

Part 1 of 3

Energy Tech and The Workforce Opportunity

The Growing Demand for Electricity

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Introduction: The New Age of Electricity

In recent years, global electricity demand is climbing, growing nearly 3% in 2025 alone, and it is expected to rise even more sharply in the next several decades. The US alone is expected to increase its electricity demand by 20-25% by 2030[1]. In parallel, broader global economic growth has slowed due to a number of structural factors, including higher costs of capital, geopolitical uncertainty, and a reduction in global trade. This economic cooling has contributed to an overall global energy demand growth of 1.3%, lower than the 10-year average[2].

As electricity needs accelerate against a backdrop of slower global energy growth, two significant changes are underway. Firstly is the diversification in generation sources: Low-emission sources, including solar, wind, nuclear, hydropower, and other renewables, contributed nearly 60% of total energy demand growth[2] Secondly is the digitalization of grid infrastructure to handle the rising demand for electricity that is, in part, driven by data center energy consumption.

Powered by LinkedIn's data, this is the first report in a three-part series that maps how the energy workforce is shifting to meet these changes and what talent gaps must be closed to address growing electricity demand. In particular, this report examines that shift across three dimensions: (1) the evolving energy generation workforce, (2) the digitalization of grid infrastructure, and (3) the operational talent required to manage increasingly complex energy systems.

Key Insights

- **The energy transition is becoming a talent transition as the workforce diversifies its skills to keep up with the increasingly complex, multi-energy system:** Between 2019 and 2025 the share of workforce with Low-Emission Energy and energy carrier skills, which includes many energy sources such as wind, solar, and nuclear, grew 19% while contracting 17% for Carbon-Based (oil, gas, and coal) Energy skills
- **Germany and France are providing an example of how the multi-energy workforce is taking hold:** In 2025, Germany and France are the only analyzed markets where workers with Low-Emission Energy and energy carrier skills outnumbered those with Carbon-Based Energy skills
- **Infrastructure investment is increasing across most countries, but the development of digital skills in the workforce is progressing unevenly:** Since 2019, continental Europe's share of workforce with traditional Grid skills has roughly doubled while the share with Digital Grid skills has grown less than 40%
- **Energy Management skills are emerging as a signal of talent readiness and a competitive advantage in the energy transition:** Between 2019 and 2025, the share of workforce with energy management skills grew over 40% in India, Germany, and France while the US, UK, and Italy trailed behind with growth ranging from -5% to 8%.
- **Meeting rising electricity demand requires more than just capital and infrastructure: it requires strategic development of the workforce to build, digitalize, and manage energy infrastructure.**

[1] *Minier, V., & Petit V. (2026, April). U.S. electricity 2030: Work harder, but also smarter. Schneider Electric Sustainability Research Institute*
[2] *International Energy Agency. (2026, April). Global energy review 2026. IEA Publications*

> Meeting rising electricity demand takes more than building new infrastructure. Organizations that **invest in workforce capabilities at the same pace as technology** will be the ones that turn that investment into resilience, efficiency and growth.”



Pankaj Sharma
Executive Vice President
of Software & Services
Schneider Electric

The Multi-Energy Workforce: Where Maturity Meets Opportunity

As electricity generation technologies evolve, the energy workforce is undergoing a parallel transformation. Across the six countries analyzed (the US, the UK, India, France, Italy, and Germany), the percentage of their workforces with skills related to Low-Emission sources and energy carriers including hydrogen and storage (batteries) has grown greatly since 2019 (pre-pandemic) while the share of workers with Carbon-Based skill sets contracted by 17% over the same period. Rather than a simple displacement of carbon-based energy sources, this movement reflects a broader diversification of workforce capabilities across an increasingly complex, multi-energy system.

Hydrogen is the emerging frontier in this diversification, up 234% in workforce share, concentrated in European markets. This is followed by the growth in workforce with storage-related technology skills (+207%) reflecting the rapid expansion of battery storage as costs fall, and the greater need to dynamically manage utility systems. Other alternative energy sources including hydro, solar, and geothermal are also experiencing significant growth in workforce share but at a more moderate pace.

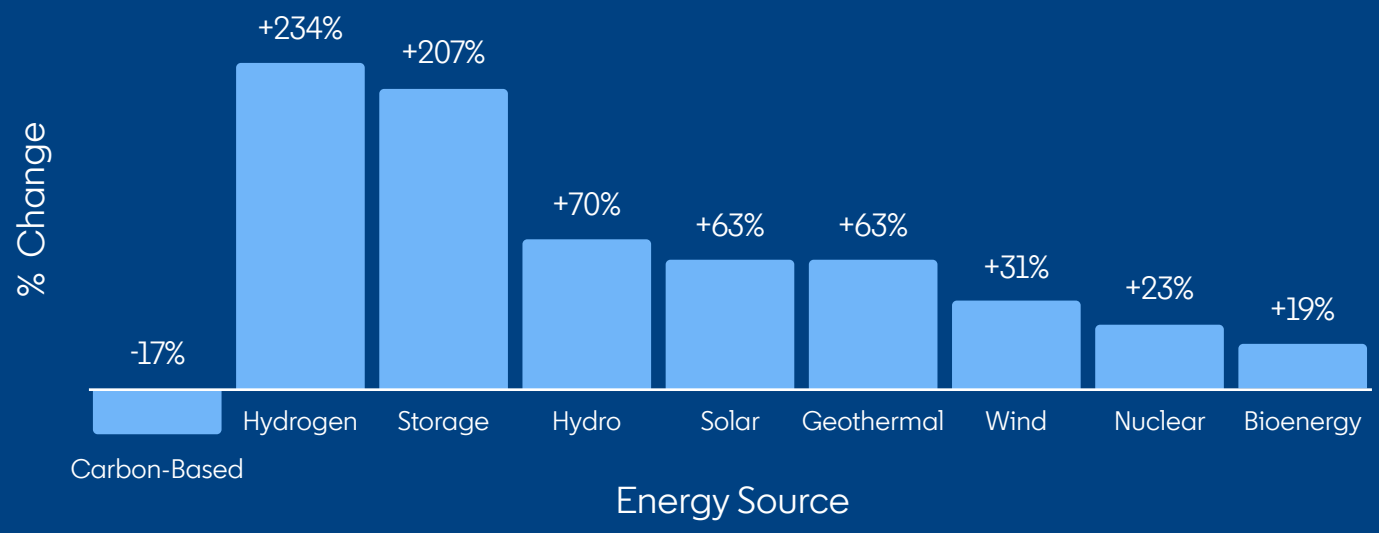
↗ **19%**

The **share of the global workforce with Low-Emission Energy and Energy Carrier skills** has grown at least 19% while those with Carbon-Based Energy skills declined 17% between 2019 and 2025.

While skill growth for low-emission energy technologies is widespread, market dynamics vary considerably. Germany and France stand out as the only two analyzed markets where workforces with Low-Emission skills exceed those with Carbon-Based skills, offering a prospective model for multi-energy talent integration elsewhere.

Growth in Workforce Share by Energy Source / Carrier

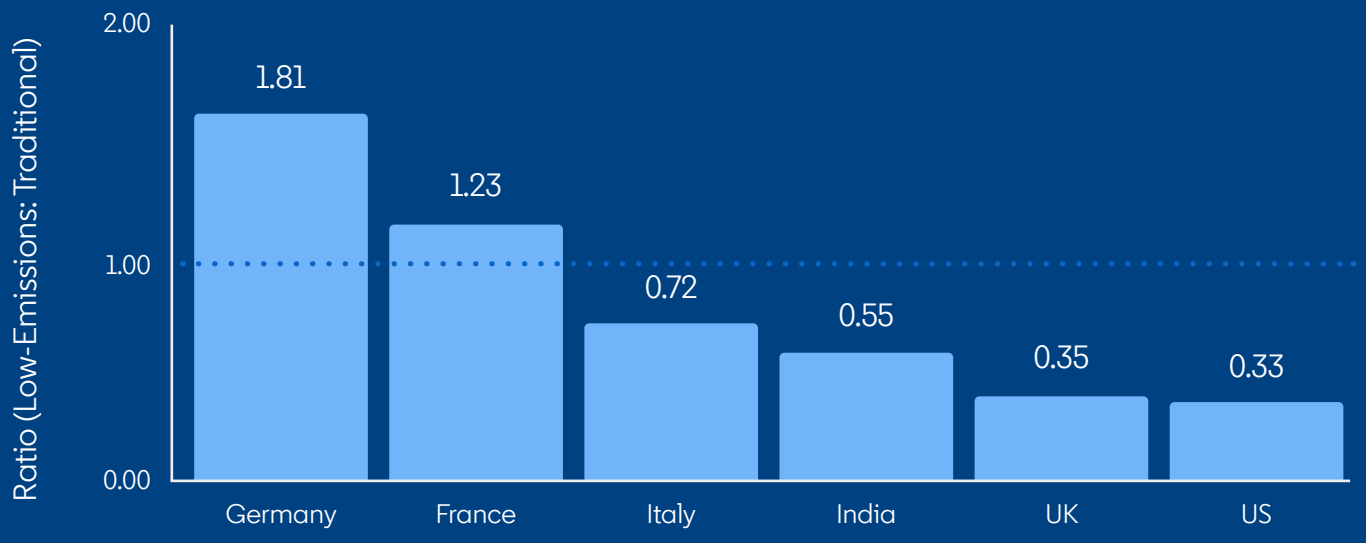
2019 - 2025



LinkedIn Network Data, 2026

Low-Emission to Carbon-Based Workforce Ratio by Country

2025



LinkedIn Network Data, 2026

These cross-country variations closely mirror historical and ongoing investments in multi-energy technologies. According to the IEA, electricity generation in Germany was already over 50% powered by renewables in 2023[3], compared to only 22% for the United States in the same year[4].

A closer look at specific energy technologies within these workforces highlights key regional specializations. Solar represents the primary foundation in several regions, accounting for over 50% of the Low-Emission Energy talent pool in Italy and India. Nuclear power demonstrates the sharpest divergence across markets, representing a substantial share of the workforces in France (23.8%) and the US (20.1%) but is negligible for Germany (2.3%) and India (2.6%).

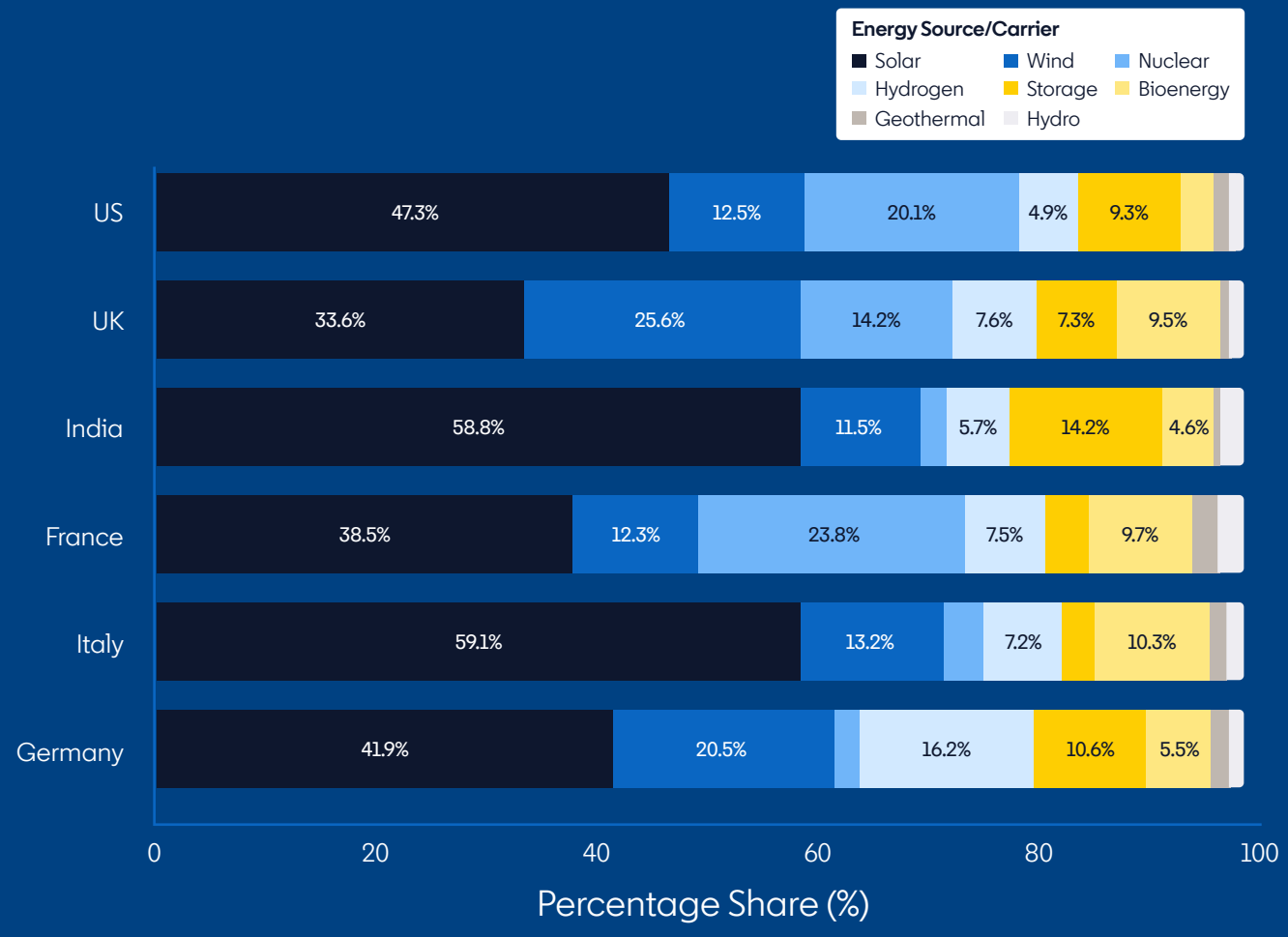
Altogether, these patterns show a multi-energy workforce that is both deepening and diversifying. Solar and wind remain dominant skill sets within the workforces of alternative sources. The US's and France's larger workforces for nuclear energy skills reflect their history of nuclear investment since the oil crises of the 1970s as noted by the EIA[5]. As hydrogen and its derivative fuels are still in a developing energy sector that has yet to mature, the pool of hydrogen-skilled workers is greatly increasing its workforce shares, especially in the UK and Germany, despite being smaller in terms of magnitude.

In 2025, **Germany and France** are the only two analyzed markets where workforces with Low-Emission Energy and Energy Carrier skills exceed those with Carbon-Based Energy skills.

[3] *International Energy Agency. (n.d.). Germany: Renewables. Retrieved September 4, 2026*
[4] *International Energy Agency. (n.d.). United States: Renewables. Retrieved September 4, 2026*
[5] *Johnson, S. (2025, August 11). Five countries account for 71% of the world's nuclear generation capacity. U.S. Energy Information Administration.*

The Multi-Energy Workforce is Deepening and Diversifying

Low-Emission Energy and Energy Carrier Workforce Composition in 2025 by Country



LinkedIn Network Data, 2026

Talent is emerging as a leading indicator of a market's capacity to deploy and scale multi-energy systems. Markets with the most developed and diverse energy workforces are often those where investment in energy infrastructure is already most advanced, while others face a longer runway to close the gap.

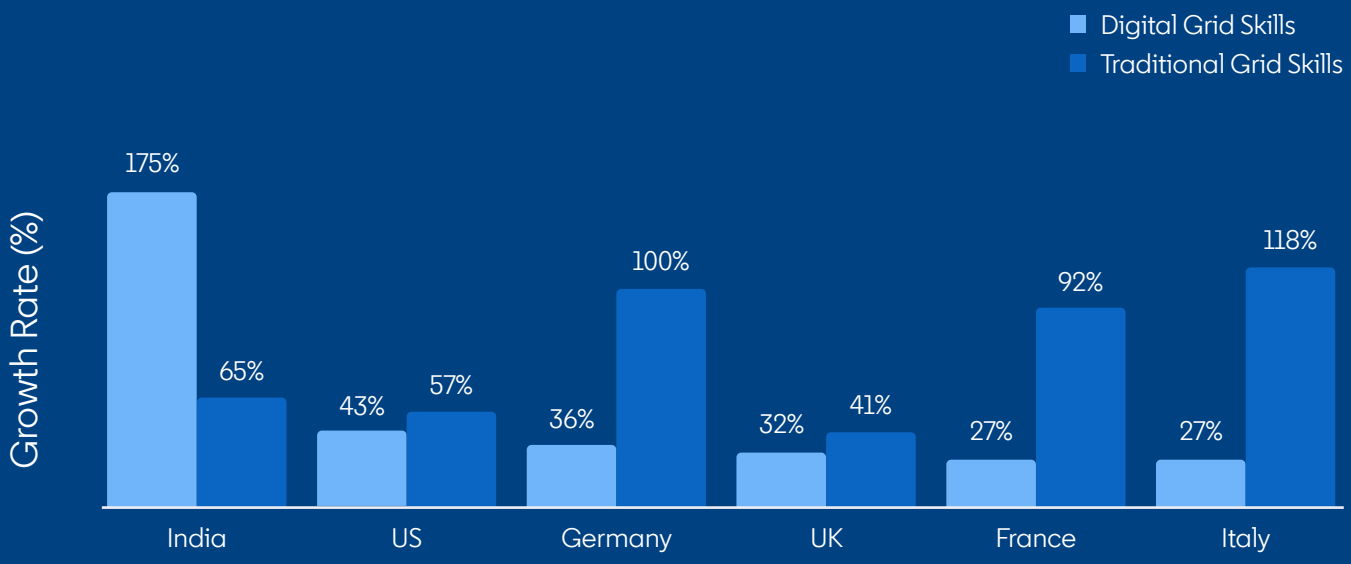
This signals a clear imperative of how workforce investment must move in parallel with energy generation strategy. Markets and organizations diversifying their energy sources and carriers without the corresponding talent development, particularly in fast-emerging domains like hydrogen, risk structural vulnerabilities that delay returns on infrastructure investment.

The Software-Defined Grid

To meet the rise in electricity demand, countries must not only build new energy generation capacity, but also modernize the grid infrastructure that delivers it. The IEA warns that grids are becoming a bottleneck for multi-energy expansion if developments and reforms do not progress fast enough to keep pace with the rising demands — a concern amplified by the fact that new grid infrastructure typically takes 5-15 years to complete.[6] Software-defined systems are becoming a critical bridge to address that vulnerability: smart grid, advanced energy management systems (EMS), and distributed energy resource orchestration allow grids to absorb more variable generation and respond to real-time demand shifts while long-term buildouts are underway.

Growth in Workforce Share: Digital vs. Traditional Grid Skills by Country

2019 - 2025



LinkedIn Network Data, 2026

LinkedIn's data reveals that out of the countries examined, all markets' workforces are growing in both Traditional Grid skills (such as Electric Transmission, Substations, Protective Relays) and Digital Grid skills (such as Smart Grid, Meter Data Management.) India is notably the only country where the workforce share with Digital Grid skills grew faster (+175% from 2019 to 2025) compared to traditional ones (+65%). This aligns with the country's Revamped Distribution Sector Scheme to modernize its distribution infrastructure which includes installing 250 million smart meters across the country.

Conversely, the US and the UK workforces are expanding both skill sets at similar rates, and continental European nations (France, Germany, and Italy) are heavily favoring Traditional Grid skills over Digital ones. All three markets see their workforce share with Traditional Grid skills roughly doubling, but the share growth for Digital Grid skills is less than 40%. This disparity suggests that continental Europe is prioritizing baseline physical infrastructure over software-driven modernization. This trend is backed by European Commission data which projected less than 30% of Europe's €584 billion grid investment through 2030 will be allocated toward digitalization, with the vast majority remaining dedicated to physical hardware.[7]

[6] *International Energy Agency. (2023, October). Electricity grids and secure energy transitions. IEA Publications.*

[7] *European Commission. (2022, October 18). Digitalising the energy system – EU action plan (COM/2022/552 final). EUR-Lex.*

This imbalance carries a cost that compounds with time. The US is expected to increase its electricity demand by 20-25% by 2030, with data centers accounting for 40-50% of that growth[8]; while the European Commission targets electricity reaching 46% of its final energy consumption by 2040[9]. Demand of this magnitude cannot wait for physical infrastructure alone, and where digital deployment stalls for lack of skilled professionals, grids default to fossil-fueled generation to bridge the gap. Investing in grid digitalization talent now determines whether the energy transition keeps pace with demand as it arrives, or scrambles to catch up after the window has narrowed.

2x

Since 2019, continental Europe's share of workers with **Traditional Grid skills has roughly doubled** while the share with Digital Grid skills has grown less than 40%

Implications for Energy Infrastructure

The stark divergence in workforce skills across the six countries points to a broader transformation in how modern electrical power grids must be managed. As countries rapidly diversify their energy sources and carriers with solar, wind, nuclear, hydrogen and others at various levels, the historical usage of steady and centralized fossil fuel generation is being replaced by a highly decentralized and weather-dependent energy ecosystem. Managing this volatility requires a profound operational shift from simply generating power to dynamically optimizing it. Consequently, overall workforce capability has quickly become the defining variable for grid reliability. As nations expand their renewable resources, a workforce with Energy Management skills — such as ISO 50001, Energy Efficiency, and Energy Audits — becomes vital for maintaining grid stability while it is being expanded.

40%

Between 2019 and 2025, **the share of workforce with energy management skills grew over 40% in India, Germany, and France** while the US, UK, and Italy trailed behind with growth ranging from -5% to 8%.

This shifting operational reality highlights the critical bottleneck facing some markets, particularly when contrasted with their global peers. While Germany and France have achieved solid 41% and 40% growth in the Energy Management workforce share to support their hardware and digital grid expansions, Italy's unexpected 5% contraction in Energy Management workforce share exposes a structural vulnerability. Italy has added raw infrastructure capacity at the expense of the operational and analytical talent required to run it efficiently.

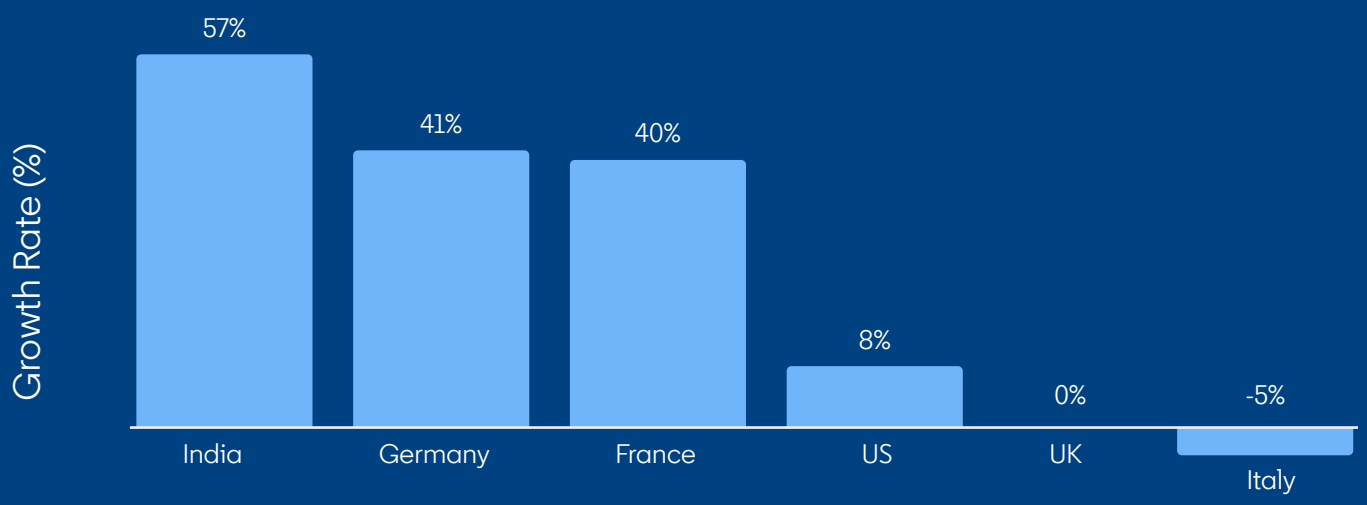
[8] *Minier, V., & Petit V. (2026, April). U.S. electricity 2030: Work harder, but also smarter. Schneider Electric Sustainability Research Institute*

[9] *European Commission. (2026, July 16). Commission boosts Europe's competitiveness, decarbonisation and independence with Electrification Action Plan (Press Release IP/26/1596). Press Corner.*

Building physical transmission assets represents only half the solution: without a corresponding expansion in Energy Management talent to monitor and route that power, modern grids risk severe operational inefficiencies.

For the global transition to succeed, nations cannot afford to treat hardware and oversight as separate priorities. Heavy infrastructure deployments must be matched by the analytical talent necessary to command them.

Growth in Workforce Share: Energy Management Skills by Country/Market
2019 - 2025



LinkedIn Network Data, 2026

Conclusion

The energy transition is ultimately a workforce challenge.

- **People are the decisive constraint.** Electricity systems can scale only as fast as the workforce available to build, digitize, and operate them.
- **Workforce investment must match infrastructure ambition.** Energy generation talent, grid digitalization skills, and energy management capability need to advance together.
- **Gaps create system-wide costs.** Without coordinated investment, shortages in grid digitalization or energy management talent can turn new energy generation capacity into bottlenecks increasing inefficiency and stranded capability.
- **Workforce development is infrastructure.** It must be planned, funded, and scaled on the same timeline as the physical assets it supports.

Meeting rising electricity demand requires more than just capital: it requires strategic investment in the workforce to build, digitalize, and manage energy infrastructure.

Annex

List of Definitions

Energy Source/Energy Carrier Skills: Skills tied to specific energy generation technologies and carriers across the full multi-energy spectrum. Energy sources included Carbon-Based (oil, gas, and coal) and Low-Emission sources which include: Hydro, Solar, Geothermal, Wind, Nuclear, and Bioenergy. Energy Carriers include Hydrogen, Storage. For example, skills under Solar include Photovoltaics (PV), Solar Energy, and Solar Panel Production.

Traditional Grid Skills: Skills related to the physical infrastructure of electricity transmission and distribution, including Electric Transmission, Substations, and Protective Relays.

Digital Grid Skills: Skills related to software-defined and digitally enabled grid infrastructure, including Smart Grid, Smart Metering, and Distributed Energy Resources (DER).

Energy Management Skills: Skills related to the operational monitoring, optimization, and efficiency of energy systems, including ISO 50001, Energy Efficiency, and Energy Audits.

Scope

- Countries in scope: France, Germany, India, Italy, UK, US
- Timeframe: 2019 to 2025

Methodologies

Data and Privacy: This body of work represents the world seen through LinkedIn data, drawn from the anonymized and aggregated profile information of LinkedIn's 1+ billion members around the world. As such, it is influenced by how members choose to use the platform, which can vary based on professional, social, and regional culture, as well as overall site availability and accessibility. In publishing these insights from LinkedIn, we want to provide accurate statistics while ensuring our members' privacy. As a result, all data show aggregated information for the corresponding period following strict data quality thresholds that prevent disclosing any information about specific individuals.

Skills: LinkedIn members self-report their skills on their LinkedIn profiles. Currently, more than 42,000 distinct, standardized skills are identified by LinkedIn.

- **Workforce growth:** For a given country, we calculate the percent of LinkedIn members who have at least 1 skill in the specified skill group. For example, for a member to be included in the solar workforce, they must have at least 1 solar skill. We calculate how this percent has changed from 2019-2025.

[6] *International Energy Agency. (2023, October). Electricity grids and secure energy transitions. IEA Publications.*
[7] *European Commission. (2022, October 18). Digitalising the energy system – EU action plan (COM/2022/552 final). EUR-Lex.*