



EXCELLENCE IN GREEN AND
DIGITAL MANUFACTURING



EXCEED

UPSKILLING PROGRAMME FOR VET PROFESSIONALS



Co-funded by
the European Union

Project id n. 101103982
CUP E31B23000120004

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CEDEFOP

European Centre for the Development
of Vocational Training



Skills intelligence and VET trends in advanced manufacturing sub-sectors

Cedefop skills intelligence on Advanced Manufacturing:

- Employment trends in selected sub-sectors & occupations
- Skill trends in selected sub-sectors & occupations
- High-tech occupations in Manufacturing

Cedefop online tools used:

- Skills intelligence
- Skills forecast
- Skills-OVATE
- European skills and jobs survey data (ESJS2)

Advanced Manufacturing sectors: Employment trends



Advanced Manufacturing (AM) sectors (EU27)

Employment in Manufacturing (broad sector) is about 15% of the total employment share.

ca. 1/3 is in Advanced Manufacturing (AM) sectors:

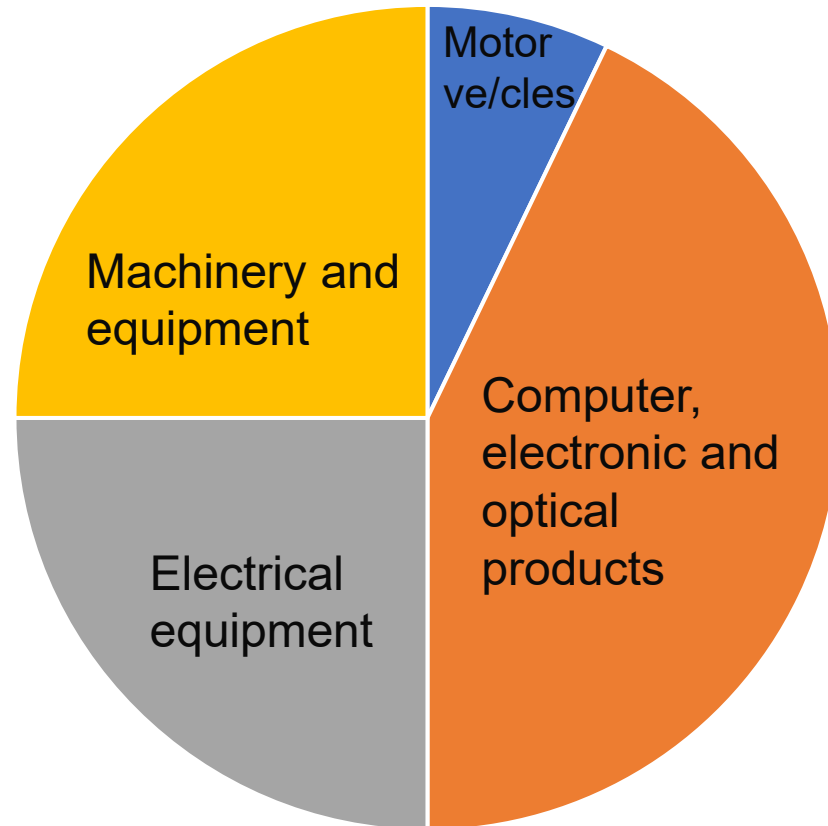
- Manufacture of computer, electronic and optical products
- Manufacture of electrical equipment
- Manufacture of machinery and equipment
- Manufacture of motor vehicles, trailers and semi-trailers (Automotive industry)

Source: Cedefop Skills Forecast 2023

Most employees in AM are employed in

- Machinery & equipment
- Automotive industry

AM sectors: Expected employment growth 2022-2035 (% annual rate), EU27



Source: Cedefop Skills Forecast 2023

Country data available [here](#)

Employment in AM is likely to benefit from EU regulations and support mechanisms

Job losses projected for **manual occupations**, often in manufacturing

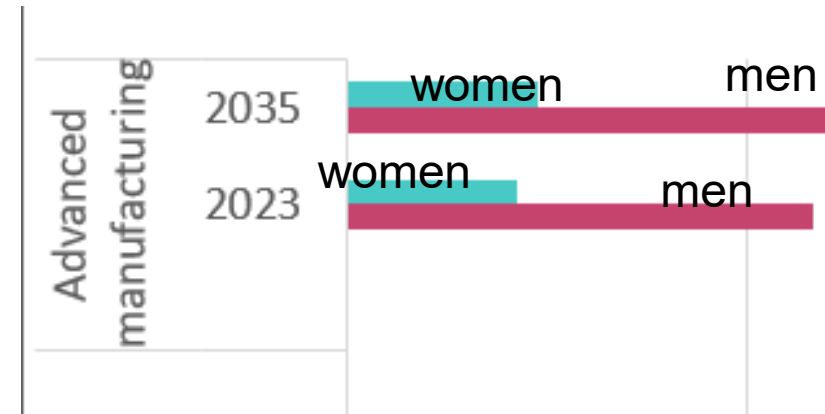
Female share in employment in AM (EU27)

Today: Women continue to be disproportionately represented in AM



Need for effective strategies to promote gender diversity, particularly in sectors where women are underrepresented

Women are expected to represent an increasing share of employment by 2035.



Projected employment in advanced manufacturing by gender, 2023 and 2035 EU-27

Source: Cedefop Skills Forecast 2023

(Advanced) Manufacturing sectors: Skill trends



Skills - Online Job Advertisements (2023-2024)

Manufacturing - Requested skills Overview

Most requested skill:

- Accessing and analysing digital data

Most requested knowledge:

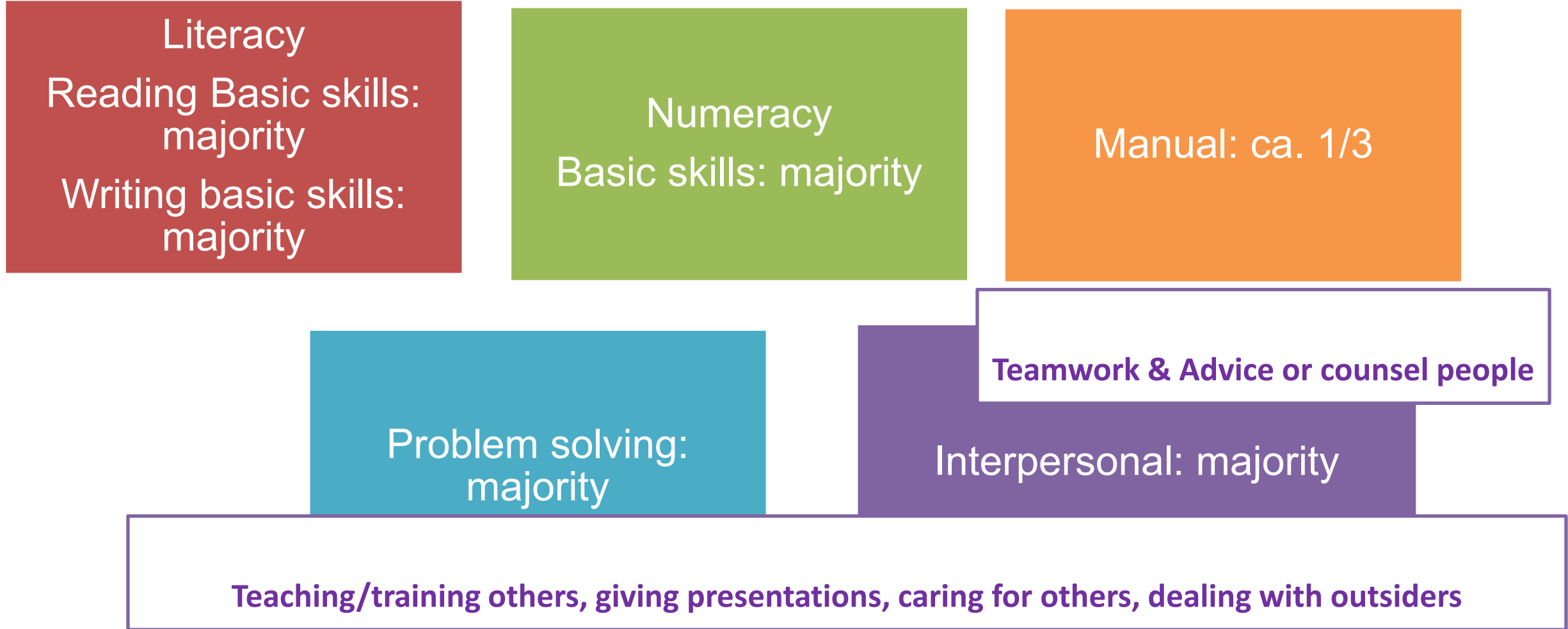
- Engineering, manufacturing and construction
- Business administration
- ICT

Transversal skills :

- Communication & collaboration, thinking skills
 - Willingness to learn
 - Collaborating in teams
 - Working efficiently
 - Advise others
 - Cope with stress
 - Show initiative

Source: Cedefop SkillsOVATE

Skill demand in AM (EU27)



Calculations based on shares of total employment in Advanced Manufacturing

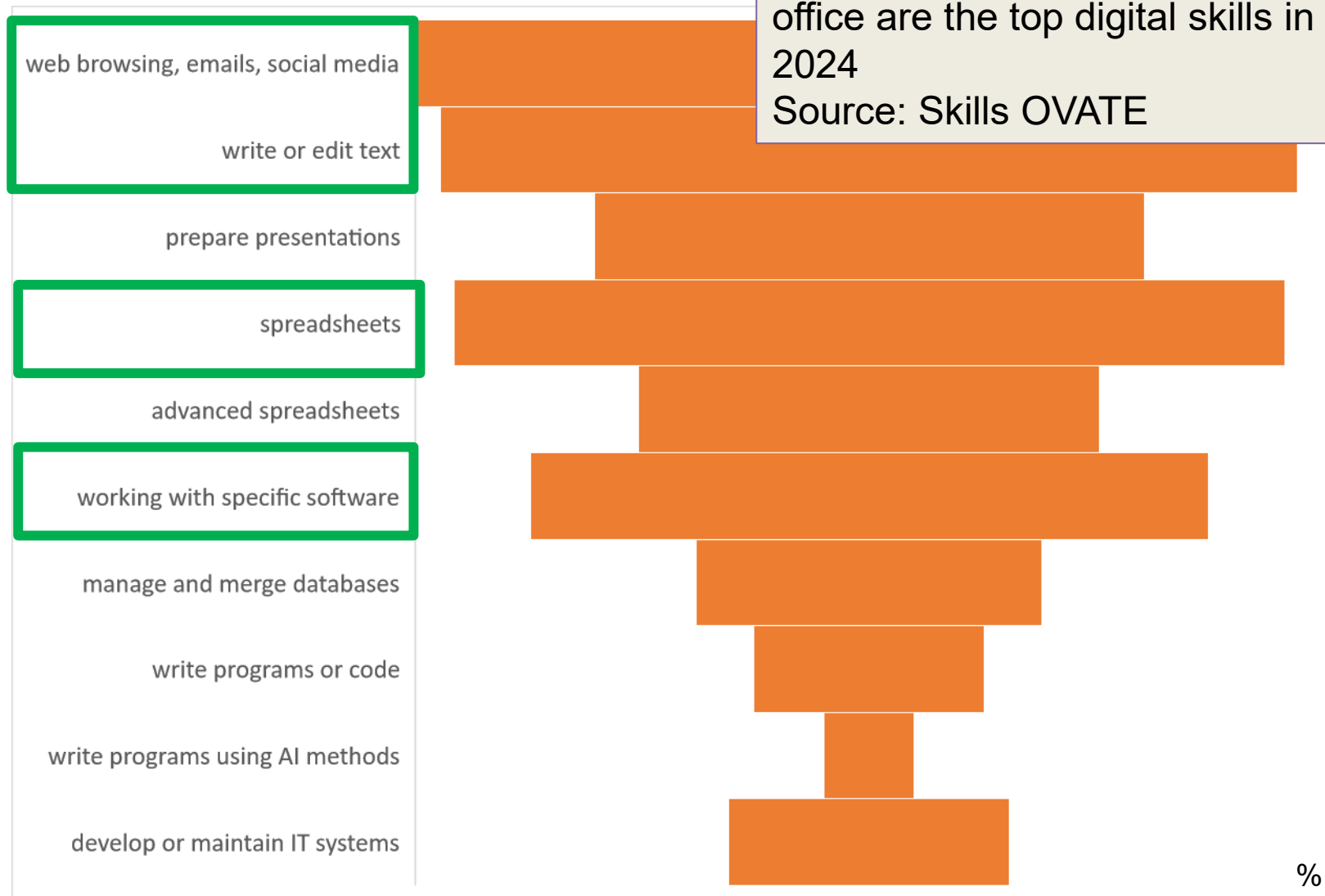
Source: Cedefop ESJS2 (2021)

Digital skill demand in AM (EU27)

Digital activities at work



The greater need for upskilling is in digital skills
Source: ESJS2



Computer literacy and use of MS office are the top digital skills in 2024
Source: Skills OVATE

Calculations based on shares of total employment in Advanced Manufacturing
Source: ESJS2 (2021)

Digitalisation and digital intensity in AM (EU27)

Digital intensity: Use of computerised machines in main job

Growing demand for efficient appliances and equipment for renewable technologies

8% of EU+ adult workers work with robots as part of their main job



9% operate 3D printers



The use of such digital equipment is concentrated in specific industries (mainly in Manufacturing and Construction)

Employees must have fundamental understanding of IT and advanced manufacturing technology

Source: ESJS2, 2021

Advanced Manufacturing (selected) occupations: Employment trends



Top occupations in Manufacturing Employment shares (EU27)

- Top three occupations: 14 % of total Manufacturing
- **Metal and machinery workers** → 14 % of total Manufacturing
 - **Machine and plant operators** → 9 % of total Manufacturing
 - **Science and engineering technicians** → 13 % of total Manufacturing

*Source Skills Intelligence/ LFS
Dataset 2022*

They will face substantial changes due to
the digital and green transition.

Selected occupations

Expected employment growth (% annual rate) 2022-2035

However, a significant amount of job openings will occur by 2035 due to replacement demand (retirement) (DE, IT, PL, ES)

At EU level (on average) we expect:

- Employment **decrease** in Metal & machinery workers
- Employment **increase** in Science & engineering workers
- Employment **increase** in Plant & machine operators

Source: Skills Forecast 2023

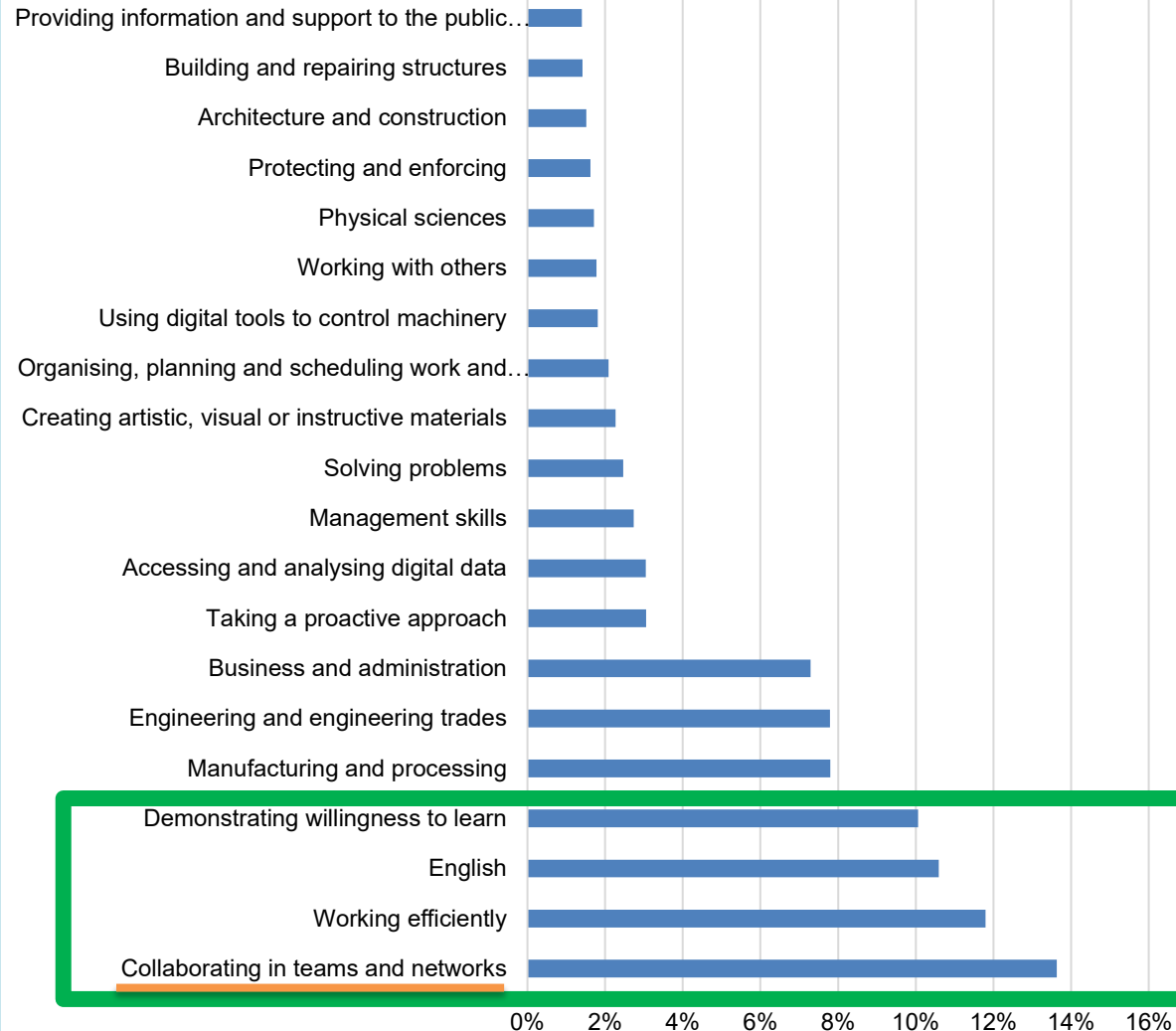
Advanced Manufacturing (selected) occupations: Skill trends



Selected occupations

Transversal skills & competences - OJAs (EU27) 2023-2024

Machine & plant operators



Most requested job-specific skills (ESCO)

- ✓ Engineering and engineering trades
- ✓ Manufacturing and processing
- ✓ Business and administration
- ✓ Architecture and construction

Similar demand of transversal skills
In all selected occupations

Source: Skills in online job advertisements,
Cedefop Skills Intelligence
Dataset: 2023-2024

High-tech occupations in Manufacturing



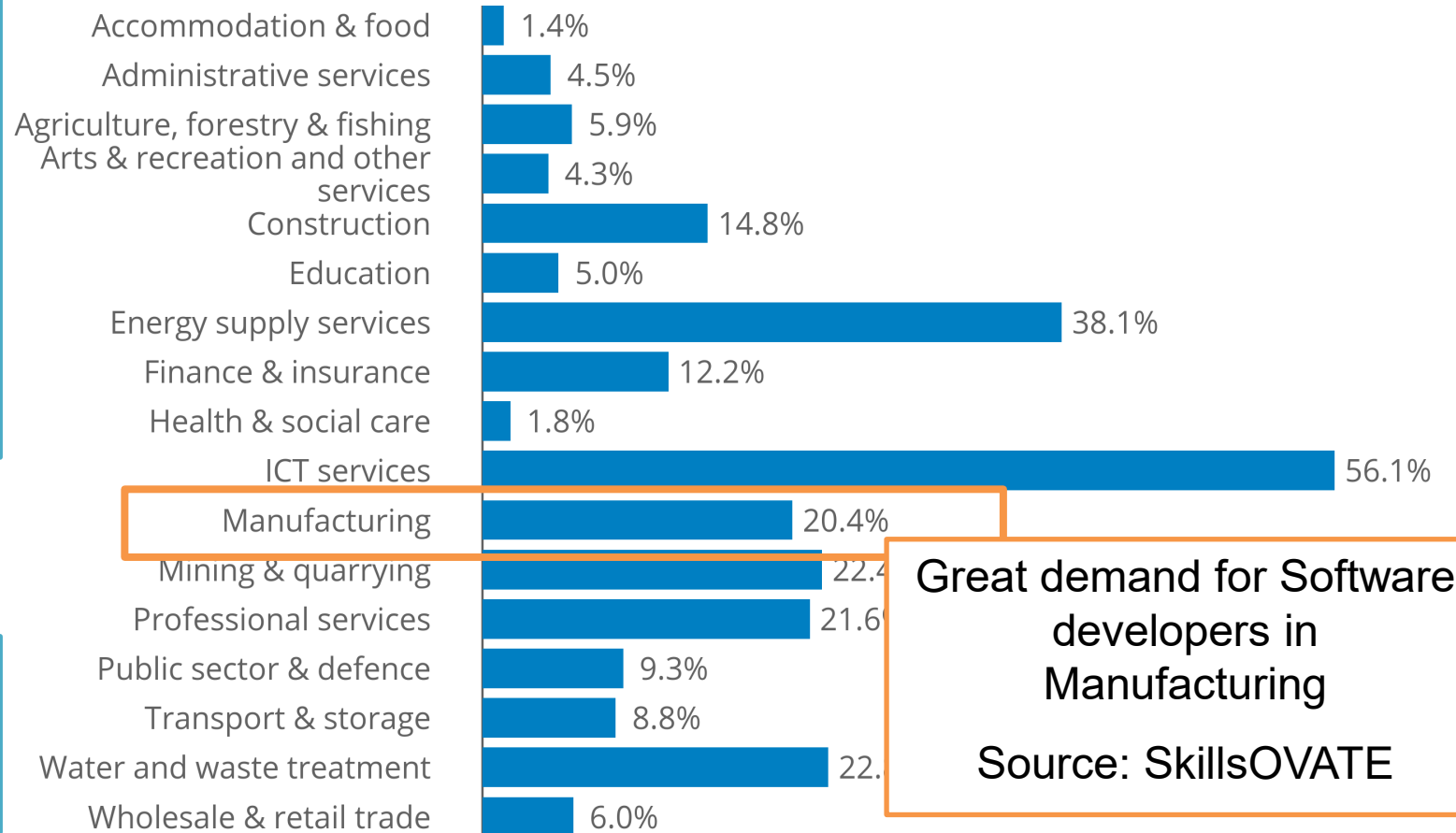
High-tech occupations

High tech occupations:

- ICT technicians
- Science and engineering technicians
- ICT professionals
- Science and engineering professionals

Manufacturing is, and will remain, a key sector for high-tech occupations.

Employment share of high-tech occupations by sector in 2035 in EU27



Great demand for Software developers in Manufacturing

Source: SkillsOVATE

Source: Skills Intelligence > [Employment in high-tech occupations](#)

Useful sources

Cedefop Skills intelligence data insights:

- [Cedefop \(2023\). *Machine and plant operators: skills opportunities and challenges.*](#)
- [Cedefop \(2023\). *Metal, machinery, and related trades workers: skills opportunities and challenges*](#)
- [Cedefop \(2021\). *Automotive industry at a crossroads*](#)

View all here: <https://www.cedefop.europa.eu/en/tools/skills-intelligence/data-insights>

Cedefop publications:

- Cedefop (2023). *Skills in transition: the way to 2035*. Luxembourg: Publications Office. <http://data.europa.eu/doi/10.2801/438491>
- Cedefop (2022). *Setting Europe on course for a human digital transition: new evidence from Cedefop's second European skills and jobs survey*. Luxembourg: Publications Office. Cedefop reference series; No 123 <http://data.europa.eu/doi/10.2801/253954>
- Cedefop, (2023). *Microcredentials for labour market education and training: the added value for end users*. Publications Office of the European Union. Cedefop research paper. <https://data.europa.eu/doi/10.2801/141643>
- Cedefop. (2024). *Digital skills ambitions in action: Cedefop's skills forecast digitalisation scenario*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2801/966457>
- Cedefop (2023). *Going digital means skilling for digital: using big data to track emerging digital skill needs*. Luxembourg: Publications Office. <http://data.europa.eu/doi/10.2801/772175>

Other sources:

- [Eurostat: Business in the manufacturing sectors](#)

Cedefop online tools

- [Skills Intelligence](#)
- [Skills Forecast](#)
- [Skills-OVATE](#)
- [European skills and jobs survey \(ESJS2\)](#)

Other:

- [European skills index \(ESI\)](#)
- [STAS - Short-term anticipation of skills trends and VET demand](#)

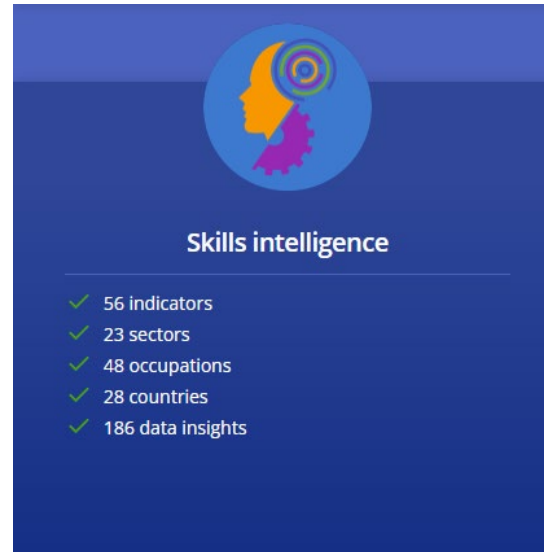
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Cedefop Online Tools

Skills Intelligence and Skills-OVATE

Navigation screenshots

Cedefop Skills Intelligence Tool Navigation screenshots



<https://www.cedefop.europa.eu/en/tools/skills-intelligence>

Skills intelligence

The screenshot shows the Skills Intelligence website interface. At the top left, there is a logo for '50 YEARS CEDEFOP'. On the top right, there are navigation links: 'VIEW MORE ONLINE TOOLS', 'LOGIN', 'REGISTER', and 'English'. Below this is a blue header with the 'Skills intelligence' title and a circular icon. A navigation bar contains several menu items: 'Introduction', 'Themes', 'Occupations', 'Sectors', 'Countries', 'Indicators', and 'Data Insights'. The 'Occupations', 'Sectors', and 'Indicators' items are highlighted with orange boxes. Below the navigation bar is a section titled 'Employment trends' with a sub-header icon and a paragraph of text: 'Employment trends cover recent developments on the European economy and its job market. They look at changes in the employment structure across countries, sectors, and occupations. The presentation utilises mainly skills intelligence indicators of Eurostat's Labour Force Survey, and Cedefop's Skills OVATE, which is based on collection of data coming from online job advertisements.' Below this is a 'Key facts' section with four cards, each containing an icon and a title: 1. 'Employed population growth' with a person and percentage icon. 2. 'Share of high-skilled jobs in employment' with a group of people icon. 3. 'Share of people participating in learning' with a person and lightbulb icon. 4. 'Share of online job advertisements for high skilled jobs' with a person and stairs icon.

50 YEARS CEDEFOP

VIEW MORE ONLINE TOOLS LOGIN REGISTER English

Skills intelligence

Introduction Themes Occupations Sectors Countries Indicators Data Insights

Employment trends

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Key facts

- Employed population growth
- Share of high-skilled jobs in employment
- Share of people participating in learning
- Share of online job advertisements for high skilled jobs

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50 YEARS CEDEFOP

Skills intelligence

Introduction Themes Occupations Sectors Countries Indicators Data Insights

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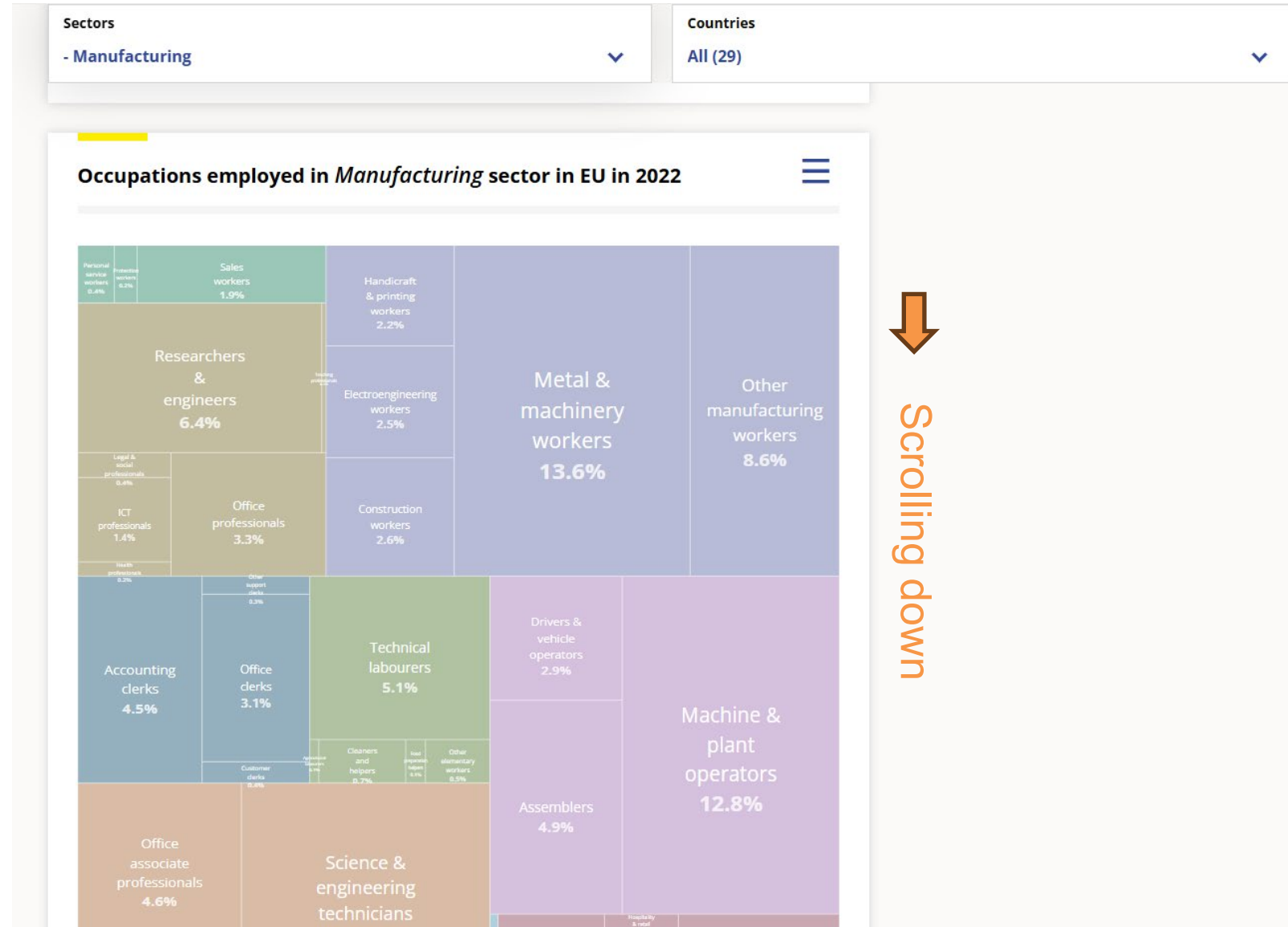
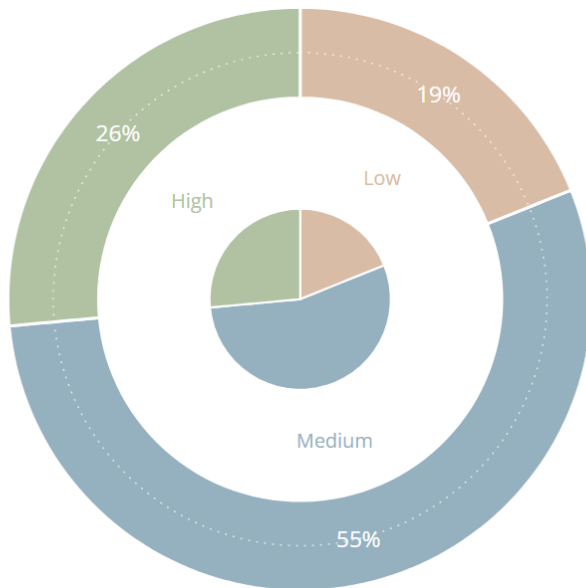
Key facts

- Employed population growth
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50 YEARS

Skills intelligence

Employment in *Manufacturing* sector for educational level possessed in EU in 2022



Cedefop Skills-OVATE Tool Navigation screenshots



<https://www.cedefop.europa.eu/en/tools/skills-online-vacancies>



Sectors and skills



Skills-OVATE offers detailed information on the jobs and skills employers demand based on online job advertisements (OJAs) in 32 countries. It is powered by [Cedefop's and Eurostat's joint work](#) in the context of the [Web Intelligence Hub](#). Please visit the [project](#) about the latest [news](#) and [publications](#) in the OJA work.

In Skills-OVATE you can access information based on millions of OJAs collected from thousands of sources, including private job portals, public employment service portals, recruitment agencies, online newspapers and corporate websites.

To show up-to-date labour market and skills trends, Skills-OVATE presents data for the last 4 available quarters and is updated four times a year. Yearly averages for key variables are available via [Cedefop's skills intelligence platform](#).

Based on the Memorandum of understanding between Cedefop and the [European Labour Authority](#) in close coordination with Eurostat's Web Intelligence Hub, Skills OVATE presents [analytics of EURES](#) vacancies.

> OJA data insights > Sectors and skills



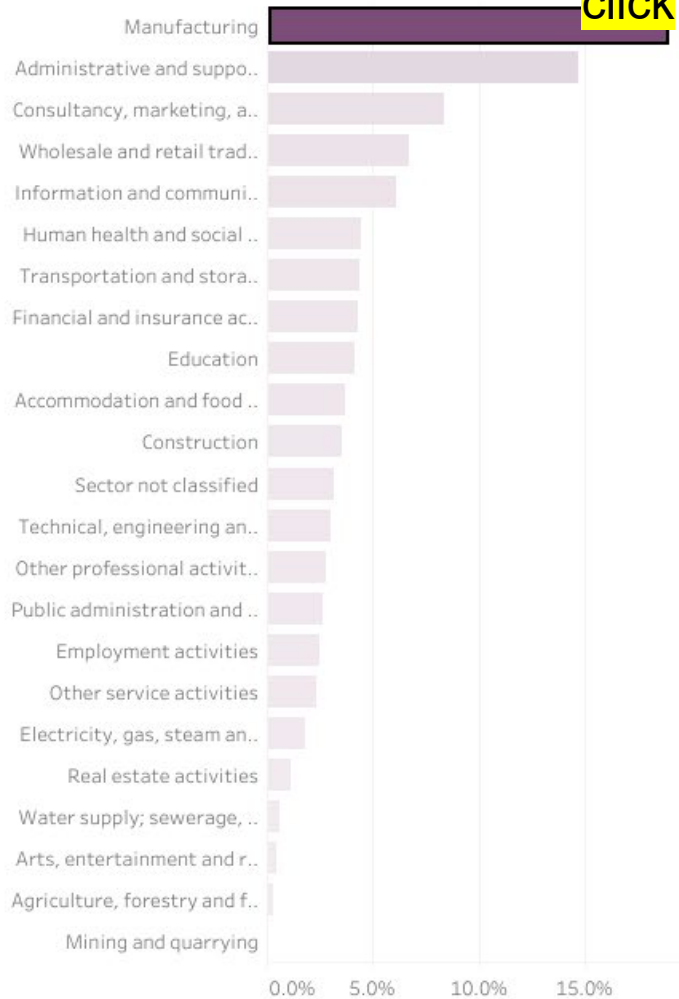
Select geographical coverage:
EU27_2020 countries

Select a country:
All

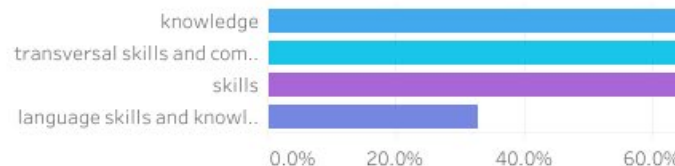
Select a skill classification:
ESCO

Data on: Q4 2023 – Q3 2024

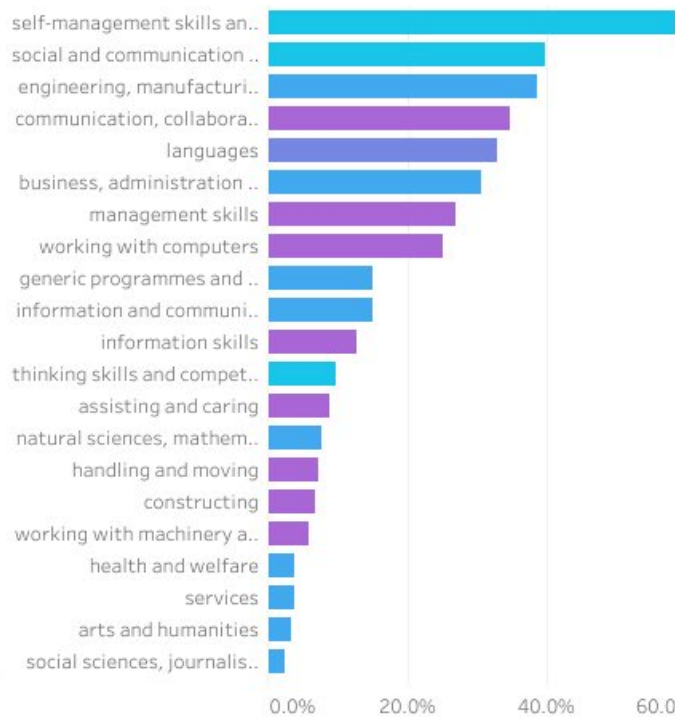
OJAs by sector



Most requested skills: level 0 ESCO

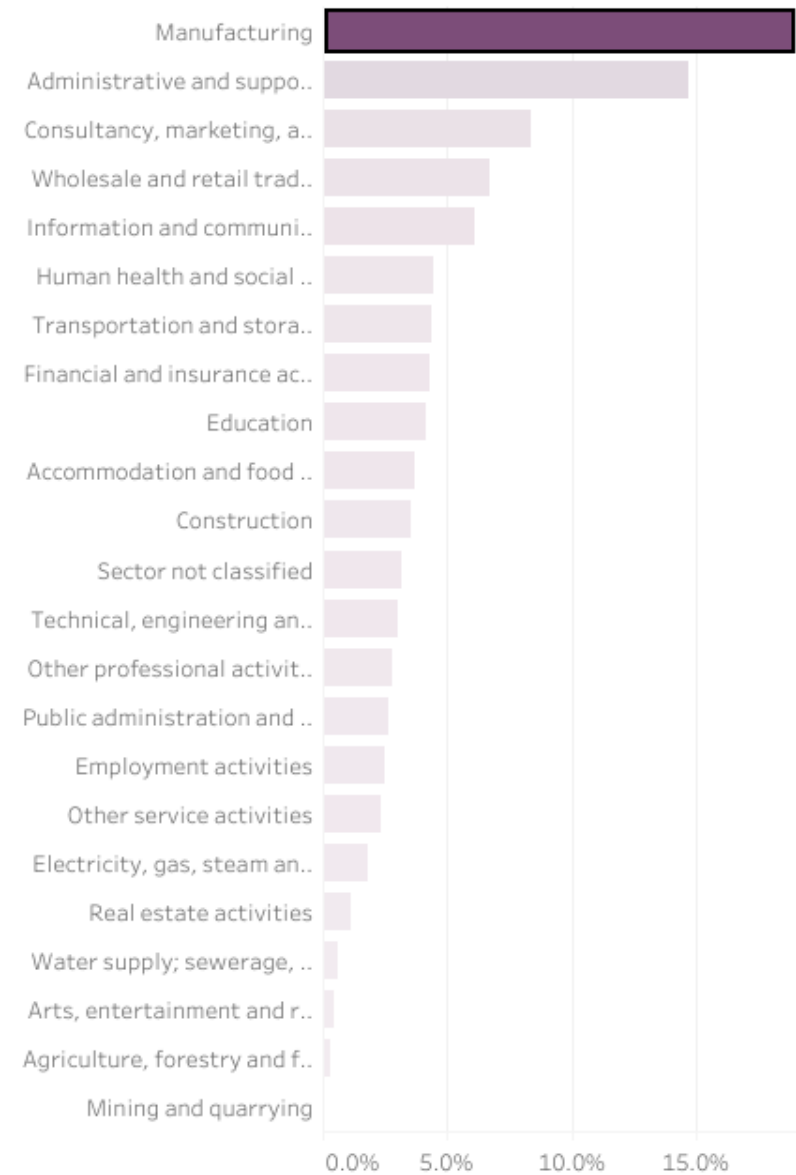


Most requested skills: level 1 ESCO

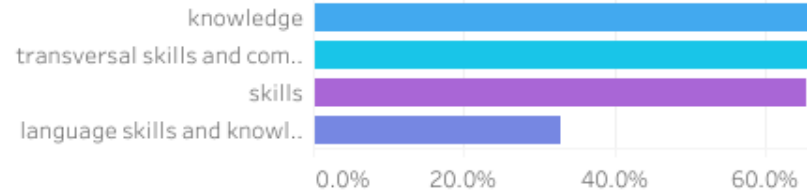


Most requested skills: level 3 ESCO

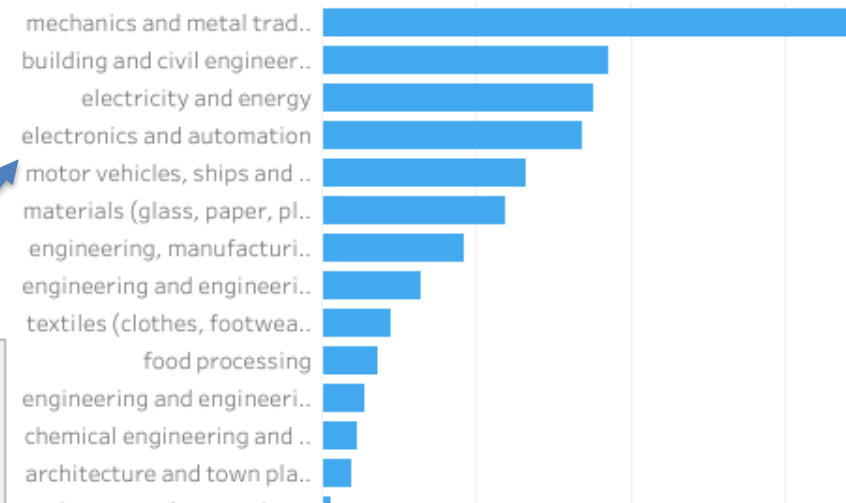




lost requested skills: level 0 ESCO



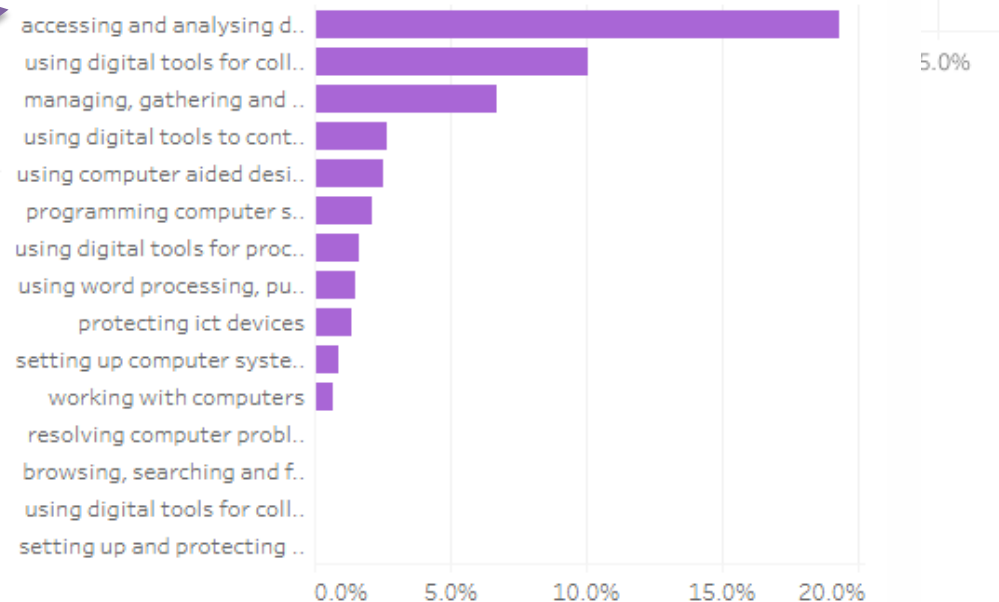
Most requested skills: level 3 ESCO



Most requested skills: level 1 ESCO



Most requested skills: level 3 ESCO



click

click

5.0%



Occupations and skills



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Select geographical coverage:

EU27_2020 countries

Select a country:

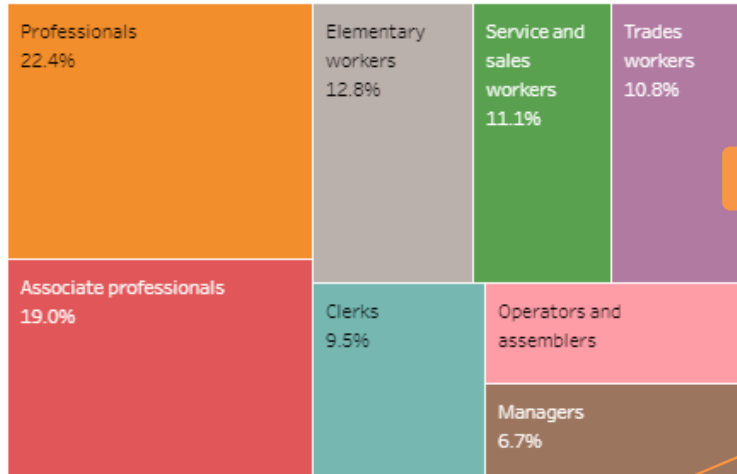
(All)

Select a skill classification:

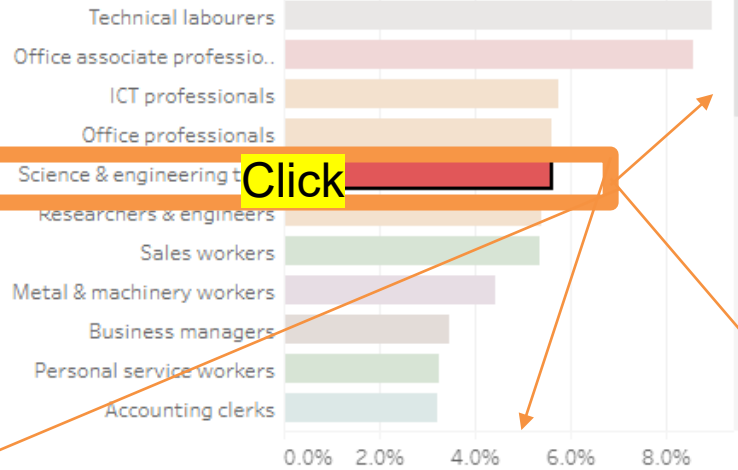
ESCO

Data on: Q4 2023 – Q3 2024

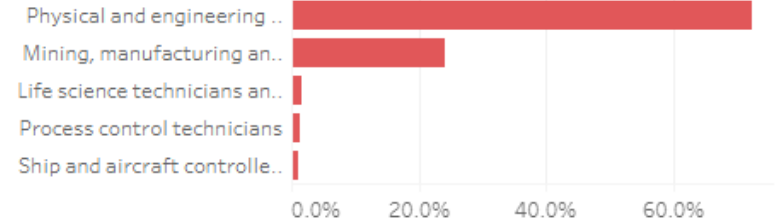
OJAs by occupation (1-digit ISCO)



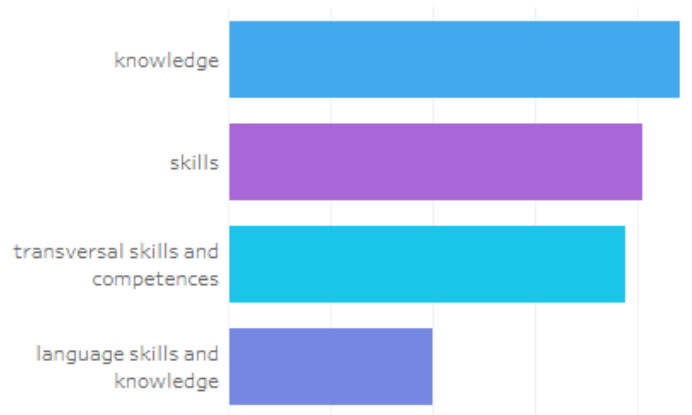
OJAs by occupation (2-digit ISCO)



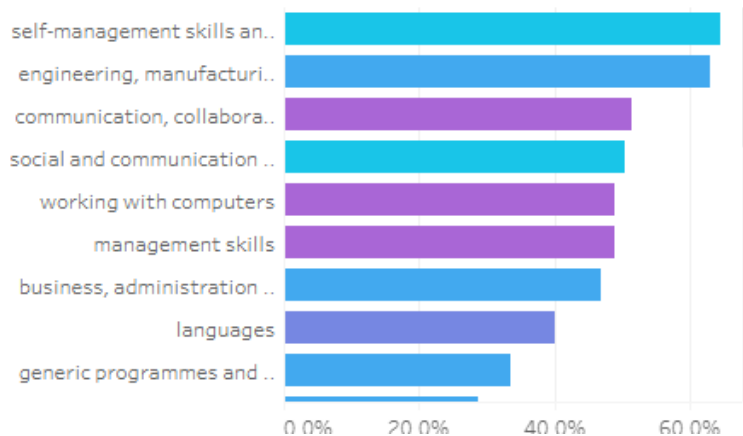
OJAs by occupation (3-digit ISCO)



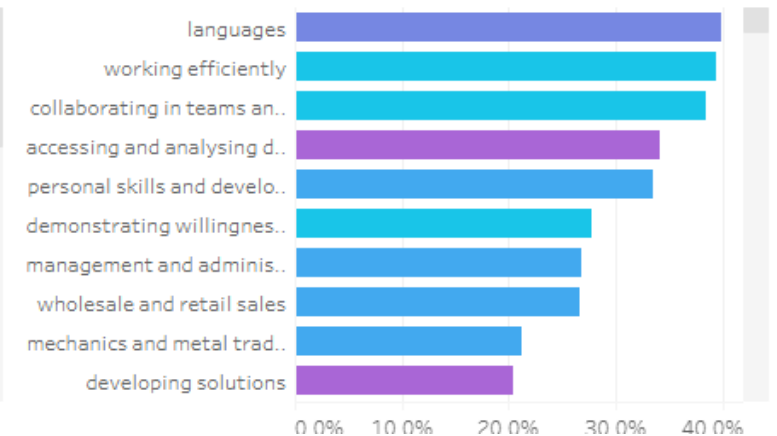
Most requested skills: level 0 ESCO skill



Most requested skills: level 1 ESCO skill



Most requested skills: level 3 ESCO skill



Thank you

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