

ELECTRIFICATION
ALLIANCE



ELECTRIFYING EUROPE

HOW ELECTRIFICATION IS
SWITCHING ON JOBS AND SKILLS



ELECTRIFYING EUROPE

HOW ELECTRIFICATION IS SWITCHING ON JOBS AND SKILLS

VALUES

- ENTREPRENEURSHIP
- CREATING NEW BUSINESS MARKETS
- INTEGRATING TECHNOLOGIES TOGETHER
- FAST-GROWING INDUSTRY
- NON-RELOCATABLE JOBS
- LOCAL JOBS
- PURPOSEFUL MISSIONS

ELECTRICAL CONTRACTORS



270,000

additional jobs in renovation by 2030¹

400,000

additional jobs in the deployment of rooftop solar PV, battery storage and electric vehicle charging points by 2030²

ELECTRIC VEHICLE PROFESSIONALS



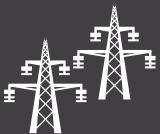
580,000

new jobs in the EU by 2030³

+34%

of jobs in growing adjacent markets such as energy production and charging infrastructure⁴

GRID EXPANSIONISTS



500,000

new jobs by 2030⁵

HEAT PUMP TECHNICIANS



ALREADY

161,000

people working in the European heat pump industry today

NEED FOR

500,000

full-time equivalent by 2030⁶

SOLAR SPECIALISTS

1 MILLION

additional direct and indirect jobs in the EU solar industry⁷



BY 2050

4 MILLION

people could be employed in solar sector jobs in Europe⁸

WIND WORKERS

Currently, wind employs

300,000

people in the EU



BY 2030,

450,000

people could be employed in the EU wind industry⁹

DIGITAL WIZARDS



Digital skills are transversal skills that are needed everywhere

- https://europe-on.org/wp-content/uploads/2021/07/EuropeOn_Job-Potential-Study-2021_Public.pdf
- https://europe-on.org/wp-content/uploads/2021/07/EuropeOn_Job-Potential-Study-2021_Public.pdf
- <https://www.platformelectromobility.eu/2021/09/24/our-key-findings-and-recommendations-to-make-the-european-green-deal-an-employment-success/>
- <https://www.platformelectromobility.eu/2021/09/24/our-key-findings-and-recommendations-to-make-the-european-green-deal-an-employment-success/>
- <https://www.eurelectric.org/news/pr-connectingthedots/>
- https://www.ehpa.org/2023/01/26/ehpa_news/wanted-half-a-million-heat-pump-installers/
- https://api.solarpowereurope.org/uploads/SPE_EU_Solar_Jobs_Report_September_2022_5925da42fc.pdf
- <https://www.solarworksplatform.org/>
- <https://windeurope.org/intelligence-platform/product/wind-energy-and-economic-recovery-in-europe/>

INTRODUCTION

REWIRING THE SYSTEM

I think we made it clear now and again that electrification is our end-game in many areas.¹

FRANS TIMMERMANS

European Commission Vice President

A new industrial revolution is happening in Europe and it is electric.

The war in Ukraine and the latest report from the Intergovernmental Panel on Climate Change² are proof, if more were needed, that the EU has no choice but to step up its efforts to decarbonise.

Electrification is widely recognised as the future of a low-carbon EU energy system. It is based on reliable, well-known technologies that are already being applied in many sectors, like transport, industry and buildings, and it is increasingly powered by renewable energy sources like wind and solar, supported by demand-side flexibility and the enabling role of grids.

Electrification is not just good for the climate. It is boosting the European economy by creating jobs and skills across the workforce, while lowering energy bills for industry and consumers.

To foster a just transition that is green and digital, electrification must become a top priority for Europe's climate and social agendas at the EU level and in all European countries. By attracting and training more workers in electrification-related positions, policymakers will successfully address decarbonisation, create a full-employment economy and boost social support for climate change. Electrification will secure Europe's position as a leading and dynamic place to live and work for people of all ages.

CREATING DYNAMIC, PURPOSEFUL OPPORTUNITIES

The third pillar of the Green Deal Industrial Plan will be developing the skills needed to make the transition happen. The best technology is only as good as the skilled workers who can install and operate it.³

URSULA VON DER LEYEN

European Commission President

Electrification is good for jobs and employment.

Electrification and the move to a net-zero economy will create jobs for people with all levels of education and training, and at different stages of their lives and careers.

Electrification means decentralised energy solutions, and creating jobs and opportunities across the whole of Europe.

Electrification will create jobs that bring meaning and support well-being. Employees increasingly expect their professional life to

offer a significant sense of purpose, as a 2021 survey by McKinsey⁴ shows. Employers failing to meet this need will lose talent to companies and sectors providing meaningful jobs. Contributing to the creation of a cleaner, net-zero emissions world can offer employees this much needed purpose.

For electrification to make the net-zero transition happen, Europe will need a new team of workers, including...

ELECTRICAL CONTRACTORS



The energy transition is making our sector lively and fascinating. Our employees should be really proud of what they are doing; they play a key role in reaching our climate target. One customer told our employees that their work is just as important as a doctor's.⁵

EMMA ELHEIM KARLSSON

CEO of Hallabro Elektriska, a Swedish electrical contracting company

Today, **nearly 2 million** Europeans work as electrical contractors, responsible for installing and integrating electrified devices in buildings, transport and infrastructure.⁶

Delivering the EU Renovation Wave will create at least **270,000 additional jobs** for electrical contractors by 2030.⁷

Deploying rooftop solar PV, battery storage and electric vehicle charging points at scale

to meet EU climate targets will create close to **400,000 jobs** by 2030.⁸

The transition will require technicians, engineers and managers. It will create long-term, fast-evolving, local jobs. Since electrical contractors are often self-employed, the transition will also generate a new class of entrepreneurs.

ELECTRIC VEHICLE PROFESSIONALS



The right skills are imperative to develop and strengthen a highly skilled workforce along the e-mobility value chain and close the most urgent skill gaps. Examples of such gaps are the reskilling of staff working in industries and fields which will disappear or be substituted in the future or the upskilling of teams in sectors which are working along the new value chains – like the battery and the charging infrastructure industries. In this way, we can face the challenge of integrating digitalisation and systemic value chain thinking to stay competitive.

PHILIPPE VANGEEL

Secretary General of AVERE

The shift to e-mobility is opening the way for new businesses and new jobs beyond transport. Batteries, charging points and refuelling stations, software services and recycling are just a few⁹ examples. In 2019, the EU automotive industry employed **5.7 million people**.¹⁰ The transition from internal combustion engines to electric vehicles will lead to a stable level of employment in the EU car sector by 2030 compared to 2019.^{11,12} Direct employment in the sector will decrease by **5 per cent**, but this

will be more than offset by jobs in adjacent industries, like energy production and charging infrastructure, which will increase by **34 per cent**.¹³

The shift to electric vehicles will create over **580,000 new jobs** in the EU by 2030, with a further **40,000 jobs** generated each year by the construction and civil works needed to adapt energy production and distribution infrastructures.¹⁴

GRID EXPANSIONISTS



Grid investments are urgently needed for the energy transition and they hold a huge potential for job creation.¹⁵

KRISTIAN RUBY

Secretary General of Eurelectric

Electrification will only work as a real solution for Europe's energy needs, climate goals and job creation if a strong grid network is in place to enable the various solutions – from electric vehicles, heat pumps and batteries – to work together and support each other. Grids connect the dots of the electrification revolution by integrating renewables, helping to create new

services for consumers and ensuring a reliable electricity flow.

Making power grids fit for the transition holds huge potential for the economy and could create **500,000 jobs** by 2030.¹⁶

HEAT PUMP TECHNICIANS



In Poland, industry and government are boosting vocational training courses for professionals: this can be a European case study.¹⁷

MAŁGORZATA SMUCZYŃSK

Vice President of the Board of the Polish Organisation for Heat Pump Technology Development

Today, around **161,000 people** work in the European heat pump industry. Over a third of them work in heat pump manufacturing.¹⁸

To meet REPowerEU's ambitious targets, sales need to increase so that **60 million** more heat pumps are installed in Europe by 2030, on top of today's **20 million**.¹⁹ Europe is moving steadily

towards this goal. The European heat pump market broke a new record in 2022 with around **3 million** units sold.²⁰

To speed up progress and reach the 2030 target, Europe needs at least **500,000** full-time equivalent heat pump employees skilled and ready for action in the next seven years.²¹

SOLAR SPECIALISTS



Europe will need as many as 1 million European jobs as early 2026 – that’s double what we have right now. The renewables sector is doing its utmost to ensure we have the skilled workforce to deliver a carbon neutral and energy secure Europe. Policymakers should work closely with us to scale up the European workforce.

WALBURGA HEMETSBERGER

CEO of SolarPower Europe

In 2021, the EU solar sector employed **466,000** people full-time, **108,000** more than in 2020, with around **56 per cent** of them in indirect jobs.²²

Reaching the 2030 solar target set in the REPowerEU package will create at least **1 million** direct and indirect jobs in the EU solar industry. ²³SolarPower Europe believes this ambition can be even higher, and is calling for 1 terawatt of solar power generation capacity in the EU by 2030, leading to the creation of around **1.5**

million full-time equivalent jobs.²⁴

Solar creates **1100 jobs** per terawatt hour of power produced.²⁵ By 2050, **4 million** people could be employed in solar sector jobs in Europe.²⁶

Three out of four solar jobs in the EU are downstream jobs, which cannot be relocated and contribute to long-term socio-economic development.²⁷

WIND WORKERS



Europe must show it is possible to have ambition and reach net zero emissions, and to be the motor of a new industrial and social strategy.²⁸

MALGOSIA BARTOSIK

Deputy CEO WindEurope

In 2019, **300,000** people worked in wind energy in the EU – **160,000** people in direct jobs and **140,000** people indirectly.²⁹

By 2030, **450,000** people could be employed in the EU wind industry – **250,000** in onshore wind and **200,000** in offshore wind – if countries deliver the 397 gigawatts of wind power envisaged in National Energy and Climate Plans (NECPs).³⁰ The upcoming revision of the NECPs will only increase these numbers.

With the right investment and planning, the ambitions of the Net-Zero Industry Act will generate jobs along the whole of the wind energy supply chain, including in logistics, service and maintenance, vessel operating companies and ports facilities.³¹

DIGITAL WIZARDS



If Europe succeeds at digitalising the energy infrastructure, it will differentiate, become extremely competitive globally and create high value jobs.³²

AGOSTINO SANTONI

VP of Cisco's South Europe Operations

The digital transformation of the energy sector is well underway with sensors, smart grids, and decentralised renewables operating with the help of artificial intelligence and machine learning, while drones increasingly aid the maintenance and servicing of offshore wind turbines.

Digital skills are increasingly in high demand to decarbonise buildings, from energy management to automating controls and cybersecurity for smart buildings.

Digital skills are what enables the electrification sector to create flexibility between electricity supply and demand, and pave the way for an (almost) fully electric Europe.

The digital workforce in the electricity sector must grow rapidly, and greater efforts are needed to show data scientists and software programmers that the energy sector is an exciting career option compared to sectors more traditionally associated with IT and digitalisation.

HOW DO WE BOOST ELECTRIFICATION AND CREATE JOBS?



1.

MAKE ELECTRIFICATION EVEN MORE ATTRACTIVE

People from various backgrounds and education levels, including those working in areas not necessarily associated with energy and decarbonisation, like digital and artificial intelligence experts, should see the electrification sector as an appealing and dynamic career option. Likewise, technical education should be actively promoted to all students and people looking to change careers, as it opens the door to a great diversity of jobs.

ACTIONS

The European Commission and Member States must:

1. Promote the acceleration of electrification in all sectors which are not “hard to abate”.
2. Provide a predictable environment for electrified industries in regard to funding and incentive schemes to avoid “roller-coaster” or “boom-and-bust” situations.
3. Provide strong energy and climate targets to give predictability to prospective students and companies (especially SMEs) thinking about investing in skills and hiring new talent.

The European Commission must:

1. Launch an ambitious EU campaign to promote technical and vocational education and careers in the energy transition, and to dismantle prejudices, including those related to gender.
 - This campaign should be part of the European Year of Skills and the implementation of the Green Deal.

Member States must:

1. Promote technical education and careers from an early age.
2. End the practice of teachers and career advisors presenting technical education as a “last resort option”.
3. Make it clear that technical jobs are open to all, regardless of gender, ethnicity, age and disability.
4. Incentivise technical teachers with better pay since they often earn less than their university colleagues, and ensure education facilities, especially technical schools and training centres, have up-to-date equipment.
5. Implement the strong energy and climate targets in national contribution plans, especially as part of the upcoming revision of national energy and climate plans (NECPs).

2. MAKE IT EASY

It must be easy for people to acquire the necessary skills to work in the clean energy sector and it must be obvious where they need to go to receive the right information.

ACTIONS

The European Commission and Member States must:

1. Ensure all new climate and energy proposals, policies and targets include skill provisions and steps to train and put in place an adequate number of skilled workers.
2. Encourage initiatives to help workers find jobs and to help employers find the right employees, such as [the SolarWorks Platform](#), a one-stop-shop for future solar workers and recruiters, matching applicants to relevant roles or training programmes.

Member States must:

1. Introduce equivalence between technical and academic degrees, allowing students to move easily from one path to the other, and to feel that technical and academic studies and jobs are valued equally.
2. Ensure job-seeking agencies set up roadmaps to promote and prioritise trainings and jobs related to the energy transition, especially when it comes to much-needed technical careers. They should emphasise that technical jobs are open to all, regardless of gender, ethnicity, age and disability, and trainings must be available locally.

3. MAKE IT PAY

People need to know that if they go to work in a new industrial sector, they will be rewarded with a stable job and good working conditions.

ACTIONS

The European Commission and EU Member States must:

1. Provide financial support to people willing to up-skill and re-skill to find work in a clean energy industry, with particular attention to women, who are still underrepresented. People need to know they will not lose money by taking time to retrain to work in another sector or to add extra skills to their CV.
2. Subsidise up-skilling for SMEs which are over-represented in sectors like installation, where more electricians are needed, and which lack the human and financial resources to implement skilling strategies.

Member States must:

1. Promote technical apprenticeships for the energy transition by providing financial support or tax relief to apprentices and/or companies, especially to SMEs, which are over-represented in the electrification ecosystem.

4. MAKE IT REAL

Education, training and skills must fit the needs of the labour market, and the targets and policies agreed by governments.

We need to reskill new and existing workers, including those in the fossil fuel sector. The growth of new jobs and employment opportunities from the energy transition will help ensure a just transition for workers in the coal sector and, longer term, in the gas sector. Many workers in these sectors have many of the skills needed to fill positions in clean energy industries. Some companies are already internally relocating their workers to zero-carbon segments to retain talent. However, this is not an option everywhere and companies need support from the EU for re-skilling initiatives.³³

ACTIONS

Member States must:

1. Regularly assess the gap nationally between available and needed professionals for the green transition, from architects to engineers, technicians to installers, as of now, and for the years to come. Skills' needs must be documented to allow companies and governments to implement the right measures.

Member States must:

1. Create more technical schools, and ensure all technical schools, new and old, are better equipped with up-to-date technologies and training, and are ready to equip trainees with the skills needed for Europe to reach its climate and energy targets.

Member States must:

1. Foster public private partnerships to ensure training and skills solutions match political agendas and market imperatives.

The European Commission must:

1. Turn words into deeds, by proposing, for example, terms of reference for Net-Zero Skills Academies, without delay.

CONCLUSION

CAN WE DO IT? YES, WE CAN!

Europe can reach net zero by mid-century while creating a plethora of new jobs and opportunities that are not just good for the planet, but for people too. To achieve these goals, however, long-term policies and investments must be put in place now.



DISCLAIMER

The figures in this report has been taken from multiple sources. Different sources may have calculated their figures in different ways – for example some may refer to direct jobs, while others to the number of direct and indirect jobs that may be created in a specific sector. There are also some overlaps between certain jobs, like electrical contractors and solar specialists. Anyone wanting to quote from the report should use the figures as reported. The figures in this report are a clear indication of the significant potential for job creation as Europe electrifies.

ENDNOTES

- 1 <https://www.euractiv.com/section/energy-environment/news/fossil-gas-has-no-viable-future-eus-timmermans-says/>
- 2 <https://www.ipcc.ch/assessment-report/ar6/>
- 3 https://twitter.com/EuropeOn_EU/status/1615636943768887296
- 4 <https://www.mckinsey.com/capabilities/people-and-organizational-performance/our-insights/help-your-employees-find-purpose-or-watch-them-leave>
- 5 <https://europe-on.org/2023/04/03/meet-emma-our-board-member-taking-the-energy-transition-to-southern-sweden/>
- 6 https://europe-on.org/wp-content/uploads/2021/07/EuropeOn_Job-Potential-Study-2021_Public.pdf
- 7 https://europe-on.org/wp-content/uploads/2021/07/EuropeOn_Job-Potential-Study-2021_Public.pdf
- 8 https://europe-on.org/wp-content/uploads/2021/07/EuropeOn_Job-Potential-Study-2021_Public.pdf
- 9 https://www.motus-e.org/studi_e_richerche/rapporto-sulle-trasformazioni-dellecosistema-automotive-italiano/
- 10 https://www.platformelectromobility.eu/wp-content/uploads/2021/07/20210702-E-mobility_EU-Report_SUMMARY_vfinal.pdf
- 11 <https://www.platformelectromobility.eu/2021/09/24/our-key-findings-and-recommendations-to-make-the-european-green-deal-an-employment-success/>
- 12 <https://www.electrive.com/2021/04/22/car-study-finds-no-major-automotive-employment-loss/>
- 13 <https://www.platformelectromobility.eu/2021/09/24/our-key-findings-and-recommendations-to-make-the-european-green-deal-an-employment-success/>
- 14 <https://www.platformelectromobility.eu/2021/09/24/our-key-findings-and-recommendations-to-make-the-european-green-deal-an-employment-success/>
- 15 <https://www.eurelectric.org/news/pr-connectingthedots/>
- 16 <https://www.eurelectric.org/news/pr-connectingthedots/>
- 17 https://www.ehpa.org/2023/01/26/ehpa_news/wanted-half-a-million-heat-pump-installers/
- 18 EHPA 2022 market report
- 19 https://www.ehpa.org/2023/04/26/ehpa_news/meeting-eu-heat-pump-goals-will-slash-20-off-heating-bills-report/
- 20 https://www.ehpa.org/press_releases/heat-pump-record-3-million-units-sold-in-2022-contributing-to-repowereu-targets/
- 21 https://www.ehpa.org/2023/01/26/ehpa_news/wanted-half-a-million-heat-pump-installers/
- 22 https://api.solarpowereurope.org/uploads/SPE_EU_Solar_Jobs_Report_September_2022_5925da42fc.pdf
- 23 https://api.solarpowereurope.org/uploads/SPE_EU_Solar_Jobs_Report_September_2022_5925da42fc.pdf
- 24 https://api.solarpowereurope.org/uploads/SPE_EU_Solar_Jobs_Report_September_2022_5925da42fc.pdf
- 25 <https://www.solarpowereurope.org/solar-factsheets-employment-and-job-creation/>
- 26 <https://www.solarworksplatform.org/>
- 27 <https://www.solarpowereurope.org/solar-factsheets-employment-and-job-creation/>
- 28 <https://www.siemensgamesa.com/explore/journal/2020/03/siemens-gamesa-malgosia-interview>
- 29 <https://windeurope.org/intelligence-platform/product/wind-energy-and-economic-recovery-in-europe/>
- 30 <https://windeurope.org/intelligence-platform/product/wind-energy-and-economic-recovery-in-europe/>
- 31 <https://windeurope.org/intelligence-platform/product/wind-energy-and-economic-recovery-in-europe/>
- 32 <https://digital-europe-website-v1.s3.fr-par.scw.cloud/uploads/2023/02/Digitalisation-as-an-enabler-for-an-independent-and-sustainable-energy-system-4.pdf>
- 33 <https://www.iea.org/reports/world-energy-employment>

Since 2017, the Electrification Alliance gathers Avere (electro-mobility), Eurelectric, the European Climate Foundation, the European Copper Institute, the European Heat Pump Association, EuropeOn (electrical contractors), smartEn, SolarPower Europe and WindEurope who collectively call for electricity to be recognised as the key energy carrier for an efficient and decarbonised European future.



@Elec_All