Labour market analysis in Romania

Prepared for AmCham Romania

August 2023

pwc

30 years · AmCham ROMANIA
30 YEARS AND BEYOND

AmCham has been seeking support in preparing a labour market analysis following its members' concern on workforce availability in Romania

Context and objectives of the analysis

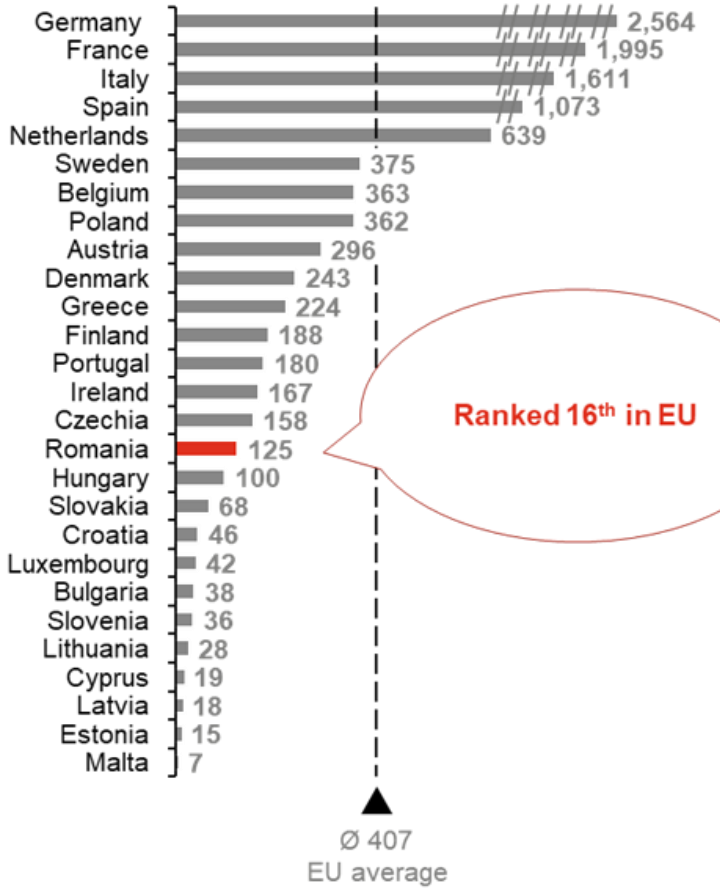| Context |
| --- |
| • AmCham is one of the most important voice of the business environment in Romania, representing about over 540 members, American, international and Romanian companies, multinational companies, SMEs and start-ups. |
| • During its 30 years of activity in Romania, AmCham has had a strong contribution to facilitating the dialogue between the business community and the public sector and promoting transparent solutions and priorities for raising Romania's attractiveness for investments. |
| • Over the past years, Romania's workforce availability, especially in most developed counties/regions, has raised concerns among companies regarding their potential development. |
| • **To address the current labour deficit and its impact on Romania's economic development, AmCham is willing to commission a "Labour market analysis".** |
| • **In this endeavour, AmCham is also interested in** identifying a series of recommendations to be discussed with relevant stakeholders. |

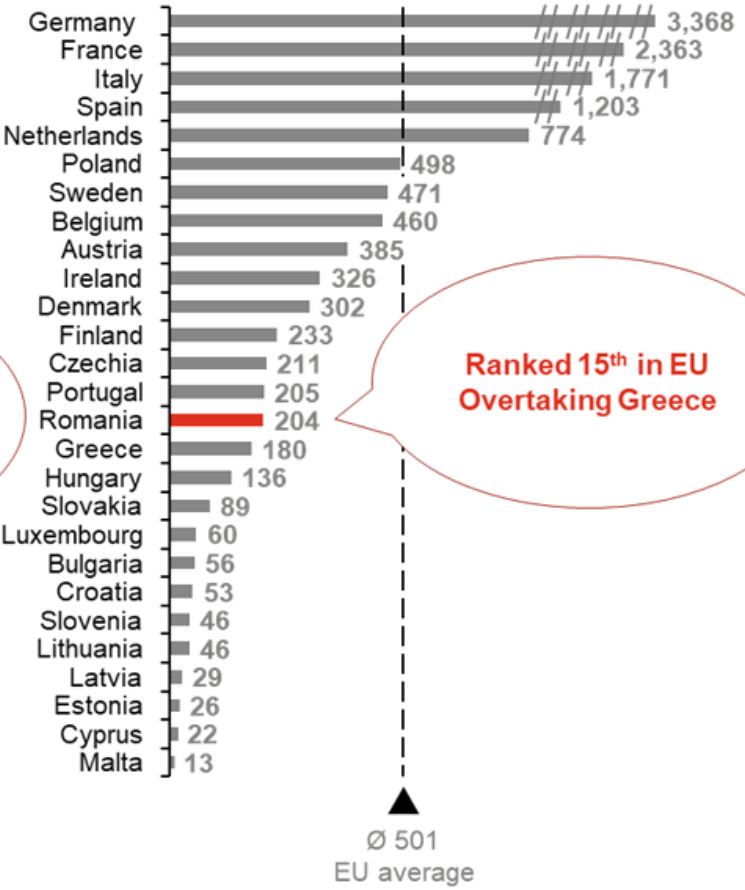| Objectives |
| --- |
| • Have a clear image on the current context of the labour market in Romania |
| • Estimation of the labour deficit |
| • The economic impact of the labour deficit and scenarios for partially covering the deficit |
| • Recommendations for both public and private sectors based on the proposed scenarios |

Romania's current labour market landscape

Since its EU accession in 2007, Romania's economy has more than doubled, moving up 4 positions in the EU ranking from 16th in 2010 to 12th in 2022, leading to increased labour demand
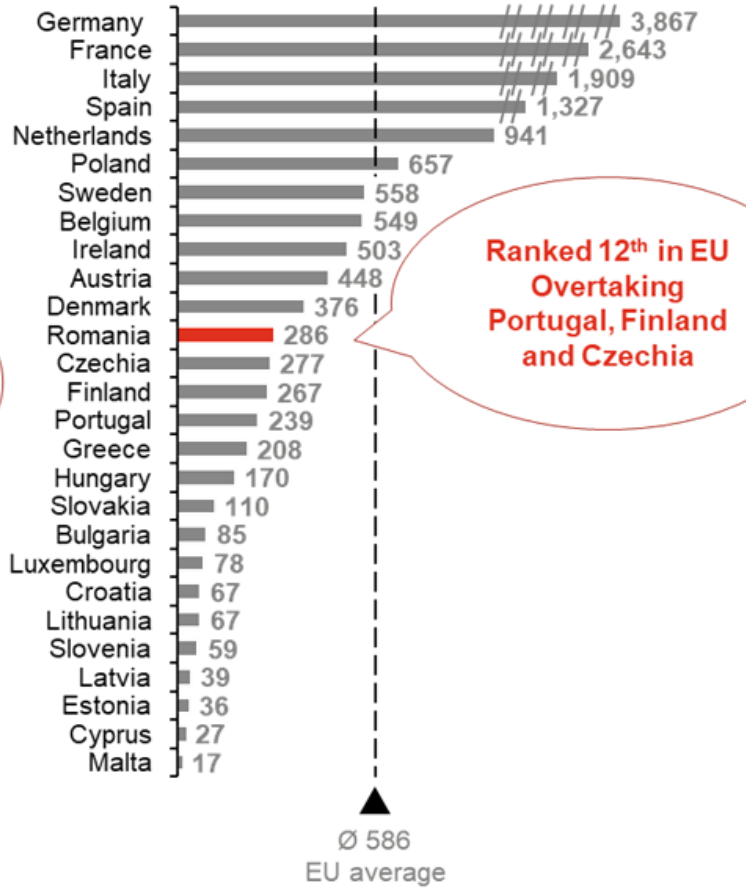

Nominal GDP (billion EUR, 2010)

Country	GDP
Germany	2,564
France	1,995
Italy	1,611
Spain	1,073
Netherlands	639
Sweden	375
Belgium	363
Poland	362
Austria	296
Denmark	243
Greece	224
Finland	188
Portugal	180
Ireland	167
Czechia	158
Romania	125
Hungary	100
Slovakia	68
Croatia	46
Luxembourg	42
Bulgaria	38
Slovenia	36
Lithuania	28
Cyprus	19
Latvia	18
Estonia	15
Malta	7

Ranked 16th in EU

Ø 407
EU average

Nominal GDP (billion EUR, 2018)

Country	GDP
Germany	3,368
France	2,363
Italy	1,771
Spain	1,203
Netherlands	774
Poland	498
Sweden	471
Belgium	460
Austria	385
Ireland	326
Denmark	302
Finland	233
Czechia	211
Portugal	205
Romania	204
Greece	180
Hungary	136
Slovakia	89
Luxembourg	60
Bulgaria	56
Croatia	53
Slovenia	46
Lithuania	46
Latvia	29
Estonia	26
Cyprus	22
Malta	13

Ranked 15th in EU Overtaking Greece

Ø 501
EU average

Nominal GDP (billion EUR, 2022)

Country	GDP
Germany	3,867
France	2,643
Italy	1,909
Spain	1,327
Netherlands	941
Poland	657
Sweden	558
Belgium	549
Ireland	503
Austria	448
Denmark	376
Romania	286
Czechia	277
Finland	267
Portugal	239
Greece	208
Hungary	170
Slovakia	110
Bulgaria	85
Luxembourg	78
Croatia	67
Lithuania	67
Slovenia	59
Latvia	39
Estonia	36
Cyprus	27
Malta	17

Ranked 12th in EU Overtaking Portugal, Finland and Czechia

Ø 586
EU average
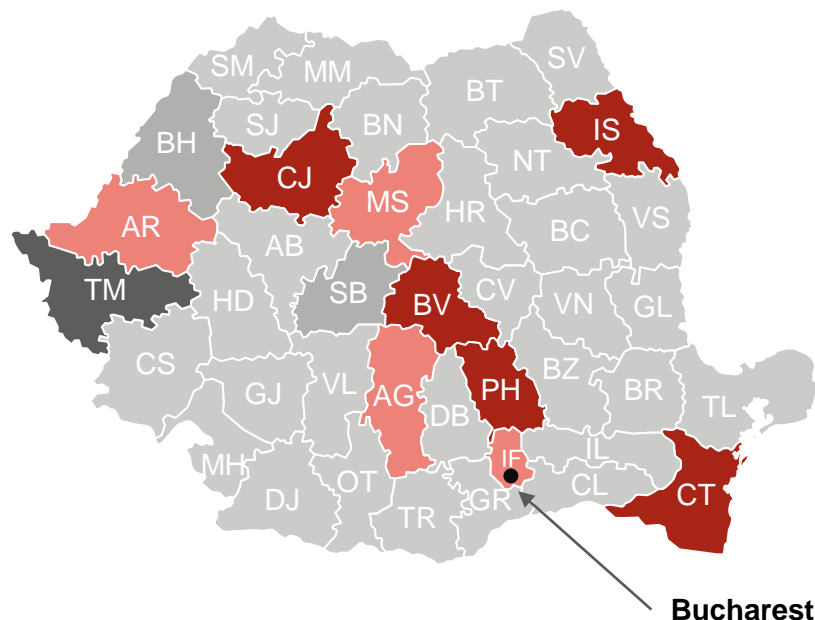
At the same time, integration into the EU single market led to agglomeration effects, resulting in development concentration in certain regions/counties and high regional disparities

Index[1] of development concentration (based on PwC analysis)
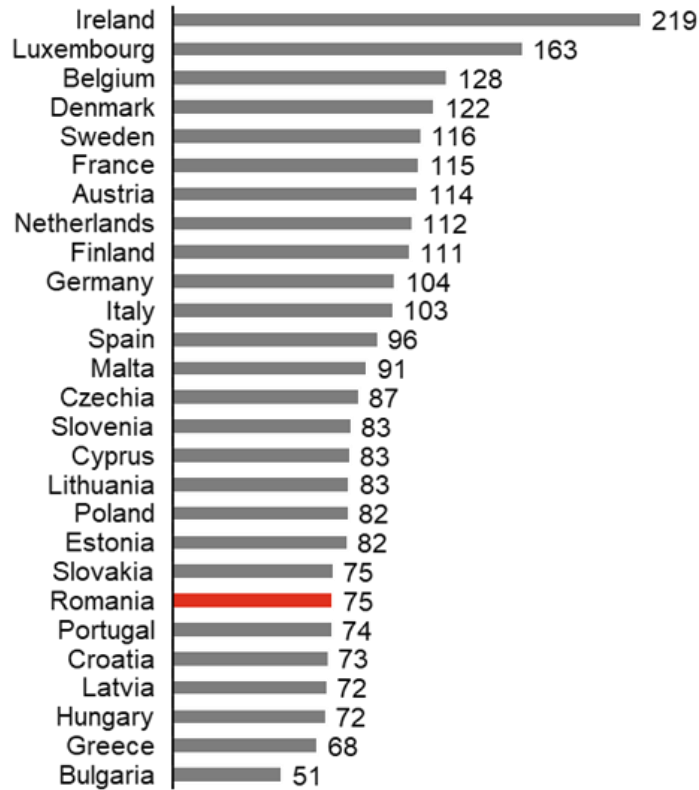

Bucharest

Key indicators used to estimate the Index (2021)

County	GDP (bn EUR)	Population ('000 people)	Employees ('000 people)	FDI stock (bn EUR)
Bucharest	59.0	1,800	965	48.7
Timis (TM)	11.3	705	235	4.6
Cluj (CJ)	12.5	709	234	2.1
Constanta (CT)	9.6	672	176	1.8
Prahova (PH)	9.2	713	173	2.6
Brasov (BV)	8.3	554	177	2.7
Iasi (IS)	8.1	793	165	0.5

Intense economic activity is concentrated in more attractive regions for foreign direct investments, i.e. regions that include **universities and developed services such as IT&C clusters & financial activities**, **most of them being located in Bucharest-Ilfov, but also industry,** which is located in the **North-West and West regions.**
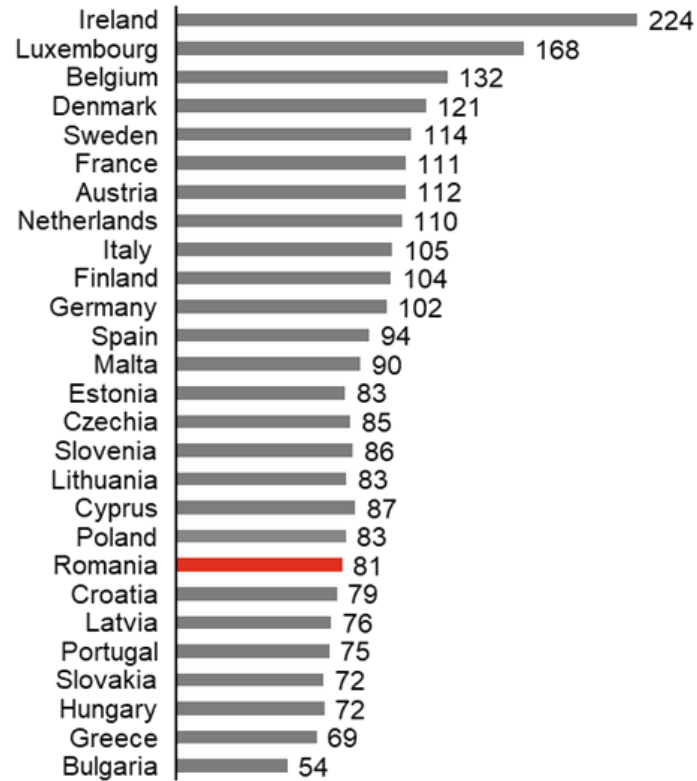
(1) Index computed by PwC based on 4 sub-indices: GDP, population, employees, FDI stock (2021). The map highlights only top counties.
Source: National Institute for Statistics, National Bank of Romania, PwC analysis.

PwC

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Romania has made progress in narrowing the productivity gap with peer countries (Czech Republic and Poland) in recent years, despite still lagging behind more developed nations
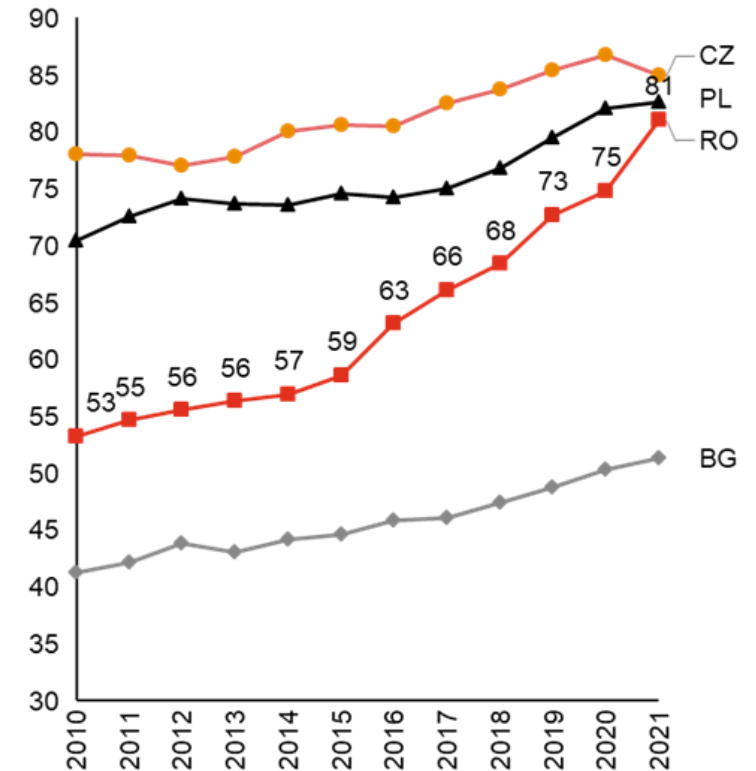
Labour productivity (% of EU, EU @100, 2020)

Country	Value
Ireland	219
Luxembourg	163
Belgium	128
Denmark	122
Sweden	116
France	115
Austria	114
Netherlands	112
Finland	111
Germany	104
Italy	103
Spain	96
Malta	91
Czechia	87
Slovenia	83
Cyprus	83
Lithuania	83
Poland	82
Estonia	82
Slovakia	75
Romania	75
Portugal	74
Croatia	73
Latvia	72
Hungary	72
Greece	68
Bulgaria	51

Labour productivity (% of EU, EU @100, 2021)

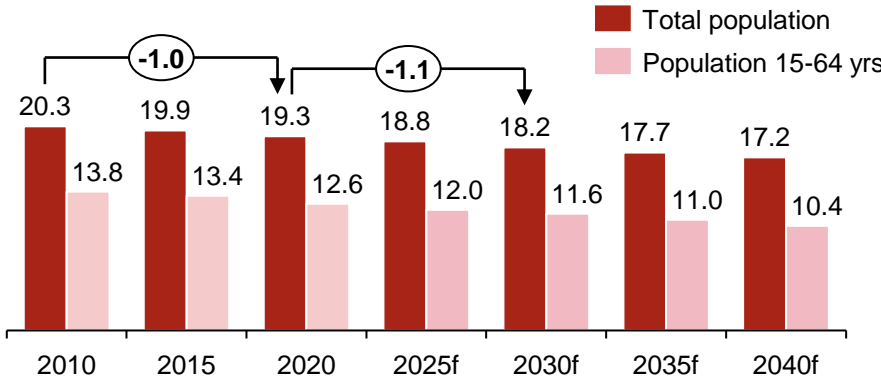| Country	Value
Ireland	224
Luxembourg	168
Belgium	132
Denmark	121
Sweden	114
France	111
Austria	112
Netherlands	110
Italy	105
Finland	104
Germany	102
Spain	94
Malta	90
Estonia	83
Czechia	85
Slovenia	86
Lithuania	83
Cyprus	87
Poland	83
Romania	81
Croatia	79
Latvia	76
Portugal	75
Slovakia	72
Hungary	72
Greece	69
Bulgaria	54

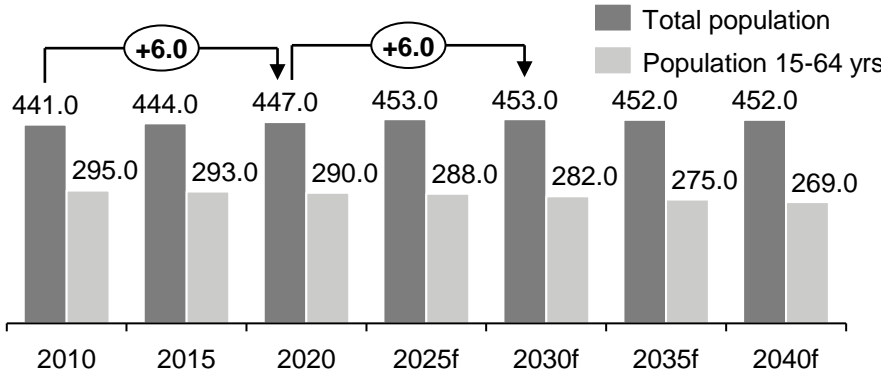**Labour productivity evolution in selected countries** (% of EU, EU @100)

The labour productivity reflects Romania's productivity level as share of total EU-27 (100%).

From a demographic perspective, Romania's population decreased by 1 million between 2010 and 2020, and it is expected to decline by another million between 2020 and 2030, consisting in active population aged 15-64yrs
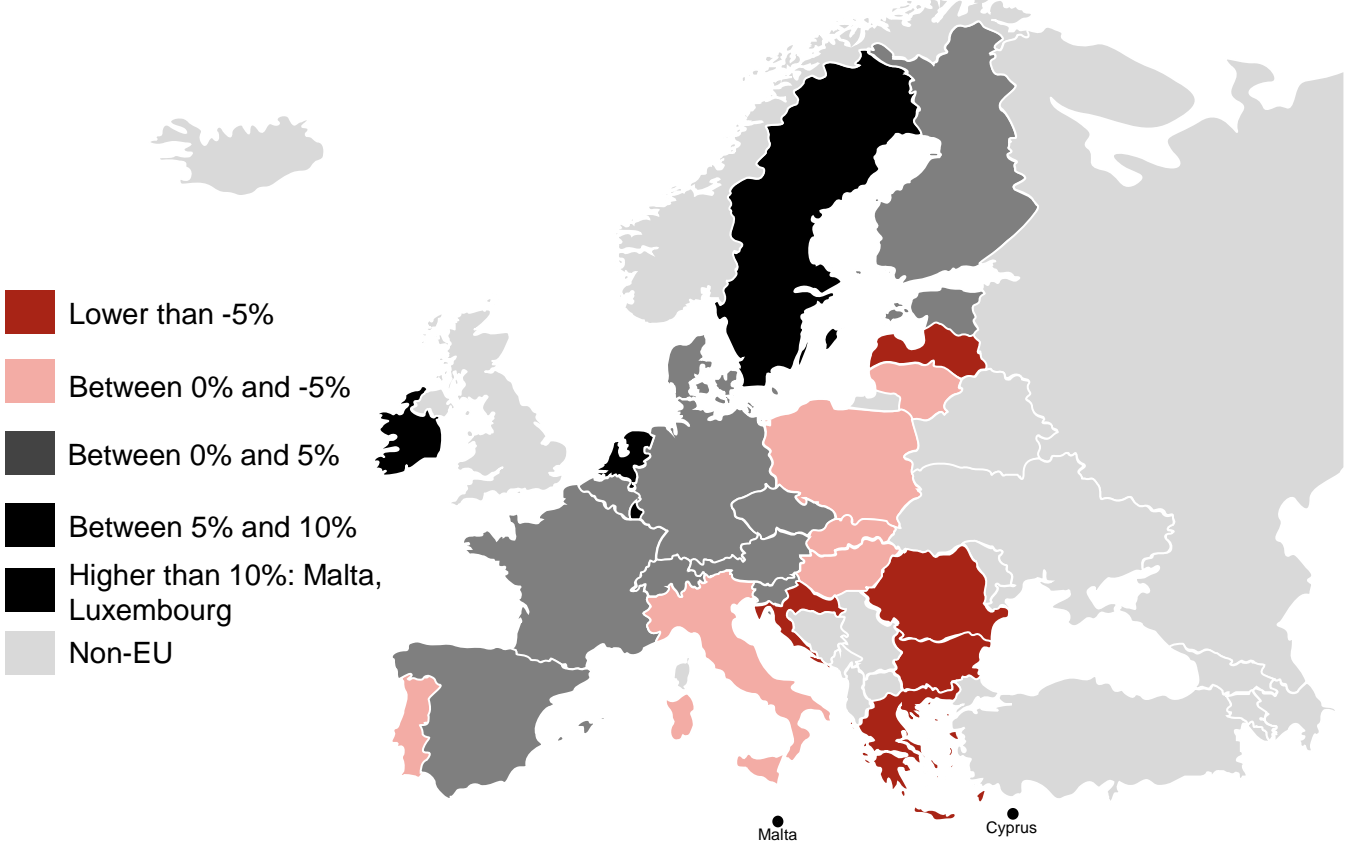
Romania's population evolution & forecast (million people)

- ■ Total population
- ■ Population 15-64 yrs

	2010	2015	2020	2025f	2030f	2035f	2040f
Total population	20.3	19.9	19.3	18.8	18.2	17.7	17.2
Population 15-64 yrs	13.8	13.4	12.6	12.0	11.6	11.0	10.4

-1.0 (2010→2020)   -1.1 (2020→2030)

EU's population evolution & forecast (million people)

- ■ Total population
- ■ Population 15-64 yrs

	2010	2015	2020	2025f	2030f	2035f	2040f
Total population	441.0	444.0	447.0	453.0	453.0	452.0	452.0
Population 15-64 yrs	295.0	293.0	290.0	288.0	282.0	275.0	269.0

+6.0 (2010→2020)   +6.0 (2020→2030)

Total population projection at EU level (change 2030 vs 2020,%)

- ■ Lower than -5%
- ■ Between 0% and -5%
- ■ Between 0% and 5%
- ■ Between 5% and 10%
- ■ Higher than 10%: Malta, Luxembourg
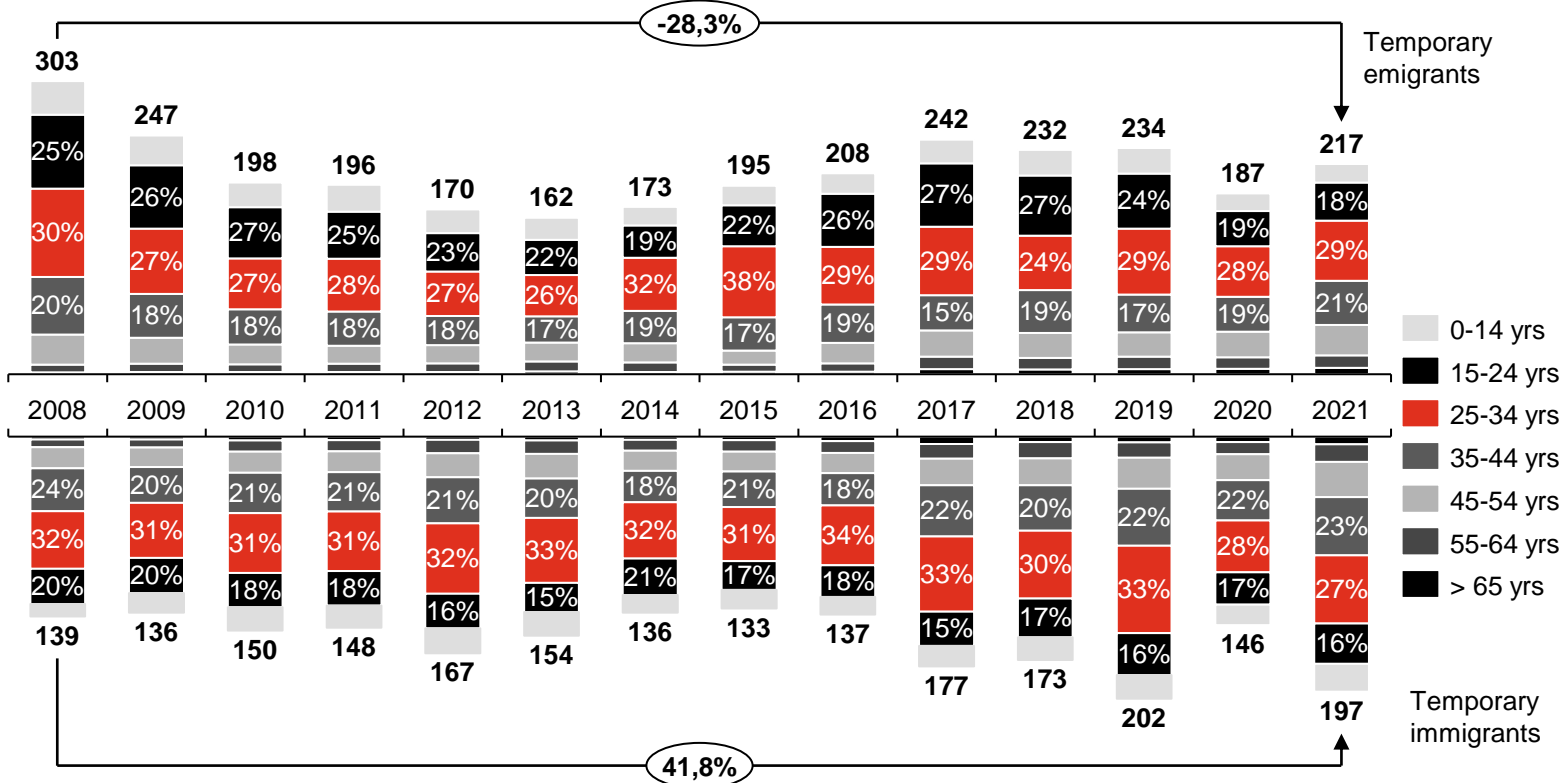- ■ Non-EU

Malta   Cyprus

Moreover, high emigration is one of the main causes for the current labour deficit in the country, as 70% of Romanian emigrants represented active labour force aged between 15-44 years
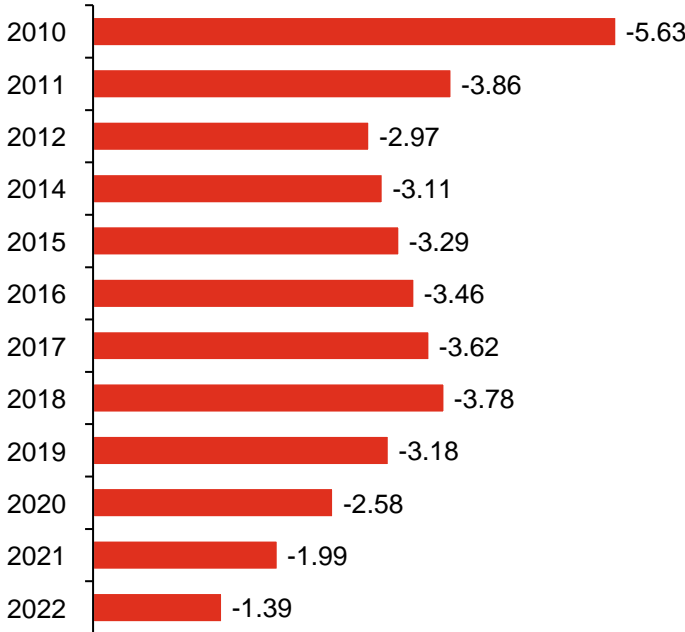
High migration
Between 2.5 and 4 million Romanians live in other states (WB, 2019, 2020), representing almost 25% of the total population.
In recent years the net migration rate started to decrease, as a consequence of reduced emigration and increased non-EU immigrants.

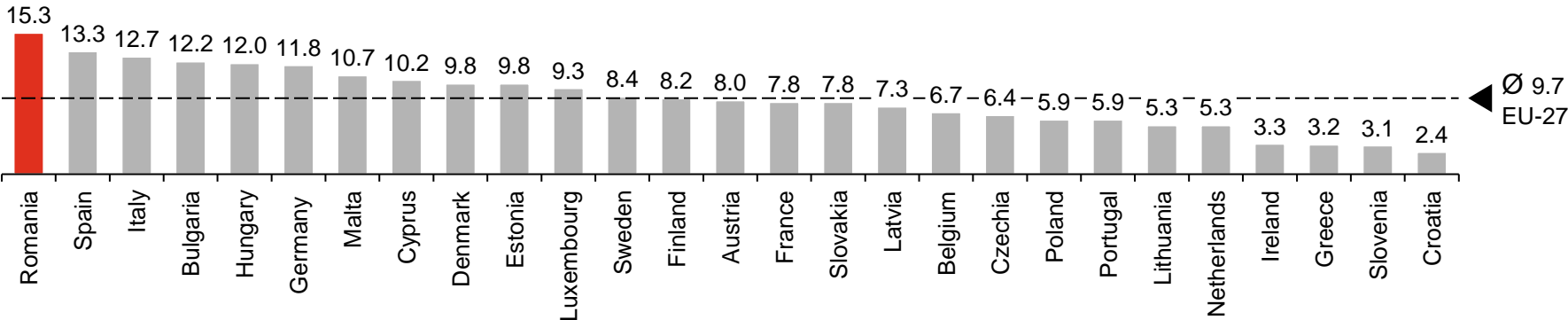**Migration evolution by age** ('000 people, 2008-2021)

Romania's net migration rate (persons/1,000 inhabitants)

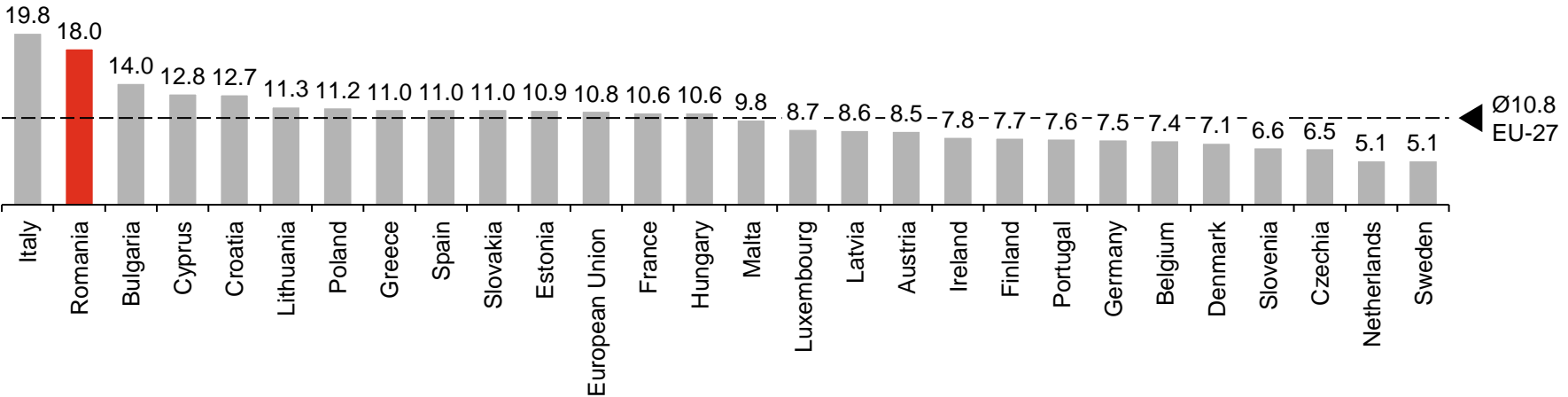| Year	Rate
2010	-5.63
2011	-3.86
2012	-2.97
2014	-3.11
2015	-3.29
2016	-3.46
2017	-3.62
2018	-3.78
2019	-3.18
2020	-2.58
2021	-1.99
2022	-1.39

Romania experienced the highest rates of early school leaving in the EU: 15.3% in 2021, compared to an EU average of 9.7%

Early leavers from education and training (18-24 years, %, 2021)

Country	Value
Romania	15.3
Spain	13.3
Italy	12.7
Bulgaria	12.2
Hungary	12.0
Germany	11.8
Malta	10.7
Cyprus	10.2
Denmark	9.8
Estonia	9.8
Luxembourg	9.3
Sweden	8.4
Finland	8.2
Austria	8.0
France	7.8
Slovakia	7.8
Latvia	7.3
Belgium	6.7
Czechia	6.4
Poland	5.9
Portugal	5.9
Lithuania	5.3
Netherlands	5.3
Ireland	3.3
Greece	3.2
Slovenia	3.1
Croatia	2.4

Ø 9.7 EU-27

Not employed educated or in training – NEET (15-24 years, %, 2021)

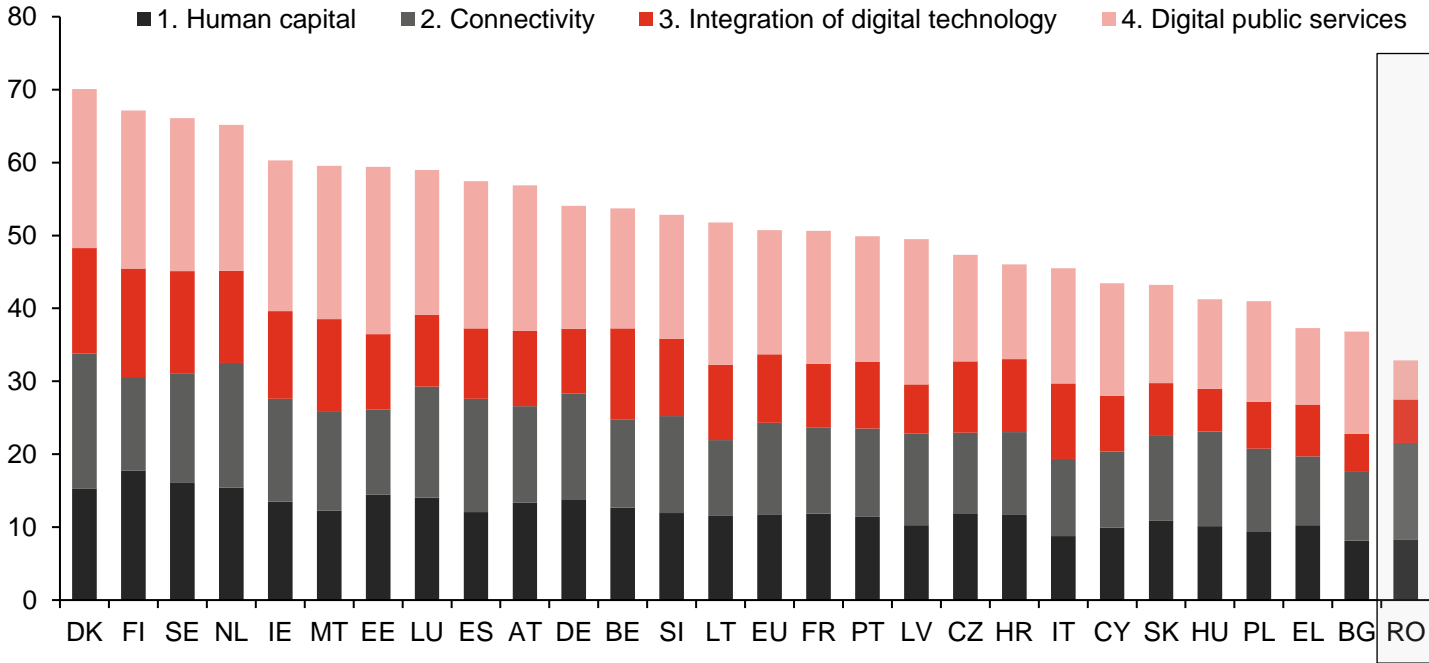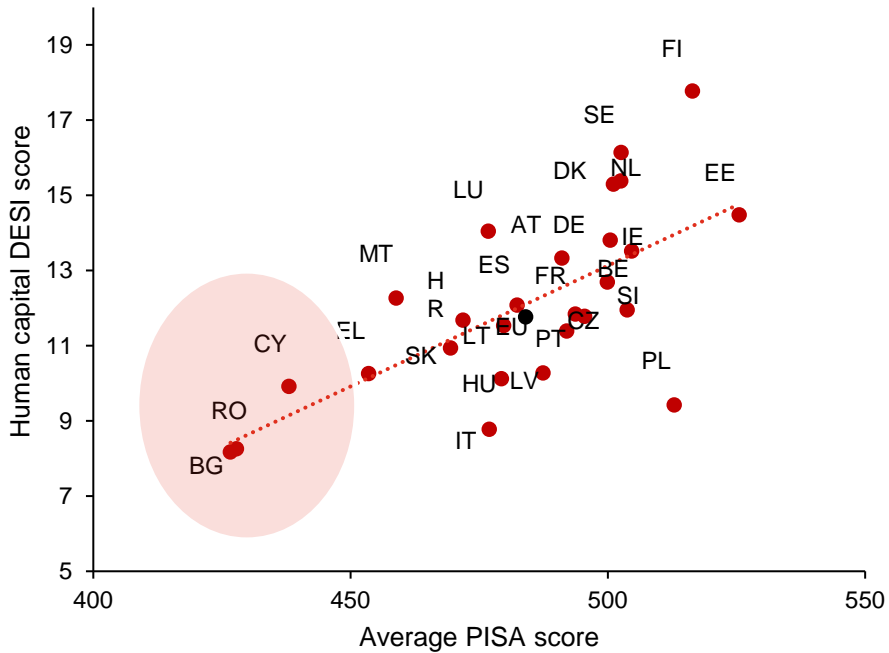| Country	Value
Italy	19.8
Romania	18.0
Bulgaria	14.0
Cyprus	12.8
Croatia	12.7
Lithuania	11.3
Poland	11.2
Greece	11.0
Spain	11.0
Slovakia	11.0
Estonia	10.9
European Union	10.8
France	10.6
Hungary	10.6
Malta	9.8
Luxembourg	8.7
Latvia	8.6
Austria	8.5
Ireland	7.8
Finland	7.7
Portugal	7.6
Germany	7.5
Belgium	7.4
Denmark	7.1
Slovenia	6.6
Czechia	6.5
Netherlands	5.1
Sweden	5.1

Ø10.8 EU-27

Key insights

- According to the Romanian Country Report 2022, the effects of the COVID-19 crisis increased the risk of early school leaving, which is already particularly affecting those from disadvantaged groups, including those in rural areas.
- The NEETs rate remained one of the highest within the EU and increased with 3.2 pp between 2020 and 2021 in Romania from 14.8% to 18.0%. This highlights RO's limited progress in addressing the education challenges.
- Moreover, The share of adults participating in learning activities, at 4.9% in 2021, is among the lowest in the EU, and only 28% have at least basic digital skills (compared to the EU average of 54% in 2021).
- Labour shortages and skills mismatches persist. Approximately 36% of workers do not work in the field of their studies, leading the EU mismatch (EU average 28.6%).

Source: Eurostat, European Commission, PwC analysis.

The relation between PISA score & the use of digital tools* highlights a major challenge in the digitalisation process of the country

**Relation between PISA score** (2018) & **Human Capital DESI** (2022)

Digital Economy and Society Index (2022)

- ■ 1. Human capital
- ■ 2. Connectivity
- ■ 3. Integration of digital technology
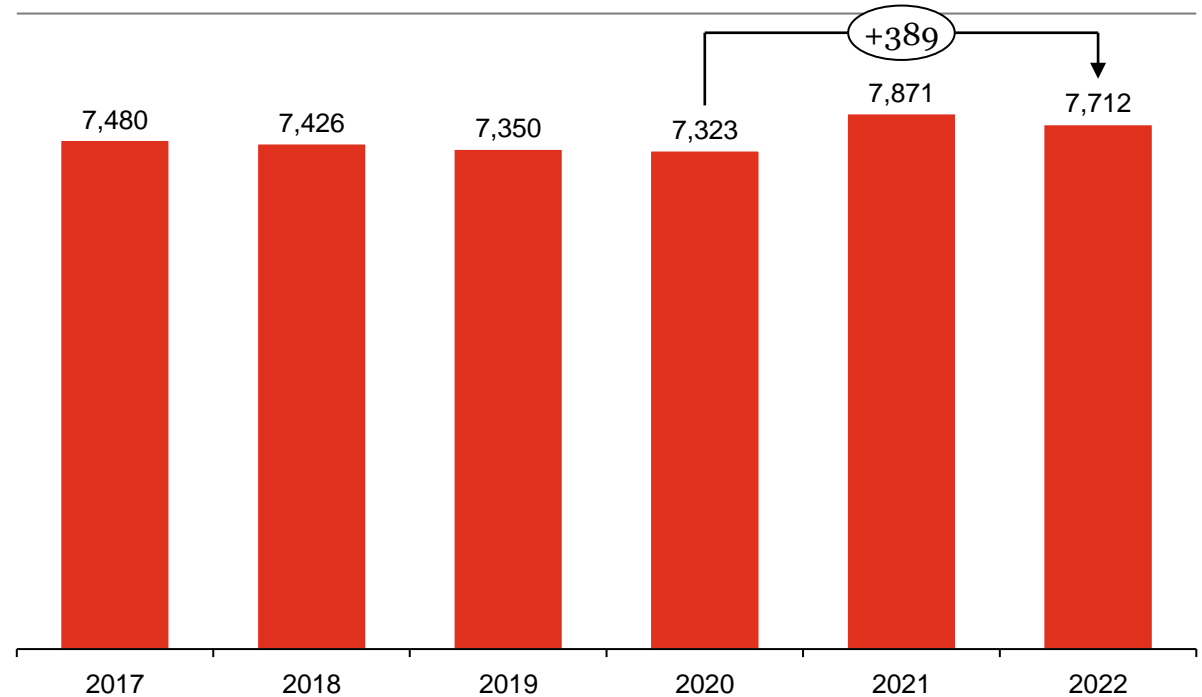- ■ 4. Digital public services

*Human Capital DESI represents a proxy for the use of digital tools

Source: DESI – European Commission, PISA – OECD, PwC analysis

Another labour market structural problem is the high share of inactive population, the second largest in the EU, after Italy. The COVID-19 pandemic increased the inactive population by about 400,000 people

Highest and lowest proportion of persons outside the labour market in EU (%, 2015 - 2021)

Country	Value
Italy	34.6
Romania	32.9
Croatia	30.2
Estonia	18.7
Sweden	15.8
Netherlands	15.0
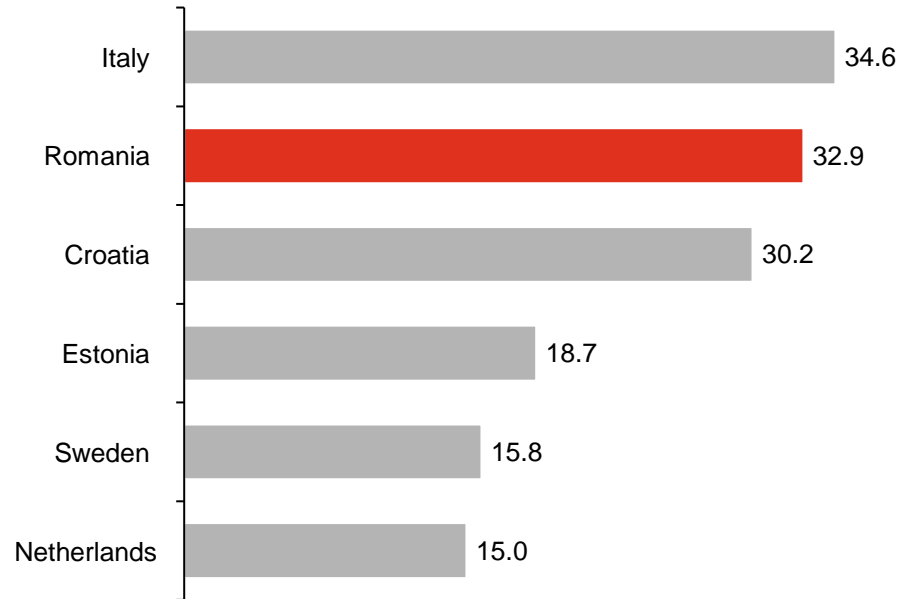
Inactive population evolution in Romania ('000 people, 2017 - 2022)

+389

| Year	Value
2017	7,480
2018	7,426
2019	7,350
2020	7,323
2021	7,871
2022	7,712

- About a half of the inactive population in Romania are high school (30.6%) and secondary-vocational education graduates (17.4%)
- 62% of the inactive population are women

Sources: Eurostat, National Institute for Statistics, PwC analysis

Despite a decline in the number of pensioners, the long-term projection shows an increasing senior age dependency ratio, which will further strain national pension systems

Number of pensioners ('000 people, 2015 - 2022)
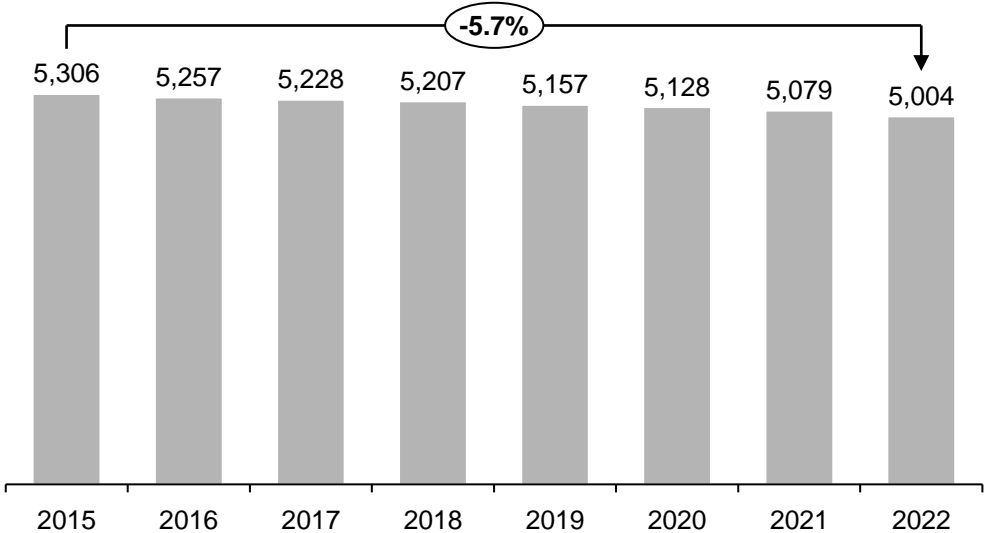
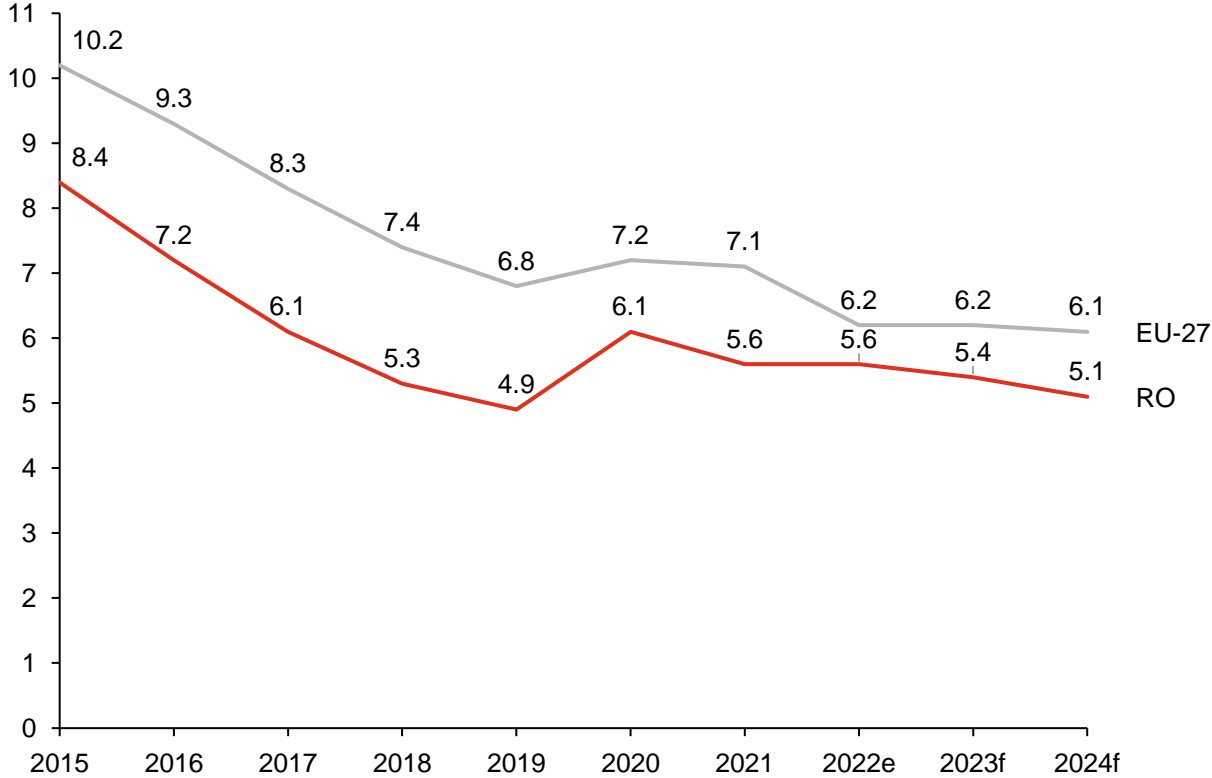**Old age dependency ratio** (%, 1990, 2019, 2050)
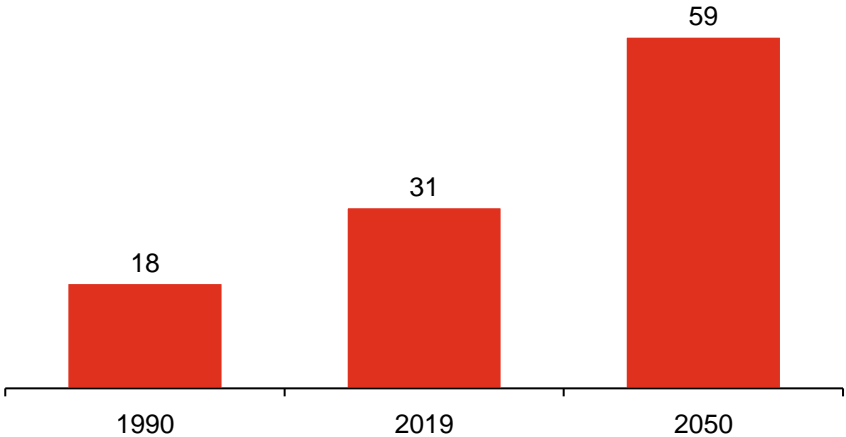
- The number of pensioners decreased in the last years following a positive change in the employment among people aged 55-64yrs, respectively from an average of 39% (out of total population aged 55-64yrs) in 2017 to 49% in 2022, consisting in a 10pp increase.
- Also, in 2020 and 2021, as a consequence of the COVID-19 pandemic, the number of deaths among people aged 55-79yrs increase by an average of 27,000 people per year compared to the 2015-2019 average (127,039 people).

Note: the old-age dependency ratio is calculated as the number of people aged ≥65 years divided by the number of people aged 20-64 years, expressed as a percentage. 2050: population according to the 2019 projections, baseline variant (EUROPOP2019).
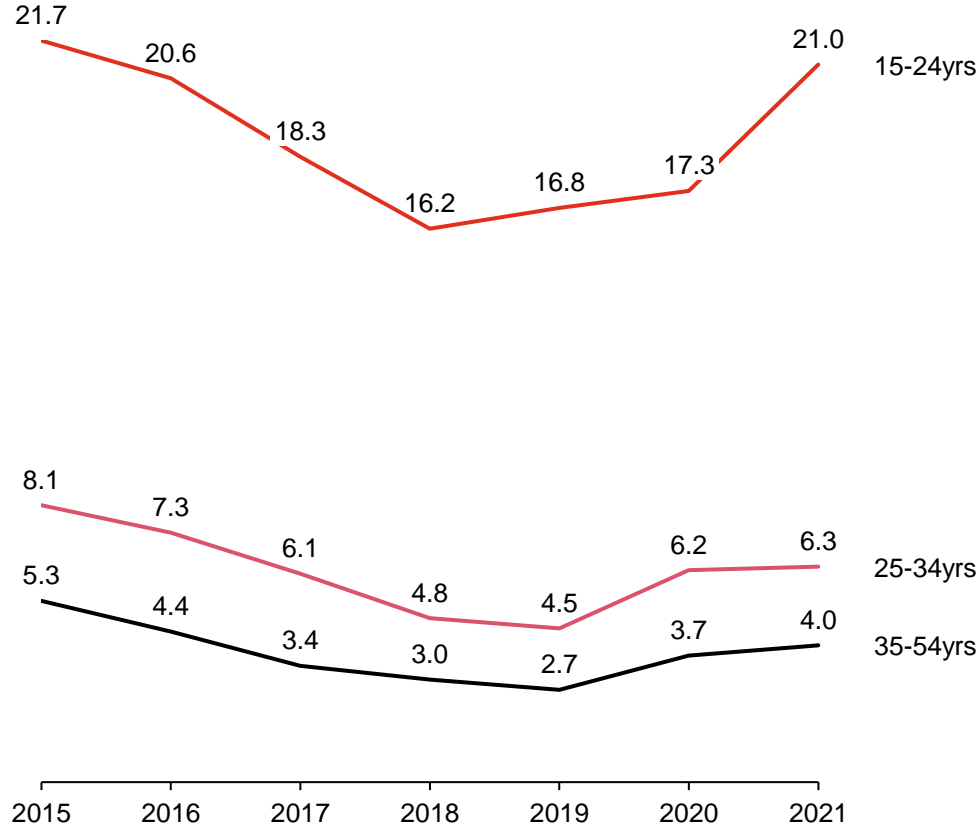
Sources: Eurostat, National Institute for Statistics, PwC analysis

The unemployment rate, although remaining low compared to other EU countries substantiates the structural problems: 2 out of 10 Romanians aged 15-24yrs are unemployed

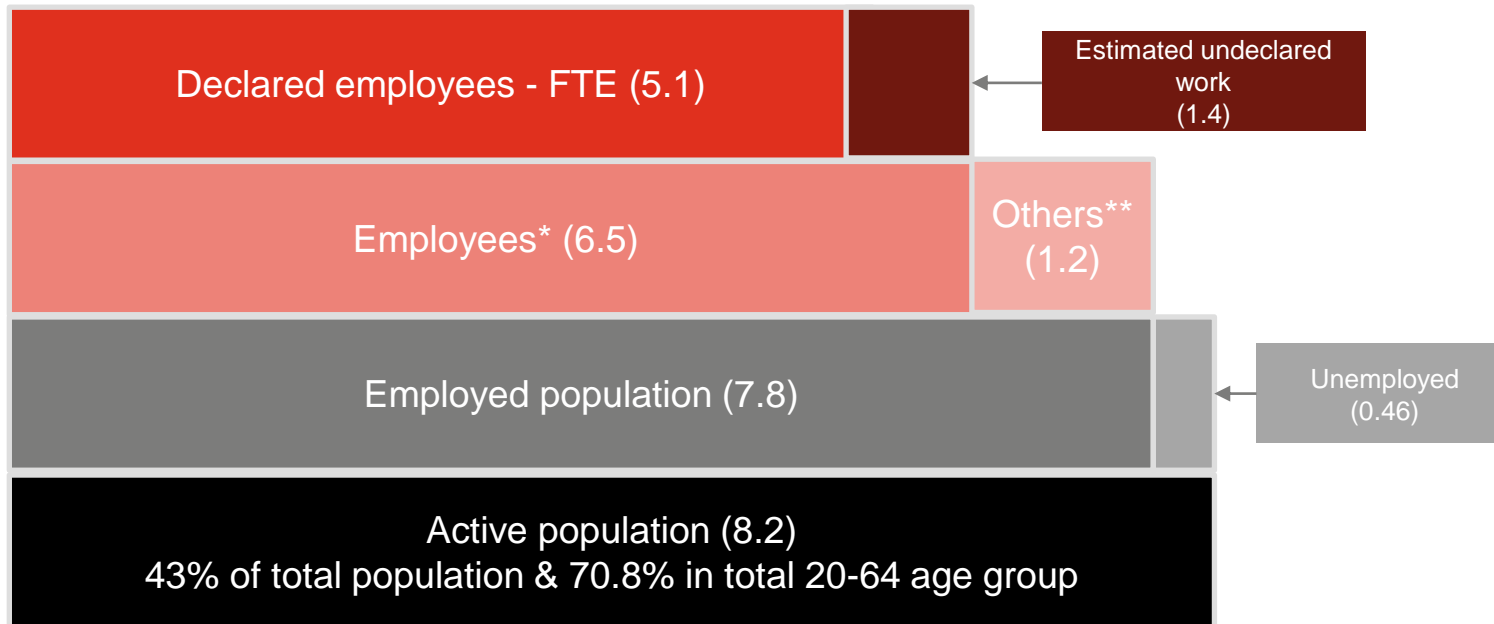**Unemployment** rate (BIM, %, 15-74 yrs)

EU-27
RO

Year	EU-27	RO
2015	10.2	8.4
2016	9.3	7.2
2017	8.3	6.1
2018	7.4	5.3
2019	6.8	4.9
2020	7.2	6.1
2021	7.1	5.6
2022e	6.2	5.6
2023f	6.2	5.4
2024f	6.1	5.1

Age unemployment rate evolution in Romania (2015 – 2021)

15-24yrs
25-34yrs
35-54yrs

Year	15-24yrs	25-34yrs	35-54yrs
2015	21.7	8.1	5.3
2016	20.6	7.3	4.4
2017	18.3	6.1	3.4
2018	16.2	4.8	3.0
2019	16.8	4.5	2.7
2020	17.3	6.2	3.7
2021	21.0	6.3	4.0

PwC

Moreover, the high share of undeclared work, estimated at 1.4 million people has a negative impact on workforce supply and official labour market data

Estimations of labour market structure in Romania (million people, 2021)

Declared employees - FTE (5.1)

Estimated undeclared work (1.4)

Employees* (6.5)

Others** (1.2)

Employed population (7.8)

Unemployed (0.46)

Active population (8.2)
43% of total population & 70.8% in total 20-64 age group

*Including army employees and people working informally (undeclared work)
**Other categories: employers, self-employed, unpaid family workers

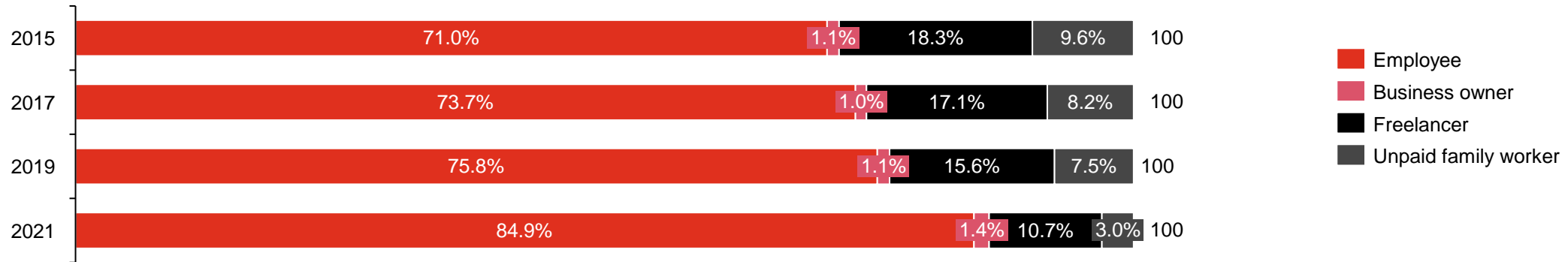| Key insights |
| --- |
| • Informal or undeclared work is estimated at around 1.4 million people, accounting for almost 25% of out of total 5.1 average number of employees (FTE).
 • This represents a major issue, especially in the context of Romania's low employment rate (68.5% in 2022) compared to the EU average (75% in 2022).
 • The informal and undeclared work put pressure on state revenues collection and has a negative impact on the workforce supply.
 • Last but not least, a high rate of undeclared work limits the estimations on labour supply leading to further challenges for investment decisions. |

Note: FTE – Full Time Employee
Note: The figures reflect Labour Force Survey, they are slightly different compared to National Accounts data
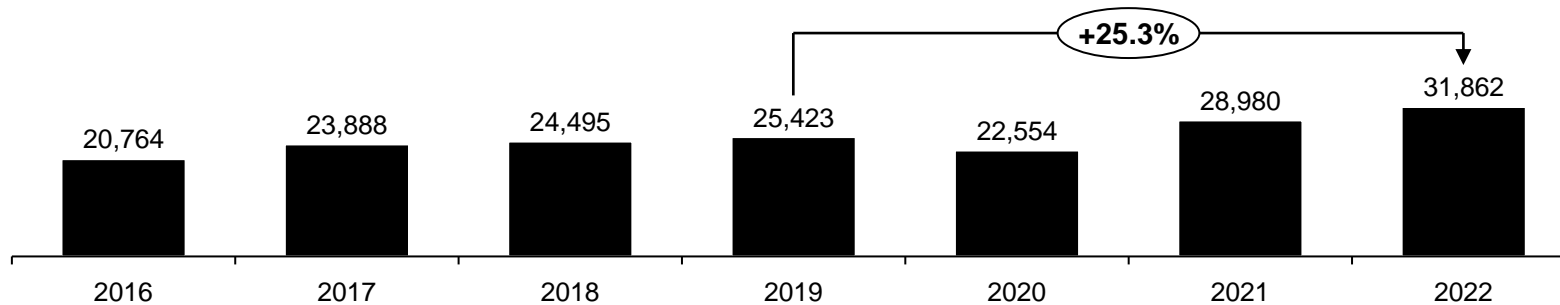
Source: National Institute for Statistics, Hotnews – WB (2021) – estimated undeclared work, PwC analysis

The high economic expansion in the last years supported a boost in the share of employees as total employment, while the share of freelancers and unpaid family workers decreased

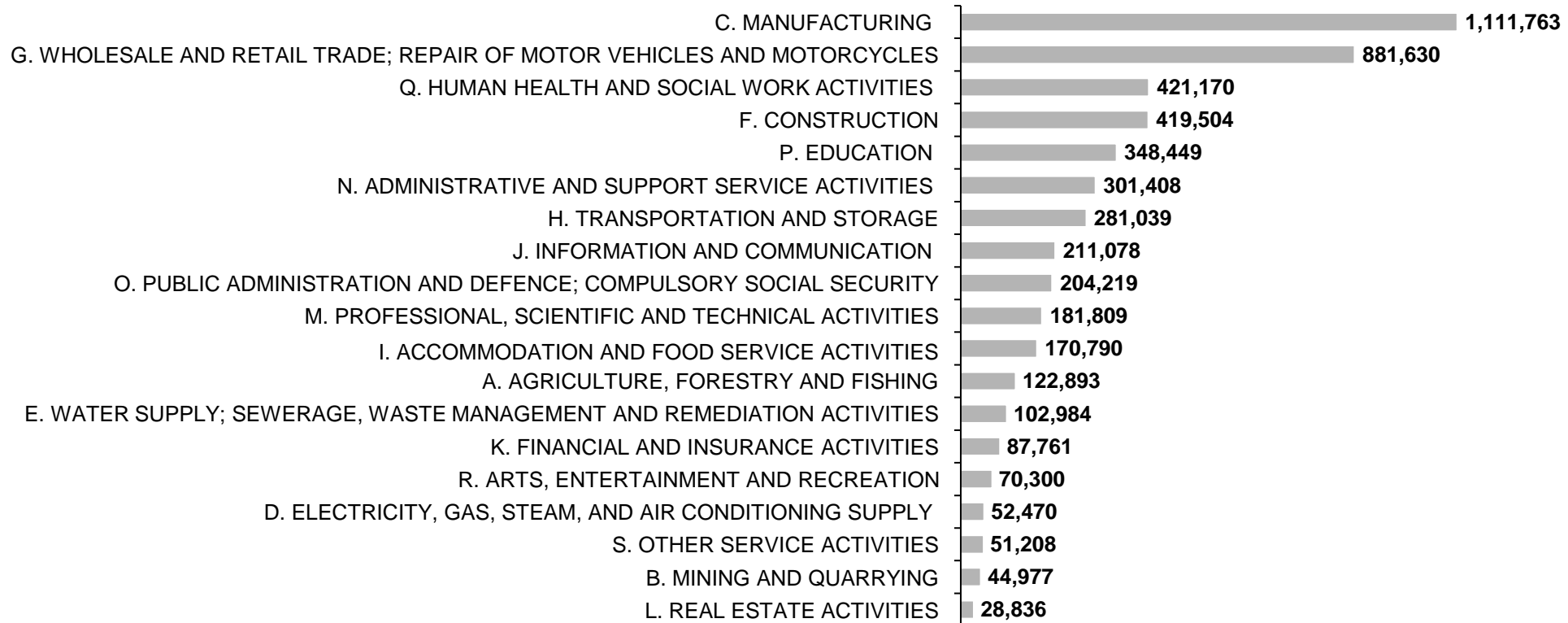**Total employment structure development in Romania** (2015 - 2021)

Year	Employee	Business owner	Freelancer	Unpaid family worker	Total
2015	71.0%	1.1%	18.3%	9.6%	100
2017	73.7%	1.0%	17.1%	8.2%	100
2019	75.8%	1.1%	15.6%	7.5%	100
2021	84.9%	1.4%	10.7%	3.0%	100

Legend:
- Employee
- Business owner
- Freelancer
- Unpaid family worker

Evolution in the number of *freelancers* - authorized persons - PFA (2015 - 2021)

+25.3%

Year	Number
2016	20,764
2017	23,888
2018	24,495
2019	25,423
2020	22,554
2021	28,980
2022	31,862

Source: National Institute for Statistics, National Trade Register Office, PwC analysis.

PwC

Manufacturing, retail and healthcare are the sectors with the highest number of employees. The 3 sectors account for 47% of the average number of employees in Romania

Average number of employees structure in Romania (2022)

Sector	Number
C. MANUFACTURING	1,111,763
G. WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	881,630
Q. HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	421,170
F. CONSTRUCTION	419,504
P. EDUCATION	348,449
N. ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	301,408
H. TRANSPORTATION AND STORAGE	281,039
J. INFORMATION AND COMMUNICATION	211,078
O. PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	204,219
M. PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	181,809
I. ACCOMMODATION AND FOOD SERVICE ACTIVITIES	170,790
A. AGRICULTURE, FORESTRY AND FISHING	122,893
E. WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	102,984
K. FINANCIAL AND INSURANCE ACTIVITIES	87,761
R. ARTS, ENTERTAINMENT AND RECREATION	70,300
D. ELECTRICITY, GAS, STEAM, AND AIR CONDITIONING SUPPLY	52,470
S. OTHER SERVICE ACTIVITIES	51,208
B. MINING AND QUARRYING	44,977
L. REAL ESTATE ACTIVITIES	28,836

ICT (24%), healthcare (15%) and professional, scientific and technical activities (15%) are the sectors with the highest employee increase rates between 2017 and 2021

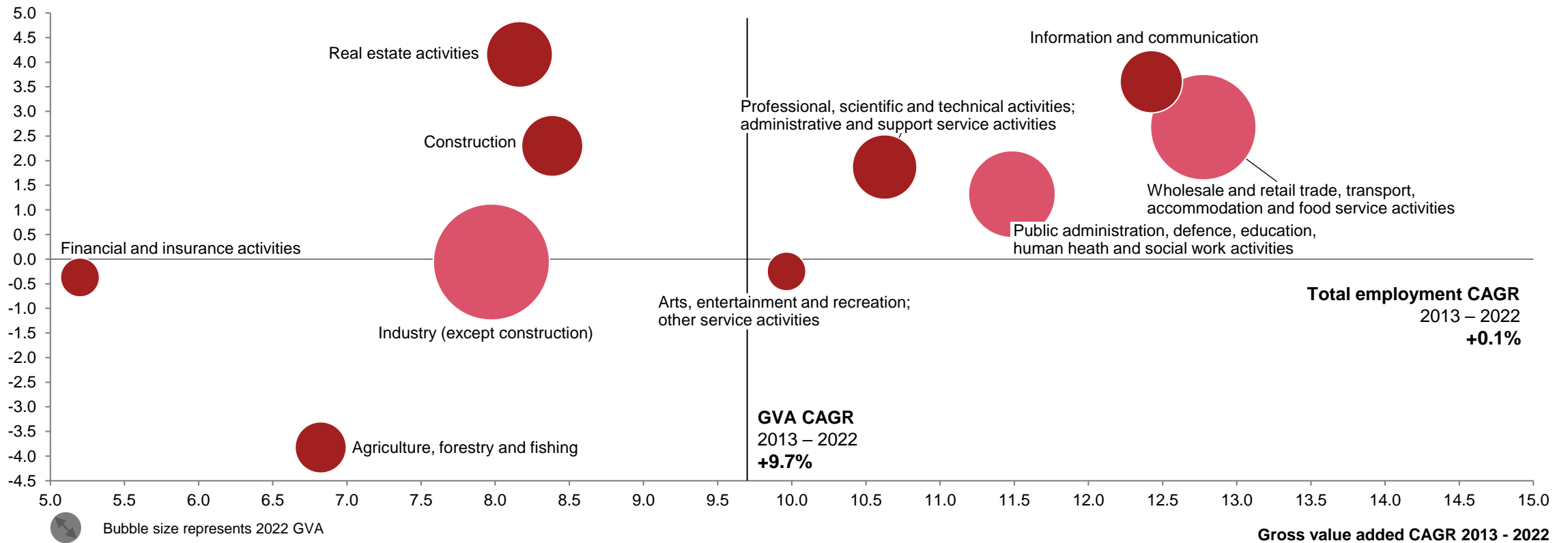**Average number of employees change in Romania** (2021 vs 2017)

Sector	2017	2021	Change 2021 vs 2017 (%)
A. AGRICULTURE, FORESTRY AND FISHING	121,720	122,893	1%
B. MINING AND QUARRYING	51,447	44,977	-13%
C. MANUFACTURING	1,195,118	1,111,763	-7%
D. ELECTRICITY, GAS, STEAM, AND AIR CONDITIONING SUPPLY	52,600	52,470	0%
E. WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	101,810	102,984	1%
F. CONSTRUCTION	370,415	419,504	13%
G. WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	833,932	881,630	6%
H. TRANSPORTATION AND STORAGE	276,909	281,039	1%
I. ACCOMMODATION AND FOOD SERVICE ACTIVITIES	169,837	170,790	1%
J. INFORMATION AND COMMUNICATION	170,274	211,078	24%
K. FINANCIAL AND INSURANCE ACTIVITIES	88,591	87,761	-1%
L. REAL ESTATE ACTIVITIES	27,747	28,836	4%
M. PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	158,459	181,809	15%
N. ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	290,120	301,408	4%
O. PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	200,038	204,219	2%
P. EDUCATION	352,153	348,449	-1%
Q. HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	367,231	421,170	15%
R. ARTS, ENTERTAINMENT AND RECREATION	68,041	70,300	3%
S. OTHER SERVICE ACTIVITIES	49,426	51,208	4%
Total	**4,945,868**	**5,094,288**	**3%**

Sectors with highest decline in the average number of employees: mining (-13%) and manufacturing (-7%) as a consequence of energy transition and automation. The trend is expected to continue.

Source: National Institute for Statistics, PwC analysis

Moreover, service intensive sectors recorded an above average growth rate both in terms of gross value and total employment

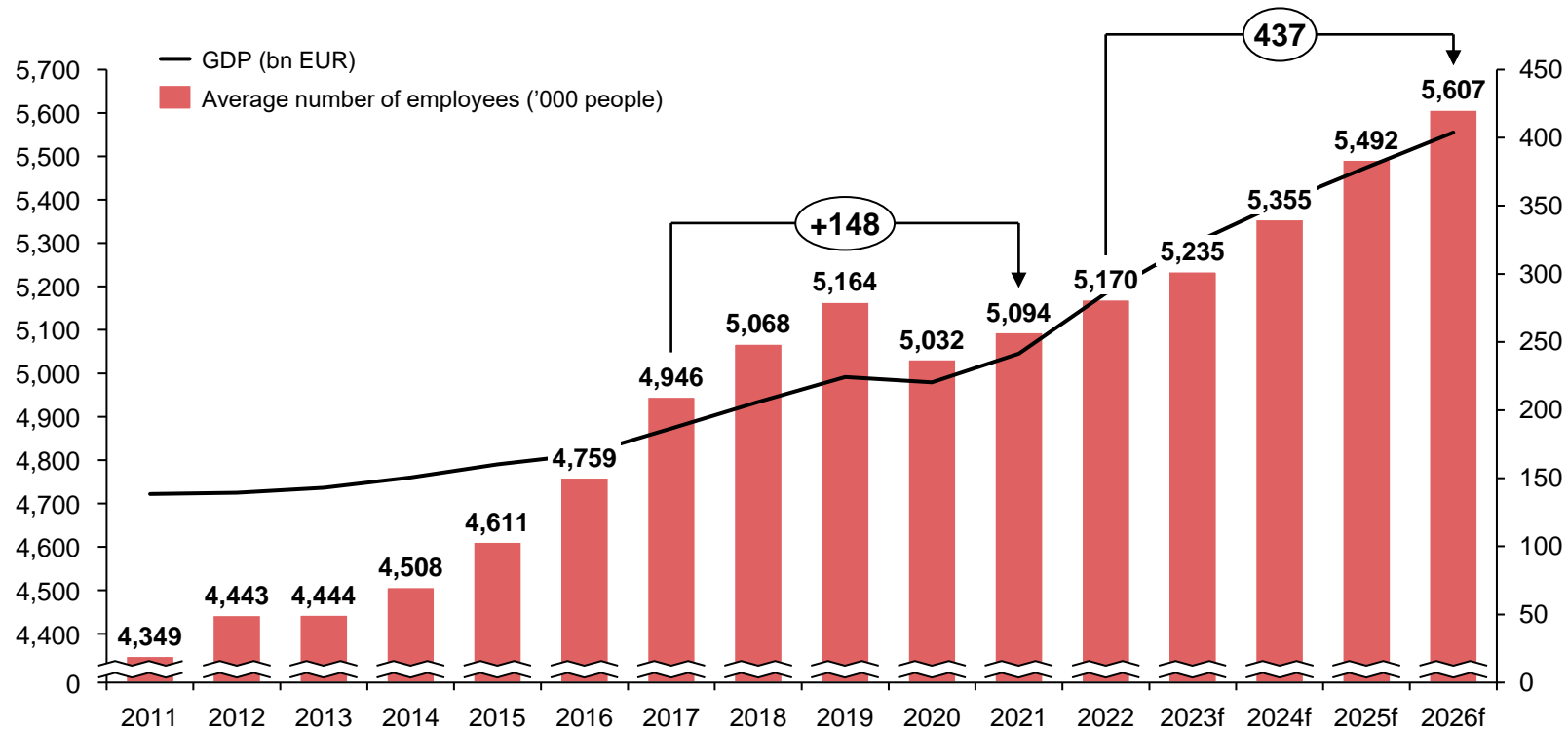**Evolution of gross value added and total employment by sector**

Total employment CAGR 2012 - 2022

Real estate activities

Construction

Financial and insurance activities

Industry (except construction)

Agriculture, forestry and fishing

Professional, scientific and technical activities; administrative and support service activities

Information and communication

Wholesale and retail trade, transport, accommodation and food service activities

Public administration, defence, education, human heath and social work activities

Arts, entertainment and recreation; other service activities

Total employment CAGR
2013 – 2022
+0.1%

GVA CAGR
2013 – 2022
+9.7%

Bubble size represents 2022 GVA

Gross value added CAGR 2013 - 2022

Note: Total employment presented above cover all employed persons (both employees and self-employed) working in resident production units i.e. the domestic employment concept, extracted from National Accounts data published European Statistics. CAGR calculated based on figures in national currency.

According to the National Commission for Strategy and Prognosis, Romania will need additional 440,000 employees by 2026, in order to achieve the forecasted GDP

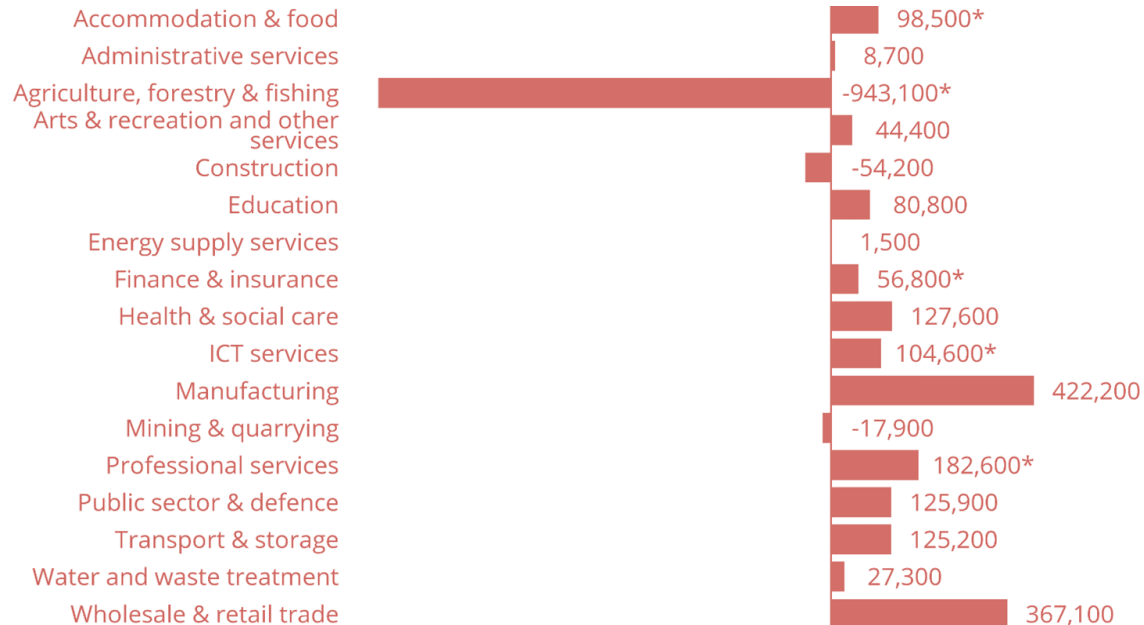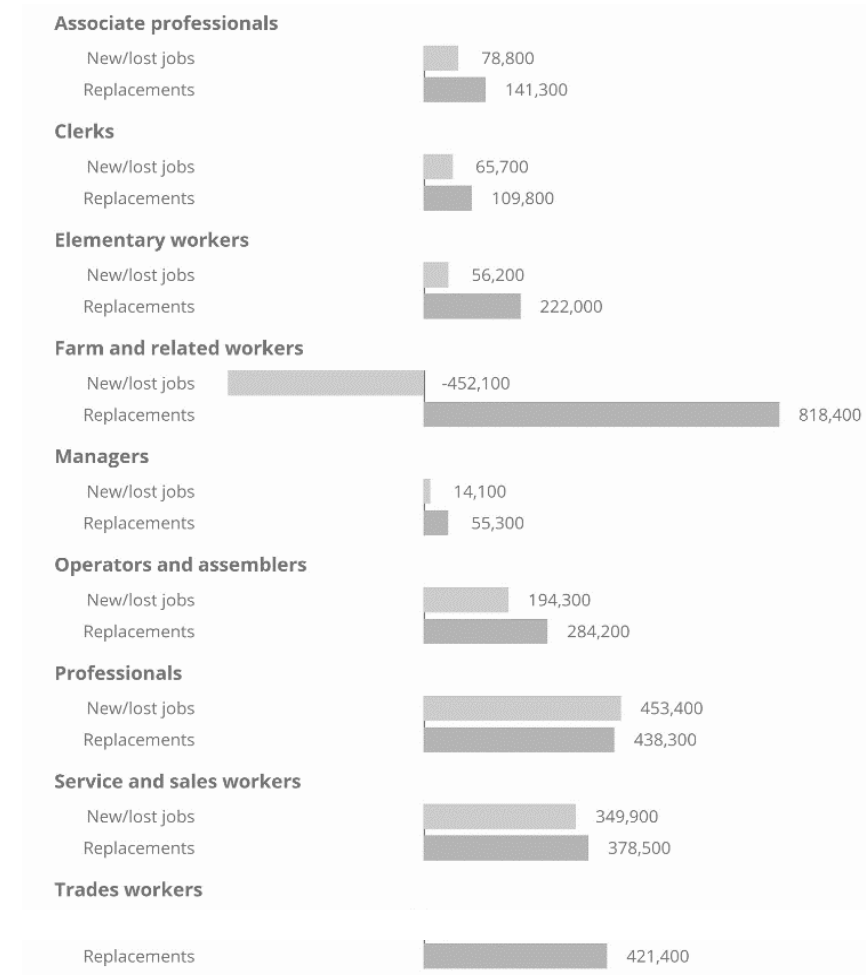**Romanian GDP current prices** (bn EUR) **and employment** (‘000 people)

Source: National Institute for Statistics, National Commission for Strategy and Prognosis (NCSP), Eurostat, PwC analysis

Most new jobs will be created in Manufacturing and Trade and will focus on professionals, service and sales workers

Future employment growth by sector, Romania, 2022-2035

Sector	Value
Accommodation & food	98,500*
Administrative services	8,700
Agriculture, forestry & fishing	-943,100*
Arts & recreation and other services	44,400
Construction	-54,200
Education	80,800
Energy supply services	1,500
Finance & insurance	56,800*
Health & social care	127,600
ICT services	104,600*
Manufacturing	422,200
Mining & quarrying	-17,900
Professional services	182,600*
Public sector & defence	125,900
Transport & storage	125,200
Water and waste treatment	27,300
Wholesale & retail trade	367,100

Future employment growth by occupation, Romania, 2022-2035

Associate professionals
New/lost jobs	78,800
Replacements	141,300

Clerks
New/lost jobs	65,700
Replacements	109,800

Elementary workers
New/lost jobs	56,200
Replacements	222,000

Farm and related workers
New/lost jobs	-452,100
Replacements	818,400

Managers
New/lost jobs	14,100
Replacements	55,300

Operators and assemblers
New/lost jobs	194,300
Replacements	284,200

Professionals
New/lost jobs	453,400
Replacements	438,300

Service and sales workers
New/lost jobs	349,900
Replacements	378,500

Trades workers
Replacements	421,400

Source: Skillspanorama, Countries / Romania

PwC

Labour deficit – assessment and economic impact

Romania's current labour deficit is estimated at 145,000 people in 2022 and is expected to increase to about 224,000 people in 2026 without taking any measures
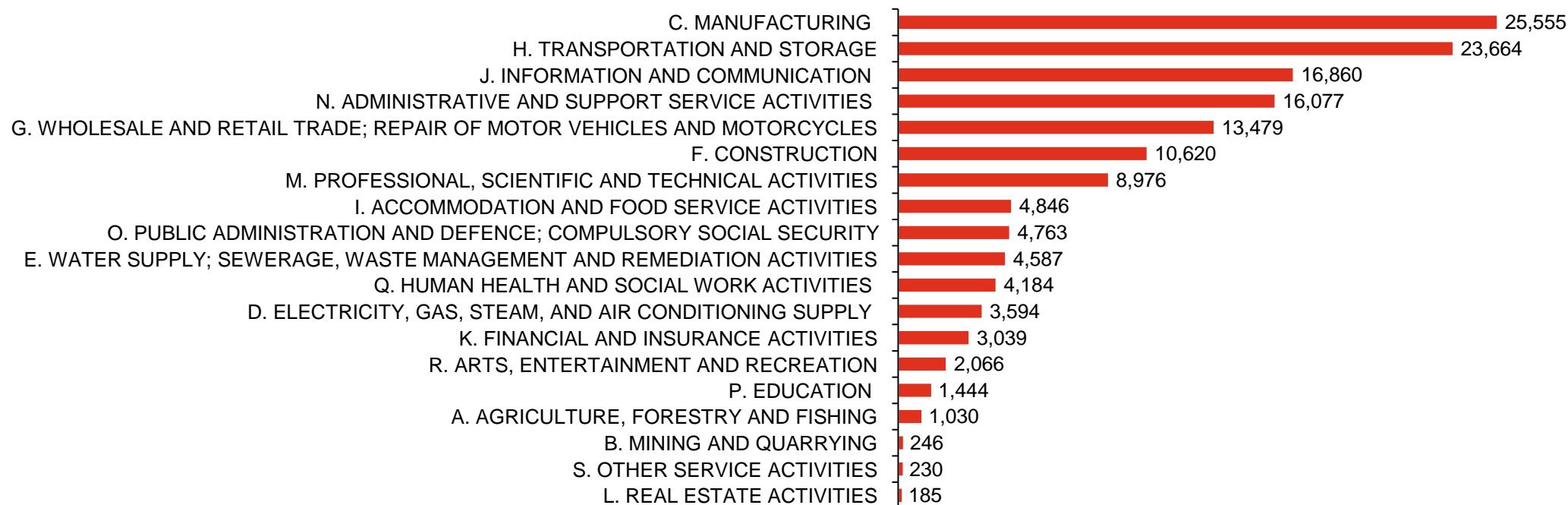
Estimated labour deficit ('000 people)

Legend:
- Vacancies - Official data (NIS)
- Estimated labour deficit

Chart values:
- 2022: 45 (Vacancies - Official data), 145 (Estimated labour deficit)
- 2023f: 164
- 2024f: 185
- 2025f: 208
- 2026f: 224
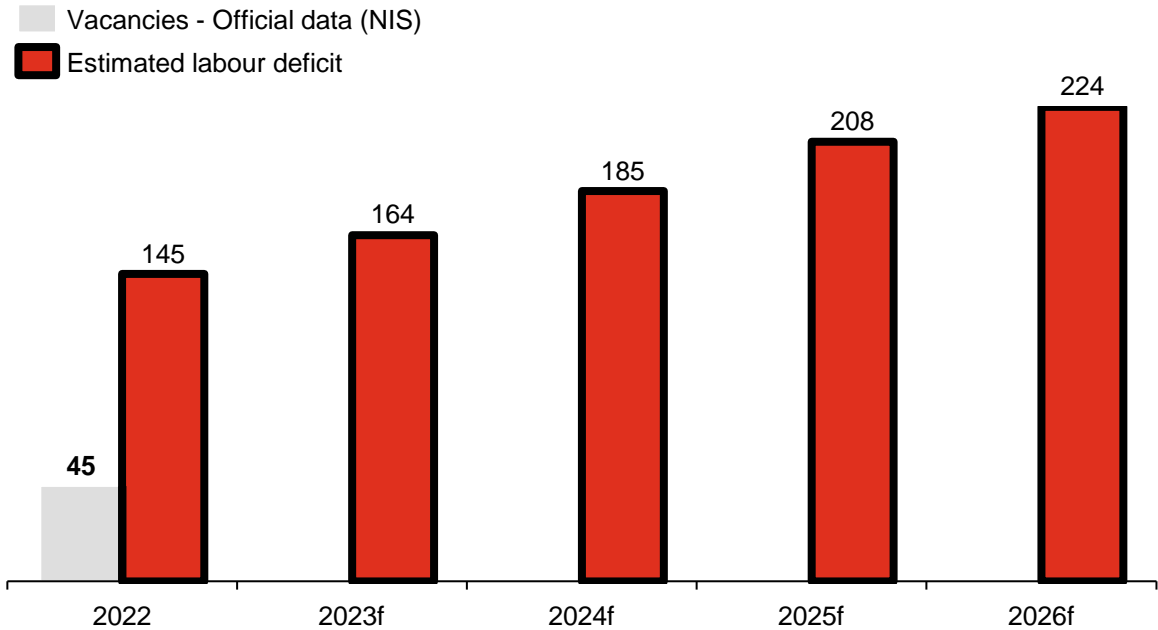
The estimated labour deficit (between 145,000 people in 2022 and 224,000 in 2026) could be even higher according to the private sector's current and short term needs, respectively 226,000 in 2022 expected to reach 350,000 people in 2026 without tacking any measures.

Assumptions

- Vacancies - Official data refer to the data collected by the National Institute for Statistics through Survey Methodology (23,000 economic agents and all public institutions).
- The labour deficit was estimated based on a multiplier of 3.22 applied to the vacancies official data.
- The multiplier was calculated based on the EU average of job vacancies (2.9% in 2022), as a benchmark (the Romanian indicator was only 0.9% in 2022).
- Also, we estimated a forecast of the job vacancies: (i) annual increase rate of 13% until 2025, representing the average rate between 2015 – 2018 and (ii) 8% growth rate for 2026, representing the average between 2015-2019.
- Also, the multiplier was substantiated taking into consideration:
  (i) the underestimated official data in the private sector (hypothesis confirmed by AmCham members);
  (ii) the estimated undeclared work (1.4mn people);
  (iii) the business environment public statements and barometers (AmCham Barometer, Concordia, FIC, etc.);
  (iv) the 20% turnover rate among private companies (PwC Saratoga, 2022);
  (v) the Best Jobs – Annual Report 2022 (350,000 active jobs out of which 60,000 candidates received an offer);
  (vi) the increased requests for non-EU workers (more than 130,000 in 2022, a 3x higher than the vacancies in 2022).

PwC   Source: National Institute for Statistics, National Commission for Strategy and Prognosis (NCSP), Eurostat, PwC analysis

Manufacturing, transportation and ICT are the sectors with the highest labour deficits* in absolute terms in 2022

Estimated labour deficit (total = 145,000 people) **by sector** (2022)

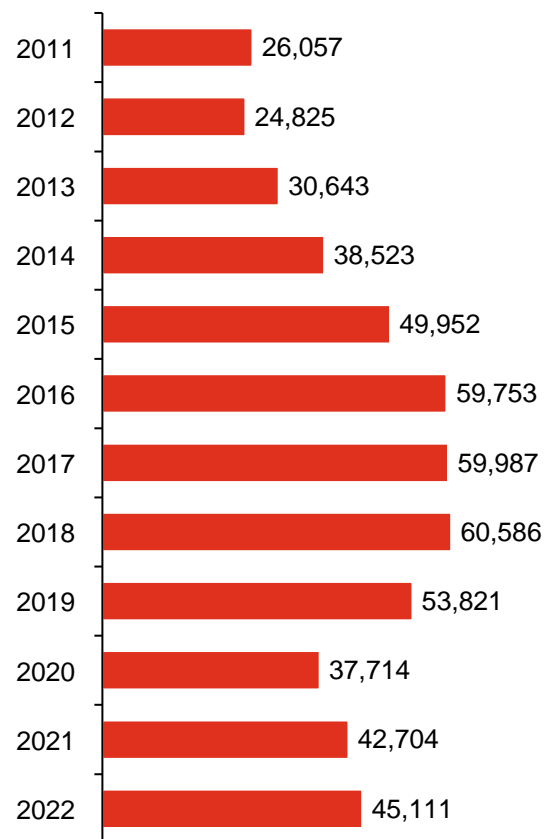| Sector	Deficit
C. MANUFACTURING	25,555
H. TRANSPORTATION AND STORAGE	23,664
J. INFORMATION AND COMMUNICATION	16,860
N. ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	16,077
G. WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	13,479
F. CONSTRUCTION	10,620
M. PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	8,976
I. ACCOMMODATION AND FOOD SERVICE ACTIVITIES	4,846
O. PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	4,763
E. WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	4,587
Q. HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	4,184
D. ELECTRICITY, GAS, STEAM, AND AIR CONDITIONING SUPPLY	3,594
K. FINANCIAL AND INSURANCE ACTIVITIES	3,039
R. ARTS, ENTERTAINMENT AND RECREATION	2,066
P. EDUCATION	1,444
A. AGRICULTURE, FORESTRY AND FISHING	1,030
B. MINING AND QUARRYING	246
S. OTHER SERVICE ACTIVITIES	230
L. REAL ESTATE ACTIVITIES	185

*Assumptions

The estimation of the labour deficit at sector level is based on a multiplier between 1-6: 1 for the public sector (O, P, Q – assuming a limited share of the private sector in education (P) and healthcare (Q) and between 2 and 6 for the activities within the private sector. Also, the estimation took into consideration the evolution of official vacancies rates between: (i) 2015 – 2022 and (ii) 2017 – 2022. For further details, please see the assumptions in slide 22.

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Following the COVID-19 pandemic, job vacancies have begun to increase based on official data. However, they have not yet reached the levels observed in 2017-2018

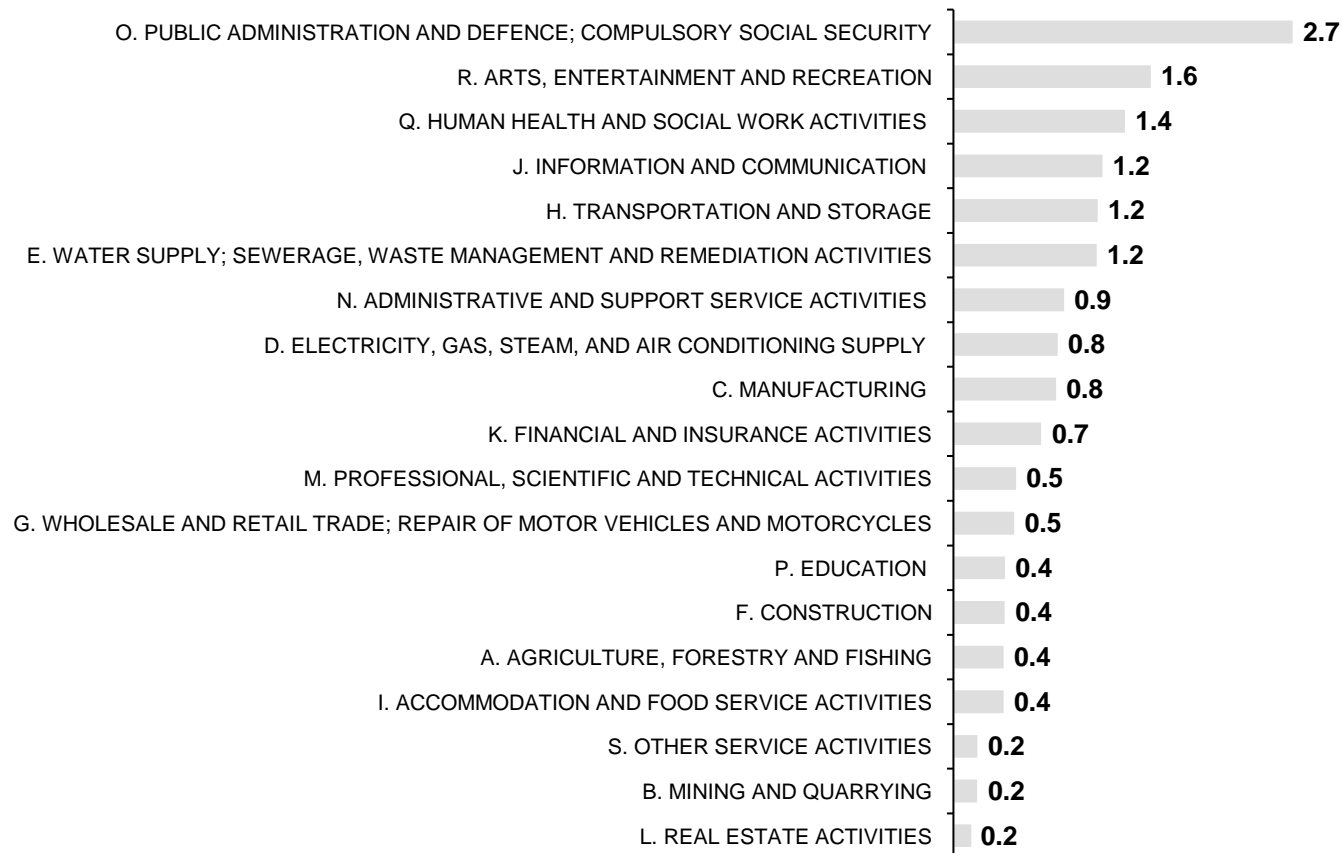**Evolution of vacancies – official data** (2011 – 2022)

Year	Value
2011	26,057
2012	24,825
2013	30,643
2014	38,523
2015	49,952
2016	59,753
2017	59,987
2018	60,586
2019	53,821
2020	37,714
2021	42,704
2022	45,111

Number of vacancies – official data change by sector (2021 vs 2017)

Sector	2017	2021	Change 2021 vs 2017 (%)
A. AGRICULTURE, FORESTRY AND FISHING	637	507	-20%
B. MINING AND QUARRYING	80	90	13%
C. MANUFACTURING	15,756	9,290	-41%
D. ELECTRICITY, GAS, STEAM, AND AIR CONDITIONING SUPPLY	365	445	22%
E. WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	1,094	1,197	9%
F. CONSTRUCTION	1,821	1,763	-3%
G. WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	5,075	4,402	-13%
H. TRANSPORTATION AND STORAGE	3,323	3,287	-1%
I. ACCOMMODATION AND FOOD SERVICE ACTIVITIES	866	704	-19%
J. INFORMATION AND COMMUNICATION	2,027	2,550	26%
K. FINANCIAL AND INSURANCE ACTIVITIES	1,435	628	-56%
L. REAL ESTATE ACTIVITIES	128	44	-66%
M. PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	1,602	933	-42%
N. ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	2,858	2,711	-5%
O. PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	8,695	5,596	-36%
P. EDUCATION	2,473	1,477	-40%
Q. HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	9,197	5,854	-36%
R. ARTS, ENTERTAINMENT AND RECREATION	1,430	1,123	-21%
S. OTHER SERVICE ACTIVITIES	1,125	103	-91%
Total	**59,987**	**42,704**	**-29%**

The sectors with the highest increase in job vacancies over the last decade are utilities and ICT, while in recent years (2017 – 2021), ICT shows the highest increase

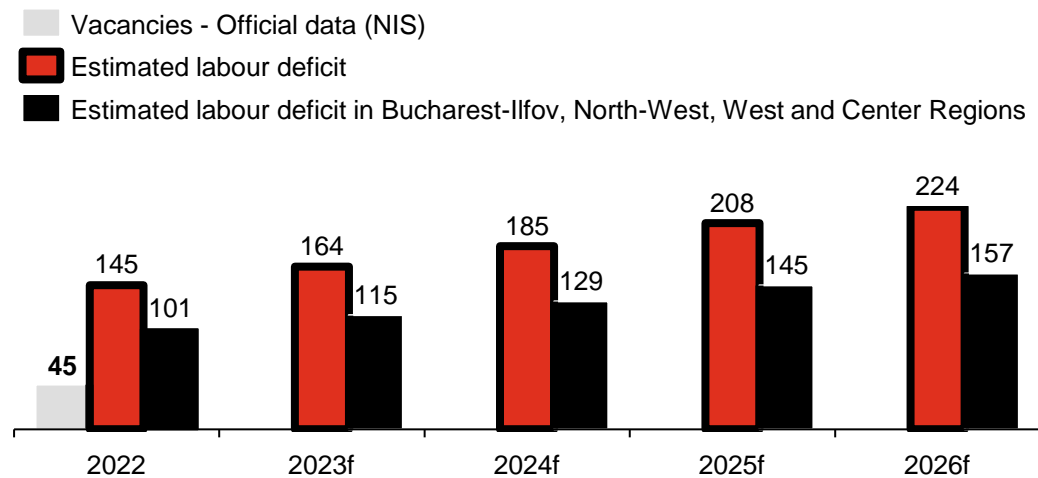**Share of job vacancies (official data) by sector** (%, 2021)

Sector	Value
O. PUBLIC ADMINISTRATION AND DEFENCE; COMPULSORY SOCIAL SECURITY	2.7
R. ARTS, ENTERTAINMENT AND RECREATION	1.6
Q. HUMAN HEALTH AND SOCIAL WORK ACTIVITIES	1.4
J. INFORMATION AND COMMUNICATION	1.2
H. TRANSPORTATION AND STORAGE	1.2
E. WATER SUPPLY; SEWERAGE, WASTE MANAGEMENT AND REMEDIATION ACTIVITIES	1.2
N. ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES	0.9
D. ELECTRICITY, GAS, STEAM, AND AIR CONDITIONING SUPPLY	0.8
C. MANUFACTURING	0.8
K. FINANCIAL AND INSURANCE ACTIVITIES	0.7
M. PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES	0.5
G. WHOLESALE AND RETAIL TRADE; REPAIR OF MOTOR VEHICLES AND MOTORCYCLES	0.5
P. EDUCATION	0.4
F. CONSTRUCTION	0.4
A. AGRICULTURE, FORESTRY AND FISHING	0.4
I. ACCOMMODATION AND FOOD SERVICE ACTIVITIES	0.4
S. OTHER SERVICE ACTIVITIES	0.2
B. MINING AND QUARRYING	0.2
L. REAL ESTATE ACTIVITIES	0.2

Sectors with the highest increases in job vacancies 2021 vs 2011 (people)

D. ELECTRICITY, GAS, STEAM, AND AIR CONDITIONING SUPPLY

+456.3%

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
80	67	82	98	113	297	365	300	293	169	445

J. INFORMATION AND COMMUNICATION

+183.0%

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
901	690	710	939	1,668	2,257	2,027	2,946	2,462	2,097	2,550

Note: The highest share of job vacancies in public sector is explained mainly by reporting which is likely to be close to 100% as compared to private sector. See assumptions on slide 22.
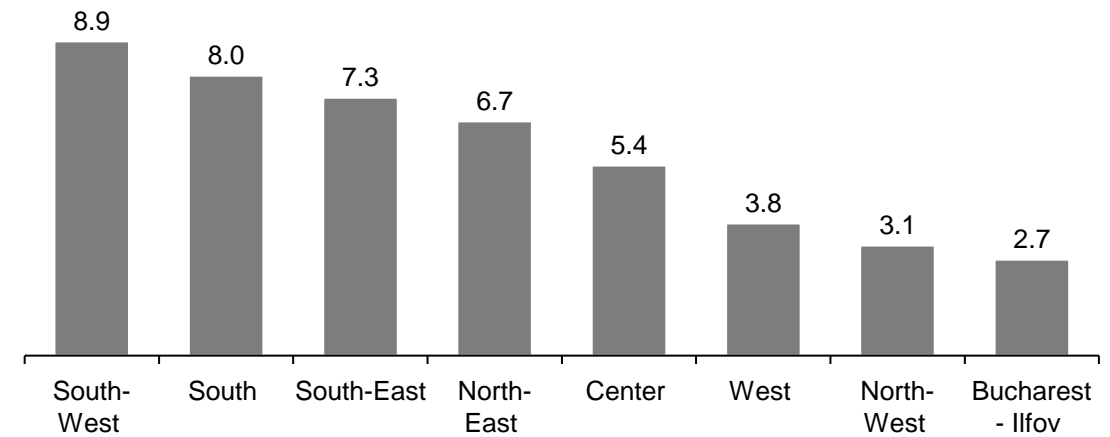
70% of the total labour deficit results from high developed areas

70% of the total labour deficit is estimated in Bucharest-Ilfov and counties such as: Cluj, Timis, Arad, Brasov, Sibiu, Prahova.
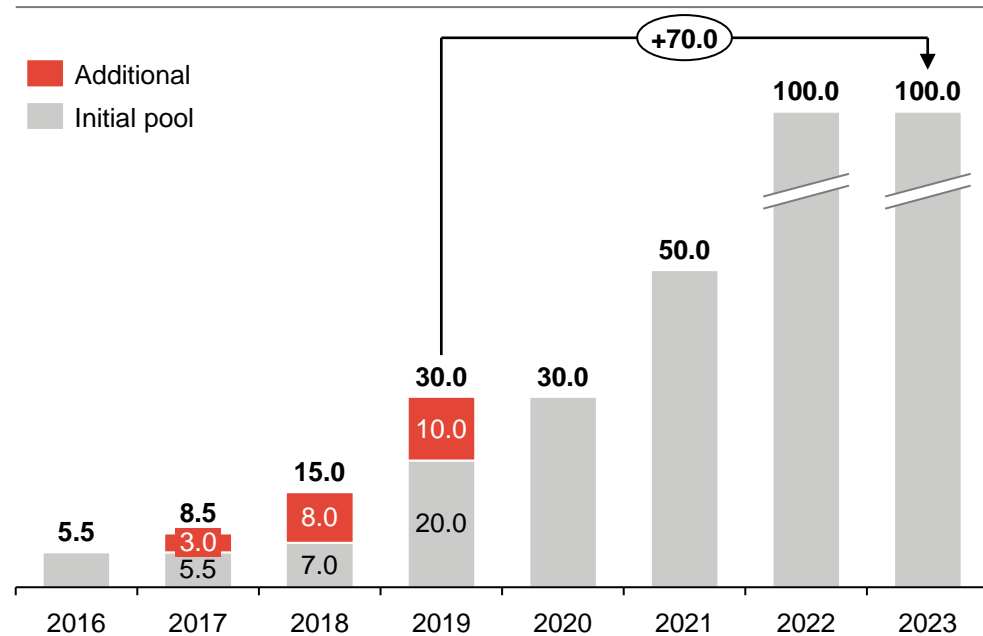
Estimated labour deficit ('000 people)

- ⬜ Vacancies - Official data (NIS)
- 🟥 Estimated labour deficit
- ⬛ Estimated labour deficit in Bucharest-Ilfov, North-West, West and Center Regions

Year	Vacancies	Estimated labour deficit	Deficit in regions
2022	45	145	101
2023f		164	115
2024f		185	129
2025f		208	145
2026f		224	157

Unemployment rate by region (%, 2022)

Region	Rate
South-West	8.9
South	8.0
South-East	7.3
North-East	6.7
Center	5.4
West	3.8
North-West	3.1
Bucharest - Ilfov	2.7

The constant increase in non-EU workers confirms the growth in demand and labour market tension

Non-EU workers contingent evolution ('000 people, 2016 – 2023)

Legend:
- Additional
- Initial pool

+70.0

Year	Additional	Initial pool	Total
2016			5.5
2017	3.0	5.5	8.5
2018	8.0	7.0	15.0
2019	10.0	20.0	30.0
2020			30.0
2021			50.0
2022			100.0
2023			100.0

Non-EU workers requests and permits ('000 people, 2017 – Jun 23)

Legend:
- Requests
- Permits

+107.2%   +132.3%   -29.4

Year	Requests	Permits
2017	5.6	5.3
2018	12.1	10.5
2019	33.6	29.3
2020	28.7	22.3
2021	59.6	50.0
2022	138.4	108.9
Jun-23*	67.6	55.5
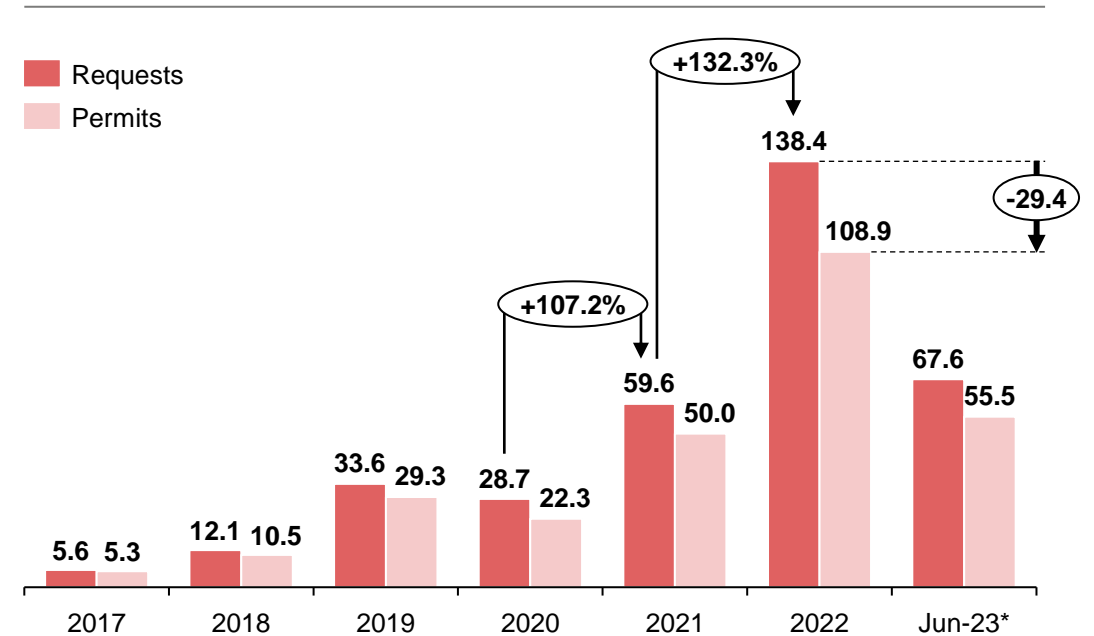
- The requests for non-EU workers increased 5 times in 2022 compared to 2020 (4.1 times compared to 2019). Although the public authorities made several efforts in processing the high number of requests, a 30,000 backlog in 2023 reflects the need for additional capacity (human resources, digitalization of the process).
- In the first half of 2023, more than 67,000 requests were submitted to the General Inspectorate for Immigration confirming that the need for non-EU workers will be, once again, higher than the contingent adopted by the Government, respectively 100,000 people.

Economic impact in 2022, defined as missed productivity, is estimated at 4.4 billion EUR, equivalent to 10% of 2022 nominal GDP increase, forecasted to more than double by 2026 up to 9.5 bn EUR

Labour deficit potential economic impact

Labour deficit in 2022

145 thousand

Labour productivity in 2022

30 thousand EUR

Economic impact calculated as missed productivity in 2022

4.4 bn. EUR

1.5% of GDP
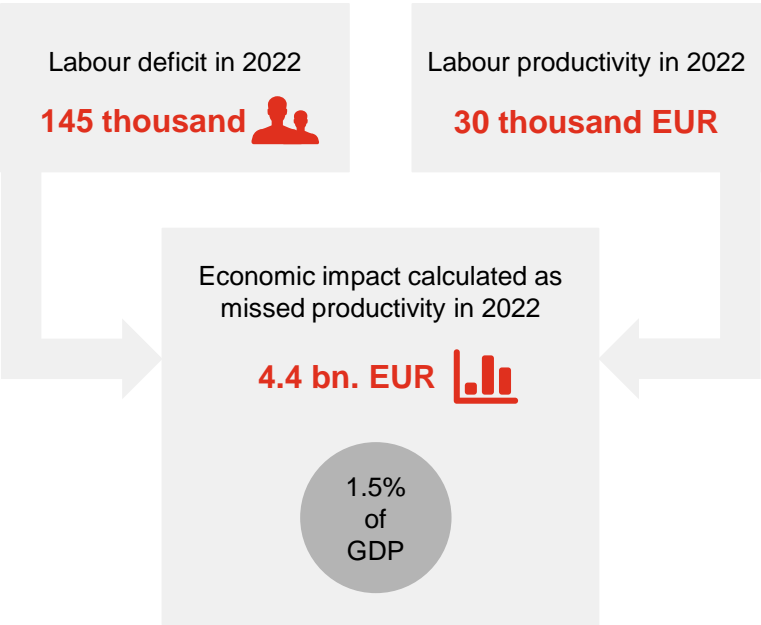
Forecast economic impact

| % of GDP | 1.5 | 1.7 | 1.9 | 2.2 | 2.4 |

bn. EUR

- 9.5
- 8.3
- 6.8
- 5.6
- 4.4

2022 | 2023f | 2024f | 2025f | 2026f

Note: To ensure consistency with value added generated in the economy, employed population information from national accounts (reflecting the domestic employment concept) is used in calculating labour productivity. Labour productivity by employed person (both employees and self-employed) engaged in productive activities as defined by National Statistics Institute within national accounts data has been considered. The average labour productivity at national level was used for estimating the economic impact, hence assuming that jobs vacant will be as productive as the average job.
The forecasted economic impact is estimated by considering that labour productivity by employed person will have the same growth rate as the GDP as shown in the spring forecast 2023 of NCSP. Fiscal revenues for the estimated labour deficit are computed by considering (1) the average nominal earnings forecast of NSCP and the social and health contribution and income tax levels constant to 2023 levels, and (2) respectively the average share of consumption in total household expenditure (separately for food and other non-food) multiplied by VAT rate in order to estimate a VAT liable amount.

Key insights

- Considering an estimated labour deficit ranging between 145 thousand persons and an aggregated labour productivity of 30 thousand EUR (without accounting for any industry-level or occupations specificities), the economic impact of labour deficit in terms of missed productivity is of 4.4 bn. EUR in 2022.
- By 2026, the economic impact defined as missed productivity is projected to reach 9.5 bn. EUR.
- In addition, fiscal revenues to the state budget for the estimated labour deficit are projected at c. 1.1 bn. EUR in 2022, increasing to 2.4 bn. EUR by 2026.

Assessing the economic impact of labour shortages can encompass a myriad of perspectives given the various factors at play both at economy and business level

Labour deficit potential channels of impact

Economic growth hampering
may occur as there are not enough people to produce goods and services, thus limiting the level of output or level of investments (both domestic or foreign)

Inflationary pressures
may be triggered by increase in costs (either labour or other costs) which may in turn be passed on to the consumers

Opportunity costs
at business level may arise either in the form of potential revenues loss from new opportunities or costs as a result of delays in existing initiatives

Supply chain disruptions
may arise from either internal production bottlenecks or issues with suppliers, leading to disruptions in the flow of goods and materials

Shrinkage of public finances
may occur due to reduced tax revenues or increased benefit payments resulting from a decrease in the working population.

Productivity levels
might suffer losses due to fewer people available or lack of adequate workforce necessary to meet demand

Increased business costs,
including human capital costs that may increase as a result of higher negotiating power of workers particularly in tighter labour markets

Customer dissatisfaction
as a result of delays in delivering the products or services or lower quality offerings

—— economy   —— business

Through public policy intervention additional workers can be activated on the labour market

Additional workforce estimation to partially cover the labour deficit ('000 people, 2023 – 2026)

■ Estimated labour deficit
■ Additional workforce

	2022	2023f	2024f	2025f	2026f
Estimated labour deficit	145	164	185	208	224
Additional workforce		50	80	100	130
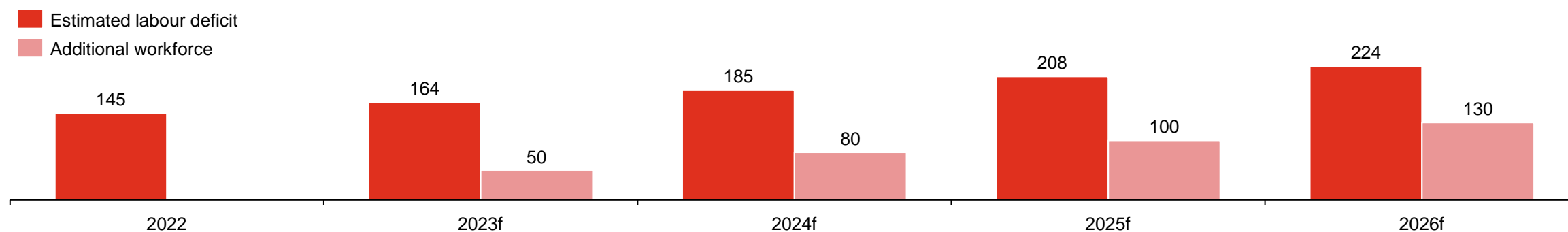
Additional available workforce estimation ('000 people)			
Category	**Current (2021/2) '000 people**	**Scenario 1** (no additional measures than non-EU permits)	**Scenario 2** (additional measures) until 2026
Unemployed (BIM)	459	0	23 (5% activation)
Non-EU workers	100	150 - 200	250*
Pensioners/Retired	*5,004*	*0*	*50*
NEETs (15-24)	349	0	35 (10% activation)
TOTAL	**5,912**	**150-200**	**358**

* Estimation based on recent non EU permits increases

However, long term Romania has a deeper problem, more difficult to address in order to remain competitive: upskilled workforce

Long term trends to consider

Accelerated penetration of the next generation technology

Continuous demographic pressure

Increased competition for talent and changing working preferences

Challenges to address

- Low level of digitization in general and digital skills in particular
- Increased levels of school abandonment
- General low quality of education (i.e. PISA scores)
- Continued negative population increase
- Negative net migration
- Low attractivity for foreign workforce
- Low sustainability of the pension system (old age dependency ratio)
- Overall, low proportion of high value added economic sectors

PwC

Moreover, increased job mobility and remote working behaviours are putting additional pressure on the labour market

Job mobility is increasing

18% of Romanian employees are likely or very likely to change employer within 12 months (up from 16% last year)

17% of Romanian employees are likely or very likely to move to a contingent work role

12% of Romanian employees are likely or very likely to leave the workforce permanently or temporarily

Remote working is here to stay

Out of the 54% of employees that can work remotely, less than 20% expect to get back to full-time office work

	Full-time remote working	Mostly remote working with some in-person working	An equal mix of in-person and remote working	Mostly in-person with some remote working	Full-time in-person working	
How are you currently working?	31%	19%	19%	17%	13%	55% hybrid
How will your employer likely expect you to work 12 months from now?	18%	22%	22%	19%	18%	63% hybrid
How would you prefer to work 12 months from now?	26%	23%	25%	15%	11%	62% hybrid

Source: PwC Global Workforce Hopes & Fears Survey 2023 and 2022 (incl. breakdown for Romanian employees)

Measures to address labour deficit

At EU level, three types of policies to address labour shortages have been identified at EU level

Attracting labour

1. Enhancing the attractiveness of certain sectors or professions by improving wages and/or working conditions.
2. Enhancing the attractiveness of living and working conditions in the country/region.
3. Creating an active migration policy that combines foresight, systems for the recognition of qualifications and capacities, anti-discrimination policies and attracting returning migrants.

Enhanced use of current workforce

1. Improving matching between supply and demand (for example, better links between forecasting needs and training provisions, the involvement of social partners in curriculum development, the regular updating of curricula).
2. Addressing skills and competence gaps (for example, work experience, long/short training, recognition of skills).
3. Improving matching / job mediation services, including via partnership with private employment services.
4. Enhancing preparations for labour market change among employees through ongoing needs assessment and lifelong learning.

Activating underutilized resources

Addressing labour market barriers for various groups that are currently long-term unemployed or inactive (for example, addressing access to care services, addressing barriers linked to health or other issues, enhancing the recognition of qualifications for migrants, adjusting workplaces for older workers or workers with disabilities, addressing discrimination).

Source: Measures to tackle labour shortages: Lessons for future policy, 2023 EU report

In Romania, immediate workforce activation programmes should focus on four pillars

Improve foreign workers inflow

- Streamlining work permit issuance: improving the current process by implementing measures such as centralizing requests in national virtual teams, reallocating resources to address backlogs, and planning resources effectively to ensure capacity during peak periods
- Continuing to gradually increase the contingent for non-EU workers
- Developing alternative, simplified, prioritized procedure for high qualified workforce (in particular, tech and other scare skills)
- Learning from successful examples: studying the practices of countries like Germany, Finland, the United States, and the Czech Republic that have implemented effective measures to improve foreign worker inflows. Drawing lessons from their experiences can help inform and shape policies and procedures in the respective country.

Examples: Germany, Finland, US, Czech Rep

Decrease youth unemployment

- Creating opportunities for development of skills which are in demand (through also using EU funds)
- Encouraging youth mobility to developed economic areas by providing incentives such as transportation, accommodation, and meal subsidies to facilitate the mobility of young individuals to developed economic areas where there are more job opportunities.
- Developing and promoting mobile career counselling teams in schools / disadvantaged economic areas to inform on real market opportunities
- Reducing school dropout rates: Implementing initiatives and support systems aimed at reducing the number of students who leave school prematurely. This can involve targeted interventions, mentoring programs, and providing additional resources to support student retention and academic success.

Examples: Germany, UK, Japan, Sweden, South Korea, Spain

Prolong duration of active life

- Considering implementing a flexible retirement scheme (access part of the pension while continuing to work)
- Incentivizing employers to provide upskilling opportunities for workers aged 50 and above

Examples: UK, Germany, Japan, Sweden, US

Increase employment among inactive segments

- Increasing employment among inactive population, in particular women, by childcare support and family-friendly policies
- Training for long-term household unemployed: Offering targeted programs focusing on in-demand skills to improve employability.
- Entrepreneurship support

Examples: Sweden, Norway, France, Canada

Thank you!

pwc