TECHNOLOGICAL CHANGES AND SKILLS NEEDS IN THE AGRI-FOOD SECTOR OF BOSNIA AND HERZEGOVINA: ORGANIC FOOD

SUMMARY REPORT

CONTENTS

INTRODUCTION

This summary report[1] 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 summary report is to examine the potential of organic farming and food production in Bosnia and Herzegovina from the perspective of skills supply and demand.

The study aims to inform a foresight exercise on technological changes and skills needs in the organic food sector of Bosnia and Herzegovina. The purpose of the foresight exercise is to identify concrete skills related measures to support the accelerated development of the sector in preparation for the single market.

OVERVIEW

Organic farming is an agricultural method that aims to produce food using natural substances and processes. Producing organically means respecting the rules on organic farming, designed to promote environmental protection, maintain biodiversity and build consumer trust in organic products. Organic farming rules also encourage a high standard of animal welfare and require farmers to meet the specific behavioural needs of animals. In 2021, the EU adopted an action plan for the development of organic production to support both production and consumption, and to further enhance sustainability, in line with the European Green Deal, the Farm to Fork Strategy and the Biodiversity Strategy.

EU citizens increasingly value organic products. Based on the 2020 Eurobarometer survey on EU agriculture and the Common Agricultural Policy (CAP), citizens believe that organic products are more likely to comply with specific rules on pesticides, fertilisers, and antibiotics (82% agreed), are more environmentally friendly (81%), and are produced with higher respect for animal welfare (80%). According to the survey, 56% of citizens recognise the organic logo, up from 27% in 2017.[2] The retail sales of organic products in the EU doubled between 2015 and 2020.

The share of agricultural land under organic farming in the EU is growing rapidly. Over the period 2012-2020, its share increased by more than 50% and the share of total organic area in the EU's total utilised agricultural area rose from 5.9 % to an estimated 9.9 %[3]. On average, though with substantial variation across EU Member States, organic farms in the EU are bigger than conventional farms and run by younger farm managers. The European Commission has set a target of at least 25% of the EU's agricultural land to be under organic farming by 2030.

In Bosnia and Herzegovina there are more than 500,000 smallholder-owned farms and about a third of the population is in some way engaged in agriculture.[4] In 2021, 2,495 ha of land was under organic

---

[1] This report was prepared by Pirita Vuorinen, ETF. The contents of this summary report are the sole responsibility of the ETF and do not necessarily reflect the views of the EU institutions.

[2] EC (2022). Europeans, Agriculture and the CAP 2022. Available here

[3] Eurostat. Available here

[4] IFAD. Bosnia and Herzegovina. Available here.

farming, an equivalent of 0.14% of the total agricultural land.[5] This is a significant increase compared to 2020, when 1,692 ha of land was under organic farming.[6]

Bosnia and Herzegovina exported 1,540 metric tons of organic products in 2020 to the EU, which sharply increased by 79.4% to 2,762 in 2021.[7]

For the purpose of this study the organic and functional foods market niche was analysed through four broader NACE classification groups:

- crop and animal production, hunting and related service activities (A1)
- fishing and aquacultures (A3)
- manufacture of food products (C10)
- and manufacture of beverages (C11)

According to a list provided by Organska kontrola, a BiH certification body, there were 31 organic producers in the country in 2022, out of which four were in conversion to organic production.[8] In addition to producers, BiH has had 51 organic processors and 20 exporters in 2021.[9]

SKILLS DEMAND

According to the interviewed companies, there is a labour shortage in the sector of the primary agricultural production in Bosnia and Herzegovina, which also affects organic producers. Many employers face issues finding people for low-skilled manual jobs. This is due to inadequate working conditions and protection at work, low wages, and the general economic and political environment in the country.

Most in-demand profiles that companies, producers of organic foods were looking for concern technical skills related to plant diseases and protection (which often includes the use of digital applications and sensors for manipulation of environmental conditions), and technical knowledge regarding diseases and insect outbreaks and horticulture. Other technical skills in demand by interviewed companies in organic food production relate to planting, watering, fertilisation, including plant diseases and protection. There is demand for both low and high-skilled workers with such profiles.

TABLE 1. RELEVANT TECHNICAL OCCUPATIONS IDENTIFIED BY COMPANIES

High-skilled occupations	
agricultural scientist (ESCO 2132.1)	food technologists (2145.1.4)
agronomists (ESCO 2132.2)	food safety specialists (2263.2)
food biotechnologists (2131.5)	food technicians (3119.5)
ecologists (2133.5)	veterinary technicians (3240.2)
agricultural engineers (2144.1.2)	agricultural technicians (3142.1)

[5] FAO (2023). World of Organic Agriculture. p. 37 and 40. Available here.
[6] FAO (2023). World of Organic Agriculture. p. 44. Available here.
[7] FAO (2023). World of Organic Agriculture. p. 143. Available here.
[8] This information is countered by the FAO's World of Organic Agriculture report, which suggests that there were 90 organic producers in BiH in 2021, see FAO (2023). World of Organic Agriculture. p. 56. Available here.
[9] FAO (2023). World of Organic Agriculture. p. 56. Available here.

Low-skilled occupations	
farm managers (ESCO 6130.1)	horticulture production managers (6113.2)
crop production managers (6114.1)	mixed farmers (6130)

Interviewed companies highlighted the demand for general digital skills but also specific knowledge and skills in implementing digital solutions in the sector. According to ESCO skills and competences database, digital skills such as operating open-source software, using agricultural information systems and databases, and knowledge in e-agriculture are part of the skills profiles for high-skilled occupations such as agricultural scientists (ESCO 2132.1), agricultural engineers (2144.1.2) and horticulture production managers (6113.2).

In terms of business services and related occupations, the interviewed companies emphasised knowledge and skills regarding organic standards and certification, internationalisation, and export. Skills in finance, business plan development, and project management were also highlighted by companies. These skills are also popular in job advertisements on job portals (e.g. Mojposao.ba). In addition, companies look for employees with marketing and sales skills, as well as administrative and managerial skills. Interviewees underscored difficulties the seasonality of the sector poses in terms of fluctuating demand for workers.

Interviewed business intermediaries and education and training providers stressed the importance of technical skills profiles such as agricultural and food technicians, agricultural engineers, technicians for biotechnology and veterinary technicians, specialists in organic production, greenhouse production and food safety policies, plant protection engineers, environmental experts, biotechnologists, and ecologists. Like interviewed companies, they felt that specific knowledge and skills in implementing digital solutions in the sector is growing in demand. The occupational profile interviewed business intermediaries and education and training providers felt was important was engineering technologists for precision agriculture, able to apply and combine technology from various fields in order to optimise and increase yields, preserve the environment and reduce emissions of negative chemicals into the soil. Finally, managerial, sales and economics skills for farmers were emphasised as crucial for successful development of business in the increasingly dynamic and competitive environment.

SKILLS SUPPLY

Vocational education and training

Vocational education and training programmes are broader in scope and there are no programmes specifically on organic agriculture and food production. However, initial vocational education and training (IVET) schools that provide education in agriculture also include modules related to organic production in their curricula. These include IVET programmes such as training of farmers (3-year high school programme), agricultural technicians (4-year high school programme), in food processing (3-year high school programme), milk processing (3-year high school programme) and fruit growing, winery and winemaking (3-year high school programme).

Continuing vocational education and training (CVET) programmes offered across the country, public and private, also have a more general focus on agriculture and food processing rather than providing specific training on organic food production.

Several examples of donor led CVET do exist such as an Erasmus + project "Western Balkans Urban Agriculture Initiative (BUGI)"[10] that ran an adult learning programme from 2017 to 2020 for the occupation "Urban Agriculture Gardener".[11] Another example is a USAID project Turizam which consisted of webinars and other virtual events focused on the certification process and organic food connected to tourism.[12]

Projects by international organisations play an important role in skills development. Bosnia and Herzegovina is in the process of updating occupational standards and harmonising them with the EU acquis. This is part of the a regional project, led by the Education Reform Initiative of South Eastern Europe (ERI SEE) Secretariat: Enhancements in the Quality of Education and Training in South Eastern Europe (EQET SEE). The first part of the project has focused on developing occupational standards, which includes agro-technicians for organic production. The current list of syllabi developed by the reform programmes of secondary vocational education[13] includes syllabi for courses on fruit and vineyard technicians, farmers, veterinary technicians, agricultural technicians, and food processors. For example, the syllabus for farmers includes a module on fertilisers where students will learn about organic fertilisers and develop ecological awareness of the significance of producing healthy food.[14]

Intermediary organisations

Business intermediary organisations generally provide more general support to companies in the agri-food sector rather than specific support for organic food producers. Business intermediaries active in the agri-food sector include the Association of agricultural producers in Federation of Bosnia and Herzegovina and Republika Srpska, the Association for Agriculture and Food Industry of the Foreign Trade Chamber of Bosnia and Herzegovina, the Association of producers of non-alcoholic drinks and water, and the Association of production, collection and processing of medicinal herbs and forest fruits.

Agricultural advisory services are an important link in the agri-food system. In Bosnia and Herzegovina agricultural advisory services are insufficiently developed and unevenly spread across the country. Private agricultural advisory services exist in Bosnia and Herzegovina, but their services are also limited. The farmer – advisor ratio in BiH is estimated to be 900 farmers to one extension officer (considering both public and non-state/private officers),[15] compared to an EU the ratio which ranges between 50 and 90 farmers per advisor. Challenges to developing the system of agricultural advisory services include, the incomplete legislative framework, lack of coordination between extension services (and cantonal extension services in the Federation of Bosnia and Herzegovina), limited

[10] BUGI project portal. Available here.
[11] BUGI project portal. Available here.
[12] The theme of the second event was Organic production as a function of the economic development of Bosnia and Herzegovina. More is available here. Also see here.
[13] VET BiH: Teaching plan and programmes. Available here.
[14] Syllabus available here.
[15] Estimates by the USAID/Government of Sweden FARMA II, 2017. Available here. Also, more about FARMA is available here.

resources, technical equipment, and innovative tools,[16] as well as low farmer interest in advisory services.

The Foreign Trade Chamber of BiH has created the Learning Management System (LMS) with the aim of improving access to digital online learning. The platform consists of electronic learning tools from webinars (via the BigBlueButton platform) to multimedia, interactive, and self-study courses. It offers courses, for instance, in managing campaigns on social media, online advertising, practical aspects e-commerce, HR management and project management.

Higher education and research

There are no university programmes specifically on organic agriculture and food production. Most public universities across the country offer more general courses, referring to agriculture, plant science, veterinary sciences and plant production.

[16] To enhance their extension service offer, the RS Ministry of Agriculture, Forestry and Water Management deployed a digital tool CARPO as an early warning system to enable farmers to reduce pest ad disease in agriculture crops. The tool was development with UNDP support, and it is available here.