

SKILLING UP THE WESTERN BALKANS AGRI-FOOD SECTOR

Kosovo

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INTRODUCTION

This report forms part of a broader study on the technological changes and skills needs of the Western Balkan agri-food sector, conducted by the European Training Foundation (ETF). The aim of this report is to examine the potential of the Serbian agri-food sector from the perspective of the skills demand and supply in the following three niches of agri-food value chain: digitalisation in agriculture and food processing, biochemical and microbial products for agriculture, and organic foods.

The study aims to inform further steps at the national and regional level in supporting the innovation ecosystems, VET, higher education and skills development, as well as lifelong career guidance systems and thus contribute to successful implementation of Smart Specialisation Strategy in the agri-food sector in Kosovo.

DIGITALISATION IN AGRICULTURE AND FOOD PROCESSING

Across the globe, information and communication technologies applied to the agri-food sector have improved productivity, supply chains, cut cost and improved the quality of agricultural products. The speed of technology adoption is correlated with farmers ability to purchase and operate new technologies.

Digitalisation in agri-food is at a very initial stage in Kosovo and growth is slow partly due to the cost of digitalisation and therefore lack of demand from the agricultural holdings. While the food processing sector has seen some application of automation (e.g., automatised confectionary machines, used by an interviewed agricultural holding), the processes in agriculture are mainly handled by physical labour and old mechanised systems. According to interview data, only around seven agricultural holdings that applied some sort of digitalisation of their farms are known - only three of which financed it themselves. Their digitalisation solutions mainly focused on farm surveillance, temperature management, and irrigation.

Digitalisation of agri-food in Kosovo comes with significant challenges regarding technology adoption in the sector, as well as the skills supply. The research team was able to identify only two digital technology producers for agri-food in the country that are driving the shift to using more digital tools and other advanced technologies in the sector. Some of the most visible digital technologies being introduced in Kosovo's agri-food ecosystem are the rather basic technologies in marketing and sales, such as e-commerce, other types of online platforms that connect agri-food producers and consumers, as well as the development of broadband internet connection. Nevertheless, providers exist in the country offering more sophisticated solutions as well, such as IoT technologies for greenhouse digitalisation and irrigation systems.

SME support services, in Kosovo have not kept up with the developments and more needs to be done in terms SME training support, technology adoption, and technology transfer. Similarly, career development support to attract skilled professionals to the agri-food sector is lagging behind.

Digitalisation is changing the sector and new attractive occupations and interesting job profiles are emerging, in particular at the cross-section of agri-food with other sectors, for both young people and experienced professionals.

The analysis of niche of digitalisation in agri-food focuses on the businesses developing and producing the digital innovations for agri-food under the following NACE sectors:

- Manufacture of agricultural and forestry machinery (C28.3).
- Manufacture of machinery for food, beverage, and tobacco processing (C28.9.3);
- Computer programming, consultancy and related activities (J62);
- Information and service activities (J63);
- Research and experimental development on natural sciences and engineering (M72.1).

Generally, the ICT sector in Kosovo is characterised by a large share of small and medium-sized companies with limited capacities for large-scale projects and internationalisation. The majority of companies in the ICT industry are micro and small businesses: 84.5% are micro businesses, 12.7% small, 2.4% medium, and 0.4% are large enterprises.¹ Kosovo Agency of Statistics estimates that the number of employees in the ICT sector in 2022 was 13,893, constituting 4% of total employees in Kosovo².

The Ministry of Industry, Entrepreneurship and Trade of Kosovo (MIET) estimates that there are 220 registered companies in the ICT sector, among which 120 are active. According to MIET's study on the 'Present state and future potential of the information and communications technology (ICT) sector in Kosovo', software development is the main activity in portfolio of ICT companies, followed by mobile application development, web development/web design, and digital marketing³. According to the same study, around 91% of ICT companies in Kosovo export their services/products.⁴ The Central Bank of Kosovo estimates that the export of ICT services in 2021 reached EUR 98.8 million. However, only a miniscule part of these activities has been oriented to the agri-food sector digitalisation.

Skills demand

Most in-demand profiles companies are looking for, according to various sources,⁵ are specialised technical skills such as software engineering and testing, work with free and open-source software (FOSS); cybersecurity, cloud computing, big data & analytics, and mobile computing and technologies related to industry 4.0 (such as embedded software and automation).

The two interviewed companies (FARA and Biotech Agriculture) emphasised that they had no specialised training prior to moving into the niche market. They emphasized the need for profiles combining specialist digital skills with agri-food sector specific knowledge. The demand for specific skills is increasing. However, education and training providers are still equipping students with general skills relevant to the niche (e.g., general ICT skills), the lack of specialisation in advanced digital and technological solutions in the agri-food sector was emphasised by all interviewees, and especially SMEs, as a major problem. Such occupational profiles and skills, at the intersection of ICT and agriculture, are not yet described in the ESCO skills and occupation database.

TABLE 1. RELEVANT TECHNICAL OCCUPATIONS IDENTIFIED BY COMPANIES

Digital technologies	
<ul style="list-style-type: none"> • 2512 - Software developers • 2511.3 - data analyst • 2511.4 - data scientist • 2514.3 - industrial mobile devices software developer • 2514.2.1 - embedded systems software developer • 2529.3 - embedded systems security engineer 	<ul style="list-style-type: none"> • 3111.13 - remote sensing technician • 3114.1.10 - sensor engineering technician • 3115.1.11 - mechatronics engineering technician • 8211.3 - mechatronics assembler • 8211.5 - motor vehicle assembler • 8212.3 - electronic equipment assembler
Agronomy, agriculture and food processing	
<ul style="list-style-type: none"> • agricultural scientist (ESCO 2132.1) • agronomist (2132.2) 	<ul style="list-style-type: none"> • agricultural technician (3142.1)

The occupations for which there is a growing demand require different skill levels. For instance, mechatronics engineer, robotics engineering technician, sensor engineering technician, embedded systems software developer and mobile application developer require at least ISCED level 5. In terms of business services and related occupations, company interviews reveal the importance of market development skills. To remain competitive and scale up locally, regionally, and internationally, companies highlighted the need for skills in agile project management and internationalisation.

TABLE 2. RELEVANT BUSINESS SUPPORT OCCUPATIONS IDENTIFIED BY COMPANIES

Business support occupations	
<ul style="list-style-type: none"> • 1324.3.2 - import export manager, e.g: 1324.3.2.1 - import export manager in agricultural machinery and equipment 1324.3.2.11 - import export manager in electronic and telecommunications equipment 1324.3.2.8 - import export manager in computers, peripheral equipment and software 	<ul style="list-style-type: none"> • 3331.2.1 - import export specialist, e.g.: 3331.2.1.11 - import export specialist in electronic and telecommunications equipment 3331.2.1.8 - import export specialist in computers, peripheral equipment and software 3331.2.1.1 - import export specialist in agricultural machinery and equipment • 1219.6 - project manager

Skills supply

Vocational education and training

As new skills needs are emerging, different from the ones traditionally sought by the agri-food sector, the shift needs to be reflected in an increase in training provision across the occupational profiles of the value chains – and not just for IT occupations.

At the VET level, there are numerous vocational schools with educational programmes relevant to digitalisation in general, without a special focus on the agri-food. Continuing vocational education and training (CVET) is offered by eight vocational training centres operating under the administration of Kosovo Employment Agency (EARK). Seven of these centres offer basic training in IT such as Microsoft Office or the European Computer Driving License (ECDL). Vocational training relevant to agri-food is offered only in one of the centre, in Peja/Pec municipality (one specialising in milk products and one in fruit/vegetable conservation), but interest is low. Overall, there were 1,702 students in adult education programmes in Kosovo in 2020/2021

To help the scale-up, interviewed companies emphasised the importance of training in the converging areas of agri-food, digitalisation and technological development. Employers reported difficulties in finding workers with the right skills to immediately perform in their jobs. Companies address the skills shortages by providing on-the-job training. According to interviews, ICT graduates need to spend at least one year in a role until they become skilled to work independently. This presents a major challenge for enterprises because of both time and cost. In addition, interns frequently leave their jobs to work outside Kosovo as soon as they get the necessary skills. As for experiences IT engineers, companies reported difficulties hiring and retaining professional who are mostly engaged in providing services for companies abroad. Finally, as companies are growing increasingly reliant on technology to stay competitive, skilled emigration poses a serious problem.

Intermediary organisations

The ambition to meet the challenges of competitiveness, digitalisation and sustainability, poses many challenges to the primarily micro and small agri-food companies. Business intermediary bodies are critical for providing access to relevant and timely informal and non-formal training to agri-food companies who generally find having relevant skills to perform far more important than training recognition. Intermediary organisations have an important role in creating value in a fragmented context, by connecting agri-food companies with actors and networks with whom they can collaborate, co-create, troubleshoot, or co-innovate with. Their role is particularly heightened in agri-food where agriculture, digitalisation and technological development are converging.

The following summarises some examples of relevant intermediary organisations:

BOX 1. EXAMPLES OF INTERMEDIARY ORGANISATIONS' SUPPORT

The Kosovo ICT Association's (STIKK) mission is to help create a better ICT business environment by improving standards and educational opportunities. It focuses on strengthening the ICT sector in the country, provides paid trainings on a wide range of relevant IT subjects, including programming languages. STIKK also supports businesses with a range of services including networking, consultancy, competition calls, and project funding. Key initiatives¹ include TechPark Prishtina, KosICT Tech Festival (KOSICT), and Outsource2Kosovo Platform which promoting outsourcing opportunities between Kosovo and international companies.

Innovation Centre Kosovo (ICK) focuses on research and development to create job opportunities in new technologies. Their incubator programme provides pre-incubation and incubation services in the field of business development and commercialisation. These services range from consulting, B2B, mentoring, to hosting services, matchmaking, fundraising and grants.

The Ministry of Agriculture Forestry and Rural Development (MAFRD) funds rural development to increase competitiveness, which includes a component on modern technologies, the support has not focused as of yet on developers of innovative solutions for tech but primarily on farmers as users. An example of MAFRD's activities is the AgromarketKS¹ e-commerce platform, launched in 2021 to promote the competitiveness of agricultural production in Kosovo.¹ Developed together with the Japan International Cooperation Agency (JICA), it was implemented by the Kosovo Women's Chamber of Commerce and Sigma BMC, a consulting company. It enables registered farmers to sell their goods online.

The agricultural advisory services in Kosovo provide counselling and training for companies operating in the agri-food sector.

Kosovo Investment and Enterprise Support Agency (KIESA) is a state agency mandated to promote and support investments, exports, tourism, SMEs, and economic zones in the Republic of Kosovo. For example, they provide vouchers for consulting to help subsidise SMEs that need consultancy services to operate. They also provide information for foreign investors on which sectors to invest in (including ICT and food processing and packaging) as well as information on business zones and parks.

Jakova Innovation Center (JIC) a non-profit organization and a business incubator established by the Ministry of Trade and Industry in cooperation with the municipality of Gjakova. It provides consulting and training in areas such as business management, market research, finance, marketing and many other areas which are important in the process of doing business.

Association of Fruits and Vegetable Processors (PePeKo) provides support to fruit and vegetable processing industry.

Initiative for Agricultural Development in Kosovo (IADK) is an NGO that focuses on facilitating rural development by reducing unemployment and import dependency in agri-food. The initiative also promotes the sustainable use of natural resources and environmental protection – as empowerment of women and youth in rural areas.

From the interviews it emerged that a number of intermediary organisations from large institutions to non-governmental organisations act as catalysts for digitalisation in agri-food and seek to create value to companies in the sector. Their support in informal and non-formal training, networking, coaching and guidance is invaluable. With collaboration and co-creation at the core of innovation and

competitiveness, there is still untapped potential for intermediary organisations to make connections across converging sectors at national, regional, and EU levels.

Higher education and research

Universities play a fundamental role in fostering digital transformation of the agri-food sector. They have a role in teaching but also in researching the agri-food sector. Their research departments play a key role in innovation.

Higher education in agricultural sciences in Kosovo is provided by the University of Prishtina, Faculty of Agriculture and Veterinary. It is the only university specialised in undergraduate and graduate studies, scientific research, training, and extension in agriculture and food processing. The University covers agriculture, livestock, forestry, veterinarian medicine, and agrarian economy. It offers programmes that include courses such as:

1. Fundamentals of Technology;
2. Processing techniques, measurements and automation;
3. Technology of fruit and vegetable, alcoholic and non-alcoholic beverages, milk and milk products;
4. Information science and communication.⁶

The decrease in the agri-food sector's contribution to GDP over the years has been matched by the decreasing enrolment of students in agri-food-related programmes. The share of students opting for either ICT or Engineering, manufacturing and construction is significantly higher.

TABLE 35. NUMBER OF STUDENTS IN BACHELOR AND MASTER STUDIES IN 2021/2022

Programme type	Bachelor			Master		
	Female	Male	Total	Female	Male	Total
Information and Communication Technology (ICT)	2,195	5,439	7,634	178	291	469
Engineering, manufacturing and construction	2,964	4,345	7,309	702	830	1532
Agriculture, forestry, fisheries and veterinary	802	793	1,595	200	113	313
Services	807	1948	2,755	116	174	290

Source: Kosovo Agency of Statistics, Higher Education Statistics by Fields of Study 2021/2022.

According to interviews, most of those employed in digitalisation in agri-food are initially trained in ICT. Such profiles are prepared by six universities in Kosovo, with approximately 600 graduates (from undergraduate and graduate programmes) per year. However, there are currently no courses in the converging areas of agri-food, digitalisation and technological development.

BIOCHEMICAL AND MICROBIAL PRODUCTS FOR AGRI-FOOD

The niche of biochemical and microbial products for agri-food focuses on the input level of the agri-food value chain. It is essential for producing necessary crops and innovating in agri-food in general and food production in particular. The niche of biochemical and microbial products for agri-food is covered under the following NACE sectors:

5. Manufacture of fertilisers and nitrogen compounds (C20.1.5)
6. Manufacture of pesticides and other agrochemical products (C20.2)
7. Research and experimental development on biotechnology (M72.1.1).

In Kosovo, production of biochemical and microbial products for agri-food is in initial stages of development. Currently the market niche is represented by a few SMEs.

Although suffering from significant data gaps, this chapter begins by presenting an overview of the general profile of the niche of biochemical and microbial products for agri-food in Kosovo. Then, we discuss the skills demand and supply associated to it. Finally, the programmes, tools, and activities are available in Kosovo to match the demand and supply in the niche are presented.

Profile of the market niche

General context

The niche of biochemical and microbial products for agri-food in Kosovo is small and underdeveloped. Although Kosovo has capacities to produce fertilisers and nitrogen compounds, as well as to manufacture pesticides and other agrochemical products, the market for companies operating in these sectors in Kosovo is highly unstable.

As Table 8 illustrates, while the number of companies in the broader sectors that this niche covered by is very small, there also was some fluctuation in the number of companies and employees active in sectors that characterise the niche. According to the 'Manufacturing Industry 2021' report, there were five companies manufacturing organic basic chemicals in Kosovo in 2020, and they employed a total of 24 people. This is an increase from 2019, when there were only three companies with nine employees. Regarding the sector of Manufacture of fertilisers and nitrogen compounds, there was a similar fluctuation, with one company operating in the sector in 2019, down from four in 2018. Furthermore, in 2020, there were two companies operating under NACE of Manufacture of pesticides and other agrochemical products (C20.2).⁷ This is a significant drop from 23 enterprises in 2019 that have employed 120 workers.⁸ The stark decrease may be due to the impacts of the COVID-19 pandemic, though this is not certain.

TABLE 8. NUMBER OF ENTERPRISES, EMPLOYMENT OF THE SUB-SECTOR C

Manufacture of organic basic chemicals	2018	2019	2020
Number of companies	4	3	5
Number of employees	23	9	24
Manufacture of fertilisers and nitrogen compounds			
Number of companies	4	1	3
Number of employees	4	3	7

Source: Data gathered from Ministry of Industry, Entrepreneurship and Trade (2020). Manufacturing Industry Report (Sector C). Available [here](#).

There is no statistical information available in Kosovo for this sector of Research and experimental development on biotechnology (M72.1.1). This reflects the small size of the market in Kosovo as well as the early phase of niche development. However, we identified and interviewed two innovators in the niche, activities of one of which fall under the NACE sector M72.1.1.

Policy background and key stakeholders

MAFRD is the main authority overseeing the areas related to the niche of biochemical and microbial products for agri-food. The Artificial Fertilisers Regulatory Service engages in certification for importing or dealing of such materials. Meanwhile, the Phytosanitary Referent Lab at the Kosovo Agricultural Institute supervised the composition of chemicals sold in the country.

Laws on Artificial Fertilisers (No.2003/10) and Plant Protection (No. 04/L-120) regulate the process of certification, activities related to imports of pesticides, as well as phytosanitary controls and other plant-protection-related activities. Interviewed companies considered the current regulation to be inadequate for the expansion of their activities in the biochemical and microbial product development and production activities. Kosovar authorities we said to lag behind in harmonising rules on innovative biochemical and microbial production practices to EU's rules.

No business intermediaries working to develop or support the niche specifically were identified, although ICK, the business intermediary supporting companies from the digitalisation niche, is also known to support companies in the biochemical and microbial products niche through their business incubator. The production of innovative biochemical and microbial products also has not been recognised by the authorities as an investment area.

Companies representing the niche

The first interviewed company, **Eco Solution Research**, was a start-up founded in 2016 that worked in the field of food waste processing with the aim of producing agriculture fertilisers and biogas. At the time of data collection, they had three staff members working on a part-time basis. In addition to employees, they also hired consultants on a grant basis (through ICK, as part of their incubator support). In order to progress with developing the machinery, they needed a lot of support in the form of international consulting, as there was no one in Kosovo who had the necessary skills and knowledge.

As of 2022, the start-up was in the process of developing a prototype of machinery to produce biogas from organic waste processing. Since they were at testing phase, they did not manage to generate any income by the end of 2022. They funded their operating costs through grants received from donors, such as the Balkan Green Foundation, UNDP and Venture UP.

The second company, **GoBeyond**, was a start-up founded in 2020 that worked on cultivating insects for protein production. They started with the cultivation of yellow mealworms, which are supposed to be used for human consumption, while their excrement would be used to fertilise plants. At the time of data collection, the company had three members of staff: two full-time and one part-time. They had not managed to produce any income by the end of 2022. This was largely due to the fact that their operations had been halted by Kosovo authorities because there is no legislation in Kosovo to regulate the process of cultivating insects. Since they had not managed to obtain a license for their operations, they were considering ending their operations by end of 2022.

Employees of these two companies are mostly graduates of the University of Prishtina (UP). UP is the only tertiary education institution in Kosovo that provides undergraduate and graduate degrees in agriculture/food processing and chemistry. The employees in this sector have degrees either in chemometrics or food technology.

The sector does not seem to present a significant potential for further development. The activities of the identified companies depend entirely on access to funding through grants. The interviewed companies representing this small niche of biochemical and microbial products for agriculture have emphasised the lack of business opportunities in the country.

Skills demand

Since the niche of biochemical and microbial products in Kosovo is very small and barely existent, there are significant data gaps regarding skills demand. Lack of relevant training opportunities for the niche is related to this broader situation of niche development.

In general, the knowledge and skills in biotechnology and food technology were identified as most in demand. There are similarities between the niches of biochemical and microbial products and, as explained in the following chapter, organic and functional foods, because some of the same skills have been identified as important for companies operating in both niches. The lack of technical skills in biotechnology and food technology reflects the poorly developed skills supply system in the country, as well as low levels of research and innovation in the fields. The educational institutions suffer from old equipment, lack of funding for innovative educational practices in the niche, and the general lack of capabilities to develop skills (e.g., outdated educational practices).

Furthermore, the stakeholders stressed the lack of interdisciplinary skills, especially skills in agriculture, food processing and information technologies. The two companies working in the niche of biochemical and microbial products in Kosovo have emphasised that they had no specialised training prior to moving into this niche. Nevertheless, they recognised a need to combine knowledge in agriculture, food processing, and information technology to develop innovative products.

Based on these skills needs, ESCO occupational profiles with matching skills and knowledge areas include (but are not limited to):⁹

8. 2131.4.2 – biochemist
9. 2131.5 - food biotechnologist
10. 2145.1.4 - food technologist
11. 2131.3 - bioinformatics scientists
12. 2132.1 - agricultural scientist
13. 2132.2 - agronomist
14. 2133.11 - soil scientist

Skills supply

As indicated earlier, the supply of skills for the development of biochemical and microbial products for agri-food in Kosovo is underdeveloped. The VET and higher education provision in the fields of agriculture, food technology and biotechnology are very general. There are no career guidance systems developed in the country that would help address the gaps in the niche. Furthermore, there are no specialised CVET courses for biology and food technology skills profiles. Companies receive no outside support for the training of their employees. Interviewed companies emphasised the need to provide their employees with comprehensive on-the-job training in order for them to be able to work. Overall, equipping students with more specific skills remains a challenge, even though the universities seem to train graduates than the labour market can absorb. There is a single university (University of Prishtina, UP) in Kosovo teaching food technology with biotechnology at an undergraduate level. It has approximately 251 graduates per year. UP also has a graduate programme in the field of food science which produces approximately 43 graduates per year. In addition, the UP is the only education institution providing undergraduate and graduate studies in chemistry and chemometrics in Kosovo. According to the data found on the web page of the University, there are around 120 undergraduate students, and 45 graduate students enrolled each year.

In general, Kosovo's skills demand and supply in the niche of biochemical and microbial products are mismatched and disbalanced. The niche is at a very initial stage of development, and the data collected does not show potential for future growth. Only two companies have been identified working on this field, with only two to three employees in each. The demand from agricultural holdings is not high since the sector is underdeveloped. There are very low or almost no opportunities to match the demand and supply in the country, which would enable the niche to smoothly develop further.

ORGANIC AND FUNCTIONAL FOODS

Organic farming is a method that respects the natural life cycles. Organic regulations tend to prohibit the use of harmful substances in food production, such as artificial fertilisers, types of PPPs (e.g., pesticides and insecticides) and food additives. Meanwhile, functional foods, also known as nutraceuticals, are defined as highly nutritious foods or food supplements that carry health benefits for consumers. These health benefits include, but are not limited to, disease protection, promotion of proper development and overall health balance.

The organic and functional foods niche in the agri-food value chain can operate on all the levels of the supply chain. However, due to the study framework, in this chapter we focus on the production, processing and wholesale/retail levels of the value chain.

This niche is covered under the following NACE sectors:

15. Growing of non-perennial crops (A1.1)
16. Growing of perennial crops (A1.2)
17. Manufacture of food products (C10)
 - Manufacture of other food products (C10.8.9)
18. Manufacture of beverages (C11)

Organic and functional foods niche is involved in the production of a wide range of goods. This chapter begins by presenting an overview of the general profile of the niche of organic and functional foods in Kosovo. The general profile section focuses mainly on the organic food production in Kosovo, as no producers of functional foods were identified in the country. After the overview of the general profile of the niche, we discuss the skills demand and supply. In addition, we discuss what programmes, tools, and activities are available in Kosovo to match the demand and supply in the niche.

Profile of the market niche

General context

The niche of organic and functional foods in Kosovo is small, yet considerably larger than the two market niches discussed above. In the country, the production mainly focuses on fresh fruits and vegetables, like raspberries and blueberries. Wild collection of non-wood forest products (NWFP) and medicinal and aromatic herbs (MAPs) dominates the organic foods sector.¹⁰

According to the available statistics, there were 66 organic producers in Kosovo in 2020 and 21 organic processor. The organic share of agricultural land in Kosovo was 0.4%.¹¹ Statistical data records a growth in the size of the organic agricultural land in Kosovo, from 1,036 hectares (ha) in 2019 to 1,604 ha in 2020, a difference of 568 ha.¹² In addition to organic agricultural land, Kosovo has a large share of organic land for foraging of wild edibles and beekeeping. This land was measured at 596,843 ha in 2020.¹³

Kosovo is rich in varieties of NWFPs and MAPs, with more than 300 species being collected and, to some extent, cultivated, of which at least 67 species have commercial value.¹⁴ Usually, it is the people who live in mountainous areas who pick and produce such products. They are generally women and children and are of lower educational levels.¹⁵ The main market for exports of MAPs and NWFPs is the EU (95%) and 83% of sales are NWFPs.¹⁶ Although an example of organic foods, wild collection of NWFPs and MAPs is not covered by the niche as defined for this study.

Policy background and key stakeholders

Organic foods production in Kosovo is regulated by Law No. 04/L-085 (2012) on Organic Farming. This law was harmonised with the Council of the European Union's Regulation No. 834/2007 on organic production and labelling of organic products, and European Commission's Regulation 889/2008, laying down detailed rules for its implementation. The Ministry of Agriculture, Farming and Rural Development (MAFRD) of Kosovo is the Competent Authority for organisation of the control system for organic production.

There are no local bodies issuing organic certification in Kosovo.¹⁷ In their absence, this is done by four international certification bodies: Q-Check P.C., Organskakontrola.ba and Bio-inspecta.ch (which merged with Albinspekt in 2017).¹⁸

Only a single association that supports stakeholders to achieve organic certification in Kosovo exists.¹⁹ This association, Organika, was established in 2013 and has had 32 members and 28 organic certified companies. The certified companies are primarily active in the foraging of Non-Wood Forest Products (NWFPs) and cultivation of Medicinal and Aromatic Plants (MAPs).

In terms of other business intermediaries, PePeKo was founded in 2015. As of late 2022, they had four full-time employees and 35 members representing over 15,000 farmers. The association's main objectives are advocating, capacity building, and members' promotion. Though they take membership fees from their members, their activities and operations were supported in 2022 by international donors, such as Caritas Switzerland in Kosovo in the value of EUR 150,000, USAID with EUR 26,000, as well as GIZ with EUR 15,000.

Companies representing the niche

Two companies were interviewed for the niche of organic and functional food products in Kosovo.²⁰ Both specialised in the organic production. The first one, **ZemraFarm**, was a family enterprise that cultivated raspberries, vegetables and aromatic herbs. They produced around ten tons of raspberries, three tons of vegetables and almost two tons of aromatic herbs annually. A considerable portion of the harvested fruits and herbs was used to produce cold pressed natural juice, dried fruits and vegetables, and confectionary products using methods that combine culinary traditions. They are one of the agricultural holdings in Kosovo that have applied digital solutions in their processes (as mentioned in the analysis of the digitalisation niche).

ZemraFarm had three people in its regular staff, one of them has a university degree, while others have obtained secondary education only. The family enterprise was well established within the local community. They created partnerships with local farmers, and aimed to intermediate between local farmers and the domestic market, contributing to the growth of these local ventures. This collaboration created up to 20 seasonal jobs each year, mostly for women.

ZemraFarm aimed to increase the production and cultivation of raspberries and aromatic herbs by 50% and actively contribute to the economic and social development of the local community. By the time of data collection, they were planning the expansion of their production facilities because of the increasing demand for their products. In order to reach a larger production capacity, ZemraFarm aimed to expand their market to the EU Members States and collaborate with partners based in the EU. They believed that this collaboration would also result in the development of skills in innovative technologies and help them procure new equipment to boost production. Obtaining new equipment would further develop the business and its production growth, and create new job opportunities, especially for women in rural areas. ZemraFarm representatives expressed interest in bringing international expertise to support their companies. They emphasised networking as an important activity that can help increase and diversify their business partners.

The second company, **SanteFruit**, cultivated blueberries. It was founded in 2016 with 4 ha of land and has grown to manage 10 ha of blueberries, an anti-hail net, a digital irrigation system, and cold storage by 2022. They had five full-time employees and up to 80 seasonal workers. Four people of the staff had university degrees, in agriculture and mechanical engineering, and one person held secondary education. Most of the seasonal workers had secondary level education.

At the time of data collection, SanteFruit exported to the Netherlands, Germany, Serbia, and Albania. They have stated that finding experts on blueberries in Kosovo was challenging. SanteFruit prioritised networking and international cooperation to help internationalise their products.

Differently from the other two market niches presented above, where the interviewed companies have been identified as the only or main players, there are other companies active in the organic and functional foods niche in Kosovo that were not part of the interviews. We present several examples in [Box 1](#).

BOX 1. EXAMPLES OF OTHER COMPANIES IN THE ORGANIC AND FUNCTIONAL FOOD NICHE IN KOSOVO

The only medium-sized business stakeholder in the niche in Kosovo in 2022 exporting MAPs and NWFPs was **Agroproduct LCC**.²¹ In addition to export activities, they cultivate, collect and process MAPs and mountain fruits.²² They mainly support their development with grant schemes and donations, and have invested in a greenhouse seedling cultivation, drying area, and a storage facility.²³ They cooperated with around 60 collectors/processors and 3,000 pickers around the country, based on 5-year contracts.

Fungo shpk. focus on mushroom production.²⁴ They collect their products from around 22 collection centres in Kosovo, which have thousands of pickers and around 100 seasonal workers.²⁵ They sell their products internationally and to Switzerland.²⁶ They also started producing mushroom ajvar, Mama Mia.²⁷ Ajvar is a traditional vegetable dip made from tomatoes, eggplants, and sweet peppers, popular across the former Yugoslav area and in east Italy.

Hit-Flores shpk. collect, process and export MAPs, mushrooms and cultivated fruits.²⁸ They employ 20 full-time workers and 50-120 seasonal workers.

Skills demand

The demand for skills in the niche is growing with the growth of its production capacities. The two companies interviewed during this study emphasised that to develop further, they need expertise from abroad related to farm management, specifically expertise in pesticide usage for organic farming, and agronomy. This suggests a shortage of occupational profiles such as:²⁹

19. farm manager (ESCO 6130.1)
20. agronomist (2132.2)
21. soil scientist (2133.11)

Both interviewed companies had foreign experts supporting them previously, but it was quite costly for them to keep engaging with international consultants. They could not recruit personnel specialising in these areas domestically.

Furthermore, the interviewees and the desk research indicated that the following occupations are in demand for organic producers in the country, and can be found domestically:

22. machinery operators (including various occupations from ISCO group 8 - Plant and machine operators and assemblers and ISCO 6 - Skilled agricultural, forestry and fishery workers)
23. food technologists (ESCO 2145.1.4)

Skills supply

According to the interviewed companies, the general skills supply in agriculture in Kosovo is satisfactory. However, like with the other niches discussed in this report, more specific skills for organic production are very hard to obtain.

At the tertiary level of education, the programmes in food technology and biotechnology at the UP, mentioned in previous chapters, equip their graduates with the most relevant skills for this niche. In addition to programmes mentioned previously in this report, it offers undergraduate courses in Plant Production, and graduate courses in Plant Protection and Pomology and Viticulture.³⁰ In this context, graduates are trained in similar skills for both organic foods market niche and the niche of biochemical and microbial products. According to the interviews with ZemraFarm and SanteFruit, most of their employees are graduates of UP, which may also suggest the homogeneity of the skills supply in Kosovo.

The VET level provision of skills can be characterised by a lack of specialised VET programmes, and of career guidance systems developed in the country that would help address the gaps in the niche. However, like with the other market niches covered in the report, prominence of on-the-job training exists, and some trainings are provided by EARK (as describe above) and business intermediaries. The latter, like PePeKo help fill some of the skills demand gaps. For instance, in 2022 they organised a series of trainings in topics such as access to finances, food safety standards, training on bio-products, and access to market. These trainings covered some basic skills such as commercialisation and internationalisation.

Nevertheless, little collaboration between different stakeholders, lack of funding for educational and development programmes, and slow demand for education in the niche results in a situation in which the most important training takes place on-the-job. While there are business intermediaries and public authorities that have programmes in place to provide support via training, this is insufficient to keep up with the growth of the niche. As a result, business stakeholders, such as ZemraFarm and SanteFruit, are mostly left to their own devices to provide on-the-job training or hire specialists from abroad.

Matching the demand with the supply

The existing provision of skills in Kosovo cannot sufficiently satisfy the skills demand of companies producing organic foods, as VET and tertiary education programmes provide only very general skills in agriculture and food processing.

The stakeholders emphasised that while it is not difficult to find staff to serve as food technologists, there are some skills that cannot be covered by the existing skills supply. More specifically, the educational programmes in Kosovo do not offer specialised courses on organic food production, which was emphasised as a challenge by the interviewed companies. As a result, some skills are very hard to obtain domestically, making the companies turn to international experts to support their operations. This especially concerns expertise in farm management and pesticide usage. The companies noted that reliance on international consultants is rather costly for them and cannot be sustained in the long run. This indicates a pressing need for specialised skills supply for organic agriculture to support the growth of the market niche.

CONCLUSIONS

The findings of this report suggest that while there is demand for capacity building in all three niches, and especially in digitalisation in agri-food and organic food production, it is limited by various structural factors. Below, we extend several important recommendations to help streamline capacity building in Kosovo.

In general, there is a significant lack of specific skills needed for all three niches. Forms of CVET and on-the-job learning are likely remain the most important sources of education in the foreseeable future. Developing mechanisms to strengthen the skills supply by making it more dynamic and market-oriented are essential to balance the skills gaps. In particular, public stakeholders, business intermediary bodies, VET and higher education should exchange information on tracking the skills demand frequently to ensure the provision of adequate skills supply.

Due to a developed IT market in Kosovo, and increasing internet penetration and usage by residents, we can conclude that there is a lot of potential to develop digitalisation in agri-food. However, the cost of such investment is high because the companies working in agriculture and food processing are rather small, which drives the demand of innovative solutions down. Therefore, support from MAFRD and donors is needed so that stakeholders that develop digital technologies for agri-food can scale up and develop their businesses. Furthermore, such support is also needed for farmers to be able to apply digitalisation to their farms, thereby creating demand.

There is a lack of Kosovar experts for activities in the sectors of Manufacture of fertilisers and nitrogen compounds (C20.1.5) and Manufacture of pesticides and other agrochemical products (C20.2). To further develop these sectors, thereby strengthening the niche of biochemical and microbial products, there is a need to support companies to hire international experts. Furthermore, there is a need to support stakeholder networking to strengthen knowledge and practice exchange.

In addition, there is a growing importance of harmonizing regulation with the EU for all niches. This is especially prominent in the niche of biochemical and microbial products since aspects of it, like insect cultivation, are not adequately regulated in Kosovo. There is a need for advocacy so that the government can adopt the regulations for this sector.

Similar recommendations can be made regarding the niche of organic and functional foods products. There is a need of developing the skills supply so that it can satisfy more specific market demand. In addition, regulation of organic production, and certification processes, need to be constantly harmonised to EU rules. This is especially important given that Kosovo does not have its own certifying bodies. Strategic documents should focus on developing mechanisms of support for improving production processes through digital technologies, networking, and international cooperation.

REFERENCES

Kosovo Agency of Statistics and Ministry of Education and Science, Technology and Innovation, Education Statistics, 2020/2021, 2021.

Kosovo Agency of Statistics, Labour Force Surveys: 2017, 2018, 2019 and 2020.

Kosovo Ministry of Industry, Entrepreneurship and Trade, SECTOR C Manufacturing Industry: 2018, 2019, 2020, 2021, and 2022.

Kosovo Ministry of Industry, Entrepreneurship and Trade, SECTOR C Manufacturing Industry: 2018, 2019, and 2020.

Kosovo Statistical Office, Higher Education Statistics by fields of study 2021/2022, 2022.

Ministry of Agriculture, Forestry and Rural Development, Kosovo Green Report 2020, 2021, 2021.

Ministry of Agriculture, Forestry and Rural Development, Strategy for Agriculture and Rural Development 2022 – 2028, 2022.

Ministry of Industry, Entrepreneurship and Trade, Present state and future potential of the Information and Communications Technology (ICT) sector in Kosovo, 2022.

Ministry of Trade and Industry, Sector profile of Food processing and packaging industry, 2014.

LIST OF INTERVIEWEES

Name	Organisation	Title	Date of the interview
Ms. Fitore Ukiqi	ZemraFarm	Owner	21/11/2022
Mr. Kreshnik Ukiqi	ZemraFarm	CEO	21/11/2022
Mr. Fadil Ukiqi	ZemraFarm	Co-Owner/ Employee	21/11/2022
Mr. Enis Hyseni	FARA	Partner	23/11/2022
Mr. Dukagjin Rudi	FARA	Owner	23/11/2022
Ms. Verina Krasniqi	SanteFruit	Manager	25/11/2022
Mr. Veton Gashi	SanteFruit	Agronomist	25/11/2022
Ms. Kaltrina Osmani	Eco Solution Research	Co-funder	25/11/2022
Ms. Alberina Gashi	Eco Solution Research	Co-funder	25/11/2022
Mr. Endrit Ahmeti	Biotech Agriculture	Owner	06/12/2022
Ms. Egzona Lami	GoBeyond	Researcher	07/12/2022
Ms. Giliana Mullaku	GoBeyond	Researcher	07/12/2022
Mr. Bajram Berisha	University of Pristina	Professor	09/12/2022
Mr. Hartim Gashi	Association of Fruits and Vegetable Processors (PePeLKo)	Executive Director	12/12/2022
Mr. Zef Dedaj	Kosovo Investment and Enterprise Support Agency (KIESA)	Act. Executive Director	15/12/2022
Mr. Zenullah Rustemi	Vocational Training Center (VCT) in Pristina	Executive Director	16/12/2022
Mr. Zenel Bunjaku	Initiative for Agricultural Development of Kosovo (IADK)	Executive Director	16/12/2022
Mr. Bekë Mulaj	High School of Agriculture in Pristina	Executive Director	19/12/2022
Mr. Arian Bugari	Ministry of Agriculture, Forestry and Rural Development	Political Advisor of the Minister	22/12/2022
Mr. Bekim Ermeni	Agrocelina	Manager	23/12/2022
Mr. Gani Ismajli	Employment Agency of Kosovo	Deputy Director	29/12/2022
Mr. Lah Nitaj	Ministry of Education, Science, Technology and Innovation, Kosovo	Director of department	06/1/2023