GREEN MOLECULES: THE UPCOMING REVOLUTION IN THE EUROPEAN EMPLOYMENT MARKET

How Green Hydrogen and Biofuels Can Impact the Employment Prospects in Germany, France, Spain, Italy, The Netherlands, Portugal, and The United Kingdom.

CEPSA

ManpowerGroup®

Work carried out by the ManpowerGroup Spain Research Center for Cepsa.
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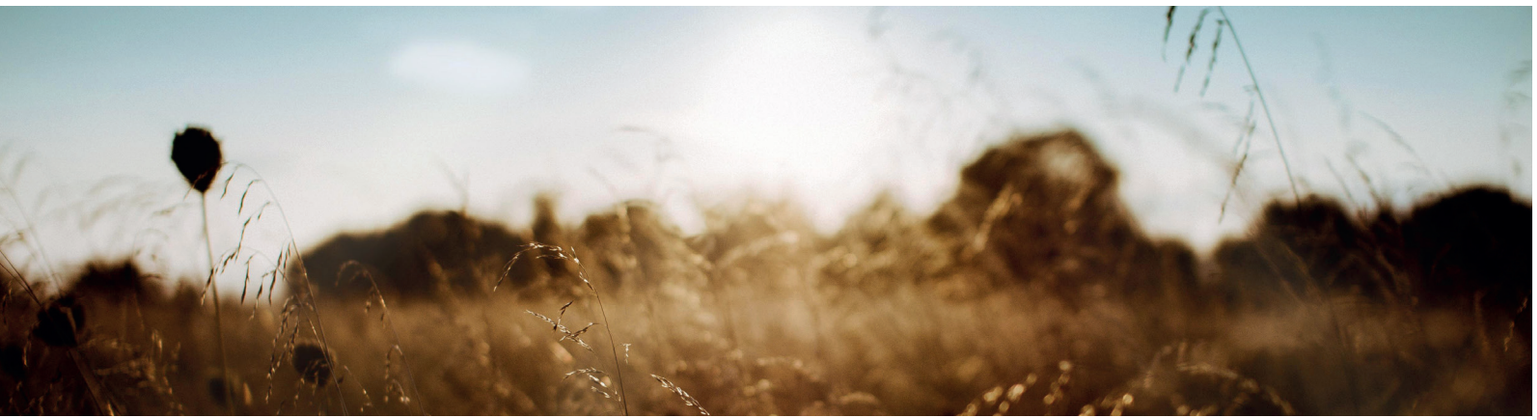

INTRODUCTION

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INTRODUCTION

At a time when change and transformation are the only constants, that also poses challenges and uncertainty for professionals and companies, when we are experiencing the greatest challenges in recent human history in social, economic and climate terms, **Green Molecules: The Upcoming Revolution in the European Employment Market'**, emerges as a beacon of hope and a guide to action.

This text aims to quantify precisely the location, quality and composition of the jobs that will be created by the energy transition driven by green molecules (green hydrogen, biofuels...). It also breaks down the measures that professionals, companies and public institutions can already put in place, individually and collectively, to take advantage of the full economic potential that the energy transition represents for the European Union and the United Kingdom.

The next two years, until 2025, are each a key moment for the 2040 scenario to be achieved. In this sense, 'Green Molecules' is a call for immediate and coordinated action to achieve the most optimistic framework possible in 17 years. **This text also transcends the boundaries of energy and employment, and enunciates a web of intertwined challenges and opportunities, elevating the energy transition to a global transformation.**

The work follows a simple logic that seeks to provide immediate insights for the reader. We start with a global quantitative overview, examining how the different selected countries (Spain, France, Portugal, Germany, the Netherlands, Italy and the UK, plus the EU-27 as an aggregate) are addressing the challenge of the energy transition from green hydrogen and biofuels, and how this relates to employment in 2023, 2030 and 2040.

Subsequently, a qualitative analysis is included that delves into the challenges and opportunities facing society as a whole, and of course individual companies, individuals and public bodies. We will talk about talent gaps, training needs, labour mobility, and more, as well as specific issues such as population ageing, the convergence of women in the labour world and the skills needed to thrive in the age of Artificial Intelligence and Sustainability.

Finally, 'Green Molecules' offers a decalogue of suggestions or roadmaps to make the most of opportunities and reduce the risks identified. All of this, under the idea that employment and energy transition are not opposing forces, but elements of the same multiplying binomial.

Each chapter of the report is a piece of this puzzle and an invitation to a global dialogue on how the energy transition is already redefining our lives and careers, European economies and their competitiveness. This document is a preview of the human capacity to adapt and evolve in an ever-changing world. **It is a train heading towards a more sustainable present.**

EXECUTIVE OVERVIEW

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EXECUTIVE OVERVIEW

"Green Molecules: the imminent revolution in Europe's employment market," drawn up by Cepsa and ManpowerGroup, analyses the employment impact that this new sustainable energy industry will have in Europe up to 2040, as well as the skills, knowledge and aptitudes of the professionals who will fill the jobs created.

- The study points out that investment in green molecules not only boosts the European energy transition, but also contributes to job creation and, therefore, to economic growth. The most in-demand skills in 2040 differ from those required in 2023, indicating an anticipated update, if not a revolution, in the job market.
- **The green molecule industry will create between 1.7 and 2 million new direct, indirect, and induced jobs** in the EU-27 and the UK by 2040.
    - On average, 101,000 jobs related to the sector will be created each year in the EU-27 and the UK, at a rate of 23% (CAGR).
  - The GDP of the area analysed would be increased by up to €145 billion in 2040 compared to 2023, which would mean an average annual increase of €8.5 billion.
  - In Spain, this sector would contribute €15.6 billion more to GDP in 2040. **This would represent an incremental 1% of GDP vs 2022.**
    - The sum of the economic impact over the next 17 years, as a consequence of the new energy paradigm, could reach a cumulative €1.3 trillion in Europe and the UK (similar to 8% of EU-27 GDP in 2022), at a rate of 22% per year (CAGR).

- **Spain: leader in job creation derived from green molecules in 2030 and 2040**
  - The 116,000 new positions in Spain in 2030 would account for 18% of the entire region analysed.
  - In 2040, Spain could create 181,000 positions, followed by the UK (173,000), Germany (145,000) and France (105,000). The Spanish figure represents **11% of the total jobs created at European level.**

- **The Green Molecule Economy: a driving force for the entire production value chain.** The Green Molecule Economy could create many more jobs and greater economic value for other sectors and industries than for the purely energy sector. Of all new jobs created by green hydrogen and biofuels by 2040, 88% are in the service and commerce sector, in industry, construction or education.
  - The energy sector will account for 12% of the 1.7 million new jobs.
  - Its supplier companies will account for 44.3% of the new jobs, all of which will be indirect.
  - Finally, the remaining 43.7% of new jobs will be distributed throughout the rest of the value chain: passenger transport, commerce, individual mobility, household energy consumption, etc.

What will these new jobs look like?

- **Of new jobs in 2040, 54.5% will require Green Skills**.
  - Spain (55.4%), followed by Italy (54.8%) and the UK (54.6%) are the countries where green skills are

most relevant for the positions to be created in 2040.

- However, they are also the countries with the largest mismatch between current and future skills: Italy, 2.8 points; Spain, 2.6 p; Germany, 2.2 p; the Netherlands, 1.8 p; Portugal, 1.7 p; the UK, 1.4 p; and France, 1.1 points.

- The new jobs created by the Green Molecule Economy are paving the way for the inclusion of women in traditionally male-dominated professional sectors.
  - The rate of entry of European and UK women is twice that of men in the decade 2030-2040. In the case of Spanish direct employment, this rate is up to 20 points higher than that of men.
  - By 2040, the share of women in direct employment could exceed that of men in some countries such as Spain (51%) and Italy (50.7%).
  - However, the period analysed is too short to observe a change in the representation of women in green molecule employment as a whole: it remains at 37%, compared to 63% of men in the European Union.

- **Pending challenge: attract younger professionals.**
  - The current average age of professionals in the energy sector is 43 years.
  - **In 2030, almost 60% of professionals in hydrogen and biofuels economy jobs will be over 40 years of age.** Some 10% are over 60 years of age.
  - In 2040, we are starting to see a certain amount of change in employment, with a 3-point increase in the participation of young people under 39 years of age, who account for 43% of professionals.

- **Demand for technical professionals increases**. **Only 20 occupations account for 8 out of every 10 new jobs created: these are mainly middle and senior technical occupations.**
  - Over the next 17 years, demand will grow for mid- and senior-level scientists and engineers, electricians, administrative and commercial managers, mining and construction labourers, IT professionals, and metal and machine operators.
  - Professionals who want to take advantage of one of the 1.7 million new jobs need to be trained in one or more of the skills required for these occupations. At the same time, professionals in occupations that will become less relevant need to be mobilised so that they can be retrained in other occupations that are more in demand.

- **A predominantly technical sector also looking for professionals with soft skills**
  - Of the skills most in demand, 46.6% are skills traditionally known as soft skills: Communication, Collaboration and Creativity (25.9%), Information Skills, such as analytical thinking and data documentation (21.2%) and Care and Assistance Provision, understood here as protecting and ensuring compliance with rules, guiding the team and providing information and public support (11.7%).
  - Demand for information management skills (+2.25 points), working with computers (+1.21 p.) and working

with specialized machinery and equipment (+1.93 p.) are growing the most compared to 2023.

- **We are at a pivotal moment to seize a historic opportunity for wealth creation in the EU and UK.** As can be seen from the data, Europe, and Spain in particular, has very advantageous starting conditions to boost the economy and job creation derived from green molecules.

  Despite this, in 2023 there are still not enough professionals who can carry out the energy transition driven by green molecules, so it is necessary to promote measures to create talent that fixes the added value in the locations where the investment is expected to be made.

  The alternatives for building talent are the following:

  - From scratch, with specific training in the areas of greatest growth and demand for professionals (skilling)
  - By attracting professionals with experience or knowledge in similar sectors (upskilling)
  - Through a massive training process for professionals in sectors that will decrease in terms of job offers and could take advantage of the opportunity of green hydrogen to remain employable (reskilling)
  - For those tasks that can be performed remotely, there is the possibility of attracting international offshore talent. However, there is a risk that these positions could fall into the inflationary salary dynamics that we are currently seeing in technology profiles.

- **How to seize the opportunity that green molecules bring? We propose 10 measures** for taking advantage of the potential opened up by the energy transition and meeting economic, social and employment objectives.

  - Matching the demand for professionals with the supply of competencies
  - Rethinking the University System
  - Supporting Dual Vocational Training
  - Nurturing non-formal training and the role of companies as talent hubs
  - Supporting Diversity
  - Fostering public-private partnerships
  - Talent without borders, as an opportunity
  - Mass dissemination
  - Attracting and engaging talent in companies
  - New skills mapping for Green Molecules

THE GREEN ROAD TO TWO MILLION NEW JOBS IN EUROPE AND THE UNITED KINGDOM

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ANALYSIS OF KEY ECONOMIC AND SOCIO-DEMOGRAPHIC FACTORS

The energy transition forecasts exponential growth in job creation in EU-27 and the UK of **1.7 million positions in 2040**, and 640,000 in 2030. Each year, an average of 101,000 jobs related to the sector will be added in the EU-27 and the United Kingdom, at an average annual growth rate of 23% (CAGR)[1].

Approximately 12% of these jobs are direct employment within the energy sector, while 44.3% are indirect, and 43.7% have an impact on the rest of the value chain[2]. Furthermore, around 40% of the direct jobs correspond to biofuels, and the remaining 60% to green hydrogen.

Direct, Indirect, and Induced Employment (2030 – 2040) (thousands)

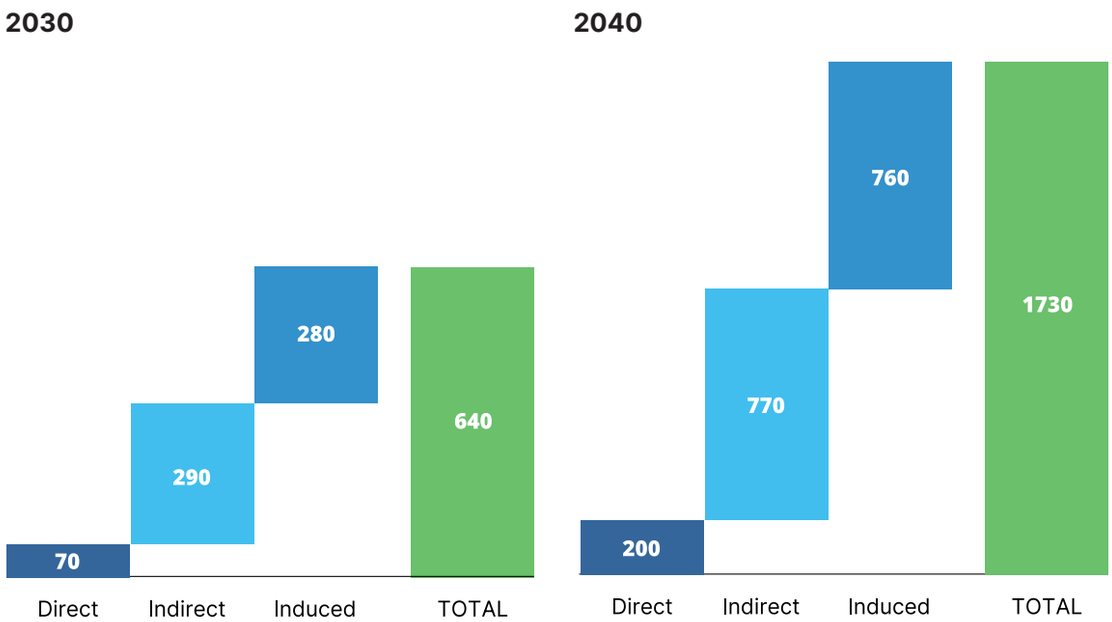


Fig. 1. Projected direct, indirect and induced job creation in the green hydrogen and biofuels sector in 2030 and 2040, for Europe 27 and UK (aggregate).

Note 1. For the preparation of this study, the most recent data from various official organizations regarding investment and expenditure forecasts, green hydrogen prices, or consumption levels in the analyzed countries have been taken into account. Any updates after the writing of this text could alter the estimates published here, so the figures should be considered as indicative at all times. The bibliography includes all consulted sources, with notable references to European Hydrogen Backbone, IRENA, IEA, PWC, FCH, Eurostat, and CEDEFOP.

Note 2. We distinguish three types of employment: i) direct impact is generated by the activity of companies in the green hydrogen and biofuels sector itself; ii) indirect impact is generated among their suppliers; and iii) tractor impact is the one that, as a consequence of the activity of the previous two, is generated along the subsequent value chain, either in dependent sectors or end users. The percentage weight is very similar in the analyzed period: Direct (10.9% and 11.6% respectively); Indirect (45.3% and 44.5%); and Induced (43.8% and 43.9% respectively).

The energy transition is a global transformation with induced effects along its entire value chain and on the Economy as a whole. The fact that 88% of all jobs created by investment in green hydrogen and biofuels are not directly in the energy sector is a measure of the large impact of the energy transition across the UK and European economy[3].

Employment Impact in Major Sectors
(2030-2040) (%)

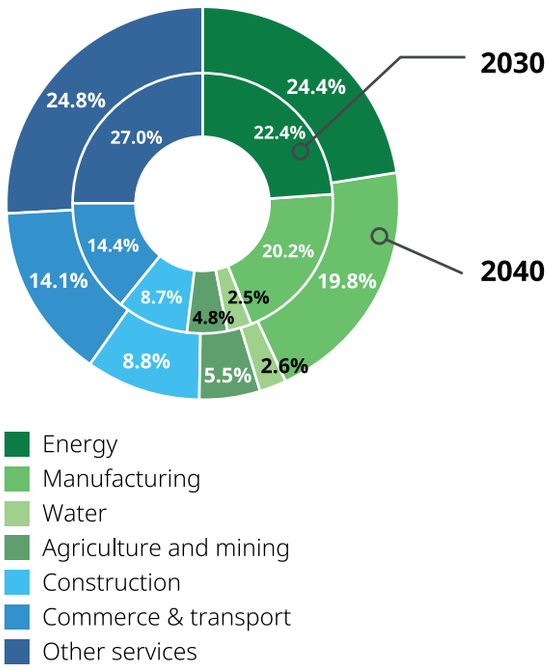


Fig. 2. Weight of jobs created by green hydrogen and biofuels in EU-27 and UK in 2030 (lighter) and 2040 (darker), by sector. Direct, indirect and induced employment are grouped together. Analysis based on Eurostat data.

Detailed Employment Impact by Sectors
(2030-2040) (%)

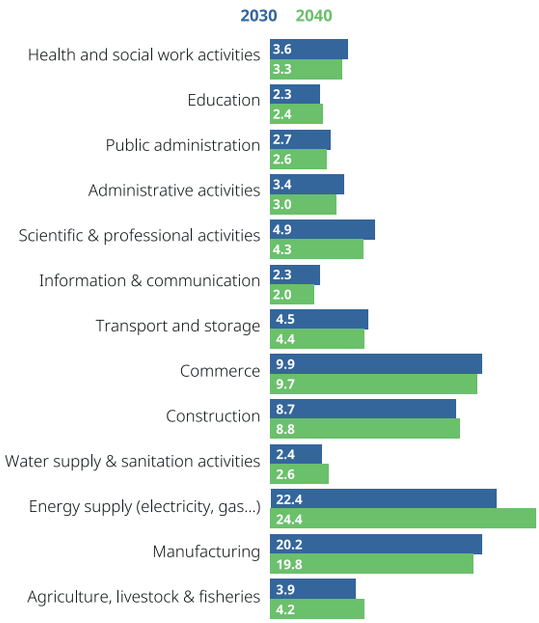
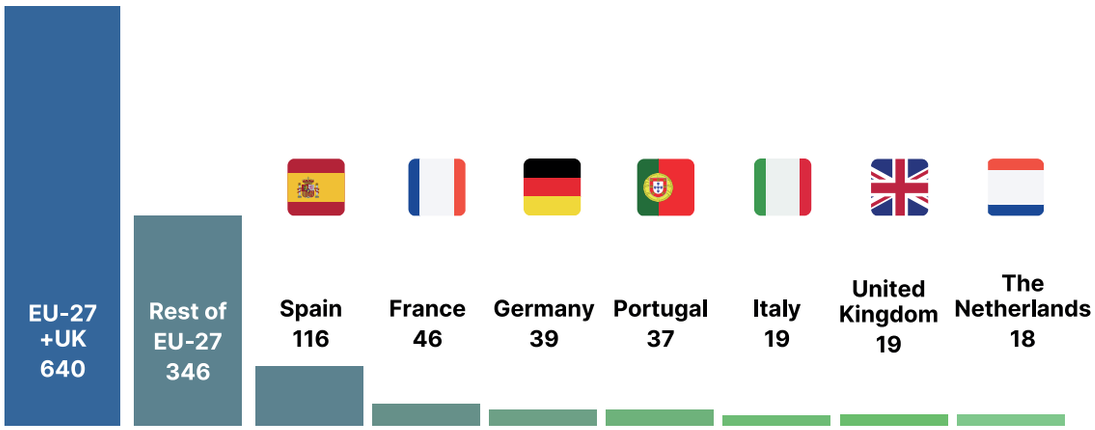


Fig. 3. Weight of jobs created by green hydrogen and biofuels in EU-27 and UK in 2030 and 2040, by sub-sector. Direct, indirect and induced employment are grouped together. Analysis based on Eurostat data.

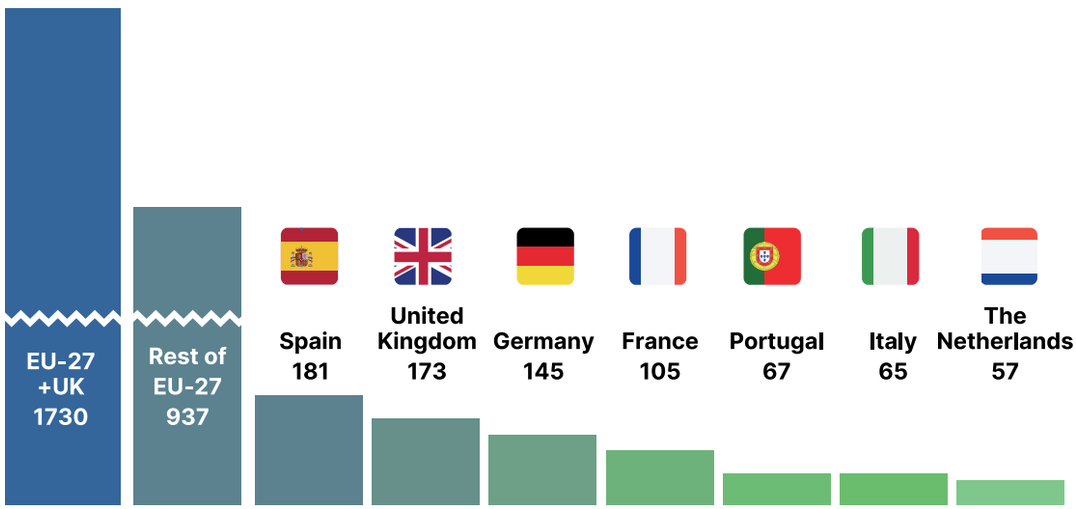
Note 3. In the hydrogen market research phase, studies and data from various sector sources such as IEA (International Energy Agency), IRENA (International Renewable Energy Agency), EHB (European Hydrogen Backbone), or FCH (Fuel Cells and Hydrogen Joint Undertaking) were analyzed and cross-referenced, in addition to strategic plans and studies from the European Commission and the studied countries.

By country, Spain (116,000), France (46,000) and Germany (39,000) will create the most jobs in 2030. However, it is in the second decade under analysis when the United Kingdom will experience an acceleration in job generation and is projected to surpass Germany by 2040. **Spain will continue to lead in job creation in 2040, with 181,000 new jobs, followed by the United Kingdom (173.000), Germany (145.000) and France (105.000).**

Job Creation in 2030 (thousands, by countries)



Job Creation in 2040 (thousands, by countries)



Figs. 4 and 5. Projected job creation by country analysed, in 2030 and 2040. Figures in millions.

In a broader perspective, the average rate of job generation between 2023 and 2040 is 30% (CAGR), with slight variations among countries: the United Kingdom reaches 35%, compared to the region's 30% or Spain's 28%. In absolute terms, Germany, with an annual average of 61,000 new jobs, would be the second country with the greatest impact, ahead of the United Kingdom (54,000) and France (53,000).

Table 1. Country comparison based on their annual growth rate and average employment figures (2023-2040)

2030-2040 Variation	CAGR	Average annual employment (thousands)
EU-27 + UK	30%	820
Spain	28%	110
France	30%	53
Portugal	29%	39
The Netherlands	31%	26
Germany	32%	61
Italy	31%	28
Rest of EU-27	30%	460
The United Kingdom	35%	54

AND HOW DOES THIS LABOUR MARKET GROWTH TRANSLATE INTO ECONOMIC TERMS?

The cumulative economic impact over the next 17 years, as a result of the new energy paradigm, could reach a total of 1.3 trillion euros in Europe and the UK (equivalent to approximately 8% of the EU27 GDP in 2022), at an annual growth rate of 22% (CAGR).

The GDP of the analysed region would increase by up to 145,000 million euros by 2040, preceded by 63,850 million euros in 2030. This would represent an annual increase of 8,500 million euros.

In Spain, this sector would contribute an additional 15,600 million euros to the GDP in 2040, a potential increase of 1% in the Spanish GDP compared to 2022.

Accummulated GDP in 2040 (contribution by country, millions of euros)

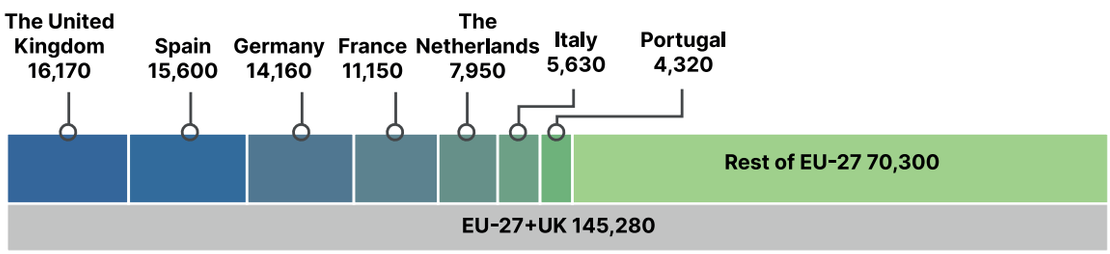


Fig. 6. Cumulative increase in the GDP of each country analysed and its contribution to the total of the geographical area studied, to 2040, in millions of Euros.

A SECTOR WITH JOBS OPPORTUNITIES FOR WOMEN

The representation of men and women in the new jobs generated by green hydrogen and biofuels remains at a ratio of 37% (women) to 63% (men) between 2030 and 2040. **However, the rate of women entering the sector during the analysed period is up to five points higher than that of men in the region, with a particularly notable difference in direct employment (21 points higher).**

Chart 2. Projection of direct, indirect, and induced employment generation driven by green molecules in 2030 and 2040 for EU-27 and the United Kingdom (aggregated).

Change 2030-2040	Men	Women
EU-27 + UK	169,5%	174,2%
Direct	179,6%	201,0%
Indirect	164,9%	168,7%
Induced	172,0%	173,4%

Representation of men and women employed by green hydrogen and biofuels

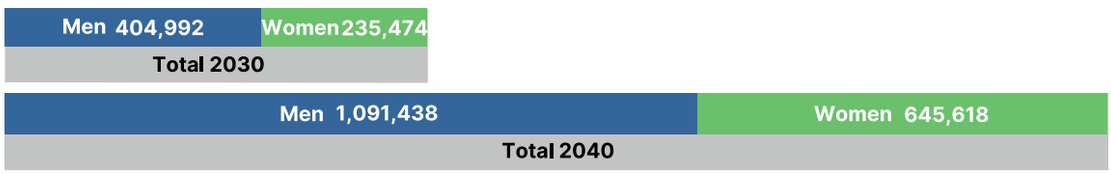


Fig. 7. Distribution of jobs in 2040 by gender.

% Men and women employed by typology in 2030-2040 (%)

Fig. 8. Men and women in direct, indirect and induced jobs in 2030 and 2040.

We will see later in the text how the differences between countries stand out. Please note **we can anticipate that women hold the majority of direct jobs in Spain (51%) and Italy (50.7%) in 2040[4].** There are countries with a predominantly male employment throughout the series, as in the case of the Netherlands (men hold 66.2% of jobs in 2040 and up to 73.9% in the case of direct jobs). Meanwhile, France is the country where the representation of women grows the most in percentage terms, with an increase of 3% from the decade of 2030 to 2040.

Women employed (2030-2040) (%)

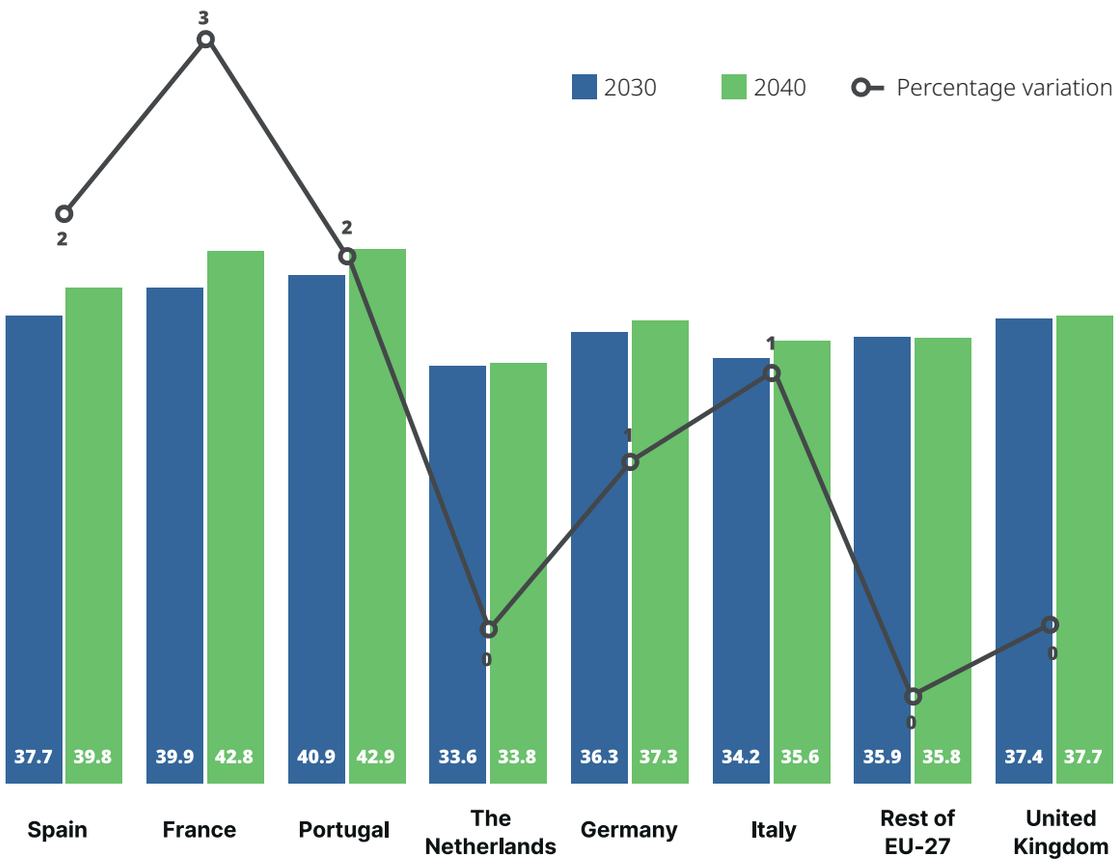


Fig. 9. Representation of women in jobs created by green molecules in Europe and the UK. 2030-2040 comparison and % variation.

Note 4. Analysis based on production projections from the European Hydrogen Backbone, Levelized Cost of Hydrogen (LCOH) projections from the European Commission and independent consulting firms, and price projections developed by PwC. Variables such as renewable energy prices by country and the expected reduction in the price of electrolyzers for the years 2030 and 2040 have been considered.

UP TO 81% OF THE JOBS CREATED ARE DISTRIBUTED AMONG 20 OCCUPATIONS.

If we look more closely at the types of occupations in which these new jobs will be concentrated, we can see that the vast majority of positions in 2040 correspond to to 20 major occupations (more information on page 30). **It follows that professionals who want to take advantage of one of the 1.7 million job opportunities identified must be trained in one or more of the skills needed to perform these occupations.**

In 2040 there could be around **225,000 positions for mid- and senior-level scientists and engineers (12.4%), up to 154,000 jobs for mid-level financial and administrative operation professionals (9.1%), 103,000 for salespeople** across the area analysed (6.1% of total jobs) and around 97,000 positions for labourers in mining, construction or manufacturing in the EU-27 and the UK (5.7%). **Investment in green molecules would open up at least 90,000 new positions for IT professionals in the region covered by this study.**

Occupations by Type of Employment, 2040 (%)

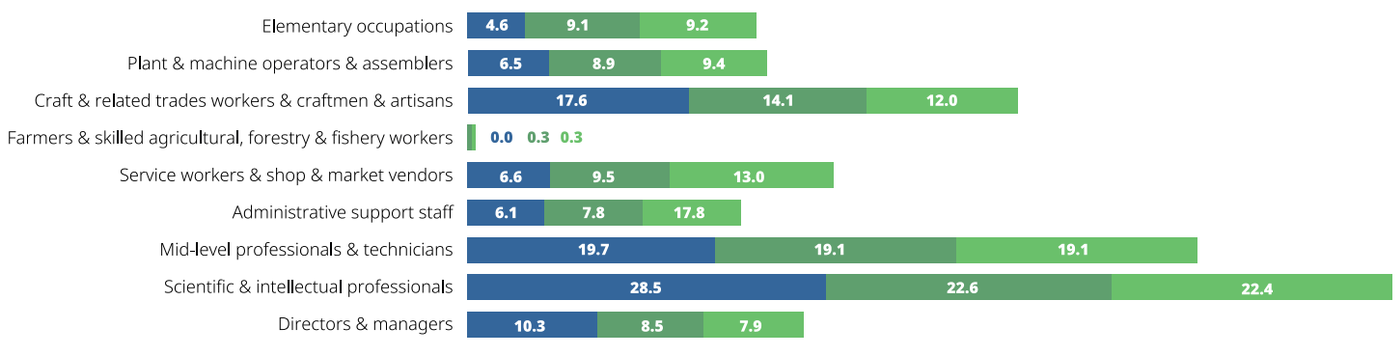


Fig. 10. Analysis of occupations in jobs created by hydrogen and biofuels in 2040, based on Eurostat and ESCO data.

THE SAME AGEING DYNAMICS OF THE EUROPEAN POPULATION

We see it in all sectors. As Europe's population ages, we are witnessing a more or less proportional forecast of the ageing of all sectors, which can only be compensated by clear and decisive employment policies. Companies also play a key role, with initiatives to attract younger talent.

In the specific case of the sector in question and of the energy transition as a whole, this ageing figure is not necessarily negative, since - as we will see below - the profiles required by this paradigm shift are mostly more experienced.

In any case, it is important to note that **the average age of professionals is 43 years old in 2030 and 42 years and 6 months in 2040, slightly lower than the average age of European professionals (44 years old in 2022).**

Representation of Age Groups in Employment (%)

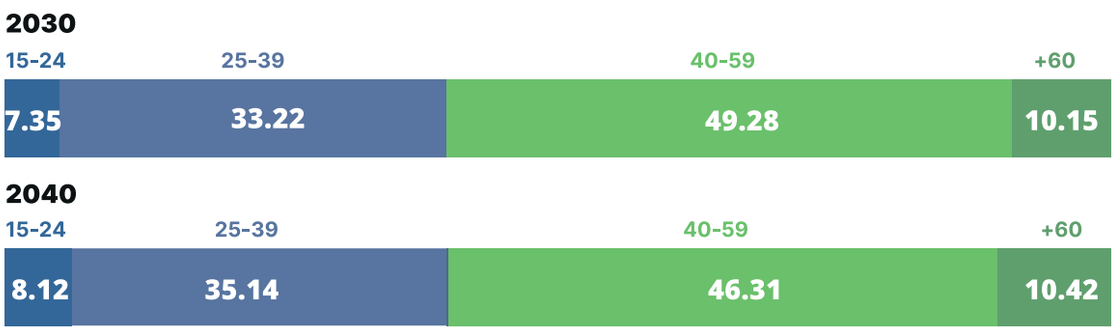
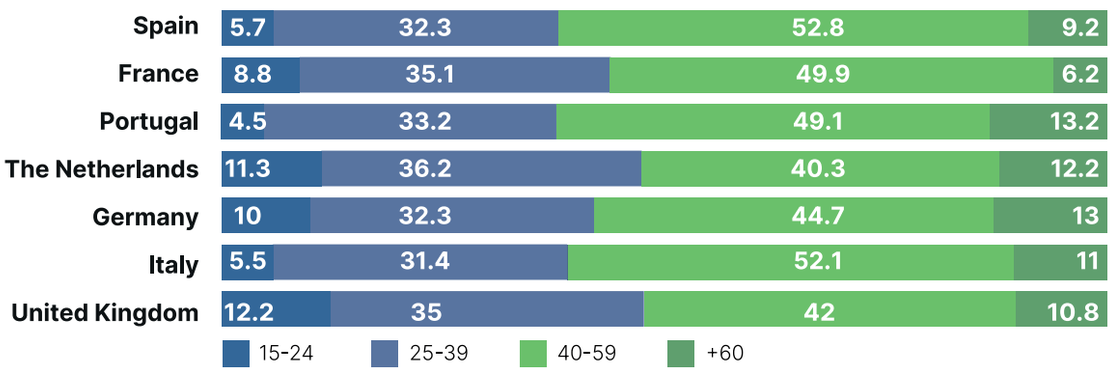


Fig. 11. Percentage weight of the different age groups in total employment in the sector in 2030 and 2040. Average age of 43 years.

Representation of Age Groups in Employment in the Analyzed Region in 2030 (%)



Representation of Age Groups in Employment in the Analyzed Region in 2040 (%)

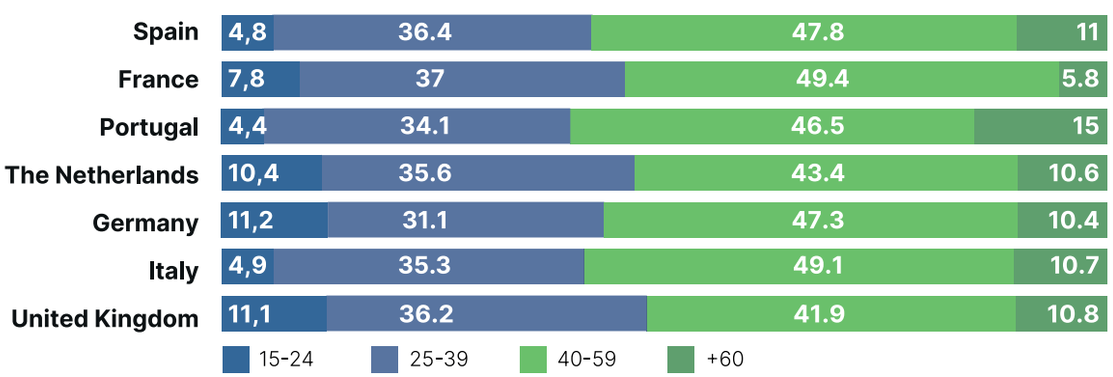


Fig. 12 and 13. Percentage weight of different age groups in the total employment by countries in 2030 and 2040, respectively.

If we look at the countries in further detail, we again see a reflection of their demographic compositions that do vary slightly in the projection to 2040. The over-40 age group is significantly higher than the area average in Italy, Spain and France in 2030. In fact, 59% of professionals in the sector in 2030 are over 40 years old, and 10% of them are over 60 years old.

In 2040, however, the share of the over-40s in this sectoral demographic pyramid falls by 2 bp, as a result of a greater incorporation of young people between 24 and 39 years of age, and a decline in professionals aged between 40 and 59.

A SECTOR FOR MID-LEVEL TECHNICIANS AND SKILLED PROFESSIONALS

Almost 67% of the occupations in the new jobs created by green molecules in 2040 are for mid-level technical professionals and trades, specialists in different fields, scientists, etc. Looking more deeply into the employment typology (direct, indirect, and induced), we see that direct jobs are mainly for scientists, mid-level technicians and officials and operators, while service workers and salespeople are more prominent in induced employment.

Weight of key occupations in 2040 (%)

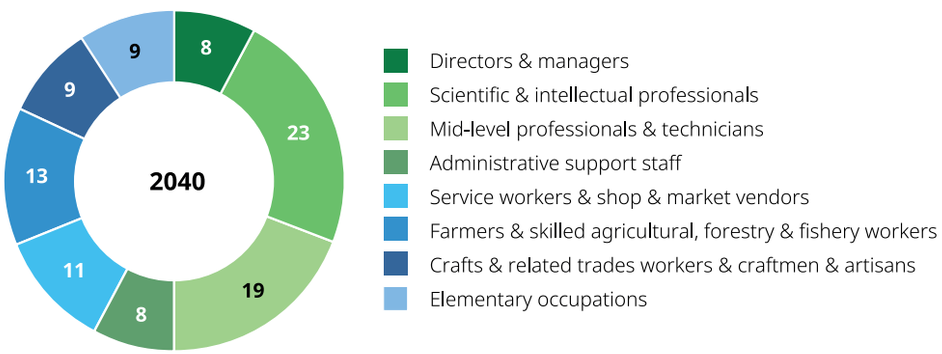


Fig. 14. Analysis of occupations in employment generated by green hydrogen and biofuels in 2040. Predictions based on Eurostat and ESCO data.

Table 3. Most Demanded Occupations in 2040 and Variation in Demand Compared to 2023

ISCO-2-digit classification		Total	Var 2023-2040
OC33	Business and administration associate professionals	9.1%	2,58
OC21	Science and engineering professionals	7.3%	3,67
OC52	Sales workers	6.1%	-0,69
OC31	Science and engineering associate professionals	5.9%	2,97
OC93	Labourers in mining, construction, manufacturing and transport	5.7%	2,89
OC24	Business and administration professionals	5.6%	0,60
OC25	Information and communications technology professionals	5.3%	2,78
OC72	Metal, machinery and related trades workers	4.9%	1,89
OC74	Electrical and electronic trades workers	4.6%	3,16
OC12	Administrative and commercial managers	4.5%	2,90
OC81	Stationary plant and machine operators	4.0%	1,84
OC51	Personal service workers	3.3%	-1,05
OC83	Drivers and mobile plant operators	2.8%	-0,90
OC43	Numerical and material recording clerks	2.5%	-0,44
OC71	Building and related trades workers, excluding electricians	2.3%	-1,31
OC13	Production and specialized services managers	1.9%	-0,29
OC34	Legal, social, cultural and related associate professionals	1.8%	-0,39
OC42	Customer services clerks	1.8%	-0,69
OC41	General and keyboard clerks	1.8%	-2,30
OC82	Assemblers	1.7%	1,13
OC22	Health professionals	1.7%	-1,63
OC44	Other clerical support workers	1.7%	0,56
OC26	Legal, social and cultural professionals	1.6%	-1,62
OC91	Cleaners and helpers	1.6%	-2,01
OC14	Hospitality, retail and other services managers	1.4%	-0,40
OC23	Teaching professionals	1.3%	-4,10
OC75	Food processing, wood working, garment and other craft and related trades workers	1.3%	-0,43
OC53	Personal care workers	1.3%	-2,91
OC35	Information and communications technicians	1.3%	0,18
OC32	Health associate professionals	1.1%	-1,67
OC94	Food preparation assistants	0.8%	-0,05
OC11	Chief executives, senior officials and legislators	0.6%	0,02
OC96	Refuse workers and other elementary workers	0.6%	-0,41
OC54	Protective services workers	0.3%	-1,35
OC73	Handicraft and printing workers	0.2%	-0,26
OC61	Market-oriented skilled agricultural workers	0.2%	-1,56
OC92	Agricultural, forestry and fishery labourers	0.2%	-0,52

Fig. 15. Weight of the different occupations, by level of representativeness in new generation jobs and their variation with respect to 2023 in basis points. Eurostat and ESCO, by ISCO-2-digit classification

A TECHNICAL SECTOR, WHERE SOFT SKILLS ARE PREVALENT

Following the conclusions in the previous section, the reader might be tempted to think that the jobs created in the heat of the green molecule economy will require mainly technical (or hard) skills. The evidence shows that this would be wrong.

The energy transition will require above all soft skills. Based on the European Commission's official classification (ESCO, Cedefop), the skills with the highest weight in 2040 for the almost 2 million new jobs in the sector are **Communication, Collaboration and Creativity (25.9%), Information Skills**, such as analytical thinking and data documentation (21.2%) a**nd Care and Assistance Provision, understood here as protecting and ensuring compliance with rules, guiding the team and providing information and public support (11.7%).**

Of course, the weight of these skills varies according to whether the job is direct, indirect or induced, but the dynamics are broadly similar across countries.

Weight of Major Skill Groups in 2040 in Europe and the United Kingdom (%)

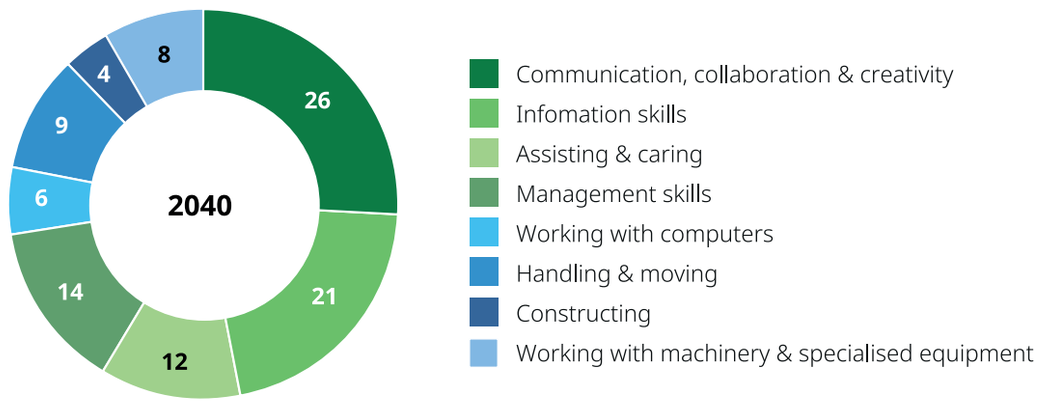


Fig. 16. Percentage weight of major occupation groups (ESCO) in the new jobs in the hydrogen and biofuels economy in Europe and the United Kingdom in 2040.

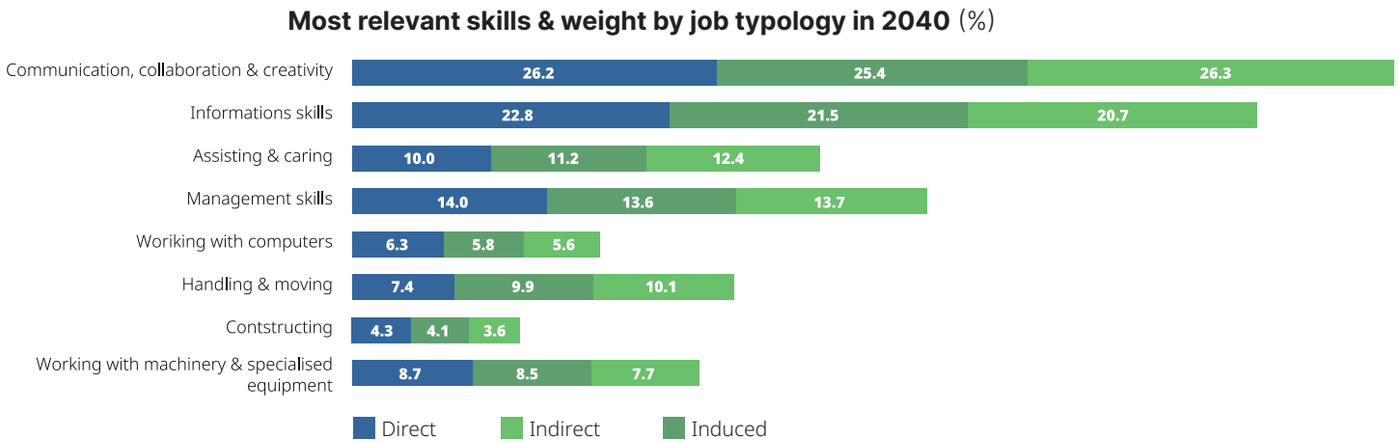


Fig. 17. Relative weight of the major Skills Clusters (ESCO) in new jobs in the hydrogen and biofuels economy in 2040, by type of employment (direct, indirect, induced).

Looking at the table below, once again **20 skills account for 70% of the skills most in demand in 2040 for the jobs that green hydrogen and biofuels will create**. Most of them are considered soft skills.

Tablel 4. Most Demanded Skills in 2040 in EU-27 and the United Kingdom (%)

S3.3	Protecting and enforcing compliance	8.55%
S1.2	Liaising and networking	5.21%
S2.8	Monitoring, inspecting and testing	4.83%
S2.7	Analysing and evaluating information and data	4.23%
S2.2	Documenting and registering information	4.18%
S2.1	Conducting studies, research and analysis	3.69%
S4.2	Organising, planning and scheduling work and activities	3.67%
S4.1	Developing objectives and strategies	3.20%
S7.1	Building and repairing structures	2.92%
S1.5	Providing advice and consultancy	2.82%
S1.6	Promoting, selling and buying	2.80%
S4.4	Performing administrative tasks	2.15%
S1.8	Working with others	2.14%
S4.3	Allocating and controlling resources	2.03%
S1.9	Troubleshooting problems	1.85%
S5.5	Accessing and analysing digital data	1.84%
S1.3	Teaching and training	1.69%
S8.6	Using precision instruments and equipment	1.68%
S6.11	Cleaning	1.66%
S1.13	Writing and drafting	1.65%
S1.1	Negotiating	1.63%

Finally, if we look at the variation between 2023 and 2040 of the most in-demand skills, we can clearly identify which are where there is the greatest mismatch today and therefore require more attention, and which will be less in demand in the future. In this sense, redirecting professionals towards the most in-demand skills will also help them in their future employability in the energy transition. **The greatest deviation between the current supply of skills and future demand is in the construction and repair of structures, data analysis (0.8 points), installation of electrical and electronic equipment (0.7 points) and the design and monitoring of tests, objectives and strategies (0.5 points).**

We see once again how the supply and demand for skills follows the logic of the permeability and evolution of the employment market itself in the period analyzed.

Variation in Skill Demand (2023-2040) in the Region (%)

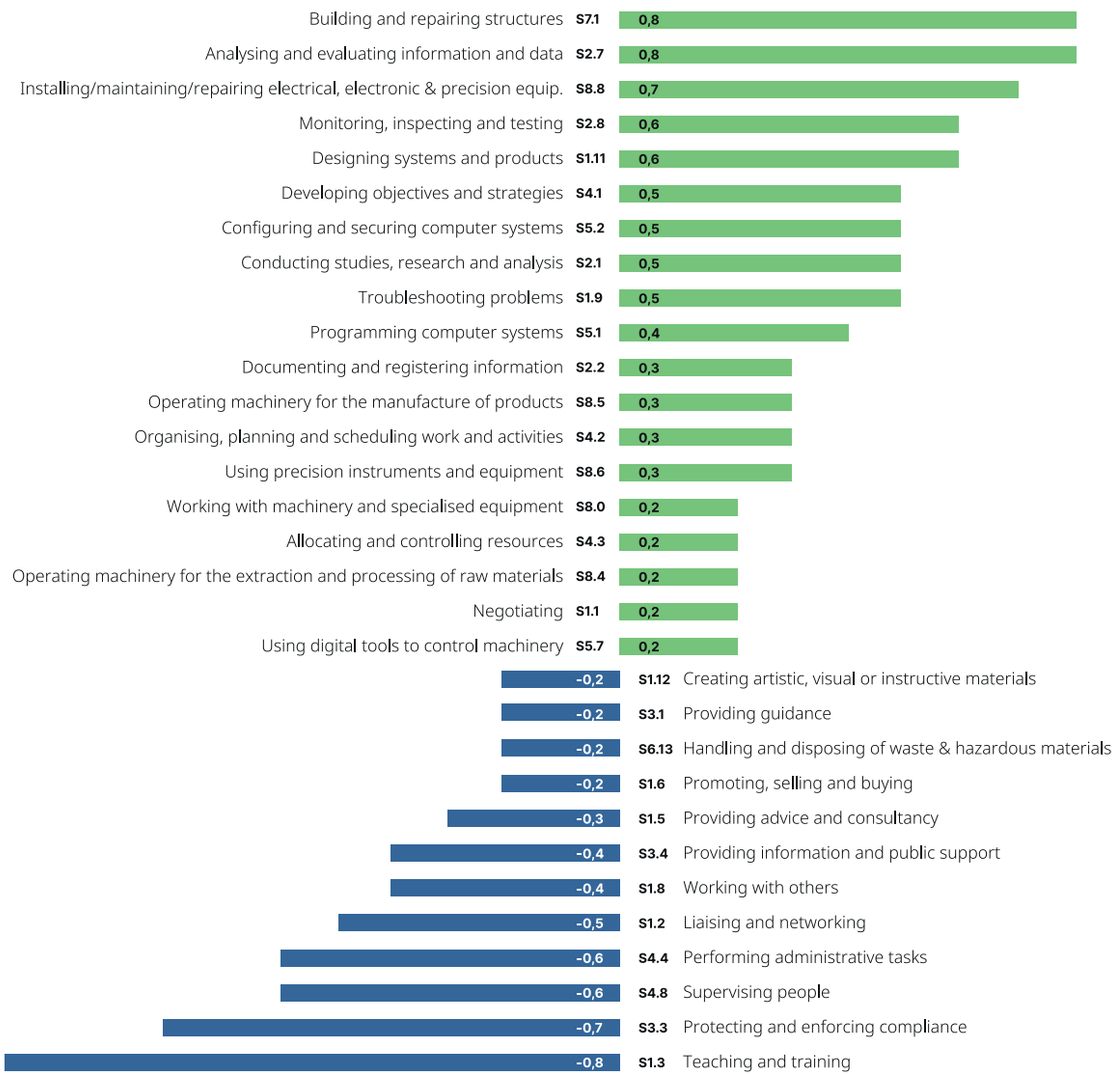


Fig. 18. Variation in skill demand in employment generated by green hydrogen and biofuels in EU-27 and the United Kingdom between 2023 and 2040.

MUCH MORE THAN EMPLOYMENT: GREEN SKILLS[5]

The European Union, through Cedefop and the European Classification of Skills/ Competences and Occupations, has been updating the definition and classification of skills as the employment market and the demand for professionals are updated. We can already see how it incorporates a categorization in its level 3 for Green Skills and even a level of what we could define as “greenicity” or, in other words, how many green subskills each identified skill contains.

In this section of the text ‘Green Molecules: The Upcoming Revolution in the European Employment Market’, we will delve into three interesting elements. Firstly, there is the European Union’s current classification of Green Competencies. Second is how much weight these Green Skills have in the composition of the new employment created by the hydrogen and biofuels economy in all the countries analysed in this study. And finally, we will present a ranking of countries according to the weight that Green Skills have in new employment in 2040.

Let’s start with ESCO’s classification of green skills. At the closing of the model of this work (December 2023), the list included 102 sub-skills (ESCO 3-digi.) of greater or lesser importance when deeming a skill green or not.

For the European classification, the greenest skills would be as follows:

S.3.3.2 Complying with environmental standards and regulations;

S.2.8.5 Measuring environmental conditions;

S.1.5.5. Advising on environmental issues;

S.2.7.4 Analysing business operations;

S.1.11.2. Designing electrical and electronic equipment and systems;

S.4.1.3 Developing policies and processes for corporate operations;

S.6.13.1 Handling hazardous materials;

S.6.13.2 Treating hazardous materials;

S.6.4.1. Land cultivation;

S.2.1.1. Market analysis;

S. 2.7.1. Real estate or rural land evaluation;

S.2.7.2. Analysis of scientific data;

S. 4.1.4. Legislative development;

S. 4.2.1. Operations manager; etc.

Note 5. Analysis based on European Hydrogen Backbone, European Commission, Eurostat, CEDEFOP, and ESCO data. The net value of greener skills is obtained based on the number of sub-skills (maximum disaggregation) classified as green.

What is evident from this prioritization is that the most critical green competencies in the eyes of the ***European Classification of Skills/Competencies and Occupations*** are directly related to environmental and compliance issues. **Although for the benefit of this study we have used this classification, as we will see below, it may be insufficient for the transformation managers of companies when addressing a change of corporate energy model.**

Green Skills and Their Relative Weight Based on Green Subcomponents

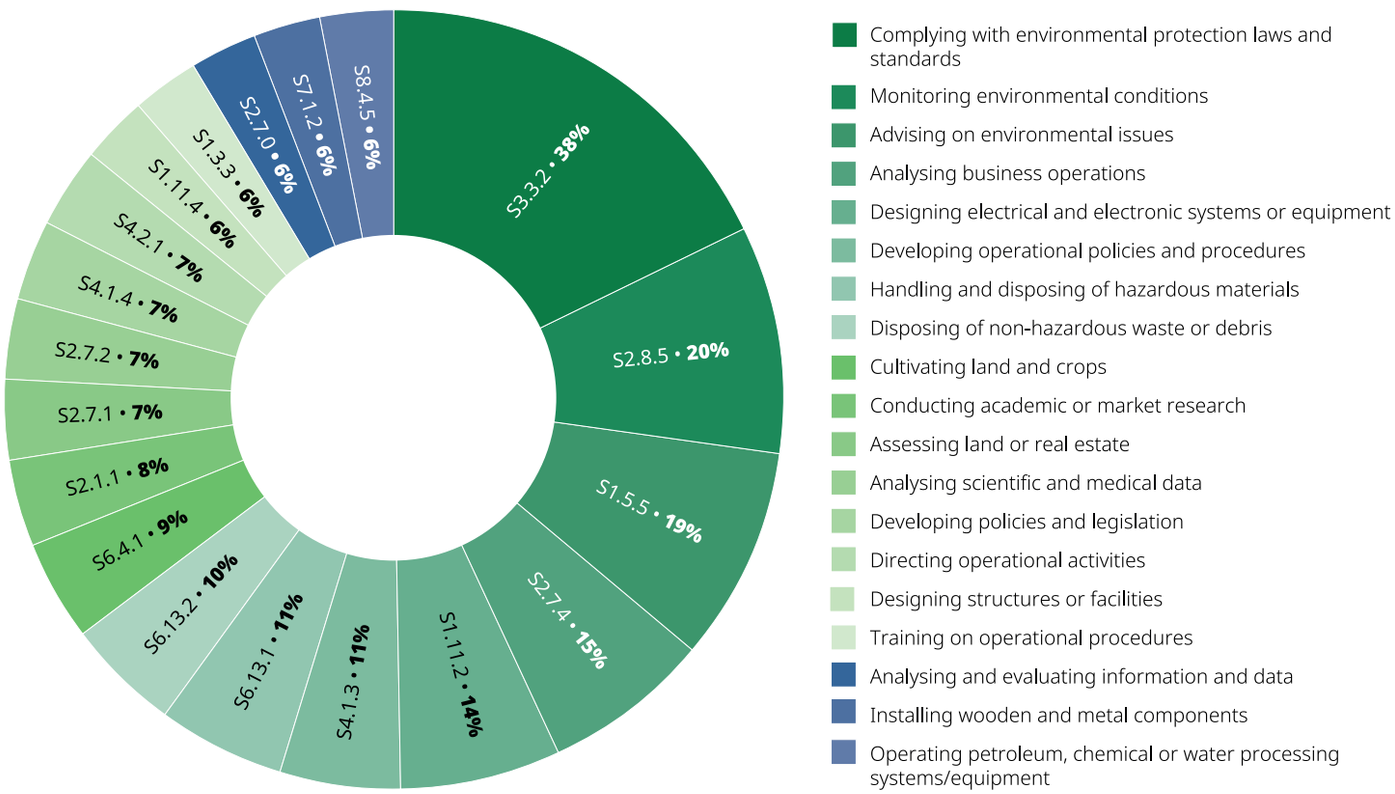


Fig. 19. Major green skills and their relative weight based on green subskills, considering ESCO and CEDEFOP data as of 2023.

On average, **the jobs created in Spain, France, Portugal, Germany, the Netherlands, Italy and the United Kingdom in 2040 will have 54.5% green skills, according to the European Commission's ESCO classification.** They are evidently more present in direct jobs, with 56.8% (remember that these are jobs in the energy sector), and their presence is increasingly less as we move up the value chain, until we reach 53.9% of the relative weight of Green Skills in induced employment.

In general, **all new jobs created by green hydrogen and biofuels over the next 17 years in Europe and the UK have a majority Green Skills component.** Insofar as they mobilise job creation, we can also say they drive the incorporation of Green Skills among European professionals in the coming decades.

Percentage of Green Competencies in European Employment in 2040 (%)

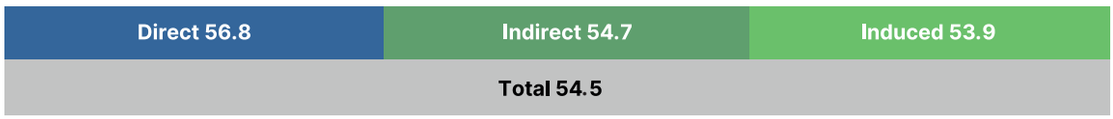


Fig. 20. Relative weight of Green Skills identified by ESCO in the composition of employment expected to emerge from investments in green molecules in Europe and the United Kingdom in 2040. Presented by employment type (direct, indirect and induced).

Lastly, if we compare the composition of jobs in each country in 2040 by the density of green skills required in each of them, we obtain the following ranking of countries according to their capacity to create green jobs. **Spain tops this list, with a 55.3% presence of Green Skills in new employment related to the green hydrogen and biofuels economy in 2040, followed by Italy (54.8%), the United Kingdom (54.6%), Germany (54.3%), the Netherlands (54.21%), France (54.05%) and Portugal (54.4%).**

This forecast also accentuates the gap between the Green Skills knowledge of current professionals in these countries and their future projection. **Italy (2.8 points) and Spain (2.6 points), followed by Germany (2.2 p.), the Netherlands (1.8 p.) and Portugal (1.7 points) are the countries that will have to make the greatest effort to achieve the green job projection.** Only France, at 1.1 points behind, seems more prepared for the energy transition and the jobs created by the green hydrogen and biofuels revolution[6].

Note 6. For more details, please refer to the appendix included at the end of the text.

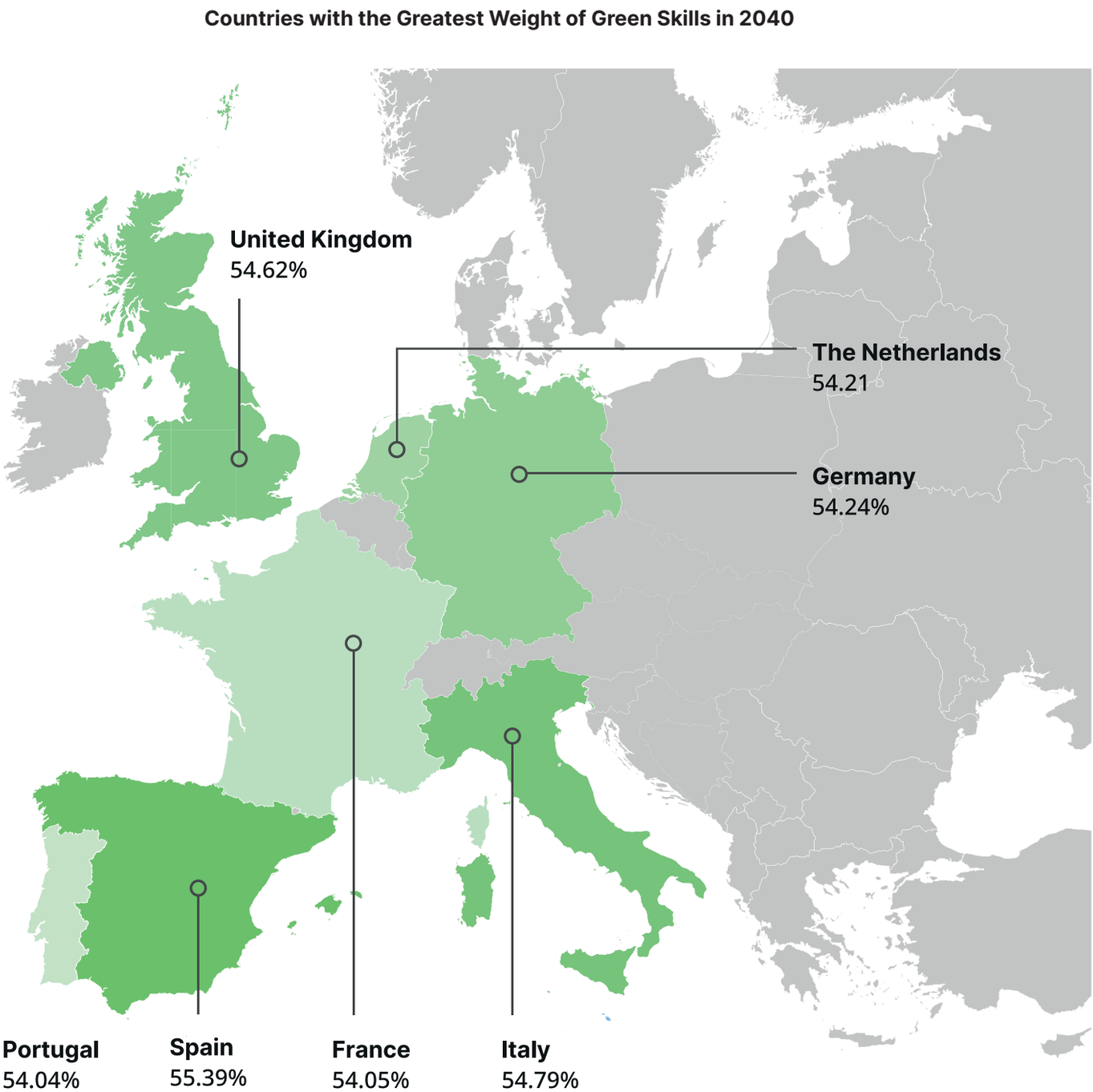
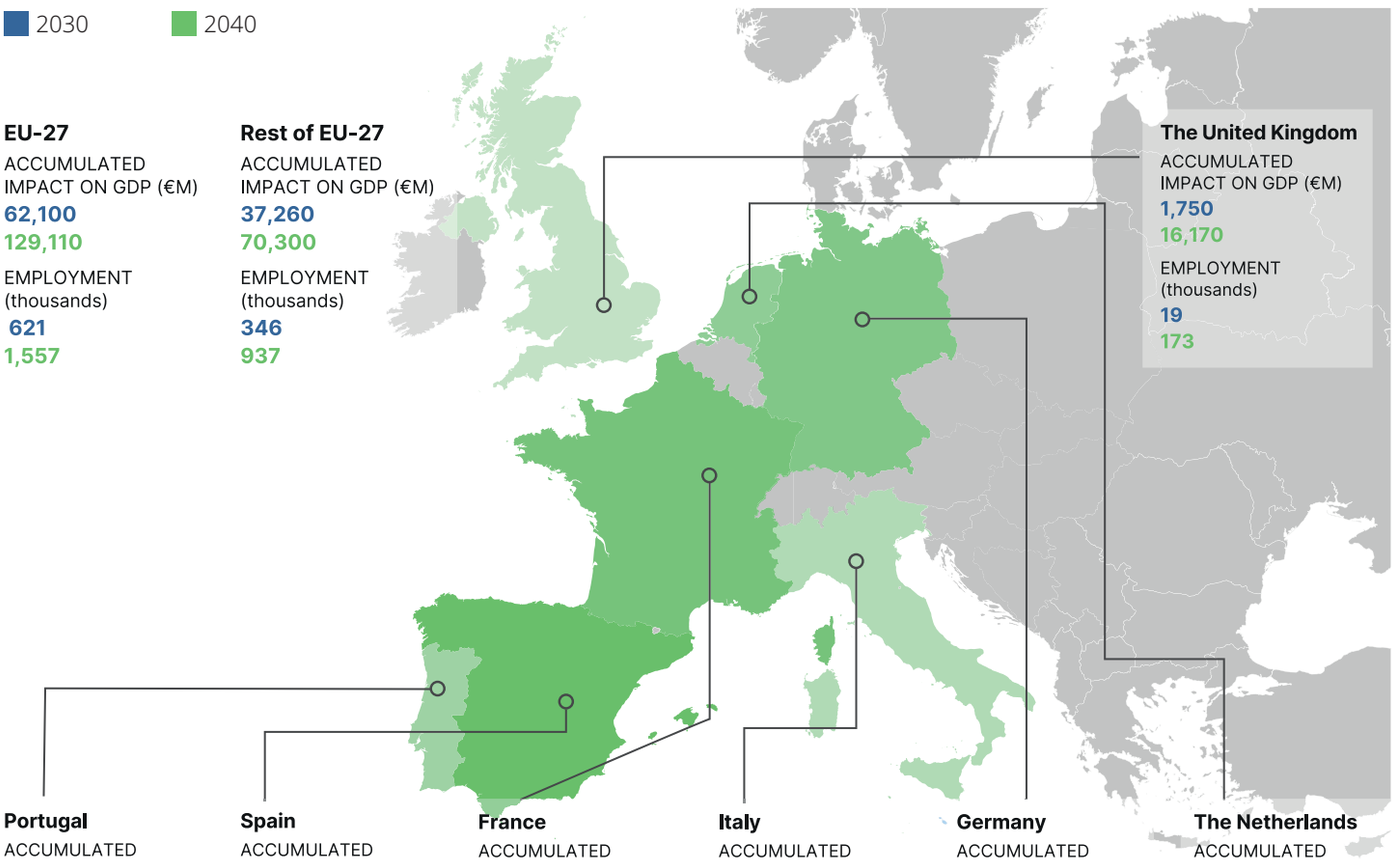


Fig. 21 Comparison of the analyzed countries based on the relative weight of Green Skills in the composition of employment expected to be generated in 2040.

THE IMPACT OF THE GREEN MOLECULE ECONOMY ON EMPLOYMENT IN THE COUNTRIES ANALYSED.

The energy transition driven by green hydrogen and biofuels will create its own employment model, as we have seen, which will demand specific professionals and skills along the entire supply and value chain. We will see below how this impact breaks down in the different countries covered.

In addition, we will look at the ISCO classification of occupations developed by the World Labour Organisation to draw as detailed a map of employment by country as possible.



MUCH MORE THAN NUMBERS: QUALITATIVE ELEMENTS OF EMPLOYMENT IN THE ENERGY TRANSITION

CEPSA ManpowerGroup

TALENT SHORTAGE OR MISMATCH? LET'S TALK ABOUT THE TALENT GAP.

It is paradoxical that in markets such as Spain, Greece and France, with an unemployment rate of 11.6%, 10.8% and 7.2% in July 2023, respectively, 8 out of 10 employers claim to have problems finding professionals for their vacant positions. With this logic, one can understand why 90% of Taiwanese and 85% of Hong Kong employers say the same, when their unemployment rate is around 3%, or even 1.9% as is the case in Singapore. Is there a lack of professionals? Do companies know how to estimate what they need?

Looking forward to an answer, the authors from "Green Molecules" we drew on the knowledge of the director and president of the Centro Nacional del Hidrogeno and the Centro Andaluz del Hidrogeno, in Spain.

On the one hand, Francisco Montalbán, President of the Andalusian Hydrogen Cluster, states: *"Hydrogenerators and their maintenance are going to require engineers, welders, electronic technicians, mechanics, installers with gas certificates... All of them are vocational profiles. Current vocational training offers basic hydrogen studies, but specific modules are needed"*, adds Javier Brey, President of the Spanish Hydrogen Association: *"In undergraduate education there are no subjects related to hydrogen, especially in technical engineering. And there is a need for this at all levels of training: Vocational training, masters and retraining profiles"*. In this way, *"The first professionals working in green hydrogen have to do everything, multitasking: manage subsidies, grants, know the stock market..."* states Brey. All this in order to move forward with the energy transition programme in the tightest possible timeframe.

TRAINING CHALLENGES: *UPSKILLING*, *RESKILLING*, *NEWSKILLING* AND OTHER CLASSIFICATIONS

To address the skills gap, relevant options to be considered are:

MASTER'S DEGREES

There are official master's degrees in Hydrogen:: in Spain, the University Master's Degree in Hydrogen Technology of the University of Zaragoza, accredited by the European Accreditation of Engineering Education (EAEE); and the University Master's Degree in Hydrogen and Renewable Energies of the Technical University of Madrid, accredited by the Accreditation Board for Engineering and Technology (ABET). At the European level, the Aalborg University in Denmark or the Coventry University in England have specialised programmes in hydrogen, and at the global level, Standford University stands out.

VOCATIONAL TRAINING

Considering that 48.7% of European students prefer vocational training over other educational options in 2021, according to Eurostat, there is still a long way to go. Among the countries covered by this study, only Italy (52%) and the Netherlands (68.7%) exceed the European standard; Spain stands at 38.7%, just one hundredth of a percentage point below Portugal (38.8%).

NON-REGULATED TRAINING

Understood as a tool for professional reskilling, Understood as a tool for professional reskilling, non regulated training can modulate career parths and thus help the reconversion of professionals who are working, or not, and have the potential for development in the new economic context. In particular, non-regulated training could help accelerate the creation of skills and talent associated with growing sectors that could benefit from the agility and capacity of private investment, in collaboration with public advice and oversight.

GREEN ACADEMIES

The European Net Zero Academies are a clear linchpin to accelerate and develop specific training programmes on the energy transition throughout Europe, to solve talent and skill gaps in certain occupations and regions, to develop specific sectoral initiatives, to serve as an observatory of green skills by region or sector and to facilitate synergies to reduce gaps

LABOUR MARKET **MOBILITY**

Initialy understood as geographical, but also cross-sectoral and intergenerational, labour market mobility can help regions converge in the energy transition.

The European Commission's latest annual report on intra-EU labour mobility indicates that, after a marked decline in 2020 due to pandemic restrictions, there were some 1.7 million cross-border professionals in the EU in 2021, with Germany, Switzerland and Luxembourg being the destination countries (almost 60%). Clearly, intra-EU labour mobility is not responding to the sectors and locations that are critical for the region's energy transition.

SOCIO-DEMOGRAPHIC CHALLENGES: FROM POPULATION AGEING TO THE CONVERGENCE OF WOMEN IN THE WORK FORCE

Europe is ageing. The energy sector is not an exception, but a reflection of what is happening in society; the population pyramids in Europe and Spain are inverted, reducing the active population and increasing the gap between future positions and available professionals.

Rethinking the traditional linear career concept

People with more than 30 years of experience in the hydrocarbon sector can make a difference in the renewable energy transition. Making companies friendlier to senior talent and more permeable to generational diversity allows more time for the transfer of knowledge to new professionals, among other advantages.

Mainly male-dominated sector

It will take years to achieve gender equality in energy sector teams.

The energy sector, and more specifically the renewable energy sector, could be a pole of attraction for female talent in the near future. Research carried out by the Instituto de Empresa and the Cepsa Foundation, "Energy transition and gender equality: opportunities for Spanish youth", reveals that young women are more environmentally aware than men, which makes them more likely to work in areas linked to the environment and new energies - 74% of women support a pro-ecological worldview compared to 71% of men.

THE HARDEST ONE YET: DIGITAL GREEN SKILLS
A CHALLENGE CONVERTED INTO AN OPPORTUNITY

The most in-demand profiles alternate between green and digital skills: artificial intelligence specialists, sustainability technicians, cybersecurity experts and renewable energy engineers. The digitisation of the energy system is a political priority and is linked to the European Green Pact and the 2030 Digital Decade Policy Agenda as a double transition. EU digital and energy policies are already guiding the digitisation of energy, as issues such as data interoperability, security of supply, cybersecurity and privacy are key to the new energy model.

One last angle is missing in this triangle: soft skills. Thus, professionals with digital knowledge, soft skills and experience in the energy field are set to be "super-professionals" in 2023.

WILL WE BE ABLE TO **SEIZE THE SPRINGBOARD?**

We have everything in our favour: we have sized up the opportunity to improve the EU's competitiveness and industrial leadership, there is specific regulation and investment, and organisations are making great strides in retraining professionals. In the latest clean energy technologies competitiveness progress report, the European Commission states that the EU is better prepared to ensure its energy security than it was three years ago. It is increasing its investment in R&D&I through tools such as the Clean Hydrogen Joint Undertaking, to incentivise research and innovation in hydrogen technologies in Europe. It has also passed two key pieces of legislation, the Net Zero Industry Act and the Critical Raw Materials Act, which aim to strengthen the value chain and build a strong domestic manufacturing base.

10 PROPOSALS FOR BUILDING A NEW LABOUR MARKET IN THE ENERGY TRANSITION

CEPSA ManpowerGroup

We have already seen how one of the major concerns of regulators, institutions and companies in the challenge of the energy transition is to ensure that all of society has access to the benefits and opportunities that come with it. The eternal struggle in the world of employment to reduce the inequalities between those who have and do not have the skills that enable them to remain employable and compete in the changing economic and employment context.

The work of 'Green Molecules: The Upcoming Revolution in the European Employment Market', would not be complete without a summary of concrete, necessary and immediate proposals. Let these last pages serve as a call to action.

MATCHING THE DEMAND FOR PROFESSIONALS WITH THE SUPPLY OF COMPETENCIES

According to data from ManpowerGroup of 2023, **7 out of 10 companies worldwide are looking for or planning to hire professionals with green skills**, or for positions where they will have to perform tasks related to the energy transition. Some 94% of employers report having some kind of problem finding these same skilled professionals. And at the same time, projections (such as those in this text) announce unstoppable employment opportunities in the future. Is it possible to match these realities? Is it possible to minimize the Talent Gap?

Measuring the skills gap

Estimating companies' specific need for skills. Skill (and not position) becomes the lowest denominator when it comes to identifying the indispensable knowledge in the company to address the corporate energy transition.

Encouraging constant upskilling

Incentivising the constant upgrading of skills. In other words, upgrading skills which insist that professionals should strive for continous skills upgrading, keeping them constantly updated.

Easy access to a list of power skills

Accessibility of key knowledge or "power skills", by sector. Current training must respond to the characteristics of the skills most in demand in each sector; this list must be easily accessible both for professionals and for academic or training institutions.

Collaboration

Public-private and private-private collaboration as a gear so that the above equation is agile and benefits as many professionals as possible. In this way, it will also have an earlier impact on companies and, therefore, on the economy.

Extended dual training

Accelerating the incorporation of professionals into the labour market through transition stages, in which training and real experience overlap. In other words, extending the concept of Dual Training to other educational stages, such as university.

RETHINKING THE UNIVERSITY SYSTEM

As we can see from the econometric analysis, all European countries will need mid- and senior-level scientists and engineers in the next five and seven years. Are there already as many as are needed?

Throughout the study, we have seen how a large number of positions will require middle and superior scientific training, as well as engineers and IT experts. However, most require skills that are currently found in middle, technical or unregulated levels of education. This encourages us to consider not only the speed with which the university - as we understand it today - can respond to the needs of the labour market, but also the actual size of the pool of professionals with this type of higher education.

It is one of the most difficult issues to address in this text, one that even includes the failure or frustration of students who choose higher education courses that will not provide them a job, because the university offers more student slots than the labour market does jobs. Nevertheless, we believe that this is an important area deserving of analysis.

Among other measures, we propose the following:

- **Estimating how many professionals with higher education training will be needed**, in which modalities and in which geographies. This study could serve as a starting point for a possible European employment map.
- **Updating knowledge** in line with the new techniques and technologies that define the **real energy transition**.
- **Accelerating the time it takes for professionals to enter the labour market**.
- Fostering the connection with the company, so that **teachers and students have a closer look at the corporate reality they will be facing**.
- As in the case of vocational **training, creating university specialisations linked to the energy transition**, accessible to students from any geography, which will provide in-depth knowledge of present and future techniques and technologies, in such a way as to also **stimulate the appetite for research**.
- Further exploring the concept of **Dual University** so that qualified professionals arrive faster to the workforce.

The role of private companies, research centres and experts in the field on university advisory boards is key to this proposal. Whether they are public or private, coordination between the different agents in the chain would make it possible to keep the range of training courses on offer up to date, ensure that teachers have extensive knowledge and that students have previous experience in the professional field. If this model of collaboration were to take root in public institutions, it could help to bring the employment opportunities created by the energy transition within the reach of any European citizen.

THE KEY ROLE OF **VOCATIONAL TRAINING**

The weight of secondary and technical education in the hydrogen economy has been demonstrated in the pages of this study. When it comes to getting a job, 80% of vocational training find one compared to almost 60% of general education graduates. However, vocational training remains unattractive in all geographies, with student participation ratios ranging from 52% in Italy to 38.7% in Spain in 2021. The European average is 48%.

- Commit to the **Dual vocational training model as an accelerator** of access to the labour market and recruitment.
- Encourage **training in soft skills** to be more present throughout the training cycle, taking into account the forecast of this study on its indispensable role in future employment related to the hydrogen economy.
- Align **training provision with public-private investment decisions** by sector and geographical area, so that the Vocational Training model's effectiveness improves and helps alike to retain talent in a determined area.

NON-REGULATED TRAINING AND TALENT HUBS

Companies spend at least €1.000 per year on training for each employee, with multi-million dollar budgets in the case of large employers and corporations that require more technological updatingv. It is difficult to anticipate the impact on training costs that the energy transition will have on organisations, but we have a reference in our ongoing digitalisation process. According to data from Experis (ManpowerGroup), Spanish companies spend on average more than €2 million on training their employees in digital skills.

In the course of this text, we have already anticipated that the energy transition involves an operational change as profound as the digital one. In fact, they overlap. Therefore, investment figures could exceed any previous numbers.

The authors of this study believe it is important for companies to focus on and consider as soon as possible different elements that will help them adapt their operations to the new energy reality:

- Consider **non-regulated training, provided by centres of reference in the hydrogen field**, as an opportunity to solve the need for skills and trained professionals in the short term.
- Dedicate resources to **supervising and coordinating different training options** to avoid duplicated content and its actual validity, to improve its usefulness and, above all, to not disorientate the professional.

- **Collaborate with public institutions to build a training catalogue** in line with their needs. Companies are ultimately responsible for their own energy transition and can contribute enormously to ensuring that training courses respond efficiently to their talent needs.

Professional experience in the company itself makes them hubs for the creation of talent; especially those that are immersed in their energy transformation. The figure of bodies to certify or accredit professional competences would be useful.

A COMMITMENT TO **DIVERSITY**

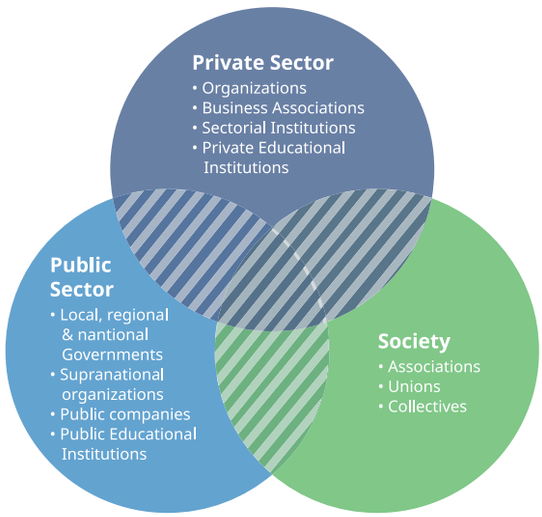
The demographic evolution of the countries analysed (tending towards an ageing population, with women increasingly present in higher education), as well as the regulatory and incentive commitments, define a socio-demographic context of employment in the hydrogen economy that is diverse. But not equitable.

The data in this study define the latent opportunities in the energy transition:

- **Greater participation of women in the employment market**, through the incentive of female vocations in the technical and technological careers most in demand for the energy transition.
- **Increased training in key skills for senior professionals**, who will account for 50% of the workforce in countries such as Spain by 2030.
- **Intense transfer of knowledge among current employees** of companies, through reverse coaching programmes, which foster collaboration, intergenerationality and, most importantly, permanence and corporate growth.
- **Incentives for the reskilling of professionals**, in particular the retraining of skills between converging sectors such as training on the hydrogen and biofuels sector for individuals from the fossil fuel sector, or retraining car maintenance technicians with experience in the combustion engine on the electric motor.
- **Corportate entrepreneurship** linked to the energy transition.

PARTNERSHIPS, PARTNERSHIPS, PARTNERSHIPS...

Everything mentioned in this study is impossible without decisive collaboration between companies, between institutions, between professionals and between organisations at different points in the chain. We are facing the unavoidable reality of the energy transition. We have already identified clear lines of action. It is now a matter of creating the meeting points, identifying resources and deadlines, and implementing them. **We have just 17 years ahead of us to seize the opportunity of the green molecule economy.**



TALENT WITHOUT BORDERS

One of the consequences of the COVID-19 pandemic and the subsequent economic crisis has been a return to local production and distribution networks in large companies, to avoid supply disruptions. The proof that remote working was acceptable for some positions and specific tasks and the growing Talent Gap in many sectors have resulted in a search for talent across geographical borders. We are committed to turning this reality into an opportunity for the economies of the countries analysed, through the following:

- **International lines of collaboration to improve the skills** of the professionals.
- Networks of partners in the different countries, and inside the countries, **to promote vocations in the sector**.
- Policies towards **encouraging the geographical mobility of professionals**, both through public and private measures, in order to carry out projects ranging from one-off projects (construction of hydropower plants, for example) to profound cultural transformations (dissemination of the use of hydrogen as a domestic energy source, as a suggestion).
- **Working groups to anticipate new challenges** in labour relations, incorporating all social agents.

DISSEMINATION

The energy transition will transform all sectors, companies and professionals, not only those directly linked to energy. We must understand it as a second "digitalisation" of the economy, in the style of the great technological change of recent decades. In the same way that digital skills are a basic element in role descriptions today, green competences are destined to become transversal and indispensable for any type of work. The difference is that we had several decades to adapt to the first change; for this energy change, there are only 15 years left.

It is essential to build an immediate and ambitious dissemination programme that not only generates interest in the new energy solution, but also raises awareness of the opportunities and uses it offers. The list of initiatives is long:

- **Education programmes in schools** at an early age on the uses and opportunities of green molecules.
- **Alliances with Consumer Associations** toward improving the knowlege and understanding on Green Technologies and Energy Transition alike.
- **Media campaigns and social media platforms.**
- **Knowledge and best practice exchange** programmes between countries.
- **Visibility initiatives and awards** for leading companies and professionals.

There are many companies that have been promoting initiatives to bring green hydrogen closer to citizens. The Aragon Hydrogen Foundation is disseminating information from an early age, with visits to its facilities for primary and secondary school students. The CSIC has science teaching programmes in schools from the earliest stages of education, with teacher training, workshops and presence at fairs and museums. Its Cicerón program dedicated to hydrogen production, available on YouTube, is very interesting. Another line of action is on the Renewable Hydrogen Roadmap, and it is to set up a general information point at the *Instituto para la Diversificación y el Ahorro de la Energía* (IDAE) on hydrogen technologies and their possibilities.

ATTRACTING AND ENGAGING TALENT

The energy transformation of companies will be the main source of job creation in the world over the next five years. At the same time, consumers are increasingly sensitive to the energy and environmental commitment of companies, prioritising both their purchasing decisions and their choice of companies to work for. Until 2023, the ESG commitment was a differentiator, but in the midst of the energy transformation, what will make the difference between companies is their ability to lead. Companies need to consider ESG as part of their Employee Value Proposition, as it is also a top-of-mind request for new and younger hirings.

What do professionals take into account when choosing a company? Flexibility, work-life balance, inspirational leaders, etc. and, even more important than financial remuneration, specific policies on energy efficiency.

The costs of attracting talent are enormous at a time of a record global Talent Gap (75% of companies report problems finding the skills they need, either because of a shortage of professionals trained in the skills they need or because of immobility in the employment market). Similarly, the costs of professional turnover are an important addition to corporate balance sheets (in Spain, the average cost is between €15,000 and €20,000 per person). Considering the above:

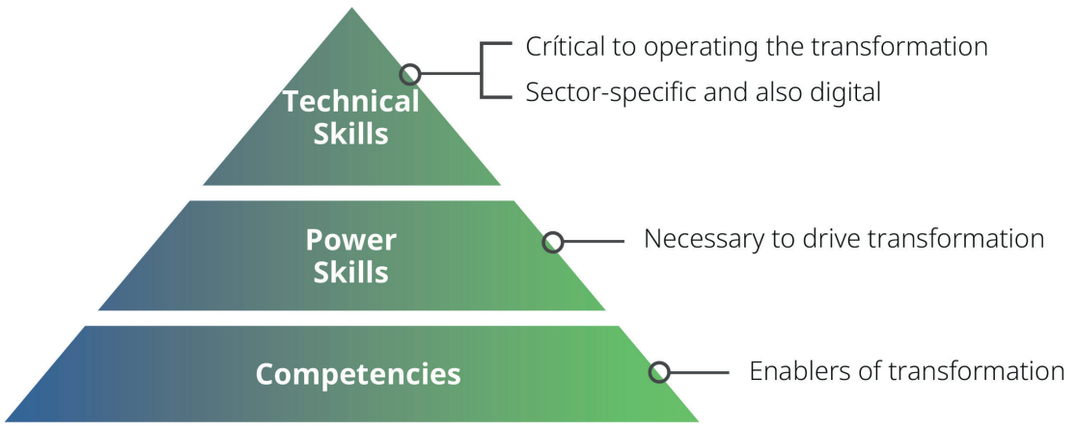
- **Accelerate their energy transition strategies** and incorporate the added value of green molecules into their efficiency expectations.
- **Desing Employee Value Propositions** that address the reality of the energy transition now.
- **Adding messages in any relevant communications** that break down the company's commitment to the energy transition.
- **Involve employees and other stakeholders** in the design of their energy transition programmes.
- **Create specific attraction campaigns targeting all the underrepresented groups** (mainly women and young people).
  In short, reinvent the Human Resources function for the energy industry.

NEW SKILLS MAPPING FOR THE HYDROGEN ECONOMY

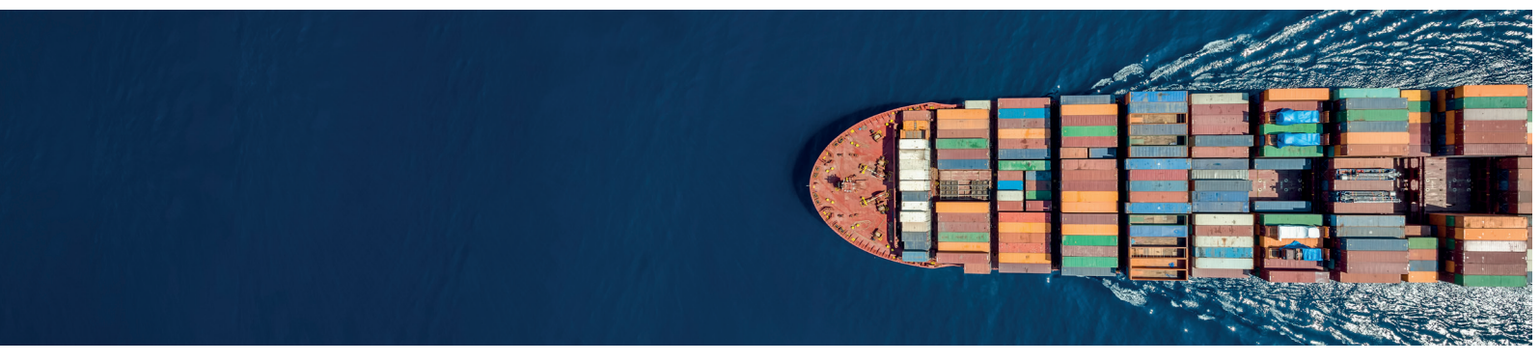
It is time to evolve the classification of skills related to the energy transition and expand the list and definition of skills related to green molecules.

Companies embarking on an internal skills analysis process in 2023 in order to address the energy transition and anticipate the reality of 2030 may find that the current literature is limited to their ambition. They are therefore faced with individually developing their own transformation programme.

In these pages, we propose a new classification of green skills that is more appropriate to the reality of the energy transition based on green hydrogen and biofuels. We distinguish among three groups of indispensable competences:



Although the current European classification has made significant progress in the recognition and description of skills related to the digitisation of companies, we believe that it is necessary to further develop those that affect the energy transition and, in particular, green molecules. This is a task that we urgently need to tackle in anticipation of the major transformation of the world of employment that is imminent.



CONCLUSIONS

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We come to the end of this paper with the feeling that we are only at the beginning of a major stage of transformation. Few of our contemporaries will have the opportunity to say that they have been the driving force behind this profound change in the economy and society, but we will all be able to say that we have experienced it. It is now about choosing to participate and actively driving the process, making sure that the opportunities that are opening up reach the hands of many - if not all. We are a Digital generation making way for a Green Generation to which we can bring the lessons learned from the past decades. **This text is a commitment to the best of what the reinvention of the world of employment that comes hand in hand with the energy transition can bring to society.**

'Green Molecules: The Upcoming Revolution in the European Employment Market' brings to the table not one, but two unique opportunities: the creation of net jobs and their consequent generation of value across Europe and the UK; and, at the same time, the valuable definition in number, location, level of education and skills that those jobs will have. A 17-year timescale gives us an ample margin to activate the levers that will enable public education institutions to create the talent needed, in partnership with the private sector. And, simultaneously, to design a public-private collaboration formula that puts the different countries analysed on a powerful and enriching path of global competitiveness.

Although this text focuses on the domestic market of the EU-27 and the United Kingdom, it is important to remember that in the next three decades the weight of countries such as the United States, China and India in the composition of the energy market and their role in the energy transition itself may make the measures described in section 6 even more urgent. It is also important to keep a global perspective when contextualising these conclusions.

1. **The energy transition will create net employment throughout the value chain**, all the way down to the private consumer. And it will improve aggregate and country GDP figures.

2. The energy transition should not be understood as a development but as **an employment market revolution, overlapping with and amplified by the digital one.**

3. **Professionals will have opportunities to obtain quality employment and access the desired and fair transition,** as long as companies and public institutions coordinate in the identification of opportunities, the size of talent gaps and the definition of specific training.

4. The commitment to the energy transition through green molecules in Europe and the United Kingdom represents **an opportunity for the region's competitiveness vis-à-vis the rest of the world.** It is an opportunity that involves both companies and citizens.

5. Companies are committed to attracting talent, creating spaces for coexistence and inclusion and continuous learning environments. The energy transition and professionals' new preferences are driving companies to **undertake profound internal transformation processes that will allow them to remain competitive or even be a benchmark** in the new energy model.

6. Skill becomes the **basic management unit,** as opposed to traditional positions, to manage the transformation of organisations in the new framework. **Those responsible for human resources and people operations are even more relevant elements** in the sustainability and competitiveness of organisations, as they manage not only professionals, but also the company's own skills bank.

7. The comparison by country shows the greatest challenges and opportunities for each of the areas analysed, which **the different social agents must address under the umbrella of a fair and transformative energy transition.** A clear example is the different rate of incorporation of women into the sector in the Netherlands compared to Spain, for example.

8. The European regulatory framework is advancing in measures such as Net Zero Academies, while there are still major differences between countries when it comes to promoting vocational education or synchronising the supply of regulated training and the demand for professionals. **Green academies are an interesting figure** for resolving talent gaps, but also for offering a space for dialogue between the different agents and favouring initiatives that can be implemented quickly.

9. It is time to extend knowledge of the energy transition beyond the academic and professional sphere, **and take it to personal environments, schools and home**s. In a way that is didactic, easy to understand and practical for everyday citizens, this would create a much more widespread awareness of the desirability of the transition, of sustainable consumption and of the opportunity at the individual level.

10. Finally, we need to take the analysis out of the pages of a book and translate it into concrete, far-reaching actions. This text comes with a parallel activation plan that aims to respond to this premise. **It is time for action.**

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