



**CEDEFOP**

European Centre for the Development  
of Vocational Training

# Unleashing the learning revolution

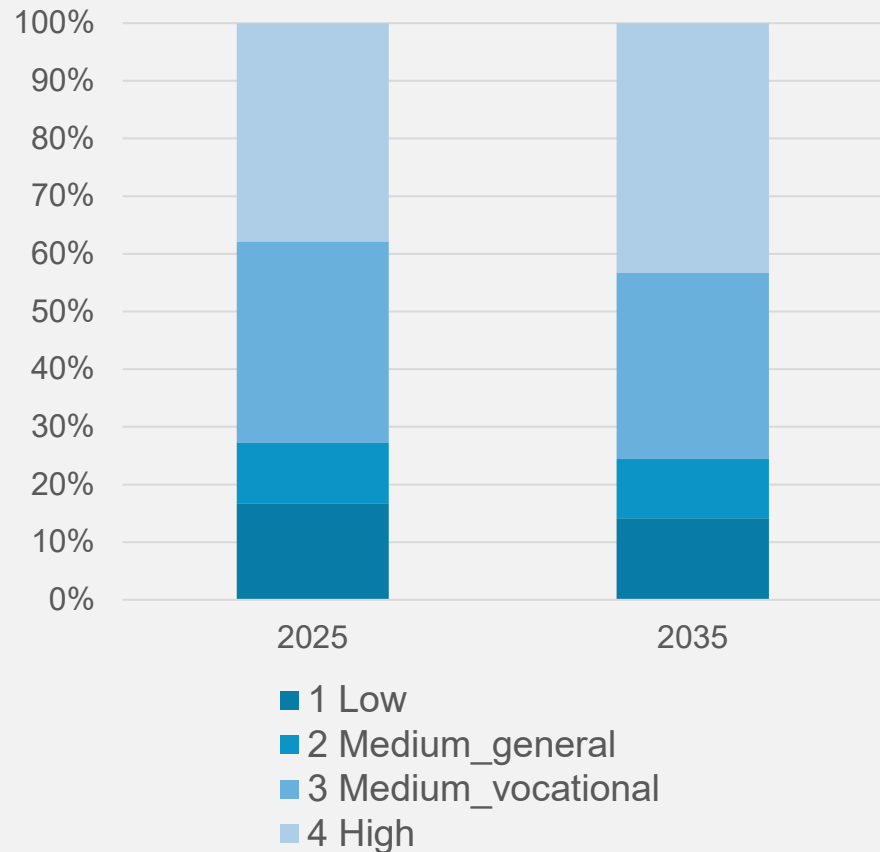
## Using skills intelligence to shape transitions

CLEAN ENERGY SECTOR SKILLS ANALYSIS

Understanding skills challenges and opportunities in the Clean Energy sector  
across European regions

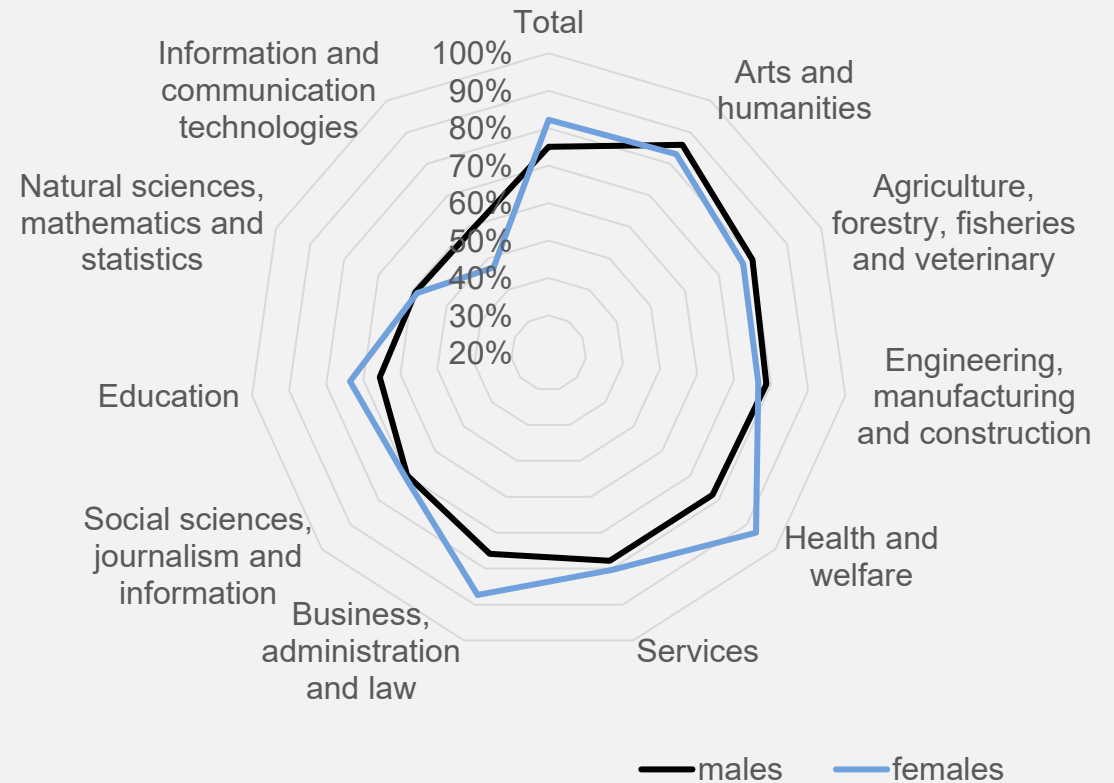
# The big picture: skills revolution is not just more higher education

Employment by qualification level, EU27



Source: Cedefop skills forecast  
<https://www.cedefop.europa.eu/en/tools/skills-forecast>

Mean completion rates in upper secondary VET by field of study and gender, EU27



Source: Vocational education and training (VET) occupations in shortage - From evidence to coordinated policy responses  
[https://www.cedefop.europa.eu/files/9209\\_en.pdf](https://www.cedefop.europa.eu/files/9209_en.pdf)

# Europe ... we have a skills & a jobs problem



## what adult workers need

**1/2** has digital upskilling potential (2021)

**3/5** needs AI skills (2024)

## what happens in practice

**1/7** AI trained (2023-24)

**4/5** Lacks suitable training (2024\*)

**4/5** has difficulties finding info on training that works for them (2024\*)



## digital training modest

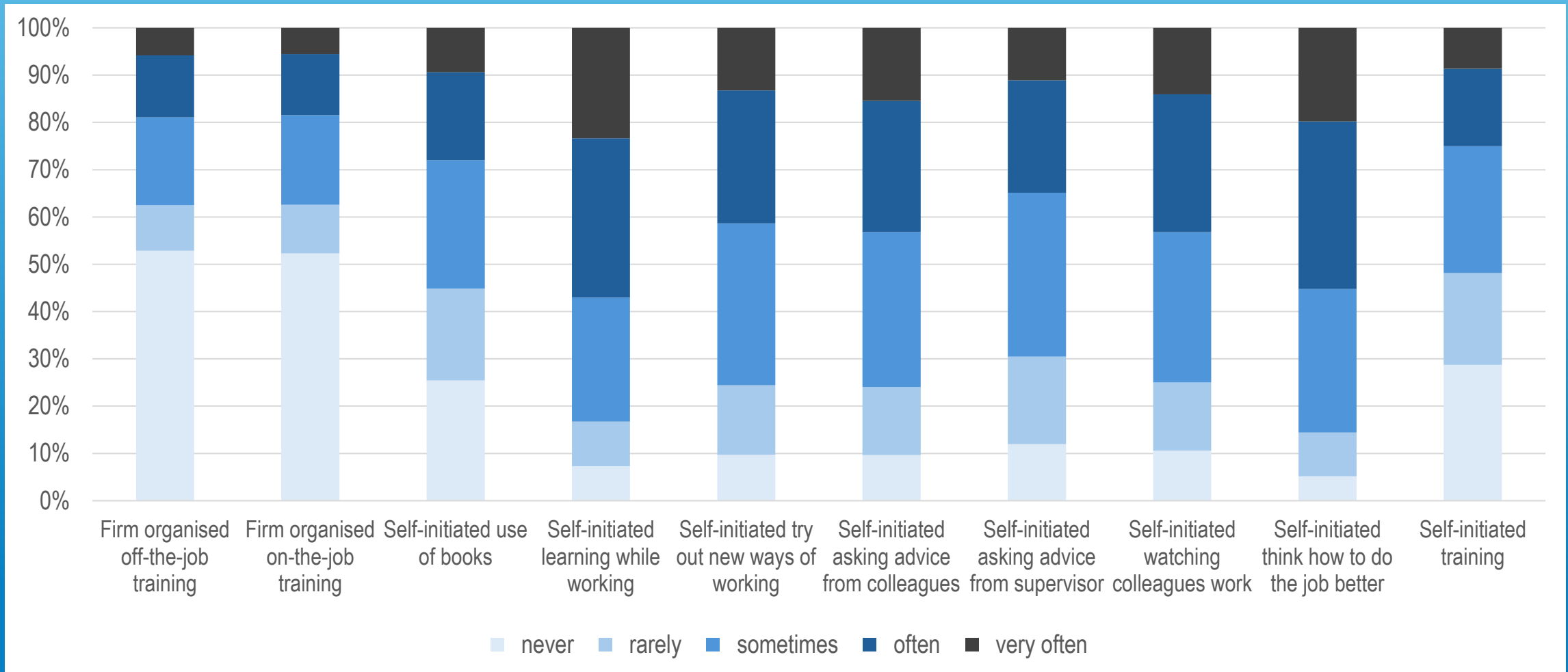
**49%** One week or less to upskill for most used technology



## but also: underused potential!

**1/2** jobs do not fully use worker knowledge and skills

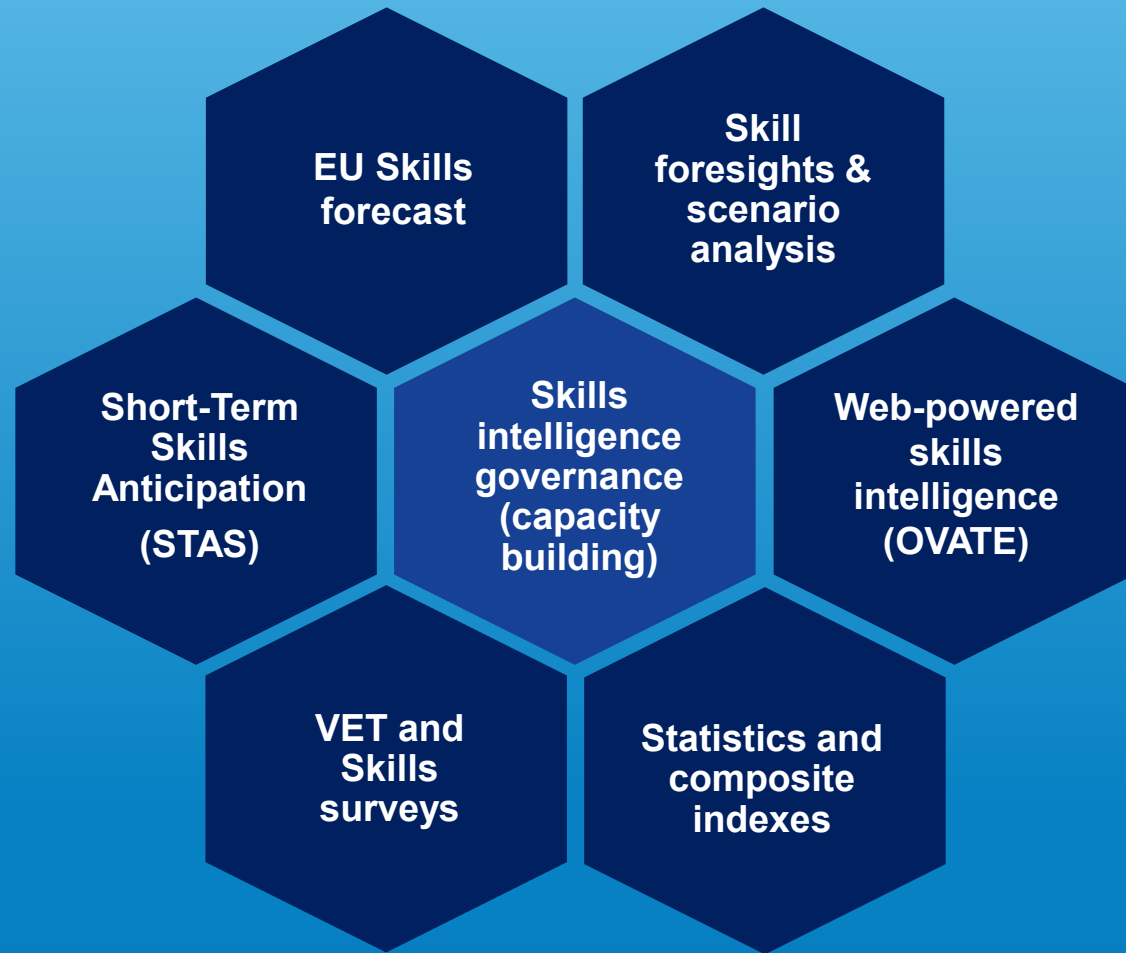
# Skills revolution = learning for work + work for learning



Source:

Cedefop (2026) Beyond skills development: unleashing human potential - First findings from Cedefop's European Training and Learning Survey  
[https://www.cedefop.europa.eu/files/3099\\_en.pdf](https://www.cedefop.europa.eu/files/3099_en.pdf)

# Skills intelligence supports learning and transitions



## Skills intelligence 'truths'

- No crystal ball
- Trade-offs between detail, precision, timeliness
- Mismatches go beyond skills shortages & gaps
- Quantitative and qualitative information

*Blend to comprehend*

# Not all green jobs are “green”

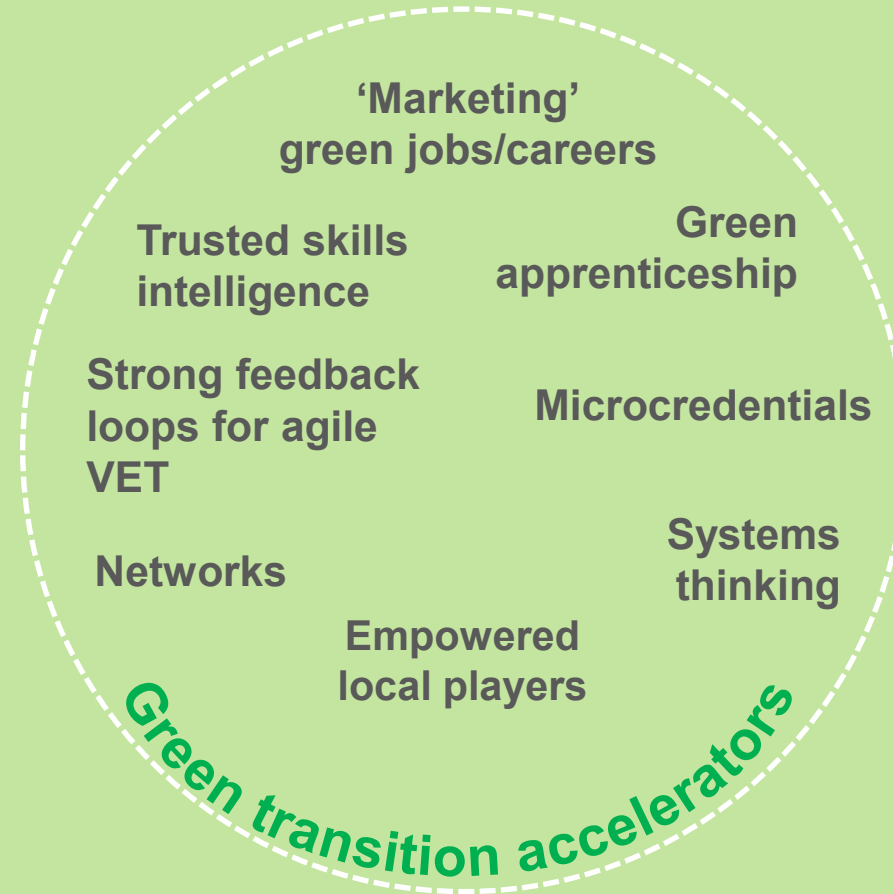


## Frontline green jobs

- Construction professional
- Repair specialist
- Energy professional
- Material extraction/recycling/reuse expert
- Material and process engineers
- Circular product designers
- Transport and mobility specialist
- Environmental protection specialist

## Greentech specialists

- Industrial problem analysts
- Industrial symbiosis facilitators
- Hydrogen specialists
- Urban space specialist
- Energy expert
- Circular economy plant designer
- Agronomists



## Green management

- Green/smart city manager
- Logistics manager
- (Strategic) waste manager
- Waste valorisation professional
- Renewable energy managers

## Digital specialists

- ICT professional
- Data scientists and data analysts
- E-commerce specialists
- GPS experts (precision agriculture)
- Waste sorting optimisation professional

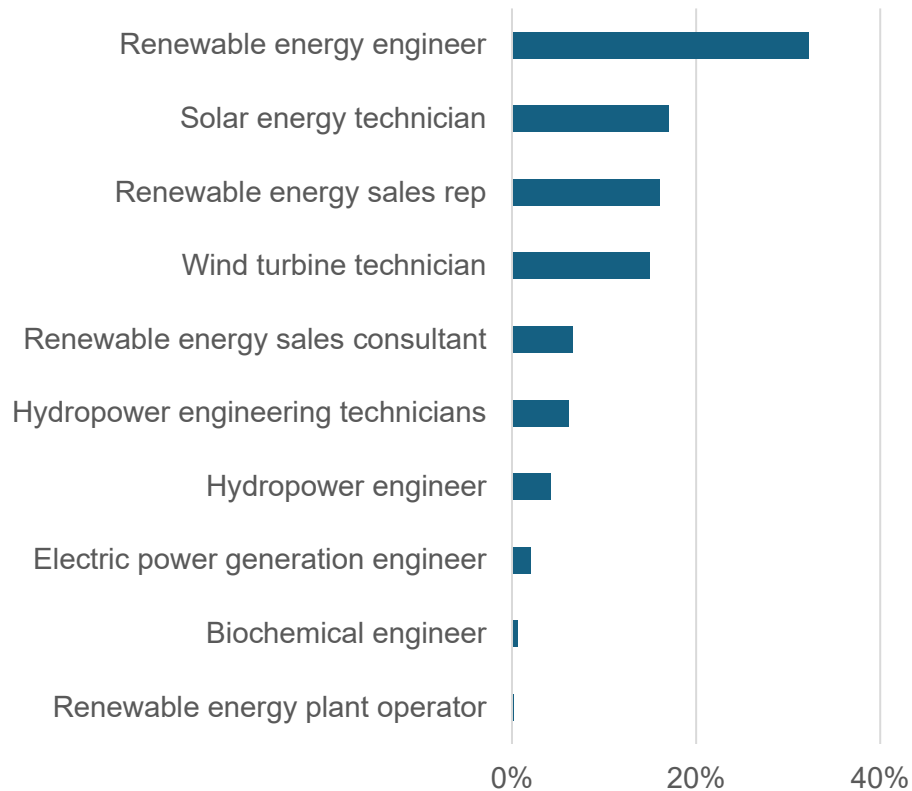
## Green hearts and minds

- HR specialists
- Consumer behaviour specialists
- Sustainability trainers
- Waste management trainer
- Citizen engagement specialist

Source: Cedefop green skills foresights in [cities](#), [waste management](#), [agri-food](#) and [circular economy](#)

# Green skills demands are highest in energy and related sectors

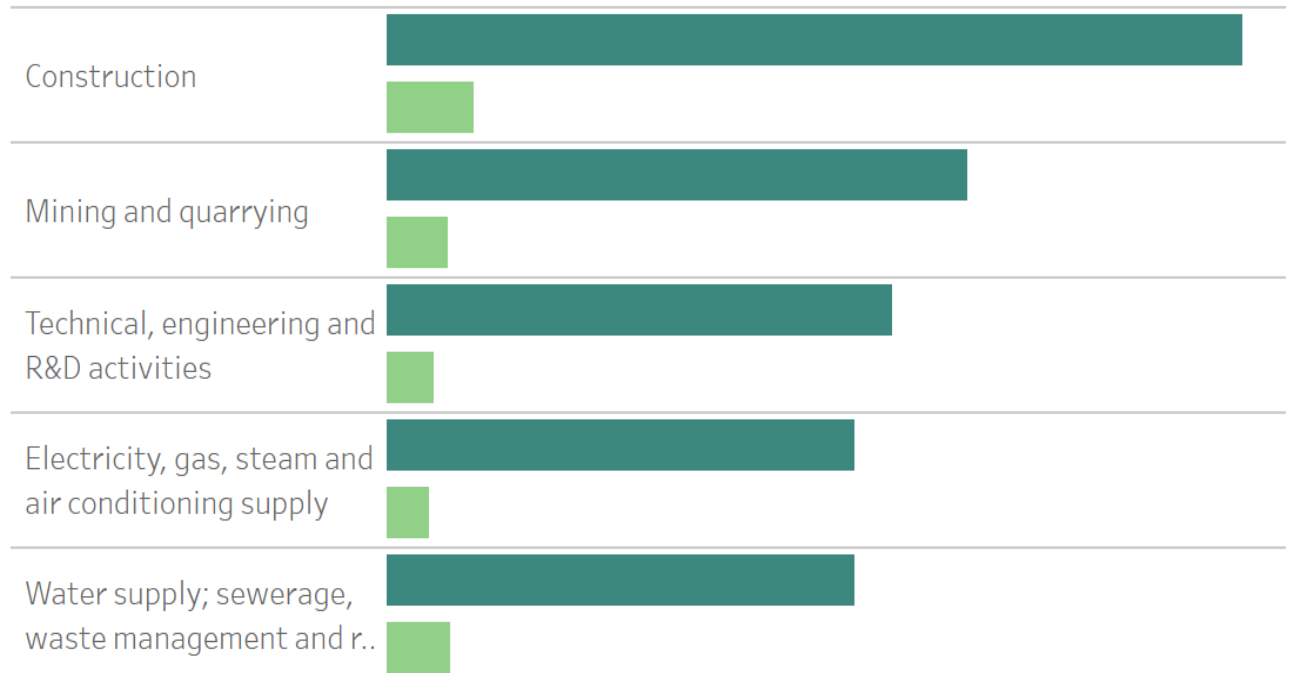
## Online job ads for renewable energy professionals (Q4 2025)



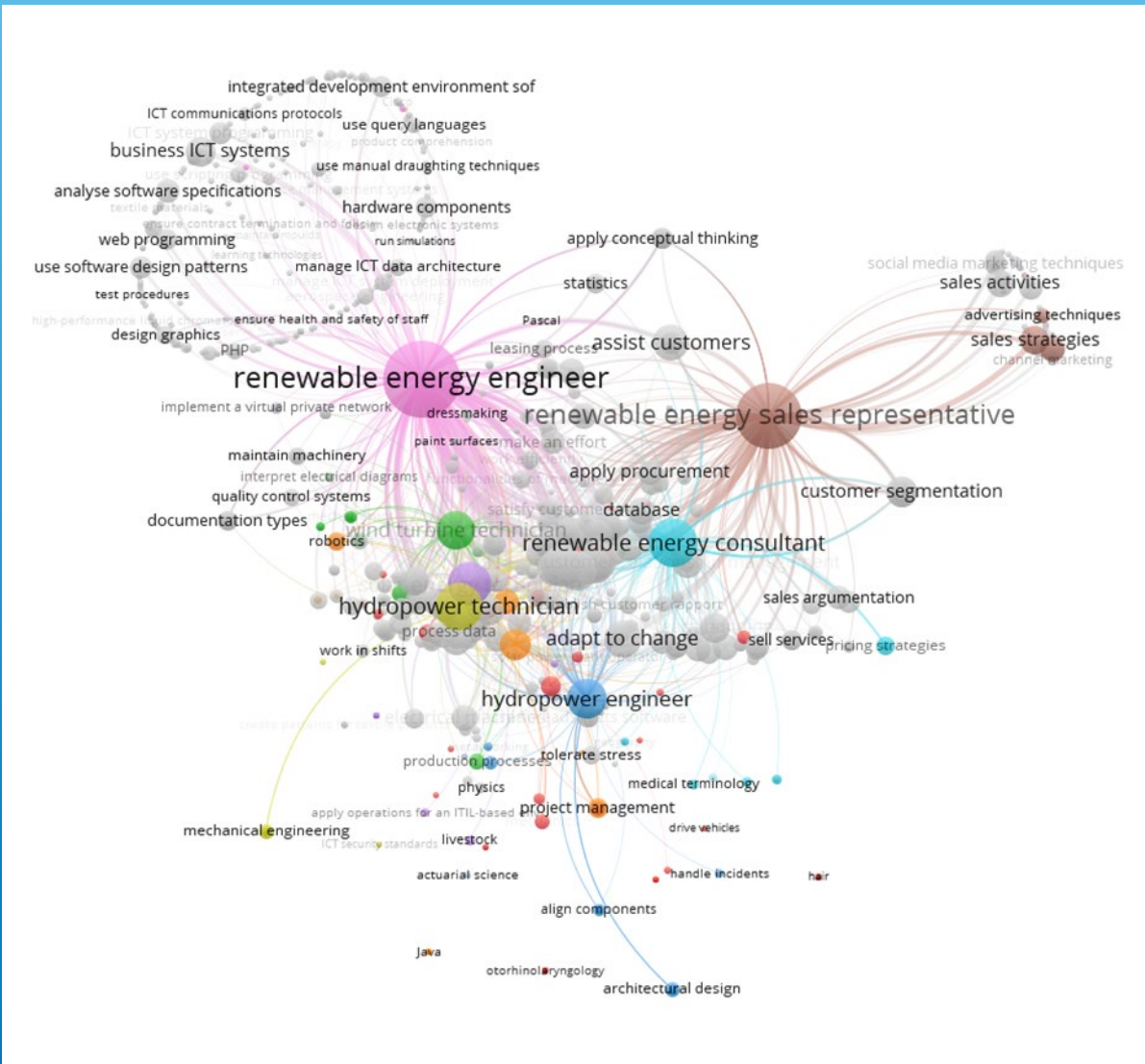
## Greenness and green pervasiveness by sector 2025

Sort by

Green pervasiveness ▼



# Hybridisation in jobs for renewable energy professionals



- Foundational technical skills: core engineering principles relating to electrical, mechanical and energy systems
- Up-to-date knowledge of renewable technologies, including wind, solar and hydrogen power and battery storage systems
- Regulatory awareness to ensure compliance with health, safety and environmental regulations
- Strong project management skills to manage large-scale renewable initiatives that require planning, coordination and oversight.
- Soft skills: Effective communication, multidisciplinary teamwork, strong problem-solving skills to adapt to emerging technologies

*More details about the jobs and skills profiles of installers, commissioning technicians, maintenance technicians, cybersururity professionals coming up in the policy brief*

# Thank you

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## *Policy pointers*

- Improve skills intelligence to track trends in green occupations
- Scale up VET for clean-tech occupations
- Map skills gaps and overlaps to facilitate career transitions
- Modernise qualifications and credentials systems to enable worker mobility
- Support carbon-intensive regions
- Support digital and interdisciplinary skills for clean tech



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