is emerging as a flexible solution, enabling individuals to acquire specific skills in renewable energy (De Rosa, 2024).

Wood Processing sector

Wood based industry plays an important role in economy and achieving sustainable development goals. The EU Forest consist of approximately 5 percent of world's forest (EU Commission, 2022). The industry is characterized by diverse, including primary wood processing to high value-added products including furniture and printed materials. Eurostat data suggest that industry Gross Value Added (GVA) of €136 billion in 2020, representing 7.2 percent of the total manufacturing industry, as a result, the industry plays an important driving role in economic growth and job creation (Eurostat, 2022). The number of workers in the Labour Force Survey for most key occupations have fluctuated in recent years. Overall demand as observed through cumulative hours worked showed that wood process workers have been in a declining trend (Eurostat data, 2024). On the other hand, housing shortages and population growth are raising demand for wood-based construction materials, such as engineered wood products and cross-laminated timber, in urban areas (Skills Insight, 2024). However, the sector faces several challenges such as labour shortages and skill mismatches, the ability to adapt to evolving market demands, the dynamism of technological change and advancement and gender diversity in the work force. For example,

Eurostat data suggest that in 2023 women represented only 19 percent of the workforce in the wood processing sector, highlighting a significant gender gap that limits the industry's potential.

The practices in different contexts include continuous education and developing skills aiming to ensure that workers get up-to-date skills according to industry standards and innovations. For example, the University of British Columbia's Centre for Advanced Wood Processing (CAWP) model partnering with NGOs and industry to provide opportunities through virtual and in-depth learning. These trainings provide specialized courses such as management and innovation trainings to help businesses to develop more efficient products, and part time in person courses related to basic industrial wood finishing, and 150-hour online module on Kiln Drying (CAWP, 2024). Another practice includes the American Wood Council (AWC) model that provides courses such as wood design, standardization, sustainability, and building codes which includes live and asynchronous learning options, focusing on critical industry subjects such as fire resistance, compliance, and current industry trends. This practice aims to maintain high standards within the wood processing industry and ensure that the workforce is equipped with skills demanded in the industry (American Wood Council, 2024).

Food Processing sector

Technological advancements, including AI, IoT, and machine learning, are rapidly transforming the food industry, leading to significant skill gaps (Akyazi et al., 2020). The food and beverage industry, employing 4.6 million people in the EU and being the largest global exporter, is projected to grow by 50 percent by 2050 due to the expanding global population (FoodDrink Europe, 2022). However, the sector faces unique challenges, including skill shortages and mismatches, especially compared to other sectors in OECD countries (Ryan, 2023). As demand increases, the need for a skilled workforce to adopt digital tools like communication platforms, cybersecurity, and IT programming becomes crucial, particularly for roles in food production, safety, and management (Akyazi et al., 2020). According to Cedefop (2023), a significant shortage of workers is expected in food preparation occupations by 2035. Additionally, women's participation in agriculture remains low due to barriers such as insufficient childcare support, lack of time-off, limited access to finance, and poor work-life balance (Ryan, 2023).

The initiative the Pact for Skills is a flagship under the initiative the European Skills Agenda, launched by the European Commission aiming to identify current and emerging skills in different sectors and regions conducting in depth analysis, including food sector. As a result, the Agri-Food pact for skills emerged aiming to upskill and reskill current workforce and making more attractive this sector for young people by providing career and life-long learning opportunities. This initiative through the partnership will design and implement sectoral curriculum that includes trainings, upskilling and reskilling, ad adopt to the technological developments (FoodDrink Europe, 2022). Another practice on addressing the skill gaps in food industry is Food Processing Skills Canada (FPSC) in Canada, which addressing the growing workforce needs through building strategic partnerships. The FPSC provides comprehensive range of courses and credentials tailored to various audiences, including students, recent immigrants, and individuals seeking career transitions, as well as incorporated cutting-edge training methods, such as virtual reality food training experiences. These trainings also provide innovative approach for learners by providing practical skills and readiness for labour market though the experience gained using real-world food processing environments (Food Processing Skills Canada, 2024)

In the Western Balkans, the agri-food industry in general faces particular challenges in attracting staff with advanced skills that are not typical for the sector (e.g. ICT, genetics, behavioural science, etc.). The most economically engaged and educated sectors of the population are typically underrepresented in the agri-food industry because young people do not find it to be an attractive sector. Additionally, the primary goal of agricultural faculties and schools in the WB region is to equip their students with production-level knowledge and abilities that are specific to the requirements of large-scale agricultural systems. Moreover, they function as independent entities, which restricts interdisciplinary collaboration and cross-pollination. Lastly, there is

a lack of business engagement and underdevelopment in VET programs, particularly in work-based learning programs. For instance, most nations lack legislative frameworks that govern internships and apprenticeships (OECD, 2024).

3.1 Education and lifelong learning: regional and international perspective

Lifelong learning models in the EU and regional countries are designed with a holistic approach, focusing on creating productive learning environments based on labour market dynamics and the supply and demand of skills. The Council of the European Union has adopted a resolution to improve lifelong guidance strategies, emphasizing key areas: (i) promoting career management skills, (ii) ensuring universal access to guidance services, (iii) improving the quality assurance of guidance provision, and (iv) fostering cooperation among national, regional, and local stakeholders (Council of the European Union, 2008). The EU aims for 47 percent adult participation in lifelong learning by 2025, with a revised target of 60 percent by 2030, as outlined in the 2021 European Pillar of Social Rights Action Plan. However, current participation stands at 37.4 percent based on the 2016 Adult Education Survey (Cedefop, 2024). EU member states have developed their own lifelong learning models tailored to their specific needs, in line with these strategic priorities. Below, we highlight best practices from the region and the EU.

Austria

In 2023, adult participation in learning in Austria increased to 17.1 percent, up from 15.8 percent in 2022 (Eurostat, trng_lfse_01 [extracted on 14.10.2024]). Lifelong learning (LLL) in Austria, known as "lebensbegleitendes Lernen," is essential for adapting to rapid societal and economic changes. The LLL:2020 strategy provides a comprehensive framework for learning across all life stages, from early childhood to adult education, encompassing policies related to integration, labour market dynamics, and regional development. A key focus is on ensuring educational opportunities for retirees, requiring educators to acquire specific skills to work with older adults, promoting intergenerational and technology-based learning, and improving educator qualifications through significant investments in infrastructure and quality measures (UNESCO, 2024).

The Life-Long Learning-LLL:2020 strategy is based on five key principles: life stage orientation, learner focus, lifelong guidance, competence orientation, and promoting participation in lifelong learning. These principles guide initiatives to enhance education at all levels, such as strengthening preschool education, ensuring equal opportunities in schools, expanding transition systems for youth, and supporting community education. The strategy also emphasizes creating learning-friendly work environments and recognizing non-formal and informal learning, particularly for continuing education across all age groups, including retirees (European Commission, 2024). As a result of the LLL:2020 framework, Austria has implemented significant reforms, including the National Qualifications Framework (NQF) Act to recognize non-formal qualifications and the introduction of competency-based curricula in schools. Additionally, Austria has made notable progress in gender equality by funding second-chance education and initiatives aimed at improving gender equality in the workforce, reflecting the country's commitment to an inclusive lifelong learning environment (UNESCO, 2024).

The Netherlands

The Netherlands has made significant progress in vocational education and training (VET), surpassing the EU's targets for both employment and lifelong learning. From 2015 to 2022, the employment rate for recent initial vocational education and training (IVET) graduates (aged 20-34) increased from 85.8 percent to 92.8 percent, well above the EU's 2025 target of 82 percent. The country also excels in work-based learning, with 95.1 percent of recent IVET graduates participating in such programs in 2022, far exceeding the EU's target of 60 percent. Additionally, more than half of Dutch adults aged 25-64 (56.1 percent) engaged in lifelong learning activities in 2022, surpassing the EU's 2025 target of 47 percent. The Netherlands has also reduced early school leaving by 3.3 percentage points over the past decade, achieving a rate of 5.6 percent,

well below the EU's target of 9 percent (Cedefop, 2024). In 2023, the highest adult participation in learning was recorded in Sweden (38.8 percent), the Netherlands (26.4 percent), and Finland (26.1 percent) (Eurostat, trng_lfse_01 [extracted on 14.10.2024]).

In 2022, the Dutch government approved a grant of EUR 392 million for the national Lifelong Learning Catalyst Project (LLO Katalysator), which will run until 2027. This project focuses on fostering regional cooperation to match training supply and demand to each region's economic and social needs. It emphasizes the development of modular training programs in collaboration with VET providers and regional stakeholders such as economic boards, industries, and institutions. The initiative is built around four pillars: identifying future skills, promoting lifelong learning solutions for transitions (such as energy transition), encouraging educational institutions to offer transition-oriented lifelong learning, and fostering a culture of learning. The project had its official national launch in June 2023, with an initial grant of EUR 167 million awarded for implementation (Cedefop, 2024). In 2020, the Ministry of Social Affairs and Employment introduced the SLIM-regeling, an incentive scheme aimed at promoting lifelong learning in small and medium-sized enterprises (SMEs). Under the scheme, SMEs, larger businesses, and partnerships of SMEs, trade associations, and educational institutions can apply for subsidies to support measures such as skills assessments, career advice, and employee development initiatives. According to the first evaluation report, 2,294 applications were submitted, with 765 grants awarded, including 673 to SMEs, 10 to large businesses, and 73 to partnerships (Cedefop, 2024).

Croatia

In 2018, Croatia had the lowest rate of lifelong learning in the region, with only 2.9 percent of adults aged 25 to 54 participating, compared to the EU-27 average of 11.1 percent (Cedefop, 2020a), which in 2023 was 6.3 percent below EU 27 average of 12.8 percent (Eurostat, trng_lfse_01 [extracted on 14.10.2024]). To increase participation, Croatia offers several incentives for both learners and businesses. Learners receive compensation for practical training and apprenticeships, regulated by contracts specified in Croatian legislation. Additionally, the Ministry of Economy provides scholarships to learners in trades with labour shortages, awarding 3,020 scholarships in 2018, totalling EUR 3.6 million. Local communities and firms also offer support. Businesses offering apprenticeships benefit from tax breaks and deductions, and small and medium enterprises (SMEs) can deduct up to 80 percent of adult education costs. In 2018, the Ministry of Economy awarded over EUR 1.4 million in grants to 190 SMEs offering apprenticeships (Cedefop, 2020a).

Croatia has made significant progress in promoting lifelong learning through initiatives led by the Agency for Vocational Education and Training and Adult Education (ASOO), with support from the European Structural and Investment Funds (ESIF). These initiatives include the "Promotion of Lifelong Learning" (PLL) projects, which aim to raise awareness and improve adult education. The first phase (2016–2019) featured annual Lifelong Learning Week (LLW) events that reached tens of thousands through workshops and campaigns. It also focused on professional development for adult educators through the International Andragogy Symposiums (ASOO, 2024). The second phase (2020–2023) continued these efforts, decentralizing activities with regional coordinators and national campaigns. It also emphasized improving the quality of adult education by hosting workshops and symposiums, reaching over 600 educators, and culminating in final conferences that showcased Croatia's progress in enhancing lifelong learning and adult education (ASOO, 2024).

4. INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SECTOR

4.1 Current state of play

The Information and Communication Technology (ICT) sector is one of the fastest-growing industries globally, significantly contributing to international economic development over the past two decades.

The ICT sector in Kosovo has emerged as a critical driver of economic growth, accounting for an estimated 16.9 percent of the country's GDP. However, despite this optimistic trajectory, the sector faces substantial challenges (EfVET,2024). One of the primary concerns is the gender disparity within the workforce. According to the Kosovo Agency Statistics (KAS), in 2023, employment within the "Information and Communication" sector shows a significant gender gap; out of a total of 10,648 workers, around 75 percent are men (8,001) and 25 percent women (2,647) (KAS, 2024). Moreover, although there is an observed growth in female enrolment in ICT education at both the Bachelor and Master levels, male enrolment has experienced a minor decline (Open Data Kosovo, 2024). This mirrors best the global trend, whereby, women despite their educational qualifications in ICT-related fields, continue to lag behind men in terms of career and advancement (Open Data Kosovo, 2024). Another barrier to women's advancement in the ICT sector is the difficulty of balancing family responsibilities with career growth. Many women find themselves between their roles as workers and caretakers, often prioritizing families' obligations due to the lack of suitable support structures, such as childcare institutions (Open Data Kosovo, 2024). Moreover, many women lack the specific technical skills required in ICT (ex. software development, network management, database development, and cybersecurity) because of the persisting gender gap in STEM education. These skill gaps present significant challenges for women seeking employment in technical ICT professions, where technical ability is highly rewarded. These challenges contribute to the gender imbalance, which in turn limits the sector's ability to develop and expand its growth. Moreover, these structural challenges are intensified by a significant staff turnover rate in the ICT sector, as numerous qualified workers leave Kosovo for better opportunities abroad, resulting in a brain drain that further undermines the sector. This situation is worsened when taking into consideration factors such as the global trend of frequent job transitions, complicating efforts for businesses to keep their employees.

To address skill mismatch over 80 percent of IT businesses provide internal training for their employees, while other businesses have started collaborating with educational institutions and training centres to better align curricula with industry demands. These partnerships have seen some success in creating training programs that reflect the realities of the job market, but progress remains slow (ALLED, 2022). Government initiatives under Kosovo's National Development Strategy emphasize vocational education and training (VET) and

university-level research to better link education with labour market needs, but overall progress remains limited. Graduates who enter the ICT sector require an average of 6.7 months to achieve satisfactory performance and skills required, which is longer than in other sectors such as manufacturing, construction, and finance, highlighting inadequacies in educational preparation (ALLED, 2022). In this vein, while Kosovo's formal education system provides technical skills such as software development and network engineering, employer satisfaction with these skills is moderate, with significant gaps still needing to be addressed (STIKK, 2023). Thereby, the contribution of both public and private institutions that provide short-term courses and specialized training in ICT-related fields, showcase a growing ecosystem of skill development efforts while underscoring the need for further improvements.

4.2 Offerings from VET & Private training providers

Industrial trends and growing market competition demand require a qualified and skilled workforce equipped with the necessary competencies to meet evolving market needs. Like other countries in the region, Kosovo is adopting a multi-dimensional education system, which includes vocational schools.

The education system in Kosovo is governed by primary and secondary legal frameworks, such as administrative instructions, as well as strategic documents. The Education Strategy (2022-2026) serves as the primary document guiding the development of education, with vocational education and training (VET) identified as a critical component of upper secondary education.

In response to the increasing demand for ICT-related professions, public vocational schools in Kosovo have introduced and developed several specialized profiles. Currently, the ICT sector offers seven profiles (Business Informatics Technician, ICT Systems Technician, Informatics, Post and Telecommunications, Software Application Developer, Technician for Interactive Media Design, and Telecommunications.) These programs are available in 25 schools across 23 municipalities in Kosovo.

Despite numerous efforts by the project research team to gather accurate data on the number of students enrolled in vocational schools during the 2024/25 academic year, only a small number of schools provided the requested information. From the available data, it is evident that the number of female students enrolled in ICT programs is significantly lower than that of males, highlighting a substantial gender imbalance in the sector (Table 2).

TABLE 2 PROFILES OFFERED BY VOCATIONAL SCHOOLS IN THE ICT SECTOR

Municipality	Name of school	Field	Profile	Duration (months)	Students (F)	Students (M)	Students (Total)
Prishtina	"Gjin Gazulli"	ICT	Business Informatics Technician	36	-	-	-
			Software Application Developer	36	-	-	-
			ICT Systems Technician	36	-	-	-
			Telecommunications	36	-	-	-
Podujeva	Fan Noli	ICT	Software Application Developer	36	4	25	29
			ICT Systems Technician	36	7	25	32
			Business Informatics Technician	36	1	20	21
			Telecommunications	36	0	12	12
			Informatics	36	0	23	23
			Post and Telecommunications	36	0	0	0
Drenas	Fehmi Lladrovci	ICT	Telecommunications	36	3	14	17
			Software Application Developer	36	28	44	72
Fushe Kosove	Minatori	ICT	Informatics	36	11	20	31
Obiliq	Ismail Dumoshi	ICT	Informatics	36	4	31	35
		Machinery, Production, and Construction	Telecommunications	36			
Peje	Rifat Gjota	ICT	Telecommunications	36	-	-	-
			ICT Systems Technician	36	-	-	-
			Software Application Developer	36	-	-	-
Kline	F.Agani	ICT	Informatics	36	-	-	-
Deçan	"Tafil Kasumaj"	ICT	ICT Systems Technician	36	-	-	-
Mitrovica	Arkitekt Sinani	ICT	ICT Systems Technician	36	-	-	-
			Telecommunications	36	-	-	-
Skenderaj	"Anton Cetta"	ICT	Informatics	36	-	-	-
			ICT Systems Technician	36	-	-	-
Vushtrri	Lutfi Musiqi	ICT	Software Application Developer	36	-	-	-
			Business Informatics Technician	36	-	-	-
Prizren	''11 Marsi''	ICT	Telecommunications	36	-	-	-
	Qendra e Kompetencës	ICT	Business Informatics Technician	36	2	15	17
Dragash	"R. Berisha"	ICT	ICT Systems Technician	36	3	15	18
Suhareka	"Skender Luarasi"	ICT	Business Informatics Technician	36	9	23	32
			Technician for Interactive Media Design	36	4	22	26
Gjilan	"Mehmet Isai"	ICT	ICT Systems Technician	36	-	-	-
	"A. Dursaku"	ICT	Informatics	36	-	-	-
Kamenica	"Sejdi Kryeziu"	Machinery, Production, and Construction	Informatics	36	-	-	-

Viti	"Jonuz Zejnullahu"	ICT	Software Application Developer	36	-	-	-
			Informatics	36	-	-	-
			Telecommunications	36	-	-	-
Ferizaj	"P. Bogdani"	ICT	ICT Systems Technician	36	4	19	23
			Informatics	36	0	36	36
Lipjan	"A.Gllavica"	ICT	Informatics	36	0	25	25
Shtime	N.Frashëri	Machinery, Production, and Construction	Informatics	36	5	15	20
Gjakova	N.Nixha	ICT	Informatics	36	4	38	42
Kijeva/ Malisheva	"L.Poradeci"	ICT	Software Application Developer	36	-	-	-
Malisheva	Qendra Kompetencës	ICT	ICT Systems Technician	36	2	25	27

SOURCES: MESTI (2024); VOCATIONAL AND EDUCATION SCHOOL

Private training providers play a crucial role in equipping young people with the skills needed to meet labour market demands in Kosovo's ICT sector. As shown in Table 3, there are 14 private training providers operating across five municipalities, all accredited by MESTI. These institutions offer 12 specialized ICT profiles with varying levels of qualification. Programs at qualification level 3 typically range from 4 to 9 months in duration, depending on the course intensity, and offer varying credit levels. Meanwhile, qualification level 4 programs generally last around 9 months and provide approximately 65 credits. The duration and credit allocation differ across profiles, reflecting the intensity and complexity of the individual courses.

TABLE 3 PROFILES OFFERED BY ACCREDITED PRIVATE TRAININGS PROVIDER IN THE ICT SECTOR

Institution/ Private	Municipality	Qualification/Profile	Level of qualification	Credits	Duration (months)
BAU Academy	Prishtina	Information and Communication Technology (ICT) Installers and Technicians	IV	-	-
		Information and Communication Technology (ICT) Installers and Technicians	III	28	-
TC Meister L.L.C Sh.P.K	Prishtina	Industrial Robot Operator – Mechatronic Process Control Technician	IV	65	9
Cacttus Education	Prishtina	Network and Computer Systems Administrator	V	240	48
		Web and Mobile Application Developer	V	240	48
PROED	Prishtina	Software Developer	V	120	48
UBT	Prishtina	Software Developer	III	19	4
		Software Developer	V	122	48
Digital School PEJA Sh.P.K	Peja	Junior Programmer	I	8	10
Digital School Sh.P.K	Prizren	Junior Programmer	I	8	10
European College of Kosovo	Prishtina	Software Development Technician	IV	60	8.5
Universum College	Ferizaj	Digital Technology	V	120	36
British High School of Technology	Prishtina	Information Technology	III	60	9
JCODERS	Prishtina	Junior Coder	I	60	12
BEETROOT ACADEMY	Prishtina	Web Application Developer	V		3
Digital School FRZ Sh.P.K	Ferizaj	Junior Programmer	I	7	10
Flutura Academy	Drenas	Junior Software Developer	IV	15	3

SOURCES: MESTI (2024); PRIVATE TRAININGS PROVIDER

4.3 Market trends and demands - Survey data

This sub-section shows data from the survey with businesses in the ICT sectors in Kosovo. Data from the survey show a growth in the ICT sector in Kosovo but also an increase in the export of services. Around 36.8 percent of ICT businesses declared that they export services. This aligns closely with findings from the Kosovo IT Barometer, which highlights that a similar proportion of businesses are exclusively focused on international markets. Notably, ICT exports last year accounted for approximately 60 million euros to the United States, 44.4 million to Switzerland, and 38.4 million to Germany, accentuating the sector's strategic orientation toward high-value global markets.

Financially, the ICT sector shows robust growth, with 47 percent of surveyed businesses reporting increased turnover in the past year. While 21 percent experienced declines and 31 percent remained stable, the majority of businesses are capitalizing on the sector's growth momentum. Encouragingly, the future outlook is overwhelmingly optimistic, as 83 percent of businesses expect that the turnover will increase. Looking ahead, the survey data on ICT businesses expansion plans indicates that the majority 36 percent intend to hire more staff. This aligns with a broader trend observed in the sector, where employment has been steadily increasing year on year. Based on Kosovo Tax Administration data, from 2019 to 2023, the number of employees in the sector grew by nearly 40 percent. On the other hand, investing in equipment, 30 percent comes in second, which shows a sustained dedication to modernizing technological infrastructure. A smaller proportion of businesses 5 percent plan to invest in facilities, while 13.8 percent are looking to introduce new products and services, and 15 percent of businesses intend to invest in digitalization processes. This represents the continuous trend of improving operations and service offerings through the integration of cutting-edge digital technologies.

In the ICT sector, 56 percent of businesses reported that some of their workers have left their jobs because of emigration in the past 12 months. Of those who left, 83 percent were men and 17 percent were women, according to the gender distribution.

4.3.1 Demand for current and future occupations

The ICT sector in Kosovo is playing a vital role in fostering innovation, driving productivity, and providing diverse employment opportunities and addressing gender disparity to some extent. It contributes to the country's economy by enhancing efficiencies in other industries and creating avenues for technological exports. Many Kosovar ICT businesses focus on providing IT services to international markets, reflecting the high level of technical expertise available. The rise of start-ups, IT consultancies, and service outsourcing have added a global dimension to the local economy. ICT-related jobs tend to offer higher wages compared to traditional industries, and they attract a younger, tech-savvy workforce. By continuing to invest in education, training, and policies supporting inclusivity, Kosovo can leverage the full potential of its ICT capabilities to further bolster its economic resilience and competitiveness.

The data combined from different sources, namely micro level survey data and in-depth interviews with subject matter experts and sector associations, highlights key roles within Kosovo's ICT sector, job demand trends, and future expectations. A surge in demand for applications programmers and software developers aligns with the global shift towards digital transformation. Despite a male-dominated sector, there is incremental growth in the inclusion of women in ICT-related roles, particularly in programming. According to the survey data (table 4), women are underrepresented in most ICT roles, with a notable presence in applications programming (23 percent of women in the sector), compared to almost negligible participation in other areas such as database administration and ICT installations. Roles like software developers and applications programmers show steady demand. Over the last three years, applications programmers averaged three open positions annually per firm, with two new jobs created. Database administrators and ICT technicians have lower turnover and job growth, reflecting either saturation in these areas or limited skill availability. Software development and programming roles are expected to see the most growth in the next 3-5 years; an average increase of three workers per year is anticipated for software developers.

TABLE 4 CURRENT PREVALENT OCCUPATIONS IN THE ICT SECTOR

ISCO Code	Occupation	% of women at sector level	Average no. of workers expected to increase/ decrease in the next 3-5 years	Average no. of open positions in the last three years	Average no. of new jobs for these positions in the last three years
2521	Database designers and administrators	1	0	2	1
7422	Information and communications technology installers and servicers	0	1	2	0
2514	Applications programmers	23	2	3	1
352	Telecommunications and broadcasting technicians	1	1	1	1
2512	Software developers	3	3	2	0
243	Sales, marketing and public relations professionals	5	1	2	0

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

On the other hand, the data on emerging occupations in Kosovo's ICT sector highlights a dynamic and expanding workforce with a strong emphasis on both traditional and innovative roles (table 5). Among the recognized roles are Computer Network Professionals, Electrotechnology Engineers, Software and Applications Developers and Analysts, and Database Designers and Administrators, emphasizing the foundational skills essential for IT infrastructure and software development. Applications programming, particularly in roles such as Applications Programmers, reflects the growing demand for custom software solutions. Beyond these traditional roles, the sector is embracing cutting-edge disciplines with the inclusion of Digital Marketing and Artificial Intelligence Specialists, signalling a shift toward integrating ICT with business growth strategies and machine learning applications. These emerging roles highlight Kosovo's readiness to adopt digital transformation and advanced technologies, paving the way for future innovations in the ICT sector.

TABLE 5 EMERGING OCCUPATIONS IN THE ICT SECTOR

ISCO Code	Occupation
2523	Computer network professionals
215	Electrotechnology engineers
251	Software and applications developers and analysts
2521	Database designers and administrators
2514	Applications programmers
252	Database and network professionals
	Digital Marketing*
	Artificial Intelligent specialist*

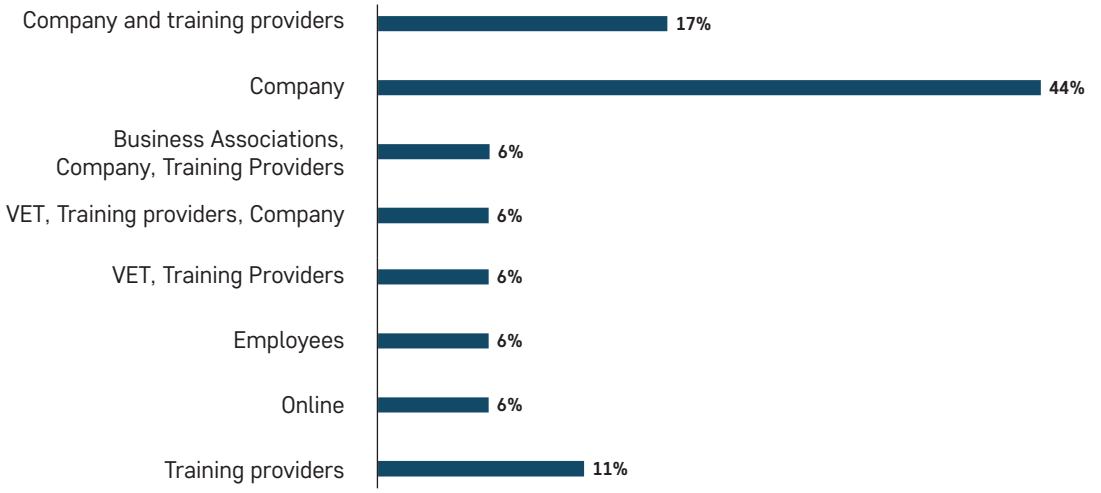
SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024) *THE OCCUPATION IS NOT LISTED IN THE ISCO NOMENCLATURE

4.3.2 Trainings

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 businesses. Regarding to spending on training activities or programs for employees over the past year, 42 percent of ICT businesses reported investing in such initiatives. However, a significant portion, 57 percent, did not allocate funds for training during this period. This implies that although a considerable percentage of businesses acknowledge the importance of staff development, many others could not yet place a high priority on training expenditures, which could influence the sector's long-term innovation and skill development. For those whose employees have undertaken training courses, it is noteworthy that most training costs—around 90 percent, are covered only by the businesses.

Looking at the sources of training provision in the ICT sector, the data shows that 44 percent of businesses offer training internally whereas 17 percent of businesses combine internal resources with external training providers. External providers, such as training providers alone, contribute to 11 percent of training efforts, while a smaller proportion is covered by online platforms (6 percent) and vocational education and training (VET). Interestingly, six percent of businesses partner with business associations alongside training providers and businesses themselves, which shows potential for sector-wide collaboration in labour development.

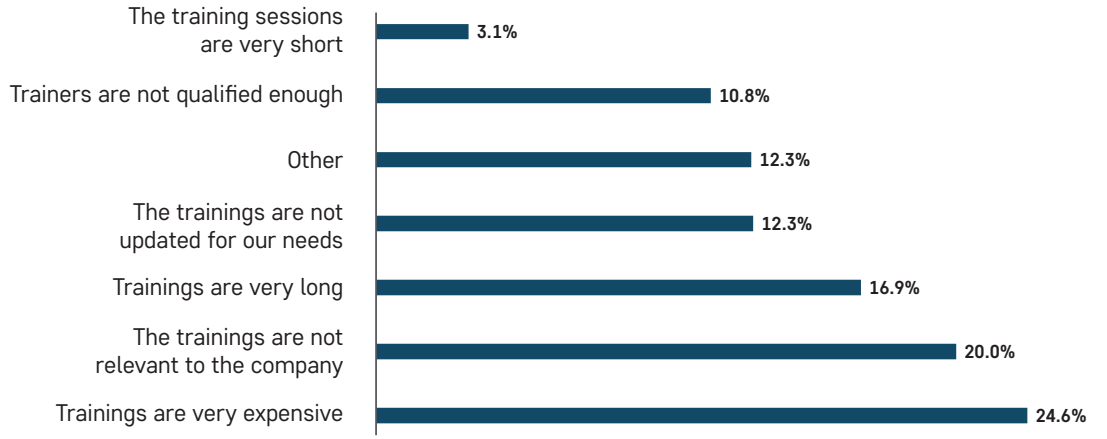
FIGURE 1 EXPENSES COVERAGE IN ICT SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

In the ICT sector businesses face several obstacles when it comes to cooperating with training providers. The most significant issue is the high cost of training, with 24 percent of businesses highlighting it as a major barrier. Around 20 percent of businesses also declared that the trainings are not updated to meet their specific needs, suggesting that many providers may not be keeping pace with the rapidly changing demands of the sector. Additionally, around 17 percent of businesses found the training content to be irrelevant. About 11 percent of respondents said that the qualifications of trainers were insufficient, which could be a serious issue for guaranteeing the quality of training that is given. Overall, most of the businesses (61 percent) currently do not have any collaboration with training providers. However, a smaller portion of businesses are engaged in such partnerships.

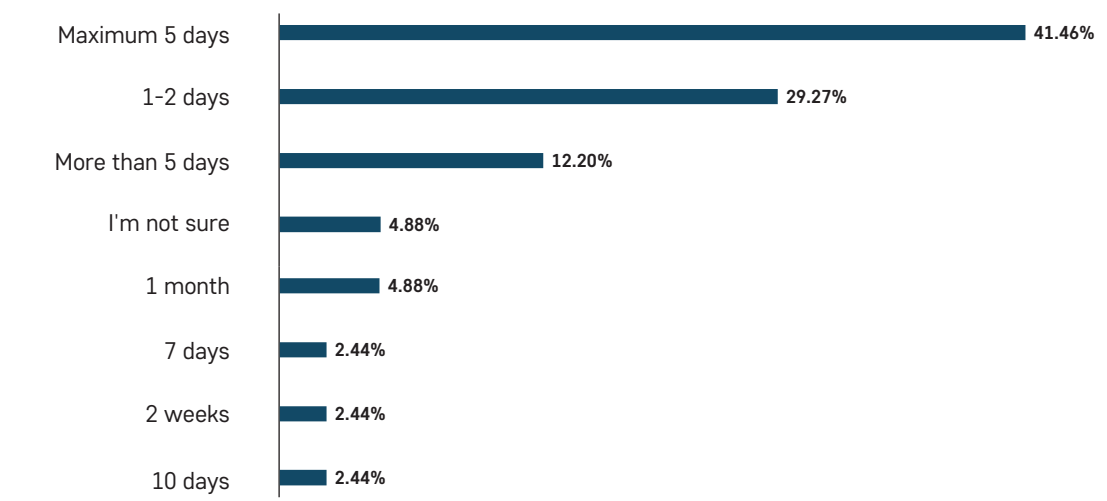
FIGURE 2 KEY BARRIERS BETWEEN BUSINESSES AND TRAINING PROVIDERS IN ICT SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

In terms of the maximum acceptable duration for a training course, the majority of businesses, 41 percent, indicated that 5 days would be the maximum duration they find acceptable. A significant portion, 29 percent, prefer training courses that last 1-2 days; meanwhile, smaller percentages of businesses are open to longer training durations, such as seven days. Regarding the preferred timing for training sessions, slightly more than half of the businesses prefer training to be conducted outside of working hours and 37 percent of businesses prefer training to take place during working hours. This trend reflects the need for businesses to consider employee availability and preferences when scheduling training sessions. However, focus group discussion with women contradicts the above preferences. They rather prefer longer training modules (i.e. 6-12 months), especially for new entrants, to equip them with competitive skills.

FIGURE 3 LENGTH OF THE TRAINING COURSES FOR EMPLOYEES IN ICT SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

4.3.3 Dual Education

As per the dual education system, 71 percent of businesses are aware of it being piloted in Kosovo, while 29 percent are not. However, only 22 percent of businesses are currently participating in the dual education system, leaving 78 percent not involved. Eighty percent said they would not be interested in hosting dual education high school students, compared to 20 percent who said they would be interested. However, such figures need to be interpreted with caution considering the relatively small sample included in the survey. This implies that although the dual education system is known, only a small percentage of ICT businesses are actively involved, and fewer are willing to host students.

TABLE 6 DUAL EDUCATION IN THE ICT SECTOR AS PERCENT

ICT	Yes	No
Are you aware of the dual education system being piloted in Kosovo?	71	29
If so, is your business part of dual education?	22	78
Would you be interested in hosting dual education high school students in your business?	20	80

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

4.4 Barriers and challenges for women in ICT sector

The evaluation of women's inclusion in the ICT sector reveals a predominantly positive outlook, with around 36 percent of respondents expressing themselves as very satisfied and an additional 29 percent being satisfied. Meanwhile, around one-third of respondents maintained a neutral stance, and only 5 percent expressed dissatisfaction. Although the large number of ambivalent responses indicate that more focused efforts would be required to guarantee fair representation and opportunities for women in the business, a general sense shows that the sector is moving toward greater inclusiveness.

Opportunities for women to advance into leadership positions in the ICT sector are largely viewed as favorable, with 41 percent of respondents agreeing to a great extent and 33 percent agreeing to a moderate extent. Additionally, one-fourth believe that such opportunities are available occasionally, reflecting ongoing efforts to promote gender equity in leadership. Only two percent indicated limited opportunities. This implies that although there has been progress in empowering women to assume leadership positions, more may be done to reinforce these gains throughout the industry.

TABLE 7 KEY BARRIERS TO WOMEN'S PARTICIPATION IN THE ICT SECTOR (IN %)

	Very low	Low	Average	High	Very high
Lack of time for work due to family obligations	9.8	12.2	46.3	14.6	17.1
The lack of flexible working hours	14.6	9.8	36.6	19.5	19.5
Lack of transportation to the workplace	17.5	7.5	32.5	35	7.5
Lack of self-confidence	20.4	16.3	22.4	22.4	18.4
Lack of family support	20	7.5	35	15	22.5
Lack of skills and abilities for work	22	4.9	41.5	17.1	14.6
Lack of childcare infrastructure (nurseries)	14.6	14.6	41.5	19.5	9.8

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Women face a range of barriers to involvement in the ICT sector, with family-related responsibilities and workplace policies emerging as key challenges. A significant 46 percent of respondents rated this as an average barrier, while 15 percent and 17 percent identified it as high and very high, respectively. This reflects the persistent societal expectations in many regions, including Kosovo, where women often bear the majority of household and caregiving responsibilities. Balancing these demands with the high expectations of the ICT sector, which frequently requires long hours or on-call availability, creates challenges for women seeking active participation in the workforce. Moreover, with 37 percent of responses categorized the lack of flexible working hours as an average barrier and nearly 40 percent marked it as high or very high, this issue shows the importance of workplace adaptability. Flexible schedules can make a significant difference for women juggling professional and personal responsibilities, such as caregiving or managing household duties. Transportation was rated as a high or very high barrier by 43 percent of respondents. This can be especially problematic for women in rural areas or regions where public transport systems are unreliable or unsafe. The inability to reach workplaces easily can limit opportunities for women, particularly when commuting times are long or require travel during non-standard hours. Nearly 41 percent of respondents (high and very high) identified the lack of self-confidence as a barrier, indicating that many women might feel less prepared to thrive in the competitive and male-dominated ICT sector. This lack of confidence can stem from societal stereotypes, a lack of visible female role models in the industry, or inadequate early exposure to technical fields. Such perceptions may deter women from applying for positions, seeking promotions, or pursuing further training opportunities.

Approximately 38 percent of respondents noted the lack of family support is a challenge for them. Family support, whether emotional or logistical (e.g., childcare assistance), plays a vital role in enabling women to pursue demanding careers. In cultures where women's professional ambitions are undervalued or where traditional gender roles prevail, the absence of such support can act as a significant obstacle to their career progression in sectors like ICT. While 42 percent viewed the lack of skills and abilities for work as an average barrier, a smaller but notable percentage rated it as high (17 percent) or very high (14 percent). This suggests that skill gaps, possibly due to unequal access to quality education or professional development opportunities, remain a concern. The rapid pace of technological innovation in ICT demands continuous learning, and women who face barriers to upskilling may feel less prepared to compete. Childcare issues, on the other hand, were rated as a high or very high barrier by 29 percent of respondents, while 42 percent identified it as an average concern. The ab-

sence of accessible and affordable childcare options can significantly limit women's ability to participate fully in the workforce, especially in industries like ICT that may demand long or irregular hours. Investment in childcare infrastructure could play a pivotal role in alleviating this burden and encouraging more women to join and remain in the sector.

Findings from sector representatives and focus groups confirm survey results, highlighting significant barriers women face in the ICT sector. While the sector offers flexibility through remote work, societal stereotypes regarding women's technical abilities persist, particularly in roles like networking and hardware installation. These biases discourage women from pursuing technical careers and create additional challenges for advancement. Cultural expectations around caregiving further exacerbate the situation, limiting women's availability for extended training and professional growth. This dual burden of societal and cultural pressures fosters self-doubt, restricting women's ability to thrive in a male-dominated field. Furthermore, systemic challenges such as gender-based pay disparity and limited professional networks also hinder women's career progression in ICT. Women often earn less than their male counterparts despite possessing similar skills and experience, perpetuating a cycle of undervaluation and discouraging long-term commitment to the sector. In addition, the lack of accessible professional networks and visible role models restricts mentorship, knowledge-sharing, and job opportunities. Expanding inclusive networks and addressing pay inequities are critical steps toward fostering a supportive environment. By establishing women-centered professional communities and ensuring equitable pay structures, the ICT sector can provide women with the financial and professional incentives necessary for sustainable career growth.

TABLE 8 PERCEPTIONS OF BARRIERS TO WOMEN'S PARTICIPATION IN THE ICT SECTOR (IN %)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Lack of awareness campaigns about career opportunities	35	19	35	2.5	7
There are practices and policies of gender discrimination in the workplace	35	19	38	2.5	4.8
The low level of wages has discouraged women from entering the labor market	21	16	52	4.8	4.8

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The challenges impacting women's participation in the ICT sector are multifaceted, with perceptions varying across different areas. A significant proportion of respondents (35 percent) strongly agree that a lack of awareness campaigns about career opportunities is a barrier, with an additional 19 percent agreeing. This clearly shows the need for targeted outreach and education to highlight the potential of ICT careers for women. Gender discrimination in the workplace also emerged as a concern, with 36 percent strongly agreeing and 19 percent agreeing that practices and policies perpetuate inequality, though 38 percent remained neutral. Additionally, low wages were seen as less impactful, with only 21 percent strongly agreeing and 17 percent agreeing that they discourage women from entering the labor market, while a majority (52 percent) held neutral views. This discrepancy suggests that although systemic problems like prejudice and awareness are recognized, financial incentives might not be widely considered the main obstacle. These findings highlight the need for holistic strategies, combining awareness efforts, workplace equality, and competitive remuneration, to enhance women's participation in the sector.

TABLE 9 INITIATIVES TO IMPROVE WOMEN'S INCLUSION IN THE ICT SECTOR: PERCEPTIONS AND AGREEMENT LEVELS (IN %)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The possibility of flexible hours for women	47.2	11.1	11.1	5.6	25
Affordable childcare	45.7	5.7	11.4	11.4	25.7
Improvement of working conditions in the sector	52.6	7.9	10.5	7.9	21.1
Transport insurance	18.8	15.6	12.5	12.5	40.6
Trainings for increasing skills and abilities in the workplace	35.3	17.6	17.6	5.9	23.5
Programs designed primarily to increase the number of women in the sector (Wage Subsidy)	59.5	10.8	13.5	5.4	10.8
Increasing the number of women in leadership positions	58.3	11.1	22.2	2.8	5.6

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

This above table illustrates various initiatives that could improve the inclusion of women in the ICT sector, with responses indicating varying levels of agreement. The highest level of agreement was found with initiatives such as increasing the number of women in leadership positions (58 percent strongly agreeing) and programs designed to increase the number of women in the sector, such as wage subsidy programs (59 percent strongly agreeing). These initiatives were seen as key strategies for fostering greater participation of women in ICT. Similarly, respondents (more than half) strongly agreed that the industry should enhance working conditions, underscoring the need to foster a more welcoming and encouraging workplace. On the other hand, transport insurance, which had the highest rate of strong disagreement (40 percent), was perceived as less critical in improving women's inclusion in ICT, suggesting that other initiatives, such as flexible working hours (47 percent strongly agreeing) and affordable childcare (45 percent strongly agreeing), were seen as more impactful in addressing barriers women face in the sector. Furthermore, there was a moderate degree of support (35 percent strongly agreeing) for offering training chances to improve skills, reflecting that improving women's professional capacities is also seen as a crucial component of broader inclusion in ICT.

Findings from semi-structured interviews with sector representatives and focus groups emphasize the importance of diverse incentives to encourage women's participation in the ICT sector. These incentives are training programs, access to finance, and paid internships that provide women with both work experience and skill development. Raising awareness about the opportunities in ICT is essential, particularly highlighting the sector's flexibility, which is ideal for mothers balancing family and work obligations. Collaboration among institutions, businesses, and vocational schools to co-create training programs aligned with industry demands was also mentioned as an important push factor to coordinate activities and jointly to address challenges. Additionally, financial support from donors is vital to improve access to training opportunities. Practical skills-focused training, coupled with financial aid and flexible working conditions, were highlighted as essential incentives to increase women's representation in the ICT sector.

BOX 1. TRANSITIONING FROM LIMITED EXPERIENCE TO PLANNING ENGINEER

As a student, she faced several challenges, including the lack of practical experience and uncertainty about her skills. These difficulties motivated her to work harder and better prepare for the job market. She realized that training programs would be excellent opportunities to develop her skills and achieve her professional goals. During her studies, she came across the Global Engineering Girls (GEG) program through informative posters. The program inspired her to apply, offering training in soft skills, social skills, ISO standards, and scholarships. It also provided opportunities to meet mentors and visit various factories, all of which aligned with her academic and career interests.

Through the GEG program, she was offered a three-month internship at a company related to her field of study. She chose to intern at TITAN Sharrcem, a cement production plant. Not only did she successfully complete her internship, but she also extended her stay for an additional seven months. This extension allowed her to secure a full-time position as a Planning Engineer, further developing her skills and building a career. She learned to view every opportunity as a step forward. Training programs are an excellent way to gain knowledge and build connections with professionals. She also realized the importance of believing in her value and seeking guidance when necessary. Her journey demonstrates that persistence, proactive learning, and taking advantage of available training programs can significantly shape one's career trajectory. Through hard work, networking, and mentorship, she transitioned from a student with limited experience to a successful Planning Engineer in the cement industry.

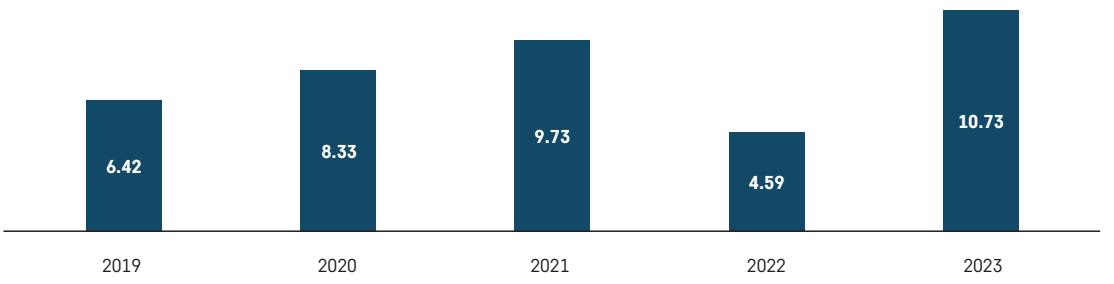
5. RENEWABLE ENERGY (RE) AND ENERGY EFFICIENCY (EE) SECTOR

5.1 Current state of play

Kosovo's energy sector remains predominantly reliant on traditional sources, with clean energy representing a relatively new and growing segment. According to the national statistics, 87.3 percent of gross energy production was derived from thermal power plants in 2023. In contrast, hydropower contributes 6 percent, while wind and solar energy together account for just 6 percent of gross production. These figures give us an image of the country's early stages of renewable energy development, offering potential and difficulties for the sector's sustainability and diversification. Kosovo's energy sector is also characterized by a significant reliance on imports to meet domestic demand. This dependence on external sources is mirrored in the Renewable Energy and Energy Efficiency (RE & EE) sector, where survey data indicates that only one-fifth of businesses engaged in export activities in 2023, while the majority focused their operations solely on the domestic market. By improving energy efficiency and integrating renewable energy sources, Kosovo can lower energy costs, foster innovation, and align with the commitments arising from the Western Balkans Green Agenda as well as global sustainability goals.

The energy sector faces challenges such as a significant skills gap and gender disparity. The sector is dominated by men comprising 89 percent of the workforce, compared to 10 percent in 2023. However, it is worth mentioning that there was a slight increase of 4 percent compared to 2022 in women's participation in this sector.

FIGURE 4 TRENDS IN WOMEN'S WORKFORCE PARTICIPATION IN THE ENERGY SECTOR (2019–2023)[2]



SOURCE: AUTHORS' CALCULATIONS

2 Note: Due to the lack of specific data on workforce participation in the selected industries, which could provide insights into sub-sectors (e.g., (code 35) Electricity, gas, steam and air conditioning supply, (code 41) Construction of buildings, and (code 35) Specialized construction activities), this analysis focuses on overall workforce participation by gender at an overall activity level, using data from the Kosovo Agency of Statistics (ASK).

Kosovo's education and training systems faces challenges to meet the growing demand for private sector for technical skills in the energy sector, with 40 percent of vocational diploma holders and 35 percent of university graduates lacking market-relevant competencies (Millennium Challenge Corporation, 2016). Vocational programs are poorly integrated and lack clear priorities, while women remain underrepresented in high-demand fields. At the University of Prishtina, female enrolment in energy-related programs has increased slightly, with 81 women in Computer Engineering by 2021–2022, in fields such as Thermo-energetics and Renewable Energy remains minimal (Gender Diversity in the Energy Sector in Kosova, GIZ, n.d.).

There are several initiatives to address skill mismatch in particular the involvement of women in REE sector. These initiatives include the Women in Energy Programs, supported by the Millennium Foundation Kosova (MFK) and Millennium Challenge Corporation (MCC), provide scholarships, internships, and technical support to increase women's participation in the energy sector. The JETA project, also backed by MFK and MCC, focuses on producing graduates with technical expertise and improving women's employment opportunities in energy industries. Additionally, Riinvest Institute's Green School provides an important platform to educate and empower individuals to address current and future challenges in renewable energy and energy efficiency.

5.2 Offerings from VET & Private training providers

Vocational education amd training in the energy sector is essential for developing a skilled workforce to support Kosovo's growing energy needs and diversification of energy sources. Vocational schools in Kosovo currently offer only two profiles in this field, available in five municipalities and provided by five schools. The Electrical Installer profile is taught at Ismajl Dumoshi Vocational School in Obiliq and Fan Noli Vocational School in Podujevë, where 36 male students were enrolled in the 2024 academic year, highlighting the absence of female participation in this field. Similarly, the Energy profile is available in three municipalities, but male students dominate enrolment here as well. Despite the increasing importance of sectors like Renewable Energy and Energy Efficiency (RE & EE) in recent years, vocational schools have yet to introduce programs tailored to these emerging areas.

TABLE 10 PROFILES OFFERED BY VOCATIONAL SCHOOLS IN THE RE&EE SECTOR

Municipality	School	Field	Profile	Students (F)	Students (M)	Students (Total)
Prishtina	Gjin Gazulli	Machinery, Production, and Construction	Energy	-	-	-
Podujeve	Fan Noli	Machinery, Production, and Construction	Electrical Installer	0	19	19
Fushe Kosova	"Minatori"	Machinery, Production, and Construction	Energy	5	12	17
Obiliq	"Ismail Dumoshi"	Machinery, Production, and Construction	Energy	0	17	17
			Electrical Installer	2	16	18
Peja	"Rifat Gjota"	Machinery, Production, and Construction	Energy	-	-	-

SOURCES: MESTI (2024); VOCATIONAL SCHOOL

Private training providers, like vocational schools, have yet to introduce new profiles in their programs. As shown in Table 8, seven private institutions across seven municipalities in Kosovo currently offer only the Electrical Installer profile. These programs are designed to equip participants with practical skills in electrical installation, maintenance, and safety standards. The duration of these courses' ranges from 3 to 12 months, depending on their intensity, with an average credit allocation of approximately 30. This data highlights that profiles related to energy efficiency and renewable energy are still not offered by either public or private institutions, leaving a critical gap in addressing emerging industry needs.

TABLE 11 PROFILES OFFERED BY ACCREDITED PRIVATE TRAININGS PROVIDER IN THE RE&EE SECTOR

Institution	Municipality	Qualification/ Profile	Credits	Duration (months)
Diakonie Training Center - DTC	Mitrovica	Electrical Installer	24	-
Professional Institute "ATC SH.P.K"	Prishtina	Electrical Installer	27	9
Bau Academy	Prishtina	Electrical Installer	27	12
TC Meister L.L.C Sh.P.K	Prishtina	Electrical Installer	50	9
KEK Training Center	Obiliq	Electrical Installer	44	-
Educational Social Center "Don Bosko"	Prishtina	Electrical Installer	12	3
Institute for Professional Qualifications - KTC	Fushë Kosova	Electrical Installer	22	3

SOURCES: MESTI (2024); VOCATIONAL SCHOOL

5.3 Market trends and demands from survey data

Survey data from the RE & EE sector reveals that over half of the businesses experienced growth in their turnover over the past year. This positive trend suggests that, despite the sector's nascent stage in Kosovo, there is a noticeable expansion and demand for clean energy solutions. However, a significant portion of businesses (38 percent) reported that their turnover remained unchanged, and a smaller percentage of businesses saw a decrease in turnover. As they look towards the future, the sector indicates strong optimism for future growth. A significant majority of businesses (82 percent) expect an increase in their turnover over the next three years. Only two percent of businesses foresee a decline, and 16 percent anticipate their turnover remaining unchanged. Since businesses often serve as early indicators of market trends and economic direction, the optimism expressed by the surveyed businesses serves as a strong signal of potential growth and positive developments in the sector.

5.3.1 Demand for current and future occupations

The sector's development is essential for building a resilient energy system that supports the country's long-term social and economic prosperity. Based on the survey data on existing occupations in the Energy Efficiency and Renewable Energy sector in Kosovo, key sector occupations currently include Building and Related Electricians, Electrical Line Installers and Repairers, Electrical Engineering Technicians, Electrotechnology Engineers, Assemblers, and Finance Experts/Professionals, emphasizing both professional and the technical skills required for energy infrastructure and renewable energy advancements. Despite the growing demand for these roles, the rep-

resentation of women remains low, with an exception electrotechnology engineers which represents 17 percent of the women working in the sector. Employment trends indicate modest growth, with an average of 2–3 new positions expected for most roles over the next 3–5 years. The data reveals limited workforce dynamism, as the firm average number of open positions and newly created jobs in the last three years has been minimal, ranging from 1 to 3 per occupation. Additionally, roles such as Assemblers and Finance Professionals illustrate the broader scope of skills needed within the sector, extending beyond technical expertise to include assembly operations and financial oversight. However, these positions also show low job creation and availability, suggesting a need for strategic efforts to expand the workforce in these critical areas. While the anticipated workforce increase reflects steady but limited sectoral growth, it also highlights the necessity for targeted interventions to attract and train more workers, particularly women, to address the gender imbalance and skills gap. Kosovo's energy sector must focus on fostering a more inclusive and diverse workforce while scaling up efforts to meet the growing demands for renewable energy and energy efficiency projects. This involves enhancing technical education, promoting gender equity initiatives, and incentivizing job creation to support the transition toward sustainable energy solutions.

TABLE 12 CURRENT PREVALENT OCCUPATIONS IN THE RE & EE SECTOR

ISCO Code	Occupation	% of women at sector level	Average no. of workers expected to increase/ decrease in the next 3-5 years	Average no. of open positions in the last three years	Average no. of new jobs for these positions in the last three years
7413	Electrical line installers and repairers	0	2	3	3
3113	Electrical engineering technicians	0	2	2	1
215	Electrotechnology engineers	17	3	3	1
82	Assemblers	0	3	3	1
241	Finance professionals	0	1	1	1

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The list of emerging occupations (table 10) in the Energy Efficiency and Renewable Energy (EE&RE) sector in Kosovo, reflect the industry's evolving demands and the shift toward specialized skill sets. Traditional roles such as electrical engineers, electronics engineers, and power generation plant operators continue to be relevant, signalling the ongoing need for technical expertise in electrical systems and energy generation. Additionally, roles such as manufacturing supervisors, and finance managers underscore the importance of management and operational oversight in driving innovation and efficient resource allocation within the sector. The emergence of research and development managers in the Energy Efficiency and Renewable Energy sector reflects the private sector's awareness and commitment to investing in R&D initiatives and recruiting skilled professionals. The inclusion of logistics specialists indicates the growing significance of supply chain optimization to support EE & RE initiatives. Notably, entirely new roles—such as photovoltaic systems technicians, energy auditors, and building efficiency technicians—are emerging as critical to the sector, reflecting a focus on renewable energy technologies, energy efficiency assessments, and sustainable building practices. These trends highlight the sector's shift toward sustainability and the need for a workforce adept in both traditional and innovative energy solutions, offering opportunities for skill development and specialized training programs.

TABLE 13 EMERGING OCCUPATIONS IN THE RE & EE SECTOR

ISCO Code	Occupation	Notes
2151	Electrical engineers	
3122	Manufacturing supervisors	
3113	Electrical engineering technicians	
2152	Electronics engineers	
1223	Research and development managers	
3131	Power generation plant operators	
1211	Finance managers	
4323	Transport clerks	Logistics specialist
	Photovoltaic systems technician*	
	Energy auditor*	
	Building efficiency technician*	

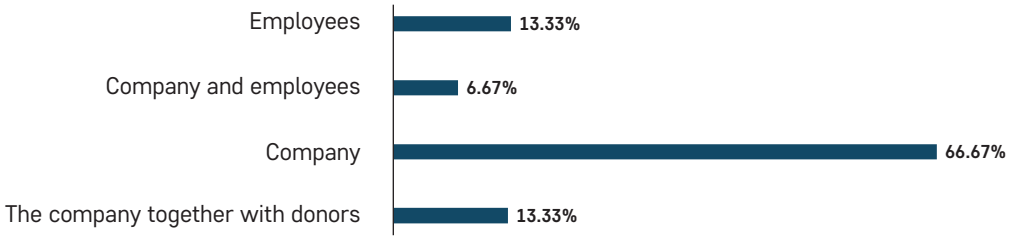
SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024) *THE OCCUPATION IS NOT LISTED IN THE ISCO NOMENCLATURE

5.3.2 Trainings

As mentioned above, around one-third of businesses surveyed in the RE & EE sector, plan to hire more employees within the next three years—a figure that closely aligns with the 30 percent of businesses that invested in employee training programs over the past year. This alignment suggests a possible connection between workforce expansion and the recognition of the need for skills development. The other considerable 70 percent of businesses did not allocate resources to training programs in the past year. However, around 83 percent declared that their employees participated in training courses over the past year. In addition, when asked what proportion of their employees had received training in the previous 12 months, businesses reported that, on average, 64 percent of their staff had done so. This implies that even though the majority of businesses are making significant investments in staff development, not all employees have received these trainings yet.

The expenses of these training courses, based on businesses responses, were fully covered by two-thirds of them (Figure). Meanwhile, 13 percent of businesses received funding from donors and another 6 percent of businesses shared the training costs between the company and its employees.

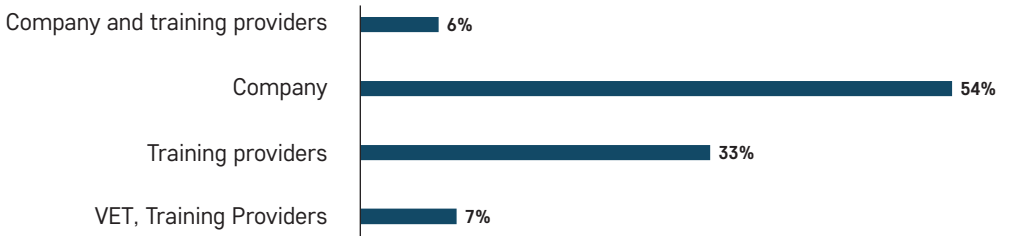
FIGURE 5 EXPENSES COVERAGE IN THE RE & EE SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The survey further shows interesting dynamics regarding the sources of training provided to employees. More than half of them delivered training internally. This aligns with earlier findings that most of the businesses were themselves the primary financers of training programs. On the other hand, external training providers contributed to 33 percent of training efforts, showing that a part of the sector relies on specialized institutions for advanced skills and technical knowledge. A smaller portion 7 percent relied on Vocational Education and Training (VET) institutions and only six percent of training initiatives combined company-led efforts with external providers.

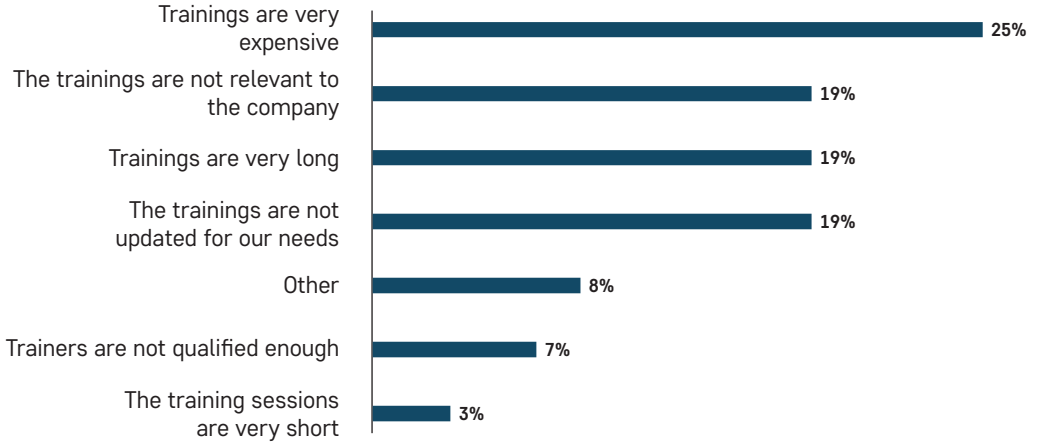
FIGURE 6 PROVIDERS OF TRAINING IN THE RE & EE SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The survey highlights several barriers that hinder effective collaboration between businesses in the RE & EE sector and training providers. Among the most frequently cited challenges is the cost of training, with one-fourth of respondents indicating that training programs are too expensive, reflecting a key financial constraint for businesses seeking to invest in workforce development. Equally concerning is the relevance and timeliness of training content, with 19 percent of businesses reporting that training programs are either not aligned with their specific needs or are outdated. This points to a discrepancy between the training providers' services and the sector's quickly changing needs. Another critical issue is the perceived lack of trainer qualifications, as seven percent of businesses expressed concerns about the competency of trainers, which may undermine the effectiveness of training programs. It becomes evident that collaboration between businesses in this sector and training providers is still at an early stage. The survey reveals that the vast majority 89.8 percent of businesses have not yet established any partnerships with training providers. This striking figure emphasizes a substantial untapped potential for fostering collaboration to address labour force development needs.

FIGURE 7 KEY BARRIERS BETWEEN BUSINESSES AND TRAINING PROVIDERS IN RE & EE SECTOR

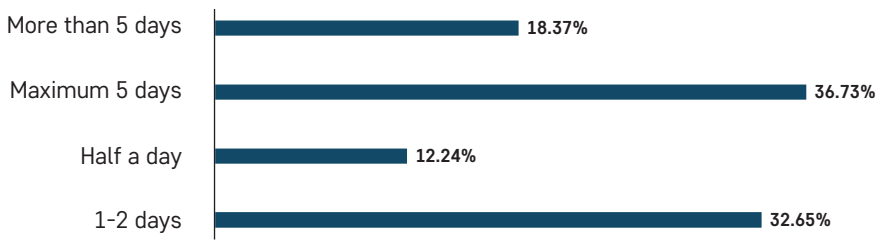


SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

When asked about the length of the training courses, the majority of businesses seem to prefer short-duration training courses. This could reflect the sector's need for efficiency and quick skill acquisition since it is growing rapidly. Around 36 percent of businesses indicate that a maximum of five days is the most acceptable duration for a training course, and similarly 32.7 percent prefer even shorter courses lasting 1–2 days. Interestingly, 12 percent of respondents express a preference for half-day courses; meanwhile, 18.4 percent of businesses are open to longer courses exceeding five days, suggesting that a segment of the sector recognizes the value of more in-depth training when necessary.

Businesses ' preferences on when to do training sessions show a clear need for flexibility outside of regular business hours. According to the survey, 60 percent of respondents prefer training sessions to be conducted outside of work hours, while 40 percent are open to training during regular working hours. It is somewhat problematic that a significant portion of businesses in the RE & EE sector prefer training to occur outside of regular working hours, as this may indicate a reluctance to allocate time during work hours for employee development, potentially limiting opportunities for comprehensive and impactful training.

FIGURE 8 LENGTH OF THE TRAINING COURSES FOR EMPLOYEES IN RE & EE SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

5.3.3 Dual Education

Awareness and engagement with the dual education system in the RE & EE sector present a mixed picture. While 62 percent of businesses are aware of the dual education system being piloted in Kosovo, only 13 percent are actively participating. However, there is notable interest in future involvement, with 52 percent of businesses expressing willingness to host dual education high school students.

TABLE 14 DUAL EDUCATION IN RE & EE SECTOR

RE & EE	Yes	No
Are you aware of the dual education system being piloted in Kosovo?	62 %	38 %
If so, is your business part of dual education?	13 %	87 %
Would you be interested in hosting dual education high school students in your business?	52 %	48 %

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

5.4 Barriers and challenges for women in RE & EE

An interesting perspective is shown by the assessment of women's participation in the energy sector. While around one-fifth of respondents are satisfied with women's inclusion, only a small portion (4 percent) express being very satisfied. A higher percentage, 42 percent, expresses no opinion, showing that they may not fully see or respond to the sector's attempts to advance gender diversity. Additionally, 14 percent of respondents are dissatisfied, with four percent expressing strong dissatisfaction, pointing to potential challenges such as gender discrimination or structural barriers hindering women's participation. When asked about women advancing to leadership positions within the RE & EE, we see a significant portion of respondents, 56 percent, that believe that there are moderate opportunities for women to rise into leadership roles. However, 26 percent remain neutral, signaling that while some opportunities exist, they may not be clear or accessible to everyone. Only a small percentage, six percent, feel that there are limited or no opportunities for women to advance.

TABLE 15 KEY BARRIERS TO WOMEN'S PARTICIPATION IN THE RE & EE SECTOR (IN %)

	Very low	Low	Average	High	Very high
Lack of time for work due to family obligations	20.4	8.2	34.7	24.5	12.2
The lack of flexible working hours	20.4	6.1	36.7	20.4	16.3
Lack of transportation to the workplace	20.4	8.2	38.8	16.3	16.3
Lack of self-confidence	25	19.6	21.4	23.2	10.7
Lack of family support	16.7	22.9	27.1	14.6	18.8
Lack of skills and abilities for work	16.3	14.3	34.7	12.2	22.4
Lack of childcare infrastructure (Nurseries)	14.3	8.2	42.9	14.3	20.4

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The table 15 presents several barriers that women face in their involvement in the RE & EE sector, with varying degrees of perceived severity. Lack of time due to family obligations is marked as a high or very high barrier by 37 percent of respondents, indicating that women may struggle to balance work and family responsibilities, especially in demanding sectors like energy. This is compounded by the lack of flexible working hours, with 37 percent rating it as a significant barrier, indicating that the rigid working hours in the sector may deter women from pursuing or staying in these roles. The importance of dependable transportation choices, particularly in distant or less accessible places, is highlighted by the fact that one-third of respondents view a lack of transportation to the workplace as a high or very high difficulty. The lack of self-confidence (45 percent of respondents rated it as an average or higher barrier) could reflect cultural or personal challenges that women in the sector face when competing in a male-dominated field, which may discourage them from taking on leadership or more visible roles. Similarly, lack of family support (39 percent rated it as a high or very high barrier) indicates that societal expectations and lack of understanding from families about women's careers in energy could hold them back.

Findings from semi-structured interviews and focus groups reveal additional barriers that women face in the Renewable Energy and Efficiency (REE) sector, beyond those identified in the survey. A significant challenge is the lack of hands-on, project-based training programs that address technical skills such as installation, maintenance, and project execution. While women that may acquire digital design skills through basic training, applying these skills in real-world scenarios remains difficult without practical experience. Collaboration between private sector companies and training institutions is essential to provide structured, project-based learning opportunities. These initiatives could help bridge the gap between theoretical knowledge and technical application, building women's confidence and fostering skill development in a supportive environment.

Another critical issue is the absence of specialized curricula in educational institutions for emerging fields like REE which needs to be addressed with the collaboration of different stakeholders. This results in a lack of foundational technical knowledge for women entering the workforce, further limiting their ability to advance in technical roles. Focus group participants recommended strengthening partnerships between businesses and educational institutions to align curricula with industry needs, ensuring that graduates are workforce ready. Real-world training, coupled with mentorship programs led by successful women in REE, was also highlighted as a strategy to inspire and engage more women. Additionally, addressing logistical barriers

such as transportation and childcare, along with revising maternity leave policies that deter private sector employers from hiring women, is crucial for fostering inclusivity and accessibility in the sector.

When it comes to lack of skills and abilities for work, although 35 percent rated it as an average barrier, the percentage of respondents who see it as a high or very high barrier indicates that there may still be gaps in training or self-perception, especially in technical fields like RE & EE, which are typically underrepresented by women. Lastly, lack of childcare infrastructure is seen as a substantial issue by 35 percent of respondents, reflecting that without adequate childcare support, many women may be forced to prioritize family care over career ambitions, further limiting their opportunities to thrive in the RE & EE sector.

TABLE 16 PERCEPTIONS OF BARRIERS TO WOMEN'S PARTICIPATION IN THE RE & EE SECTOR (IN %)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Lack of awareness campaigns about career opportunities	34.7	34.7	36.7	14.3	12.2
There are practices and policies of gender discrimination in the workplace	12.2	40.8	32.7	8.2	6.1
The low level of wages has discouraged women from entering the labor market	12.2	30.6	38.8	14.3	4.1

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The answers to the comments about women's involvement in the RE & EE industry indicate the main obstacles that women in the area face. The statement on the lack of awareness campaigns about career opportunities shows that 35 percent of respondents strongly agree, and another 35 percent agree, which shows that a significant portion of individuals in the sector recognize the importance of such campaigns. Nevertheless, a sizable portion (36.7 percent) are neutral, suggesting that not all organizations or sectors are fully addressing this issue. Regarding gender discrimination, 12 percent of respondents strongly agree, and 41 percent agree, which points to a notable perception of gender discrimination practices in the workplace. The low wages discouraging women from entering the labor market has received less agreement, with 12 percentage strongly agreeing and 31 percent agreeing. It additionally indicates that although some women may find that income differences are a contributing factor, other issues such as prejudice or knowledge may be more important barriers.

TABLE 17 INITIATIVES TO IMPROVE WOMEN'S INCLUSION IN THE RE & EE SECTOR: PERCEPTIONS AND AGREEMENT LEVELS (IN %)

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
The possibility of flexible hours for women	55	15	25	2.5	2.5
Affordable childcare	47.6	21.4	11.9	7.1	11.9
Improvement of working conditions in the sector	42.5	25.	17.5	2.5	12.5
Transport insurance	39	39	14.6	2.4	4.9
Trainings for increasing skills and abilities in the workplace	37.2	25.6	27.9	0	9.3
Programs designed primarily to increase the number of women in the sector (Wage Subsidy)	34.1	14.6	31.7	17.1	2.4
Increasing the number of women in leadership positions	35	27.5	25	2.5	10

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The findings of the survey on efforts to increase women's engagement in the RE and EE sectors highlight important areas that need to be addressed in order to promote gender diversity. The possibility of flexible working hours stands out as the most favored initiative, with 55 percent of respondents strongly agreeing and 15 percent agreeing. Affordable childcare is another prominent recommendation, with 48 percent strongly agreeing and 21 percent agreeing. This illustrates the need for easily available childcare options to lessen the difficulties women encounter in balancing work and family responsibilities, hence facilitating their entry and retention in the workforce. Improved working conditions within the sector also received strong support, with 43 percent strongly agreeing and one-fourth agreeing. This implies that improving workplace conditions—including facilities, safety precautions, and equity policies—is crucial to fostering inclusivity and keeping woman employees. Moreover, transport insurance received considerable backing, with 39 percent of respondents both strongly agreeing and agreeing. Training programs, on the other hand, aimed at enhancing skills and abilities were also emphasized, with 37 percent strongly agreeing and 26 percent agreeing. Programs designed to increase the number of women in the sector, such as wage subsidies, received moderate support, with 34 percent strongly agreeing and 15 agreeing. While this initiative is viewed positively, it may be seen as one part of a more comprehensive strategy to boost women's participation. Lastly, increasing the number of women in leadership positions was endorsed, with 63 percent strongly agreeing and agreeing. This points out the understanding that breaking down barriers and promoting an inclusive culture in the industry depend on the presence of women in leadership positions.

In addition to the incentives identified in the survey, semi-structured interviews and focus groups revealed several other crucial recommendations for encouraging women's participation in the Renewable Energy and Efficiency (REE) sector. Sector representatives emphasized the need for specialized, fast-tracked training programs to equip women with the skills needed for renewable energy roles. These programs should be rapidly developed to address the sector's growing demand for workers. Furthermore, offering support services such as transportation and daycare options would alleviate significant logistical barriers that women face, especially in fieldwork. Creating opportunities for women to advance beyond administrative roles is also essential to promote long-term career growth and retention in the sector.

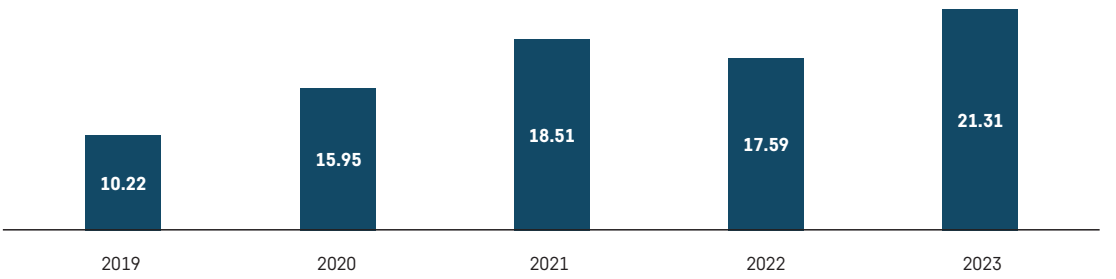
Another important incentive derived from semi-structured interviews and focus group was related to revising labor laws, particularly maternity leave policies, which currently pose a financial burden on private sector employers and discourage them from hiring women. Revising these policies to make employment for women more affordable would contribute to equal participation. Additionally, ensuring financial support for training costs would further incentivize women to enter the sector. Focus group participants suggested that the government should collaborate with the private sector to conduct detailed skills gap analyses, helping to align training programs with the industry's needs. These steps, including financial support and leadership opportunities for women, would significantly enhance women's involvement in REE and energy efficiency roles.

6. WOOD PROCESSING SECTOR

6.1 Current state of play

The wood processing industry in Kosovo has a unique structure, with 90 percent 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). These skills are essential for improving productivity and the quality of wood products. Businesses that successfully utilize these technologies and skills gain a competitive advantage in the market. Taking into consideration that the becoming engaging in export markets and producing higher quality products, the sector needs to adopt new technologies (EYE, 2016). However, skill shortages related to digital skills, combined with specialized training opportunities, and significant barriers to investment in employee development (Open Data Kosova, 2024). In terms of women participation in the sector, the data from KAS shows an increase, however limited, of women in production sector, from 17 percent in 2022 to 21 percent in 2023.

FIGURE 9 TRENDS IN WOMEN'S WORKFORCE PARTICIPATION IN THE PRODUCTION SECTOR (2019–2023)



SOURCE: KOSOVO AGENCY OF STATISTICS (KAS), 2024

The low participation of women in the wood processing industry is attributed to barriers such as family responsibilities, insufficient childcare facilities, informality in employment (e.g., lack of formal contracts), and skill mismatches (Open Data Kosova, 2024). Furthermore, the absence of educational and vocational training programs designed specifically for women limits their opportunities to acquire the skills and qualifications required from the private sector (Open Data Kosova, 2024).

6.2 Offerings from VET & Private training providers

The wood processing sector in Kosovo offers a limited number of specialized profiles, which are available in four municipalities through four vocational schools. These profiles include Computerized Machinery Operation, Woodworker, Carpentry Interior Design, and Wood Technology. Unsurprisingly, three of these profiles are concentrated in the municipality of Ferizaj, the hub of Kosovo's wood industry. While data on student enrolment is scarce, available information from the "Shtjefën Gjeçovi" school reveals that all 23 enrolled students are male, underscoring the sector's gender imbalance.

TABLE 18 PROFILES OFFERED BY VOCATIONAL SCHOOLS IN THE WOOD PROCESSING SECTOR

Municipality	School	Field	Profile	Students (F)	Students (M)	Students (Total)
Prishtina	"Shtjefen Gjeçovi"	Machinery, Production and Construction	Computerized Machinery Operation	0	23	23
Peje	Rifat Gjota	Machinery, Production and Construction	Woodworker	-	-	-
Vushtrri	"Lutfi Musiqi"	Machinery, Production and Construction	Carpentry/Dual	-	-	-
Ferizaj	Zenel Hajdini	Machinery, Production and Construction	Interior Design and Wood Technology	-	-	-
			Woodworker / Carpentry/Dual	-	-	-
			Woodworker	-	-	-

SOURCES: MESTI (2024); VOCATIONAL SCHOOL

Private training providers in the wood processing sector currently offer only Carpentry profiles, available in the municipalities of Lipjan and Prizren. These programs are accredited at qualification level IV and provide a total of 30 credits. Despite the rapid growth of the wood processing industry in Kosovo and its significant export potential, the range of profiles offered by training institutions remains notably limited, highlighting a gap in meeting the sector's evolving workforce needs.

TABLE 19 PROFILES OFFERED BY ACCREDITED PRIVATE TRAININGS PROVIDER IN THE WOOD PROCESSING SECTOR

Institution	Municipality	Qualification/ Profile	Level	Credits	Duration (months)
Training Center – "I.A.P Shehu"	Prizren	Carpentry	IV	30.6	-
IAP "Dekoriti Training Center	Lipjan	Carpentry	IV	31	2

SOURCES: MESTI (2024); PRIVATE TRAININGS PROVIDER

6.3 Market trends and demands from survey data

The wood processing industry in Kosovo has experienced significant growth and development in recent years, emerging as a vital contributor to the national economy. Survey findings show that approximately 41 percent of businesses in the sector are exporting their products to EU countries, reflecting their expanding reach and competitiveness. Nearly half of the businesses reported increased turnover, driven by rising demand in both domestic and export markets. However, 40 percent of businesses indicated unchanged turnover, and 10 percent reported a decline. Despite these mixed results, the sector remains optimistic, with over 90percent of businesses expecting growth in turnover over the next three years, while 6.8percent anticipate stability.

Regarding business priorities, the wood processing sector places the highest emphasis on investing in equipment (35 percent), followed closely by hiring additional staff (33 percent). This reflects a strong focus on enhancing production capacity and addressing labour demands. Meanwhile, 18 percent of businesses aim to improve their infrastructure, but fewer prioritize introducing new products and services 7 percent or investing in digitalization 5 percent. This traditional focus on core operations highlights challenges such as limited access to financing, insufficient technical expertise, and low levels of digital integration across the industry.

Workforce retention poses a significant challenge, as 50 percent of respondents reported losing employees to emigration, while the other 49 percent have not encountered this issue. Among those who emigrated, men account for 84 percent, compared to 16percent for women. This disparity likely reflects broader gender dynamics in the wood processing sector, where men dominate the workforce. It may also suggest that men are more inclined or able to seek opportunities abroad, potentially influenced by cultural or familial factors that restrict women's mobility.

6.3.1 Demand for current and future occupations

Wood processing is one of the most important sectors for Kosovo's economy, acting as an industrial foundation for skilled labour, sustainable production, and value-added manufacturing. It drives economic activity by supporting domestic needs and export opportunities while creating jobs in technical and craftsmanship roles. With its potential for steady growth, both domestically and internationally, the sector significantly contributes to the country's industrial development and economic stability. Investing in innovation and workforce inclusivity could further enhance its impact on Kosovo's economic progress. The data on prevalent occupations (table 14) in Kosovo's wood processing sector reveals insights into workforce dynamics, gender representation, and employment trends. Like other sectors, wood processing exhibits a pronounced gender disparity, with women mainly in the sales roles. Employment expectations for the next 3-5 years suggest moderate growth or stability, with manufacturing managers, wood processing and papermaking plant operators, and woodworking-machine tool setters/operators showing an average increase of two to four workers, reflecting steady demand for skilled labour. Recruitment trends over the past three years indicate limited activity, with open positions and new jobs per occupation averaging between one and three, suggesting low turnover and restrained sector growth. Key roles such as wood processing plant operators and woodworking-machine tool setters/operators are crucial for driving production, with relatively higher anticipated workforce increases, signalling sustained demand for technical expertise. Meanwhile, assemblers and cabinetmakers highlight the importance of hands-on craftsmanship in wood processing, though new job creation remains modest. Sales workers, with comparatively higher female representation, play a critical role in connecting production with markets but exhibit limited expansion, reflecting a stable but unambitious market outreach strategy. Overall, the wood processing sector demonstrates potential for growth in skilled technical roles but requires targeted efforts to enhance gender inclusivity, boost workforce expansion, and foster innovation to sustain competitiveness and unlock further economic contributions.

TABLE 20 CURRENT PREVALENT OCCUPATIONS IN THE WOOD PROCESSING SECTOR

ISCO Code	Occupation	% of women at sector level	Average no. of workers expected to increase/ decrease in the next 3-5 years	Average no. of open positions in the last three years	Average no. of new jobs for these positions in the last three years
1321	Manufacturing managers	3	2	1	2
817	Wood processing and papermaking plant operators	3	4	3	2
7523	Woodworking-machine tool setters and operators	2	4	2	2
82	Assemblers	4	3	3	1
752	Wood treaters, cabinetmakers, and related trades workers	0	3	3	1
52	Sales workers	25	3	3	1

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Emerging occupations in Kosovo's wood processing sector reflect the evolving needs of the industry, driven by increasing demand for technical skills, management expertise, and market expansion. Traditional roles like assemblers and wood treaters remain vital, emphasizing the importance of craftsmanship and material processing in the production cycle (table 15). The inclusion of manufacturing supervisors signals a growing focus on enhancing operational efficiency and overseeing complex production processes. Notably, the emergence of roles like sales, marketing, and development managers—particularly those specializing in export markets—reflects an industry shift toward global competitiveness and export-driven growth. Additionally, the presence of stationary plant and machine operators underscores the sector's reliance on advanced machinery and technical expertise to improve productivity. Together, these roles indicate that the wood processing sector in Kosovo is transitioning toward a more sophisticated, market-oriented model, requiring a blend of traditional craftsmanship and modern management skills to meet domestic and international demands.

TABLE 21 EMERGING OCCUPATIONS IN THE WOOD PROCESSING SECTOR

ISCO Code	Occupation	Notes
82	Assemblers	
52	Sales workers	
3122	Manufacturing supervisors	
7521	Wood treaters	
122	Sales, marketing, and development managers	With focus on international markets
818	Other stationary plant and machine operators	

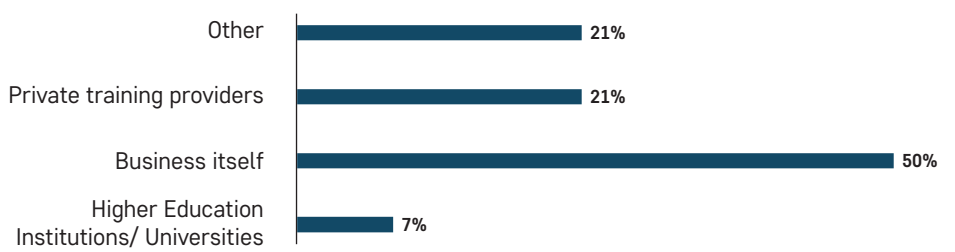
SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

6.3.2 Trainings

In the wood processing sector, only 24 percent of businesses reported spending on training programs, leaving a significant 75 percent without any investment in this area. This reflects best the lack of focus on workforce development a persistent problem in Kosovo where businesses frequently put other operational needs over staff training. Although 92 percent of employees in the wood processing industry engaging in training courses, only 50 percent of the whole workforce received training in the preceding 12 months. This suggests that despite training opportunities have been available to many employees, the total reach within the workforce is still limited External donor support is crucial to facilitating skill development in the wood processing sector. Most training expenditures (78 percent) are financed by donors, either in partnership with employers (71 percent) or individually (7 percent). Additionally, around 21 percent of employers reported sharing training expenditures with their employees.

According to the data, businesses provide the majority of training in the wood processing industry (50 percent), suggesting a direct investment in workforce development. Private training providers and "Other" sources both provide 21 percent, confirming the need for external knowledge to complement in-house efforts. However, higher education institutions play a minor role (7 percent) This could be attributed to the mismatch between industry needs and academic programs. With the technological advancements, new professions like machine operators now require technical skills rather than physical labour, making the field more attractive especially for women. However, the lack of adequate training programs forces businesses to rely on internal training or private providers, limiting the role of formal education in workforce development.

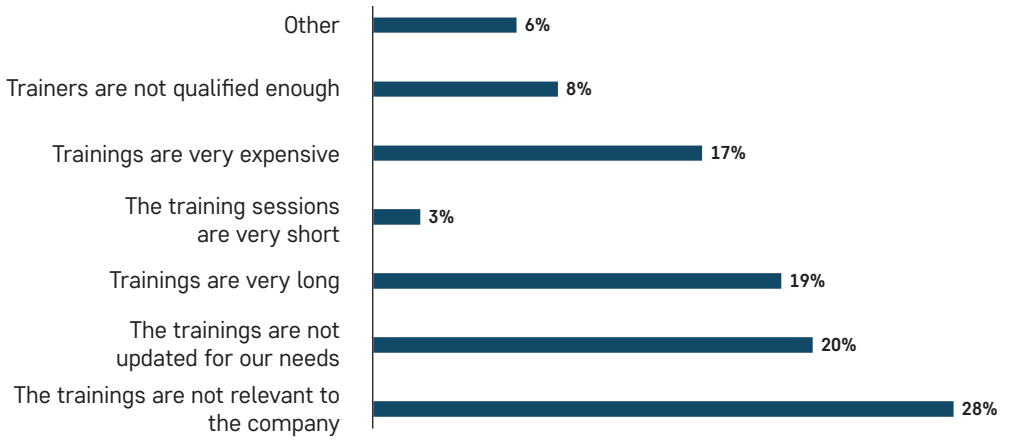
FIGURE 10 TRAINING EXPENSES COVERAGE IN THE WOOD PROCESSING SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Businesses face several obstacles when it comes to cooperating with training providers. One of the key barriers is the irrelevance of the trainings with 28 percent followed by outdated trainings programs, noted by 20 percent suggesting that providers are not keeping pace with the evolving demands of the industry. Furthermore, the length of training is a barrier, with 19 percent finding it too long and 3 percent finding it too short, pointing to a lack of flexibility in program design. For more detailed information, see Figure 11

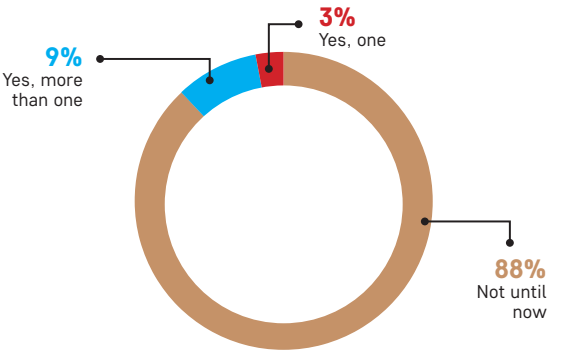
FIGURE 11 KEY BARRIERS BETWEEN BUSINESSES AND TRAINING PROVIDERS IN WOOD PROCESSING SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

An overwhelming 88 percent of businesses have yet to establish any form of collaboration with training providers. This support above discussed data which identified outdated and irrelevant training programs as major barriers, implying that businesses are hesitant to join owing to a lack of value and relevance to their needs. The data further shows that only a small fraction of 8 percent have worked with more than one provider, while an even smaller 3 percent have collaborated with just one.

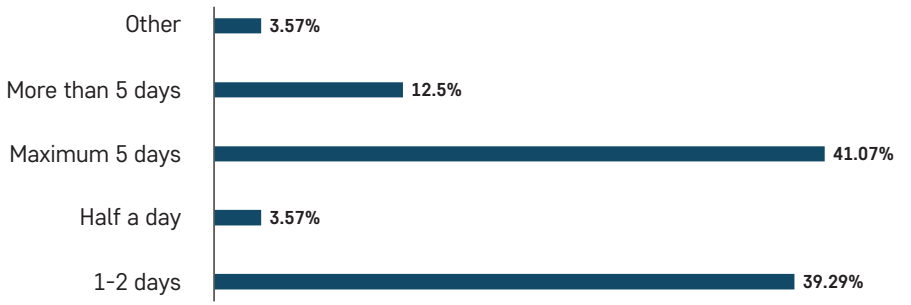
FIGURE 12 COLLABORATION WITH TRAINING PROVIDERS IN WOOD PROCESSING SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The figure depicts the duration of training courses for personnel in the wood processing industry. The majority of the courses are short, with 41 percent lasting up to 5 days and 39 percent lasting 1-2 days. Only 12 percent of training lasts more than 5 days, demonstrating that most organizations choose short courses that are less likely to disrupt regular operations. However, small time investments, such as half-day training.

FIGURE 13 LENGTH OF THE TRAINING COURSES FOR EMPLOYEES IN WOOD PROCESSING SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

6.3.3 Dual Education

A significant portion of businesses (55 percent) are unaware of the dual education system being piloted. This shows a lack of information and support for firms seeking to understand or participate in the program. However, 70 percent of firms expressed interest in hosting dual education students, indicating high potential for future participation. Currently, only 17 percent of businesses are part of the dual education system, while a significant 83 percent are not involved.

TABLE 22 DUAL EDUCATION IN RE & EE SECTOR

Wood Processing	Yes	No
Are you aware of the dual education system being piloted in Kosovo?	45 %	55 %
If so, is your business part of dual education?	17 %	83 %
Would you be interested in hosting dual education high school students in your business?	70 %	30 %

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

6.4 Barriers and challenges for women in Wood Processing sector

The table 23 highlights significant obstacles to women's participation in Kosovo's Wood Processing industry, reflecting a broader systemic issue where cultural and structural barriers combine to create a challenging environment. Key challenges, such as insufficient childcare infrastructure, with 54 percent of respondents rating it as a high or very high, and family responsibilities (43 percent), underscore the urgent need for targeted and focused interventions to address these barriers effectively. This is consistent with data showing that conventional gender roles that lay most of the caregiving and household responsibilities on women and a lack of nurseries and childcare facilities are the main causes of Kosovo's low female labor force participation

TABLE 23 BARRIERS REGARDING TO WOMEN INVOLVEMENT IN THE WOOD PROCESSING SECTOR (IN %)

	Very low	Low	Average	High	Very high
Lack of time for work due to family obligations	17.9	7.1	32.1	33.9	8.9
The lack of flexible working hours	17.9	19.6	23.2	26.8	12.5
Lack of transportation to the workplace	20	12.7	36.4	20	10.9
Lack of self-confidence	20.7	20.3	26.2	21.5	11.4
Lack of family support	19.6	26.8	17.9	25	10.7
Lack of childcare infrastructure (Nurseries)	16.1	5.4	25	35.7	17.9
Lack of skills and abilities for work	19.6	21.4	19.6	21.4	17.9

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The findings from interviews with sector representatives and focus groups confirm survey results regarding the barriers that impede women's involvement in the wood processing sector. While companies do not face significant structural limitations in hiring women, societal perceptions and cultural norms play a key role in discouraging women from entering manufacturing roles. This is particularly evident in positions like field assemblers or installers, where on-site work is often seen as unsuitable for women due to traditional gender roles. Consequently, the challenge lies not in company restrictions but in the low application rates among women, as cultural mentalities influence their decisions to avoid certain positions within the industry. Another major barrier identified in both the survey and focus group findings is the limited enrolment of women in vocational schools, which are essential for acquiring the skills needed for production roles in the wood processing sector. Despite the growing presence of women in university-level programs, vocational education has not seen a similar increase, leaving a gap in qualifications for women who wish to enter the sector. The physical demands of certain production stages also deter women from engaging fully in this field. Furthermore, the lack of targeted internships, professional training programs, and adequate safety measures in the workplace compounds these challenges, making it difficult for women to gain practical experience and succeed in the industry. Survey findings suggest (table 24) that awareness campaigns related to career opportunities present issue, followed by low wages which discourage women to enter into labor market. Furthermore, findings also show that there are discriminant practices and policies related to workplace for women.

TABLE 24 ASSESSMENT OF AGREEMENT WITH KEY LABOR MARKET ISSUES IN THE WOOD PROCESSING SECTOR (IN %)

	Very low	Low	Average	High	Very high
Awareness campaigns about career opportunities are insufficiently developed	12.5	10.7	28.6	35.7	12.5
Discriminatory practices and gender-biased policies persist in the workplace	17.9	10.7	26.8	28.6	16.1
The low wage levels have discouraged women from entering the labor market	21.4	5.4	33.9	30.4	8.9

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Survey findings suggest that majority of firms suggested that flexible working hours, affordable childcare, improving working conditions and securing transportation were the incentives with highest percentage. While most of one third of firms maintained that trainings to improve skills and abilities and programs such as wage subsidy and increasing the number of women in the sector in leadership positions were listed as important incentives to include women participation in wood processing sector.

TABLE 25 INCENTIVES TO REMOVE BARRIERS ON WOMEN PARTICIPATION IN THE WOOD PROCESSING SECTOR (IN %)

	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
Flexible working hours for women	11.5	3.8	19.2	15.4	50.0
Affordable childcare	7.7	7.7	3.8	23.1	57.7
Improving working conditions in the sector	13.7	5.9	19.6	9.8	51.0
Securing transportation	5.8	9.6	17.3	15.4	51.9
Training to improve skills and abilities in the workplace	9.4	5.7	28.3	17.0	39.6
Programs designed primarily to increase the number of women in the sector (Wage Subsidy)	11.8	7.8	33.3	11.8	35.3
Increasing the number of women in leadership positions	17.0	11.3	11.3	22.6	37.7

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Semi-structured interviews and focus groups supported findings from survey and also added additional incentives related to wood processing. Findings suggest that donors and public institutions play a critical role in promoting women's integration into the labor market, especially in sector like wood processing. Financial support for training costs, which alleviates the burden on prospective female employees, is considered essential. A recommended solution is the establishment of policies that create effective training systems, such as a digital platform where job seekers can register and receive vouchers for professional training. This would greatly benefit women who often struggle to access information about available opportunities. Additionally, ongoing support from public institutions and donors for training and internships is crucial to ensuring greater female participation. These measures would help

women in manufacturing, including those involved in CNC operation, design, and management, to gain the necessary skills and thrive in increasingly inclusive work environments.

Furthermore, paid internships and safety assurances on job sites were specifically highlighted as key factors to encourage more women to enter these industries. They also emphasized the need for targeted training programs to address specific skill gaps, particularly in areas like CNC operation and design. Additionally, there was a strong call for increased awareness about career opportunities, along with the removal of logistical barriers such as transportation and childcare. Ensuring that women have access to both practical training and the necessary support would help foster greater inclusivity in wood processing sector, allowing women to participate fully and benefit from the sector's growing opportunities.

BOX 2. FROM UNEMPLOYED TO DESIGN ENGINEER AND PROJECT SUPERVISOR

Currently working in the Wood Processing sector as a Design Engineer and Project Supervisor, she is responsible for developing technical designs and coordinating resources to ensure efficient, on-budget project completion. Before reaching these roles, she faced unemployment due to a lack of skills, experience, networking, and job opportunities. She had always dreamed of a stable career, but the barriers seemed challenging. As an unemployed woman, she felt trapped in a cycle where her limited professional network and lack of specialized skills kept most opportunities out of reach. Even with the drive to build her career, she found it difficult to overcome these obstacles, feeling like each application and interview ended in disappointment. However, when she learned about a training program in CNC machining, she saw a glimmer of possibility. Driven to build a future, she joined the program to improve her job prospects. With technical training, mentor support, and friendship among peers, her confidence and determination grew steadily. Through the training, she gained both theoretical and practical skills in CNC machining, mastering machine setup, G-code and M-code programming, and managing materials and tools. This hands-on experience enabled her to apply what she learned directly, building a strong skill set in a challenging field. Safety protocols and quality control became second nature, preparing her to work efficiently and safely.

After completing the training, she felt prepared and motivated to begin her job search. With the program's support, she networked with industry professionals and attended seminars, deepening her field knowledge. Impressed by her skills, a partner company invited her to interview for a CNC operator position, confident she was ready for the role. Her hard work and commitment led to rapid advancement within the company, first to a design engineering role, where she developed project designs and ensured quality standards. Later, she was promoted to project supervisor, managing budgets, timelines, and resources while overseeing team communication and risk management. Reflecting on her journey, she encourages women facing similar challenges to pursue training programs as a way to build new skills and expand career opportunities. She stresses the importance of persistence and continuous learning, even when faced with obstacles. Her message for other women is with determination and confidence, women can succeed in technical fields and achieve fulfilling careers

7. FOOD PROCESSING SECTOR

7.1 Current state of play

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 businesses 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.

Although women participation in the sector is high with 38 percent, which is higher than the total employment rate for women in Kosovo (22 percent), women are still underrepresented in technical and managerial positions. Suggesting that above-average opportunities in certain occupations, women's participation in higher qualifications and leadership positions remains low (PEPEKO, 2024).

The skill mismatch between the demand and supply of skilled labour is a major challenge for the sector. While there is high demand for skills requiring secondary education, the insufficient number of qualified graduates entering the workforce worsens the situation to open the skill gap without well targeted interventions. The sector's urgent need for occupational standards stresses the growing demand for a skilled workforce capable of meeting industry requirements (USAID, 2024). The skills deficit is particularly pronounced at National Qualifications Framework (NQF) levels 3 and 4, stemming from a high vacancy-to-unemployment ratio and insufficient outputs from higher education institutions and vocational education and training (VET) schools. The shortage of technician-level training programs requiring four to five years of post-secondary education further exacerbates the issue, creating a medium-level skills gap that may hinder the industry's ability to meet market demands (USAID, 2024). The education system in Kosovo, mainly VET programs, are not adequately aligned with the requirements of the food processing industry. The training that is currently available are not sufficient, especially for technician-level jobs that are important for the growth of the business. The lack of targeted training programs to address skill mismatch in the sector creates additional challenges for graduates that aim to enter in the sector (PEPEKO, 2024) with special emphasis women.

7.2 Offerings from VET & Private training providers

The food processing sector in Kosovo provides limited specialized profiles available in public and private VETs. The number of municipalities that provide these trainings is 15 overall in eight profiles. The profiles available in these profiles are: Plant Protection, Food Safety Assistant, Food Processing and Related Professions, Chef, Food Technology, Meat Processor, Chef/dual, Pastry Chef. The data on the number of students enrolled in these schools and profiles lack; based on the available data, in Prishtina "7 Shtatori" VET school the total number of enrolled students is 28, while in Drenas "Fehmi Ladrovci" the number of students enrolled is 24, followed by "Ymer Prizreni" Vet school in Prizren with 18 students.

TABLE 26 PROFILES OFFERED BY VOCATIONAL SCHOOLS IN THE ICT SECTOR

Municipality	School	Field	Profile	Students (F)	Students (M)	Students (Total)
Prishtina	"A. Frashëri"	Agriculture, Forestry, Fisheries, and Veterinary	Plant Protection	-	-	-
			Food Safety Assistant	-	-	-
	"7 Shtatori"	Services	Food Processing and Related Professions	-	-	-
			Chef	3	25	28
Drenas	"Fehmi Ladrovci"	Agriculture, Forestry, Fisheries, and Veterinary	Food Processing and Related Professions	15	9	24
Peja	"Ali Hadri"	Agriculture, Forestry, Fisheries, and Veterinary	Chef	-	-	-
Klina	"F. Agani"	Agriculture, Forestry, Fisheries, and Veterinary	Food Processing and Related Professions	-	-	-
Decan	Tafil Kasumaj	Information and Communication Technology	Chef	-	-	-
Mitrovica	"Arkitekt Sinani"	Agriculture, Forestry, Fisheries, and Veterinary	Food Processing and Related Professions	-	-	-
Skenderaj	Anton Ceta	Information and Communication Technology	Food Technology	-	-	-
		Agriculture, Forestry, Fisheries, and Veterinary	Food Processing and Related Professions	-	-	-
Vushtrri	"Bahri Haxha"	Services	Chef	-	-	-
Prizren	"Ymer Prizreni"	Services	Chef	2	16	18
Suhareke	"Abdyl Ramaj"	Agriculture, Forestry, Fisheries, and Veterinary	Food Technology	-	-	-
Gjilan	"Sahit Baftiu"	Agriculture, Forestry, Fisheries, and Veterinary	Meat Processor	-	-	-
		Services	Chef/dual	-	-	-
Viti	"Jonuz Zejnullahu"	Agriculture, Forestry, Fisheries, and Veterinary	Food Processing and Related Professions	-	-	-
Ferizaj	Zenel Hajdini	Agriculture, Forestry, Fisheries, and Veterinary	Chef	-	-	-
		Machinery, Production, and Construction	Pastry Chef	-	-	-
Gjakova	"K. Kusari"	Agriculture, Forestry, Fisheries, and Veterinary	Food Processing and Related Professions	-	-	-
Rahovec	'Selajdin Mullabazi-Mici"	Services	Food Processing and Related Professions	-	-	-

The number of private VET training providers is limited and is only in five municipalities available. The number of profiles provided by private training are six namely: Pastry Maker, Livestock Technician, Mixed Crop and Livestock Producer, Fruit and Vegetable Preserver, Worker for Harvesting, Cultivating, and Processing Wild Fruits.

TABLE 27 PROFILES OFFERED BY ACCREDITED PRIVATE TRAININGS PROVIDER IN THE FOOD PROCESSING SECTOR

Institution	Municipality	Qualification / Profile	Level	Credits	Duration (months)
Professional Institute "ATC SH.P.K"	Prishtina	Pastry Maker	III	30	12
Initiative for Agricultural Development of Kosovo - IADK	Vushtrri	Livestock Technician	III	30	2.5
TC Meister L.L.C Sh.P.K	Prishtina	Mixed Crop and Livestock Producer	III	15	2.5
KEK Training Center	Obiliq	Fruit and Vegetable Preserver	III	15	2.5
Educational Social Center "Don Bosko"	Prishtina	Pastry Maker	III	9	1.5
Institute for Professional Qualifications - KTC	Fushe Kosova	Worker for Harvesting, Cultivating, and Processing Wild Fruits	III	6	-

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

7.3 Market trends and demands from survey data

According to the data, 14 percent of food processing enterprises export, while the remaining 86 percent do not. Overall, the food processing sector exhibits favourable conditions, with approximately 49 percent of businesses surveyed reporting increased turnover, while nearly 44 percent indicated no change, suggesting that a significant proportion of the sector has sustained stability. Meanwhile, only 7 percent of businesses indicated a decline in turnover. However, what stands out is that businesses within this sector have overwhelmingly high expectations for the next three years. Nearly three quarters (74 percent) are very optimistic anticipating a growth, while merely 21 percent see no change and only 5 percent foresee a decrease. The figure below explains strategies for market growth among food processing sector. The predominant focus on equipment investment (34 percent) signifies a prevalent tendency in Kosovo's manufacturing sector, as businesses seek to improve their production capabilities in order to maintain competitiveness in both local and regional markets. Moreover, it aligns with the necessity to enhance efficiency and product quality, especially in a country that is moving toward becoming more connected to European markets.

The focus on hiring more people (26 percent) suggests that the industry has room to grow and create jobs. However, the low emphasis on facility investment and the digitalization process (13 percent and 8 percent, respectively) is noteworthy. This may be explained by the fact that businesses in Kosovo are still having difficulty implementing more creative or infrastructure-intensive expansion plans.

Migration has significantly impacted the workforce in the food processing industry. Over the past 12 months, 55 percent of firms indicated that emigration caused employees to leave their positions compared to 44 percent that did not. Of those who emigrated, men made up 78 percent of the emigrants, while women made up 21 percent, showing a gender gap in migration trends. Data further shows that throughout the past 12 months, 41 workers quit their employment to work abroad.

7.3.1 Demand for current and future occupations

The food processing sector is one of the fastest growing industrial sectors and is essential to Kosovo's economy as it bridges agricultural production with consumer markets, providing essential value addition and employment opportunities. Despite its labour related challenges, including gender imbalances, and recruitment dynamics, the sector holds

potential for development through targeted investments in skills, innovation, and inclusivity. With its capacity to strengthen local supply chains, enhance food security, and drive exports, food processing serves as a key driver of sustainable economic growth in Kosovo. The table 15 shows the list of current most relevant occupations in Kosovo's food processing sector highlighting patterns in gender representation, workforce dynamics, and employment trends. The sector displays a wide gender disparity, with roles such as managing directors, manufacturing managers, and dairy-products makers having minimal or no female representation, while roles like bakers, pastry cooks, and confectionery makers show a comparatively higher percentage of women (37 percent of the women employed in the sector). This indicates a division in gender participation, with women concentrated in roles traditionally perceived as more accessible or aligned with societal norms. Workforce expectations for the next 3-5 years reflect modest growth or stability, with average increases or decreases in workers ranging from one to three per occupation, suggesting a relatively steady demand in the sector without significant expansion. Recruitment trends reveal limited hiring activity over the past three years, with open positions and new jobs per occupation generally capped at one or two, indicating low turnover or restrained growth.

Manufacturing managers and dairy-products makers stand out with a slightly higher anticipated workforce increase, pointing to growing demand for specialized skills in managing production processes and dairy-related operations. Bakers and confectionery makers, while showing higher female participation, have relatively static job trends, with minimal new opportunities in recent years. Sales workers, with 28 percent of all women in the sector, represent another critical role, bridging production with market demand, yet they, too, display low employment dynamics in terms of open positions and new jobs. To foster inclusivity and stimulate development, policies targeting gender equity, skills training, and innovation in food processing could be instrumental. The sector's low turnover may also reflect a need for modernization and incentivization to attract and retain talent.

TABLE 28 CURRENT PREVALENT OCCUPATIONS IN THE FOOD PROCESSING SECTOR

ISCO Code	Occupation	% of women at sector level	Average no. of workers expected to increase/ decrease in the next 3-5 years	Average no. of open positions in the last three years	Average no. of new jobs for these positions in the last three years
112	Managing directors and chief executives	1	1	1	1
1321	Manufacturing managers	2	3	2	1
941	Food preparation assistants	8	1	2	1
7512	Bakers, pastry-cooks and confectionery makers	37	2	1	1
7513	Dairy-products makers	0	3	1	1
52	Sales workers	28	2	2	1

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Lastly, the data on emerging occupations (table 20) in the sector highlights a shift toward roles that include both traditional skills and market-driven expertise. Core occupations such as bakers, pastry cooks, confectionery makers, and dairy-products makers remain integral, reflecting the sector's reliance on skilled artisans in food production. Simultaneously, roles like food and beverage tasters and graders point to a growing focus on quality control and product standardization, critical for enhancing market competitiveness. The emergence of sales workers and sales, marketing, and development managers—especially with an emphasis on international markets—emphasizes the sector's need for professionals who can connect local production with broader consumer bases, driving exports and economic growth. Food preparation assistants also play a supportive yet vital role, ensuring efficiency in production processes. Collectively, these occupations signal a blend of tradition and innovation, highlighting the sector's readiness to adapt to global market demands while preserving its artisanal roots.

TABLE 29 EMERGING OCCUPATIONS IN THE FOOD PROCESSING SECTOR

ISCO Code	Occupation	Notes
7512	Bakers, pastry-cooks and confectionery makers	
52	Sales workers	
122	Sales, marketing, and development managers	With focus on international markets
941	Food preparation assistants	
7513	Dairy-products makers	
7515	Food and beverage tasters and graders	

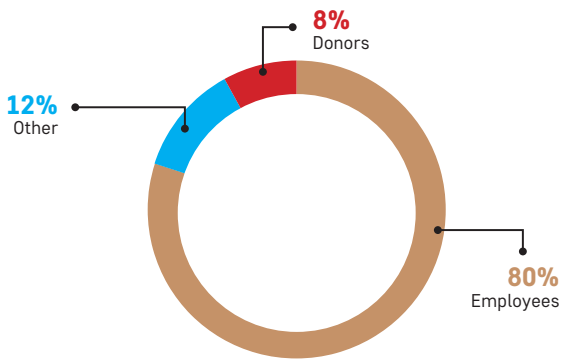
SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

7.3.2 Trainings

Improving the skills of the workers within food processing is becoming more and more important as Kosovo strives for increased market integration and export potential. According to the data, only 27 percent of the businesses in this sector reported spending on training programs in the previous year whereas 72 percent did not prioritize such expenditure. Despite this, the data shows that around 76 percent of food processing employees took training courses in the previous year, while 23 percent did not, showing a rather high level of engagement in training activities. However, just 43 percent of the workforce were trained in the last 12 months. This reveals a gap, as more than half of the workforce has not benefited from formal training programs, implying that, while training opportunities are being used to some level, efforts must be broadened to provide broader access and coverage across the industry.

A significant commitment to workforce development is demonstrated by the fact that, of the 27 percent of businesses in the food processing industry that made training program investments, the majority—80 percent reported fully covering for the programs themselves. Only 8 percent of training expenses were entirely covered by donors, while the "Other" category accounting for 12 percent refers to a collaborative arrangement where businesses and employees shared the costs of training.

FIGURE 14 EXPENSES COVERAGE IN THE FOOD PROCESSING SECTOR

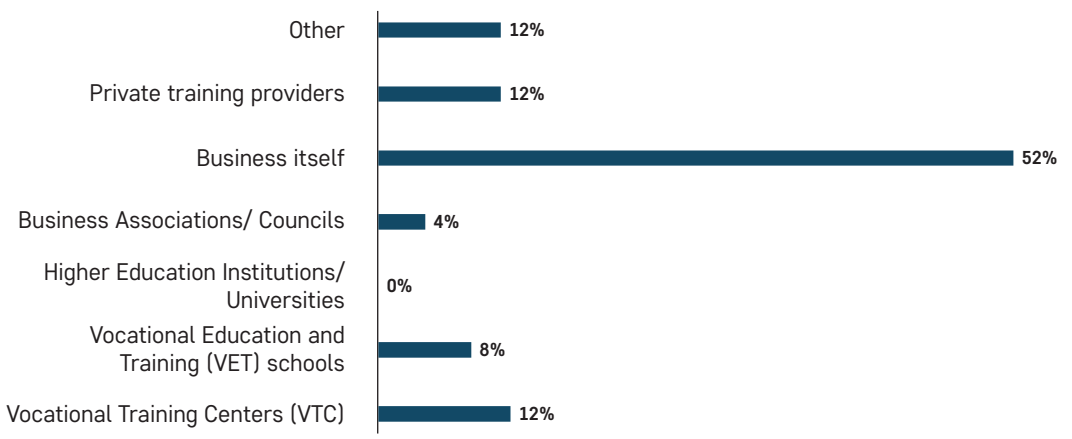


SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Businesses in the food processing sector that invest in training play a dual purpose as they provide internal training while also covering all training costs. According to the data, around 52 percent of these organizations reported providing internal training. In contracts, the dependence on private training providers (12 percent), vocational training centres (12 percent), and other external programs (12 percent) best matches Kosovo's overall emphasis on decentralized, non-academic training alternatives to meet immediate practical demands. This tendency demonstrates the limited involvement of structured institutional frameworks in meeting the sector's training needs, prompting enterprises to fill the gap themselves.

The 8% contribution of VET schools to training in the food processing sector could be linked to systemic difficulties in Kosovo's vocational education system. Challenges such as obsolete curricula, limited resources, and a significant gap between the skills taught and those required in the job market severely limit their effectiveness (European Training Foundation, 2023).

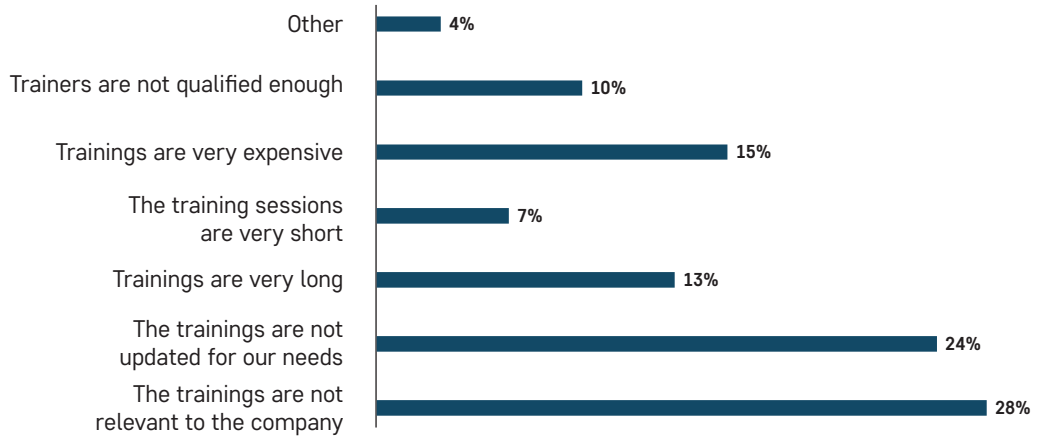
FIGURE 15 PROVIDERS OF TRAINING IN THE FOOD PROCESSING SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Businesses interviewed were asked to identify the key barriers between businesses and training providers within this sector. The irrelevance of training content (28 percent) and outdated training programs (24 percent) has been most frequently specified. This gap is very relevant and most likely encourage businesses to favour in-house training, where training can be tailored to meet their specific needs. At the same time, these findings support the data presented earlier, underscoring business's preference for specialized training solutions that precisely fit with their goals. Other notable barriers include training being very expensive (14 percent) and them being very long (12 percent). For more information, see Figure 16.

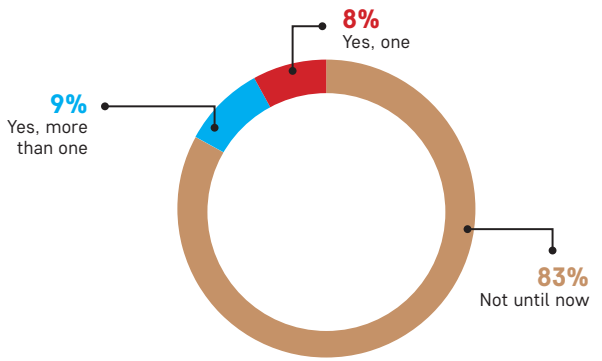
FIGURE 16 KEY BARRIERS BETWEEN BUSINESSES AND TRAINING PROVIDERS IN FOOD PROCESSING SECTORTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

The level of collaboration between businesses and training providers is far from ideal, with most of the businesses reporting no engagement at all (82 percent). This is intrinsically linked to the key barriers previously identified, as without proper collaboration training providers don't have the knowledge necessary to match their programs to industry-specific demands, which leads to programs that don't meet the strategic and operational goals of businesses. On the other hand, only 9 percent of organizations reported collaborating with more than one training provider, while 8 percent reported cooperating with just one. Even though these numbers only reflect a small portion of the industry, they show that certain businesses understand how important it is to build outside alliances to strengthen their training initiatives.

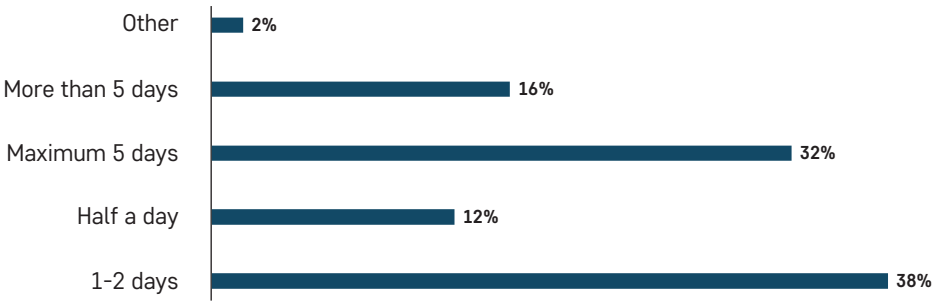
FIGURE 17 CURRENT COLLABORATION WITH TRAINING PROVIDERS IN FOOD PROCESSING SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

When analysing the length of training courses for employees in food processing, as depicted in the Figure 18, short-duration training sessions lasting one to two days appear to be the most preferred ones, with over 38 percent of respondents favouring them and 32 percent preferring a maximum of five days. This could be attributed to several key factors, including limited staff capacity or limited finances. In contrast, only 16 percent find training durations of more than 5 days acceptable.

FIGURE 18 LENGTH OF THE TRAINING COURSES FOR EMPLOYEES IN FOOD PROCESSING SECTOR



SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

7.3.3 Dual Education

Table 17 provides useful insights on the state of dual education in Kosovo's food processing sector, highlighting both the benefits and obstacles that this project faces. While 49 percent of businesses are aware of the dual education system being tested, 51 percent are not, indicating a considerable knowledge gap over a model aimed to link education with labour market demands. This lack of knowledge could be attributed to insufficient outreach efforts or involvement with the private sector, both of which are crucial to the success of such projects. Furthermore, active engagement is noticeably low, with only 22 percent of enterprises now participating in dual education, while a significant portion of 78 percent are not. Nevertheless, the data shows promising potential; 56 percent of businesses expressed interest in hosting dual education students, indicating that this industry is ready to embrace practical learning methods with proper support and incentives.

TABLE 30 DUAL EDUCATION IN THE FOOD PROCESSING SECTOR (IN %)

Food Processing	Yes	No
Are you aware of the dual education system being piloted in Kosovo?	49 %	51 %
If so, is your business part of dual education?	22 %	78 %
Would you be interested in hosting dual education high school students in your business?	56 %	44 %

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

7.4 Barriers and Challenges for women in Food Processing sector

According to the findings, there are major obstacles for women that want to enter the workforce, especially when it comes to balancing limitations and family responsibilities. Two major obstacles as seen in the table below include the lack of flexible work schedules (23 percent high, 39 percent average) and time constraints resulting from family obligations (29 percent high, 36 percent average). Another notable concern is transportation, which is ranked as a high or very high obstacle by a total of 41 percent of respondents. A significant issue is the infrastructure for childcare, with a total of 44 percent. Although most respondents ranked skills gaps as ordinary (33 percent), there were some noticeable high (17 percent) and extremely highs (14 percent). Self-confidence and family support, though less pronounced, remain significant for certain groups. For more information, see Table 25.

TABLE 31 BARRIERS REGARDING TO WOMEN INVOLVEMENT IN THE FOOD PROCESSING SECTOR (IN %)

	Very low	Low	Average	High	Very high
Lack of time for work due to family obligations	12.6	11.5	35.6	28.7	11.5
The lack of flexible working hours	16.1	11.5	39.1	23.0	10.3
Lack of transportation to the workplace	17.4	14.0	27.9	26.7	14.0
Lack of self-confidence	19.5	22.0	34.1	19.5	4.9
Lack of family support	19.8	17.4	31.4	20.9	10.5
Lack of childcare infrastructure (Nurseries)	7.0	12.8	36.0	23.3	20.9
Lack of skills and abilities for work	16.3	19.8	32.6	17.4	14.0

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Findings from sector representatives and focus groups reveal additional barriers to women's participation in the workforce that extend beyond those identified in the survey. Social norms and societal expectations limit women's opportunities, particularly in male-dominated industries. A lack of proper coordination among stakeholders, inadequate childcare facilities, and the high cost of childcare disproportionately impact women, often leading to their exclusion from the labor market in particular food processing sector. Rural women face additional challenges due to insufficient infrastructure and accessibility, which further widens the urban-rural divide in workforce participation. Furthermore, despite significant interest among women, particularly in agricultural studies, the lack of practical training and specialization opportunities remains a key barrier. Training programs exist but often fail to bridge the gap between theoretical knowledge and industry-specific skills. The absence of Level 5 specialization programs restricts pathways to higher-level roles. Additionally, logistical challenges, such as limited childcare services and poor access for rural women, discourage broader participation. To address these barriers, targeted incentives and improved infrastructure are necessary to enable women to gain the practical experience and accessibility required to thrive in this sector.

Several critical issues affect women's participation in the labor market. Survey data shows, lack of sufficient awareness campaigns about career opportunities takes over 40 percent of the share of respondents that rate this as a high or very high obstacle. Workplace discrimination and gender-biased policies also emerge as critical issues, with 30 percent of respondents rating them as high barriers and 15 percent as very high. Additionally, a combined 47 percent of respondents rated this issue as high or very high, demonstrating that inadequate financial incentives significantly impact women's decisions to participate in the labor force.

TABLE 32 ASSESSMENT OF AGREEMENT WITH KEY LABOR MARKET ISSUES IN THE FOOD PROCESSING SECTOR (IN %)

	Very low	Low	Average	High	Very high
Awareness campaigns about career opportunities are insufficiently developed	7.0	14.0	38.4	22.1	18.6
Discriminatory practices and gender-biased policies persist in the workplace	12.8	12.8	29.1	30.2	15.1
The low wage levels have discouraged women from entering the labor market	10.5	11.6	30.2	32.6	15.1

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Findings from the survey show that for over 60 percent, flexible working hours, inexpensive childcare, and improved working conditions as significant incentives to recruit more women to the food industry. Respondents stressed that removing transportation barriers and providing training to improve skills and abilities will help women enter and remain in this field. Furthermore, the implementation of specialized programs, such as pay subsidies, was cited as a crucial tool for increasing women's engagement. For more detailed information, see Table 27.

TABLE 33 INCENTIVES TO REMOVE BARRIERS ON WOMEN PARTICIPATION IN THE FOOD PROCESSING SECTOR (IN %)

	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
Flexible working hours for women	7.5	7.5	11.3	23.8	50.0
Affordable childcare	12.7	6.3	11.4	31.6	38.0
Improving working conditions in the sector	9.1	9.1	14.3	24.7	42.9
Securing transportation	14.8	9.9	13.6	13.6	48.1
Training to improve skills and abilities in the workplace	15.2	6.3	19.0	22.8	36.7
Programs designed primarily to increase the number of women in the sector (Wage Subsidy)	17.9	2.6	20.5	20.5	38.5
Increasing the number of women in leadership positions	14.3	10.4	19.5	22.1	33.8

SOURCE: AUTHOR CALCULATION BASED ON THE SURVEY DATA (2024)

Findings from semi-structured interviews and focus group emphasize the importance of targeted incentives to address barriers and increase women's participation across sectors. In the food processing sector, representatives highlighted the need for specialized training programs to address skills gaps, particularly through vocational schools and accredited centers. Innovative childcare support, such as subsidized preschool programs, and awareness campaigns to encourage rural women's participation were also among incentives recommended. Paid internships, flexible work hours, and accessible training opportunities were identified as essential incentives to bridge the gap between theoretical knowledge and practical skills. Furthermore, participants emphasized the role of public institutions and donors in providing continuous support for training, internships, and skill-building programs tailored to the needs of women in various industries.

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