

SMARTLABOR

Skilling up the Western Balkan

Agri-food sector with Digital skills

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OVERVIEW OF AGRI-SECTOR IN NORTH MACEDONIA

- Agri-sector in this report comprises sections Agriculture A1, A2 and A3 (NACE classification)
 - A1-Crop and animal production, hunting and related service activities
 - A2 -Forestry and logging
 - A3 - Fishing and aquaculture
-
- Over the years falls as percent of GDP – from 10% in 2010 to 7% in 2023*
 - Number of employees from 121K in 2011 to ~54K in 2023 (LFS data)

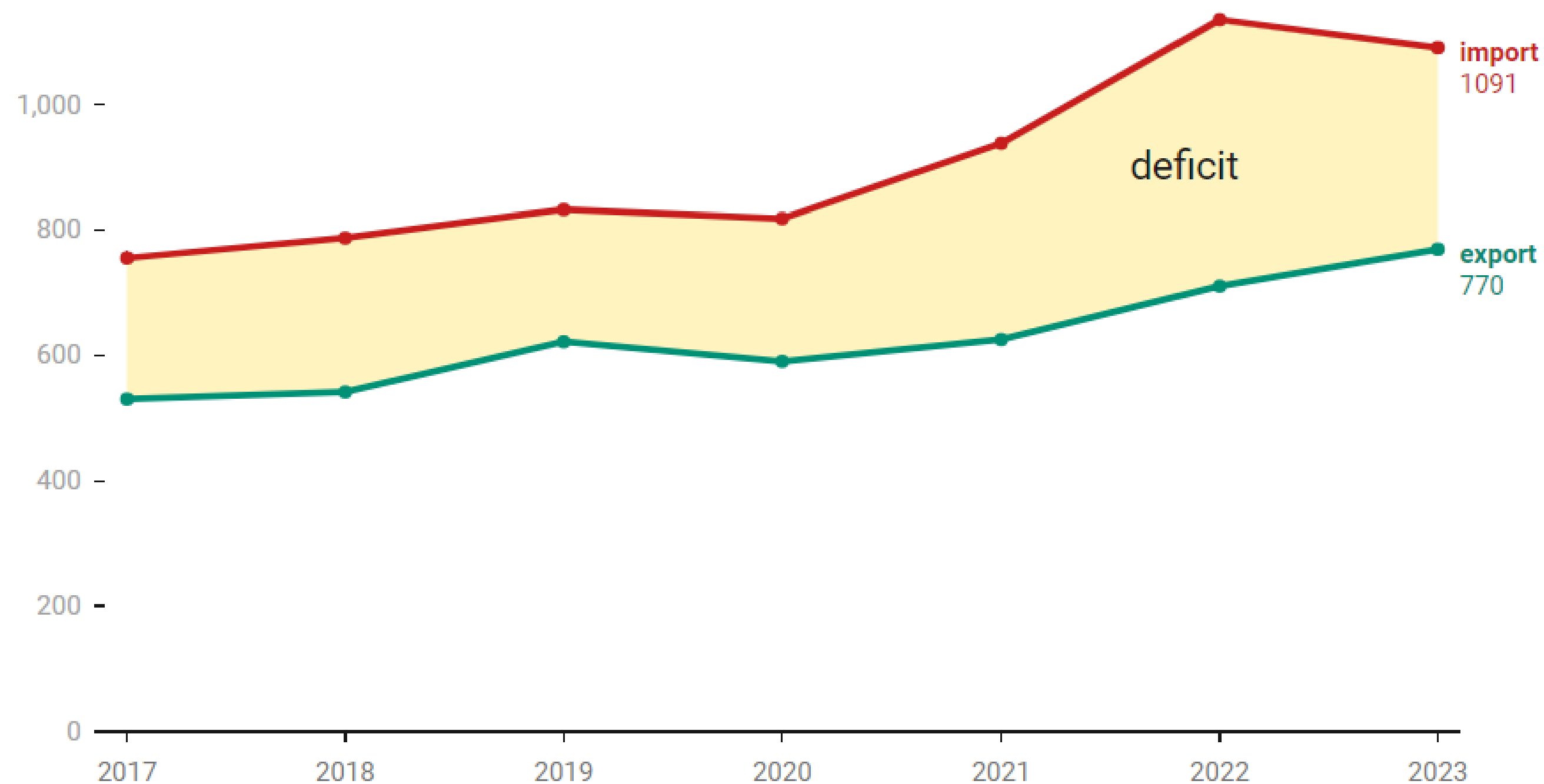
Source: Makstat



INTERNATIONAL AGRI-TRADE

EXPORT AND IMPORT OF AGRIFOOD PRODUCTS FOR 2017-2023

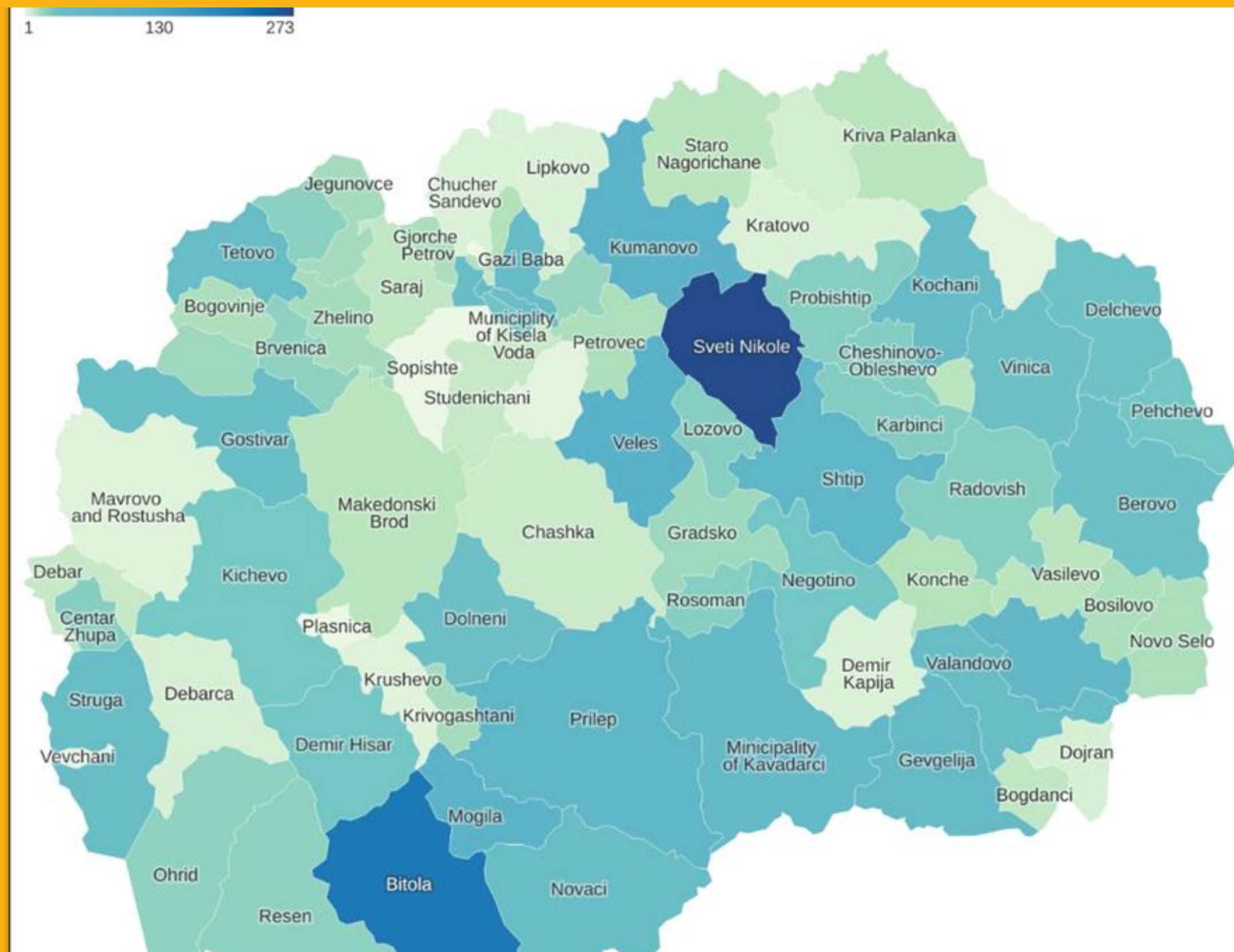
In mln EUR



RELEVANT DOCUMENTS

- Strategy for Agricultural and Rural Development 2021-2027
(support for digital transformation)
- [Smart Specialization Strategy 2023- 2027](#) (Smart Agriculture and Food with Higher Added-Value)

NUMBER OF ACTIVE BUSINESSES REGISTERED WHOSE MAIN ACTIVITY IS IN AGRICULTURE SECTOR, BY MUNICIPALITY, END OF 2021



Source: Makstat, own elaboration

EMPLOYED BY ACTIVITY OF THE BUSINESS ENTITIES, BY NACE AND ISCO, ANNUAL

	2018	2021	2023
Managers	774	947	:
Professionals	1,050	1,554	936
Technicians and associate professionals	1,221	2157	828
Clerks	686	543	:
Service workers and shop and market sales workers	540	1,313	:
Skilled agricultural and fishery workers	56,884	56,553	32,951
Craft and related trades workers	1,726	812	:
Plant and machine operators and assemblers	1,806	1,127	1,055
Elementary occupations	54649	26,499	16,560
Total	119,337	91,506	53,746

Source: Makstat, own elaboration

FDI'S IN AGRICULTURE SECTOR AND TOTAL, FOR THE PERIOD 2014-2023

Year/mln EUR	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Agriculture, Forestry and Fishing	10.67	2.75	1.6	-2.93	4.7	31.79	20.77	36.28	44.11	35.52
TOTAL FDI's	205.1	216.7	338.4	181.7	614	398.7	201.4	470.5	745	443.8
% of all	5.2	1.3	0.5	-1.6	0.8	8.0	10.3	7.7	5.9	8.0

Source: National Bank of RN Macedonia

AVERAGE NET WAGE PAID PER EMPLOYEE BY SECTIONS AND DIVISIONS OF ACTIVITY

Year/ MKD	2019	2020	2021	2022
TOTAL	25,213	27,182	28,718	31,859
AGRICULTURE, FORESTRY AND FISHING	20,066	21,747	22,837	25,436
Crop and animal production, hunting and related service activities	19,637	21,749	22,894	25,952
Forestry and logging	21,388	21,994	22,772	24,112
Fishing and aquaculture	15,409	17,544	21,080	22,620

Source: Makstat

SKILLS NEEDS

- Skills Needs Analysis –2023 (ESA)

	Employments demanded	Basic education	Secondary education	Upper secondary	Higher education
Total	14,915	4,277	6,770	2,258	1,610
Agriculture sector	285	131	138	6	10
Source: ESA					

- Chamber of Commerce
- OJV (Online job vacancies)

VOCATIONAL EDUCATION

Number	Name of school	Town	Profiles
1	SOZU "Kuzman Shapkarev"	Bitola	Agrotechnician, Technician in agromanagement, Technician in phytomedicine
2	SOU "Gotce Delchev"	Valandovo	Technician in phytomedicine, Agrotechnician
3	SOZSU "Gjorche Petrov"	Kavadarci	Technician in phytomedicine, Agrotechnician/ agromanagement
4	DSU and Regional Center for vocational education "Kiro Burnaz"	Kumanovo	Technician in phytomedicine, Agrotechnician/ agromanagement, Technician in veterinary medicine
5	SOU "Orde Chopela"	Prilep	Agrotechnician/ agromanagement, Technician in veterinary medicine, Technician in phytomedicine
6	SOU "Tzar Samoil"	Resen	Agrotechnician, Technician in phytomedicine
7	SOU "Kocho Racin"	Sveti Nikole	Agrotechnician/ agromanagement
8	SUGS "Brakja Miladinovci"	Skopje	Technician in veterinary medicine, Agrotechnician, Technician in phytomedicine, Technician in agromanagement
9	SOU "Dimitar Vlahov"	Strumica	Agrotechnician, Technician in agromanagement, Technician in phytomedicine, Crop producer, Technician in veterinary medicine
10	SOSU "Mosha Pijade"	Tetovo	Technician in veterinary medicine /Technician in phytomedicine, Agrotechnician

HIGHER EDUCATION

year/graduated	2016	2017	2018	2019	2020	2021	2022	2023
Total in the country	8,247	8,545	7,698	7,874	6,907	7,753	7,483	7,422
Faculty of Veterinary Medicine, UKLO	5	15	5	11	5	4	5	12
Faculty of Veterinary Medicine, UKIM	12	19	8	13	13	9	7	15
Faculty of Agricultural Sciences and Food, UKIM	105	105	102	85	33	64	52	63
Faculty of Agriculture, UGD	62	74	78	41	45	54	23	51
Faculty of Agricultural and Biotechnical Sciences UTetovo	-	-	-	-	-	16	14	4
Total agriculture	184	213	193	150	96	147	101	145
Share of Total in %	2.2	2.5	2.5	1.9	1.4	1.9	1.3	2.0

Source: Makstat

NON-FORMAL EDUCATION

- Open Civic Universities – old name: Worker's Universities
- Adult education
- [Strategy on Adult Education 2019-2023](#) (new strategy is under preparation)



LIFELONG LEARNING OFFERED BY UNIVERSITIES

- Universities can establish centres for lifelong learning and offer continual professional development and non-formal training courses - Official gazette [82/2018](#)
- Expected that some professions in agri-food sector receive the status of regulated profession (Phytomedicine engineer and Agronomy engineers)



DIGITAL SKILLS IN AGRICULTURE

- The link between companies in the sector and VET schools in agri-food is based on ad-hoc basis ?
- Need to train and educate the VET professors with the subjects related to use of digital technologies ?
- SELFIE- Tool for to support learning in the digital age (VET schools)
- 1,201 ESCO skills and knowledge concepts have been classified as digital. This includes: 718 skills, 475 knowledge concepts and 7 transversal skills.

DIGITAL SKILLS IN AGRICULTURE

Skills demand

- Data analysis and management
- Precision agriculture
- Drone technologies
- Online marketing and e-commerce
- Crop monitoring and prediction

DIGITAL SKILLS IN AGRICULTURE

- Matching the demand and supply (horizontal and vertical mismatch)



POTENTIAL THEMES FOR DISCUSSION

- Current databases and registries are not digitalized and poorly structured
- Ex. fertilizers and pesticides need database of approved list,
- Geolocation and mapping of parcels
- Financial means disbursed for organic producers, trainer providers and programmes offered in agri-sector



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