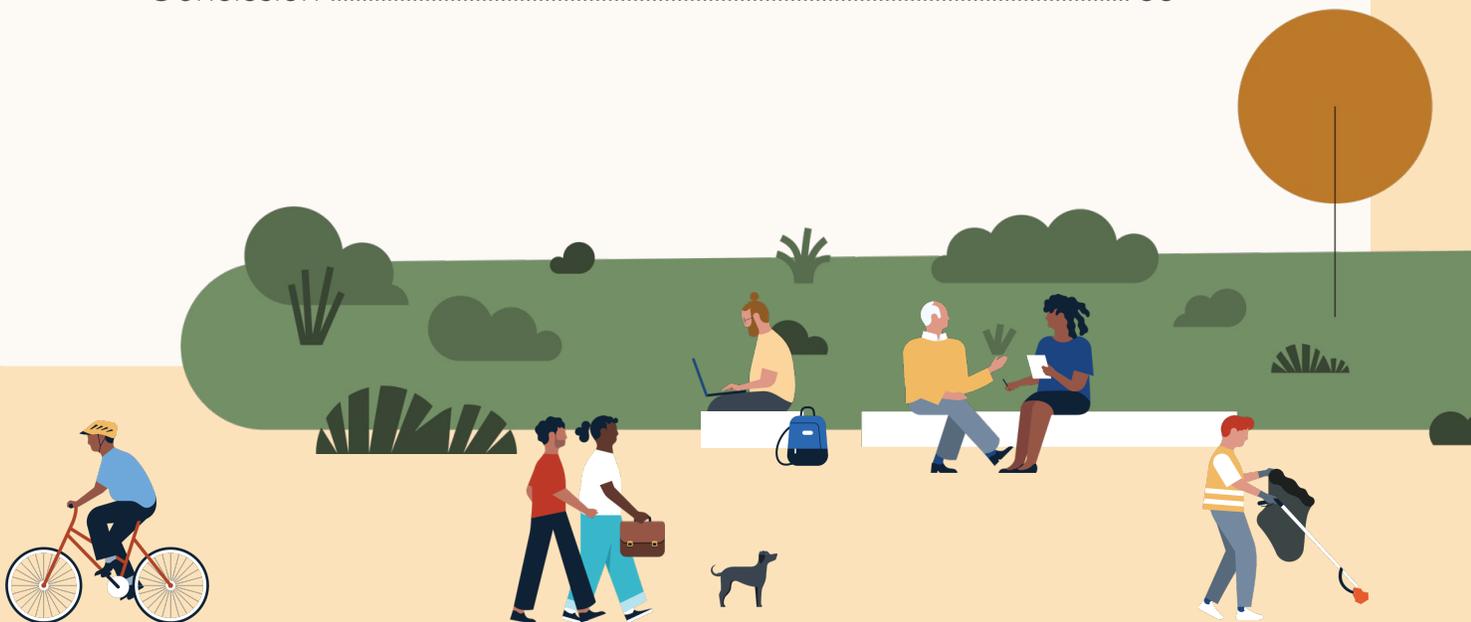


Global Green Skills Report 2023

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The scale and urgency of the transformation required to fight climate change has never been more clear.



According to a report recently released by the UN’s [Intergovernmental Panel on Climate Change \(IPCC\)](#), the actions we take over the next decade will determine whether or not our planet is livable for generations to come.

The gargantuan challenge of drastically reducing greenhouse gas emissions demands a whole-of-economy shift — across industries, roles, and geographical regions. With every challenge comes opportunity: If we take the right approach, we can leverage our efforts on behalf of the environment to catalyze growth throughout the global economy.

At LinkedIn, we believe the most promising path forward is through a skills-based approach to greening the global workforce. By breaking down roles into the specific capabilities required to do them, we can develop talent strategies that recognize individuals for the capabilities they possess. And by thinking of climate-related jobs as collections of skills, specifically “green skills,” we can expand the talent pool available to solve the climate crisis. Just as most roles now require digital skills, jobs ranging from procurement specialist to fleet manager to product designer to head chef can be performed in a more sustainable way if workers have green skills.

This report identifies global trends at the intersection of the workforce and sustainability, based on data from a membership base that now exceeds 930 million LinkedIn users worldwide. As detailed in the following pages, our findings reveal that there are pockets of exciting momentum, but that we are still dangerously far from the scale of change that’s required.

The concentration of “green talent” in the workforce — the share of workers who hold a green job or list at least one green skill on their LinkedIn profile — is growing in every one of the 48 countries we studied. We also found, however, that the increase in demand for green skills is outpacing the increase in supply, raising the prospect of an imminent green skills shortage. Between 2022 and 2023 alone, the share of green talent in the workforce rose by a median of 12.3% across the 48 countries we examined, while the share of job postings¹ requiring at least one green skill grew nearly twice as quickly — by a median of 22.4%.

Growth in demand for green skills is outpacing the increase in supply

Between 2022 and 2023

+12.3%

Share of green talent in the workforce

+22.4%

Share of job postings requiring at least one green skill



¹This analysis was conducted using paid job listings on LinkedIn posted by companies to ensure data consistency.

Remarkably, our data suggests that green skills, and the jobs that require them, are especially resilient during times of economic uncertainty. Even as overall hiring slowed over the past year, green hiring bucked that trend. While overall hiring slowed globally between February 2022 and February 2023, job postings requiring at least one green skill have grown by a median of 15.2% over the same period. And since March 2020, our data shows, workers with green skills have been hired for new jobs at a higher rate than those without green skills in every single country we studied.

Still, we are far from the green skills penetration that we need. Our study reveals that just one in eight workers have green skills. Put another way: Seven in eight workers lack a single green skill, at a time when the future of our planet depends on them.

**Median growth in
LinkedIn job postings
requiring at least one
green skill**

between February 2022
and February 2023

+15.2%

Our 2023 Green Skills Report also delves into **three sectors** that are especially pivotal to meeting sustainability targets:



**Energy
production**



Transportation



Finance

Energy production and transportation are the first and second-largest sources of carbon emissions, respectively, while the finance industry is a critical enabler of the transformation that's required.

Accelerating the green transformation, while expanding access to the opportunities it opens up, will require unprecedented levels of cooperation among stakeholders in the public and private sectors. To that end, this report includes critical questions that policymakers, business leaders, and others might explore as they seek to develop regulations, programs, and policies that foster green skills development and create pathways for workers to transition into jobs that help green the planet.

Just as scientific research continually expands our understanding of climate change, data at the intersection of climate and the workforce can play a critical role in guiding workers, companies, and governments in making strategic decisions and developing targeted interventions to accelerate the transition to a green economy. We have a historic opportunity to save our planet — but to seize it, we need the right human capital.

Key findings

Around the world, **only one in eight workers has one or more green skills**. Put another way, seven in eight workers lack even a single green skill.

Between 2022 and 2023, the **share of green talent² in the workforce rose by a median of 12.3%³** while the **share of job postings requiring at least one green skill grew twice as quickly** — by a median of 22.4%.

The five-year annualized growth rate between 2018 and 2023 reveals a similar trend. The **share of green talent grew by 5.4% per year** over that period, while the **share of jobs requiring at least one green skill grew by 9.2%**.

Even as overall hiring slowed over the past year, green hiring bucked that trend. While overall hiring slowed globally between February 2022 and February 2023, **job postings requiring at least one green skill have grown by a median of 15.2% over the same period**.

The **median LinkedIn hiring rate⁴ for workers with at least one green skill is 29% higher** than the workforce average.

From 2015 to 2023, **employment in the renewable energy industry grew in every country we studied**. For every 100 workers who left the global renewable energy sector, 120 workers joined.

The **transition to a greener economy is driving green skills growth across all industries, including the most carbon-intensive**. For example, the green talent concentration in the oil and gas industry has steadily increased since 2016, reaching 21% in 2023.



² A LinkedIn member is considered green talent if they have explicitly added green skills to their profile and/or they work in a title with a relatively high intensity of green skills.

³ Unless otherwise specified, all global statistics refer to the median among all 48 countries we studied. We believe this is a more accurate, precise way to measure overall global trends because it reduces the extent to which a large economy can skew the data and subsume the data insights of smaller markets.

⁴ The LinkedIn hiring rate is the ratio of hires divided by LinkedIn membership and is indexed to 2016.

The **share of auto workers with EV skills (a subset of green skills) rose by a median of 61%** between 2018 to 2023.

The **countries with the greatest share of auto workers with EV skills** as of March 2023 are Sweden (8.1%), the UK (7.3%), and Germany (6.1%). The US lags behind, with 3.7% of auto workers possessing EV skills.

While the **median green talent concentration** across all industries is 12.3% (meaning that one in eight workers has green skills), **it's only 6.8% for the finance industry** (meaning that one in 15 has green skills). This places finance behind industries ranging from energy and mining to agriculture, healthcare, and manufacturing, when it comes to green talent.

With a 14.8% year-over-year increase in its green talent concentration, **the finance industry is greening faster than most industries.**

In 81% of transitions into green jobs — jobs that have sustainability at their core — workers already have green skills or prior green job experience. Certain green jobs are more likely to be available to workers without prior green job experience. These include relatively new and quickly growing roles like sustainability manager and energy auditor.

The **skills profile for the average job changed 24%** between 2015 and 2022 — and **green skills are increasingly among the newly added skill requirements.**



Energy production & utilities

More workers are joining renewable energy — and we see significant growth in green skills in the fossil fuel industry.



Energy production is the largest source of greenhouse gas emissions, comprising [60% of emissions](#) worldwide. At the same time, global energy demand is [projected to grow 47%](#) between 2020 and 2050. While the amount of energy produced from renewable sources like wind and solar continues to increase — rapidly, in some markets — fossil fuels like coal still produce the [majority of the world's electricity](#).

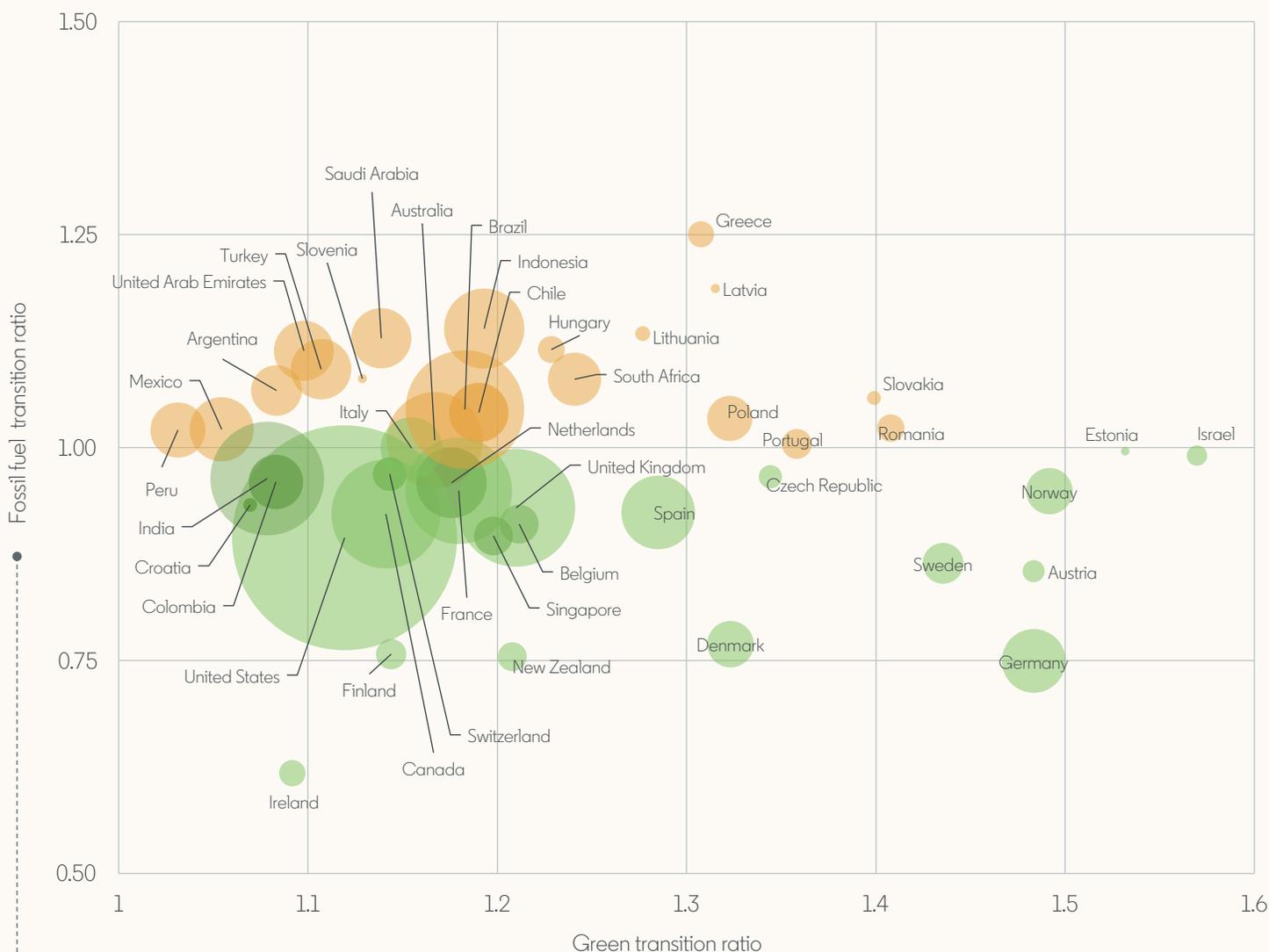
To meet increased energy demand while limiting the increase in average global temperatures (ideally to 1.5 degrees above pre-industrial levels, as outlined in the Paris Agreement) will require a massive infusion of green skills throughout the entire energy industry, especially in the renewable energy sector.

Across the world, our data reveals overall positive growth into renewable energy — meaning that more people are joining the industry than leaving it. The graph below shows that between 2015 and 2023, employment in the renewable energy industry grew in every country we examined. During this period, 120 workers joined the renewable energy industry for every 100 who left. In countries represented with green circles, more people are leaving the fossil fuel industry than joining it. In countries represented with yellow circles, more people are joining the fossil fuel industry than leaving it (even amid parallel renewable energy growth).

Transition ratios for renewable and fossil fuel-based industries

Ratios are the share of members transitioning into the industry to members transitioning out. Circle sizes represent the number of times workers changed jobs within the entire energy sector.

● Fossil fuel industry shrinking ● Fossil fuel industry growing



For the purposes of this report, we define the **renewable energy industry** as including solar, wind, and hydroelectric power generation; industries that support renewable energy generation (such as photovoltaic cell manufacturing); energy generation that does not produce direct carbon emissions, including nuclear power generation; and industries that administer environmental programs and provide environmental services. We define the **fossil fuel industry** as including any activities that produce or support the production of fossil fuels. This includes coal mining, oil extraction, and fossil fuel electric power generation.

In Australia and the United Arab Emirates, more workers are entering the fossil fuel industry than exiting it — and this trend is accelerating. In the US, the UK, Germany, Singapore, and France, fewer workers are going into the fossil fuel industry than leaving, but this decline is decelerating.

Global green talent concentrations

What percentage of workers have green skills?

12.3%

Economy-wide

21%

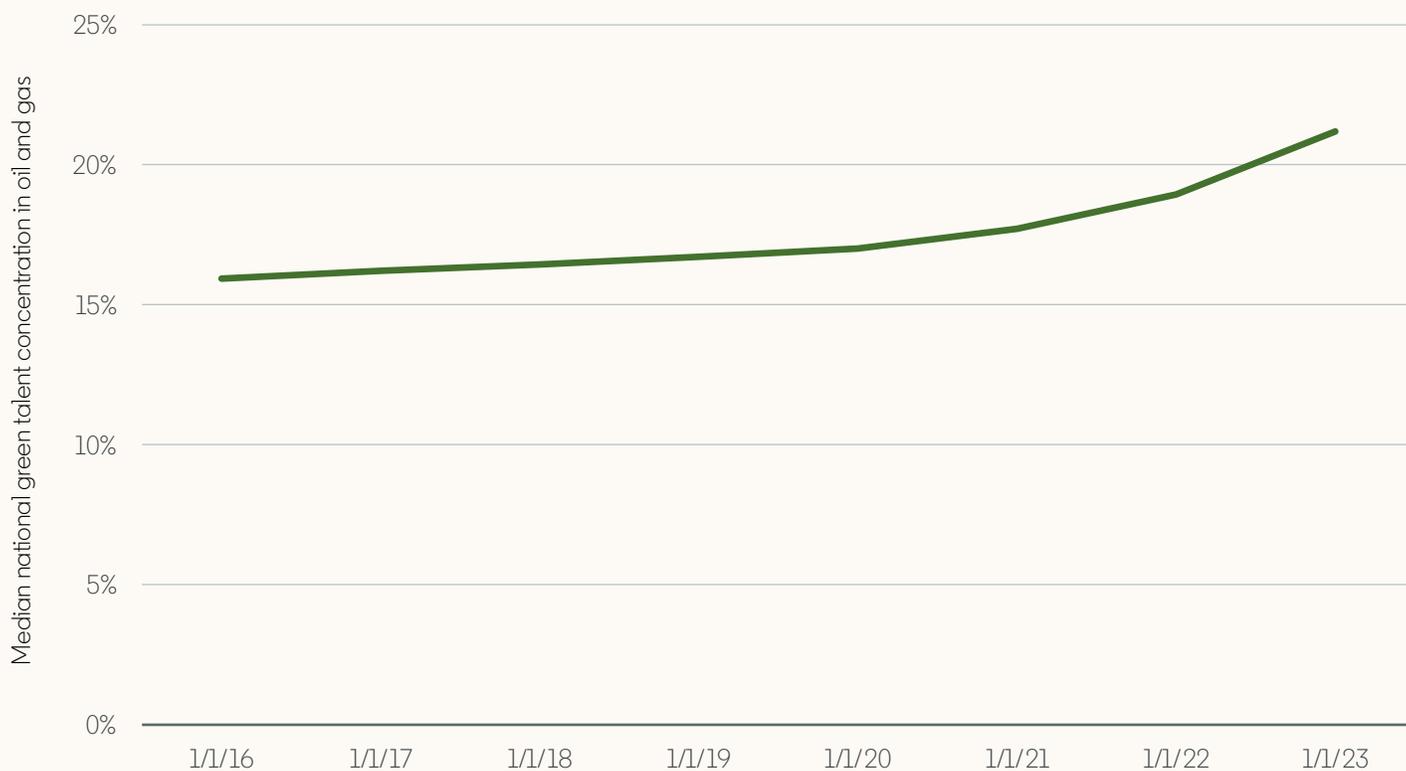
Oil and gas industry



These trends reinforce the need for countries to double down on strategies for reducing fossil fuel-derived emissions — even as they transition to renewable energy. Our research reveals that this is starting to happen, as oil and gas (a subset of fossil fuels) has a median national green talent concentration of 21%. By comparison, farming (42.9%) and construction (27.4%) are higher, emblematic of a trend in which we see the most resource-intensive industries have the highest concentration of green skills.

Indicative of the importance of transitioning even the most carbon-intensive industries to a more sustainable future, green skills have become increasingly prevalent in oil and gas, as shown by the consistent rise in green talent concentration between 2016 and 2023.

Growth in green talent concentration in oil and gas (2016-2023)

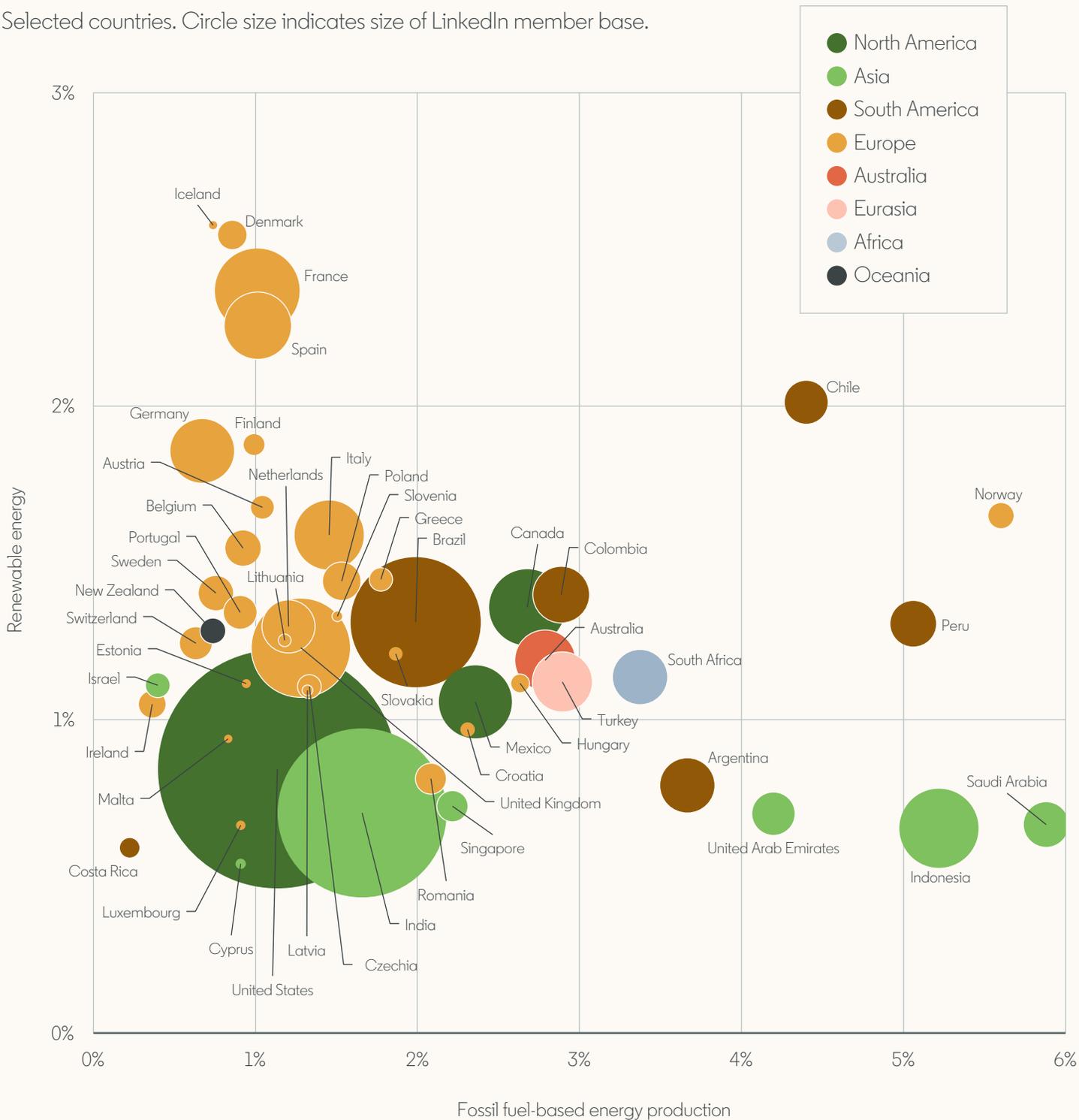


Energy production & utilities

The chart below reflects the share of LinkedIn members in the renewable energy and fossil fuel industries, by country. In European countries like Iceland, Denmark, France, and Spain, more than 2% of LinkedIn members work in renewable energy, while roughly 1% or fewer work in fossil fuel-related industries. In Saudi Arabia and Indonesia, by contrast, more than 5% of LinkedIn members work in fossil fuel-related industries, while fewer than 1% work in renewable energy.

Share of members in renewable and fossil fuel-based industries

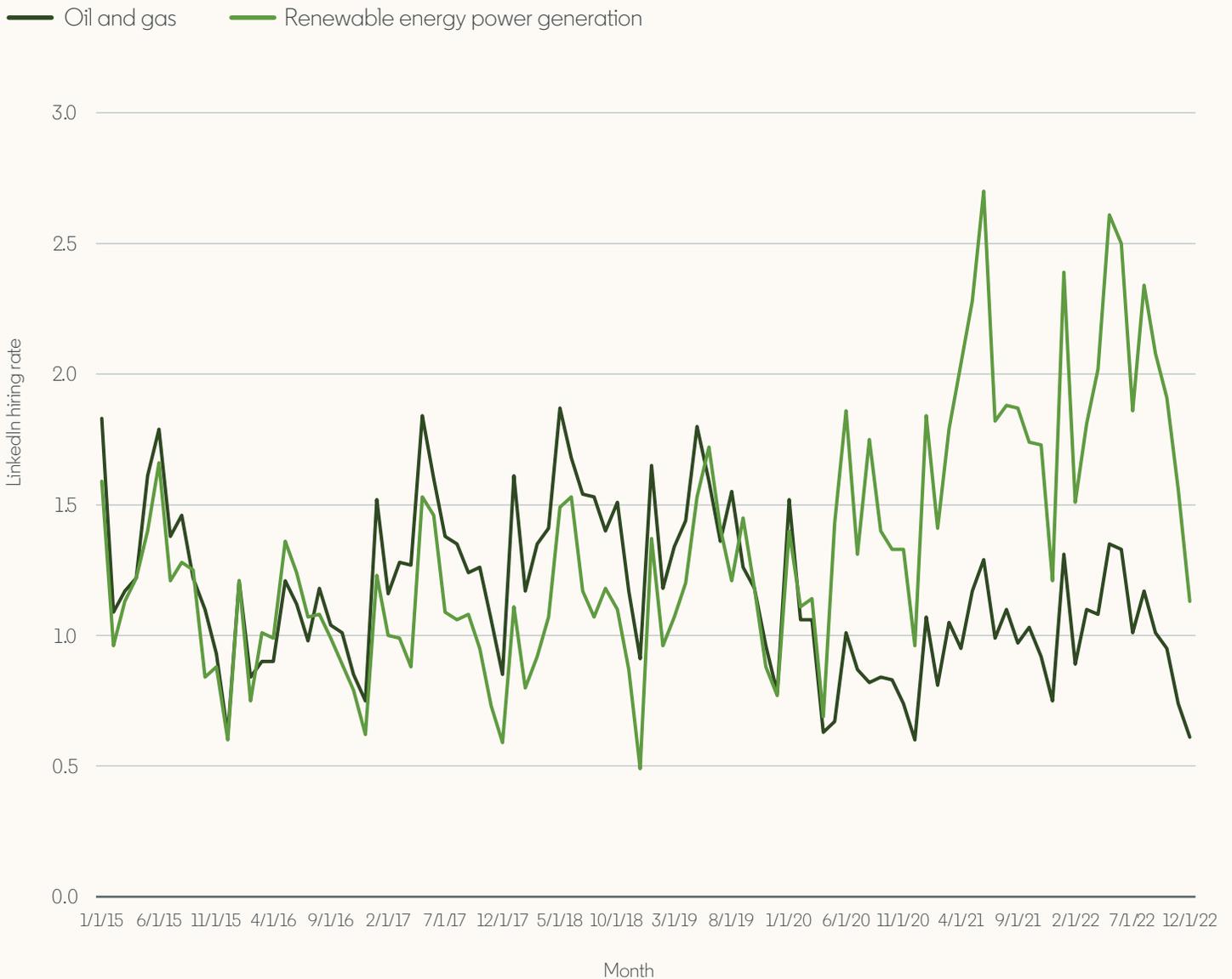
Selected countries. Circle size indicates size of LinkedIn member base.



Energy production & utilities

While the US fossil fuel-based energy sector remains larger than the renewable energy industry, our data shows that renewable energy is gaining ground. Since March 2020, the LinkedIn hiring rate for the US renewable energy industry has consistently surpassed the LinkedIn hiring rate for US oil and gas. There were 69% more renewable energy jobs posted in the first three months of 2023 than in the first three months of 2022, for example, while oil and gas job postings grew by 57% over the same period.

LinkedIn hiring rate for oil and gas and renewable energy power generation (United States)



Utilities point to a promising path forward

A microcosm of the transition toward greener energy production is taking place within the utilities industry.

Even as most industries are posting fewer jobs now than in 2022, the utilities sector has more job postings today than a year ago. Looking at the US, as virtually all industries pull back on hiring, our data shows that the utilities sector has the lowest decrease in its hiring rate.

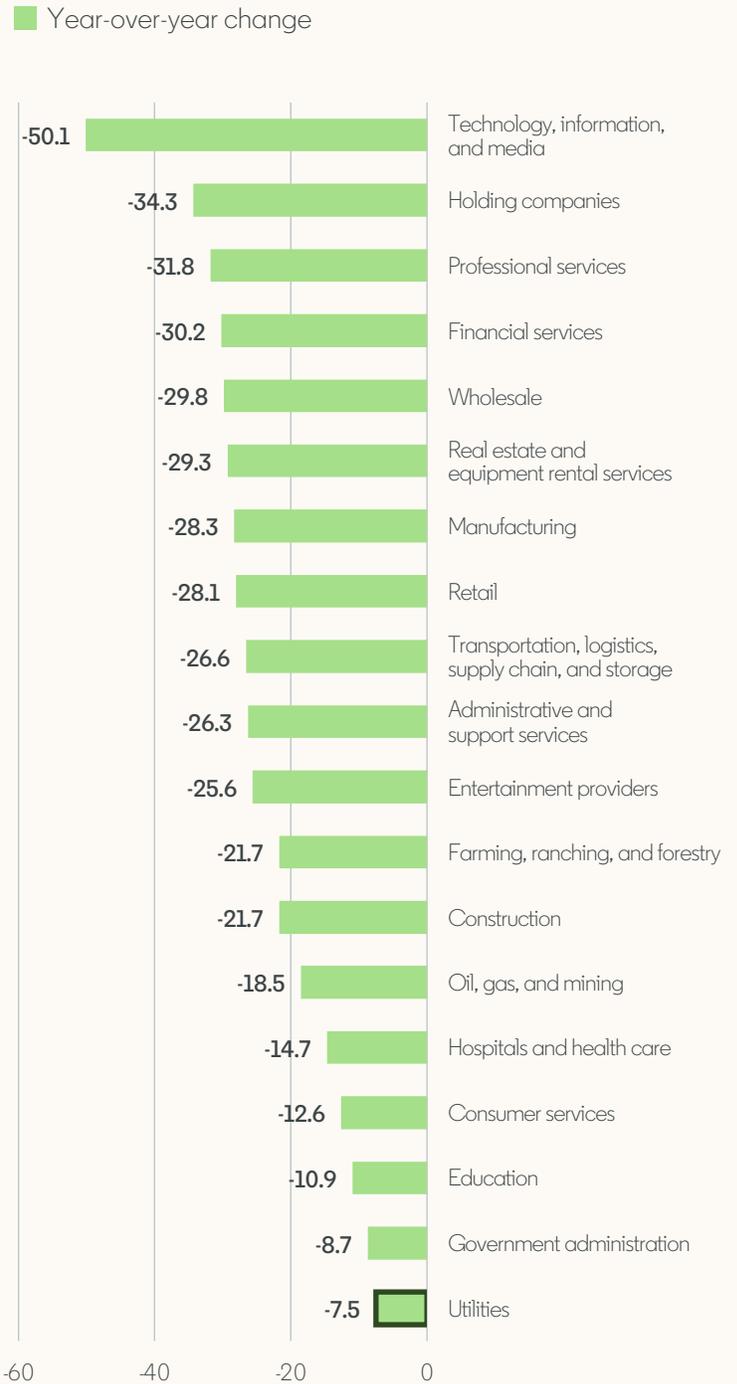
It's not surprising that the utilities sector has remained resilient, given its central role in people's everyday lives. What is surprising is the extent to which that resilience is driven by a transition toward renewable energy.

Between March 2022 and March 2023, the LinkedIn hiring rate in the US solar energy segment rose by 1% and remained twice as high as any other segment of the utilities industry.

We see this reflected in the external environment. According to Energy Intelligence's recent [Green Utilities Report](#), the top 100 green utilities and independent power producers around the world have added more new renewable capacity over the past year than during any prior year. This illustrates the clear connection between sustainability and the workforce: When hiring and job postings in renewable energy increase, the industry gains the capacity that's needed to produce clean energy.

Change in LinkedIn hiring rate by industry

United States, March 2023



Energy production & utilities

Green skills — the building blocks for a sustainable economy — are also becoming increasingly prevalent among utilities industry talent. LinkedIn data shows that renewable energy, solar energy, and power distribution were among the top five skills added by US utilities workers in 2022.

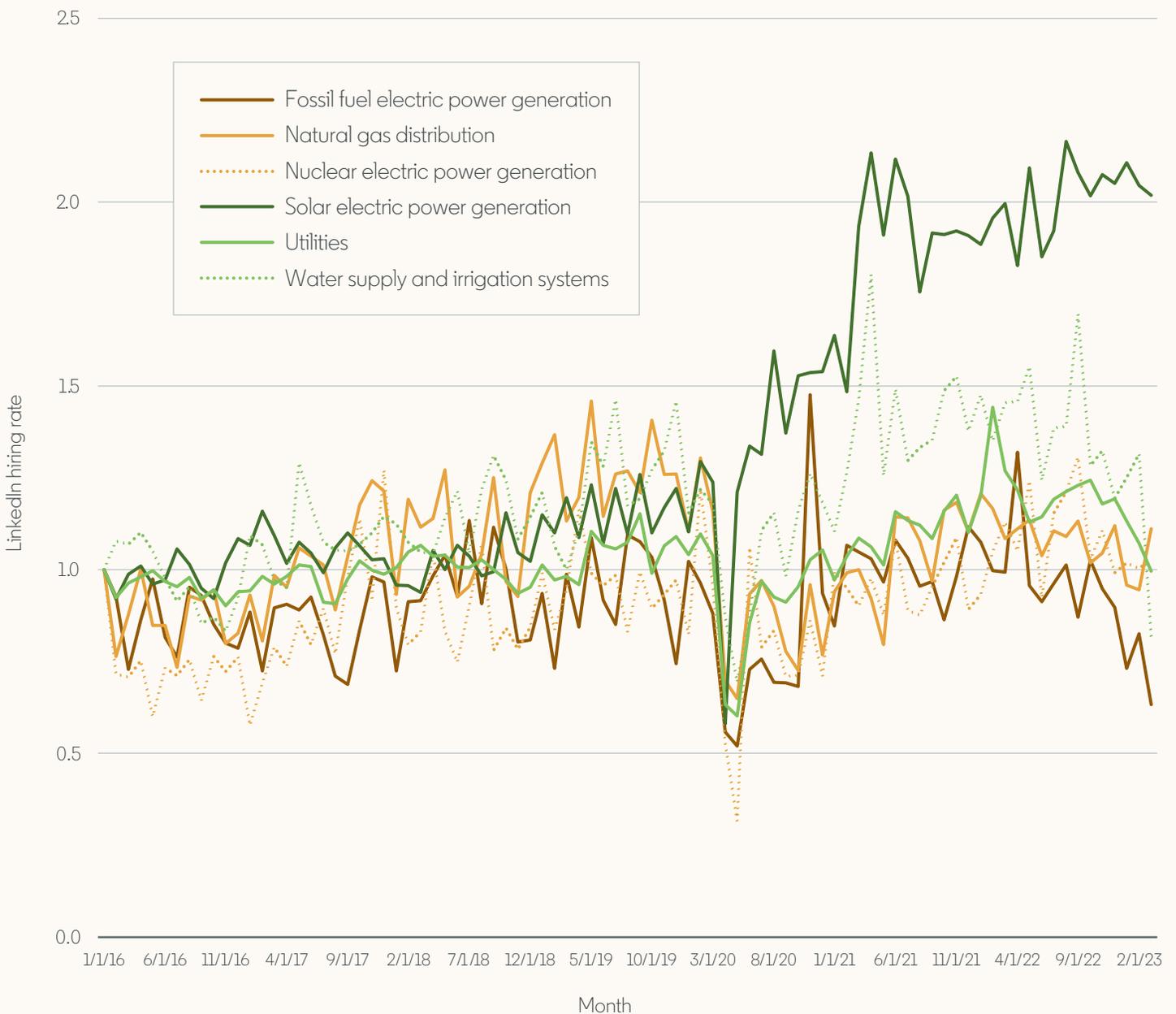
Top skills added by US utility workers in 2022 included these green skills:

- ✓ Renewable energy
- ✓ Solar energy
- ✓ Power distribution



LinkedIn hiring rate for utility sector industries in the United States

Seasonally adjusted. LinkedIn hiring rate is indexed to January 2016, which is set to 1.



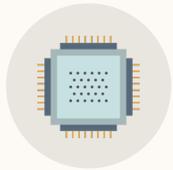
Policy implications

By cultivating green skills among workers throughout the energy sector, we can create the building blocks needed to shrink the carbon footprint of energy production overall. Moreover, we can demonstrate how every worker has a role to play in the fight against climate change.

Questions to consider:



What are the easiest short-term strategies, and most effective long-term strategies, during what will likely be a protracted transition toward 100% renewable energy?



What new technologies should we be investing in to maximize carbon capture and storage in the oil and gas industry? What green skills might these new technologies require, and how can we help workers develop them?



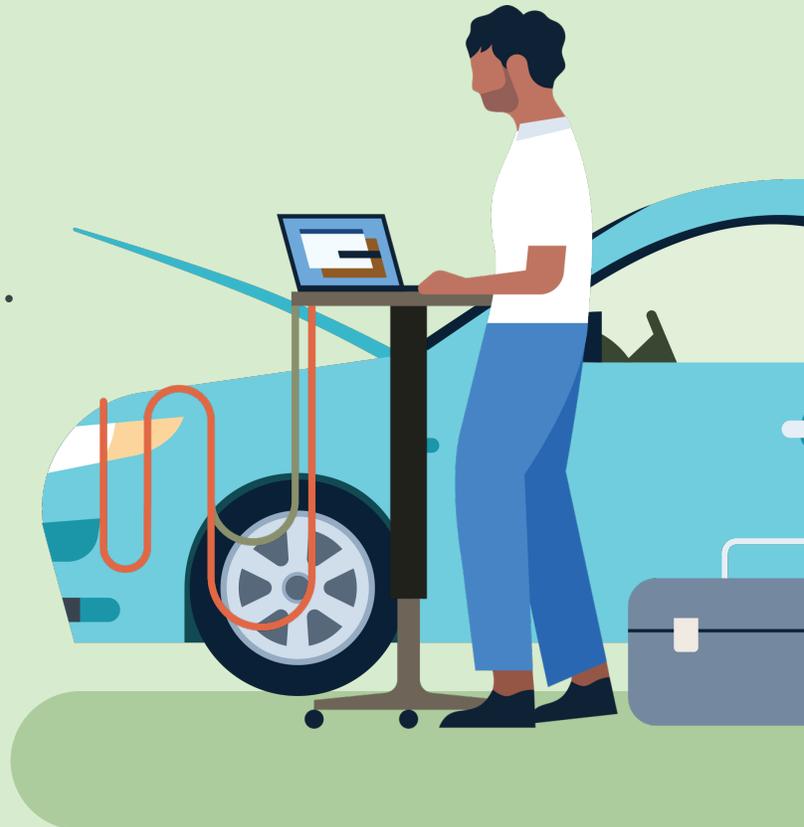
How can targeted investments, additional legislation, or other efforts amplify the impact of initiatives like the Inflation Reduction Act in the US, the Sustainable Jobs Plan in Canada, and the European Green Deal?



How can we forge partnerships among governments, businesses, labor unions, education providers, and civil society groups to transition workers into renewable energy? Are there overlapping skill sets that present promising reskilling opportunities? What social protections can governments put in place to support workers through these transitions?

Transportation

More workers have green skills related to electric vehicles — and it's not just the auto industry that's hiring them.

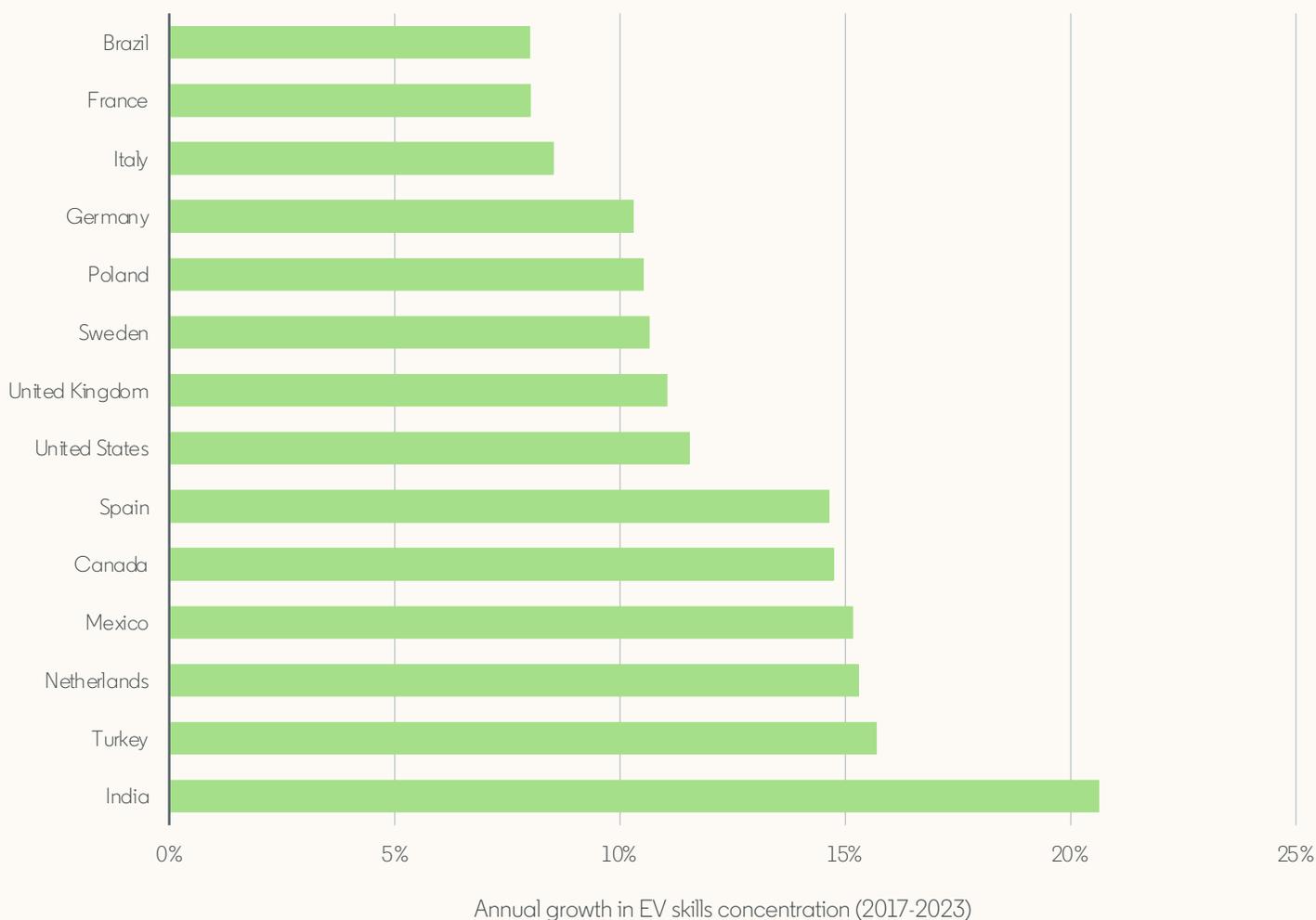


Transportation is the second-largest source of greenhouse gas emissions, accounting for [roughly a quarter](#) of emissions worldwide.

One of the most promising pathways to reducing transportation-related pollution is through accelerated growth in the electric vehicle (EV) industry.

Global demand for EVs is up. There are now 16.5 million electric cars on the roads, with EV accounting for 10% of global car sales, [according to the International Energy Agency \(IEA\)](#). In the US, China, and certain European countries, the share of electric car sales [nearly doubled](#) from 2020 to 2021.

Annual growth in EV skills concentration among auto industry workers by country (2017 - 2023)



In response to this shift, automotive industry workers are increasingly adding relevant green skills to their LinkedIn profiles — and the industry is hiring larger shares of workers who are equipped with these skills. Across all countries we examined, the share of auto workers with EV skills (a subset of green skills) rose by a median of 62% between 2018 and 2023.

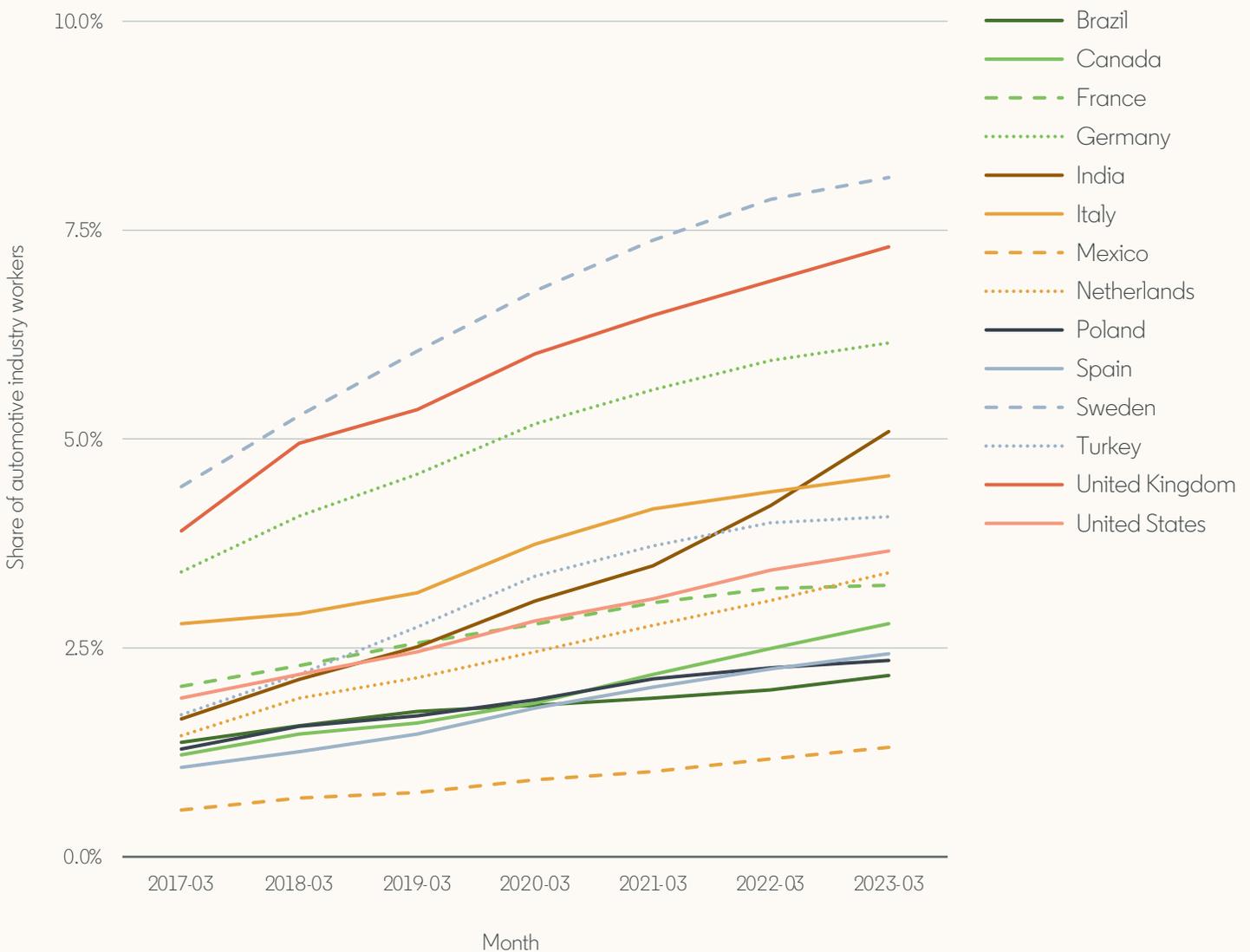
The median share of automotive workers with EV skills today is 3.5%. Sweden, the UK, and Germany are global leaders in terms of the share of auto workers with EV skills⁵ (8.1%, 7.3%, and 6.2%, respectively). Even these relatively mature EV markets have witnessed about 50% growth in the share of auto workers with green skills from 2018 to 2023.

⁵ When discussing members with at least one EV-related skill, we refer to the following skills from our Economic Graph skills taxonomy: Automotive Design, Automotive Electrical Systems, Automotive Electronics, Automotive Engineering, Automotive Technology, Batteries, Battery Charger, Battery Electric Vehicle (BEV), Battery Management Systems, Battery Testing, Charging, Cobalt, Electric Cars, Electric Motors, Electric Power, Electric Propulsion, Electric Transmission, Electric Utility, Electric Vehicles, Electricity Markets, Energy Efficiency, Energy Policy, Environmental Compliance, Environmental Policy, Fuel Cells, Graphite, Hybrid Electric Vehicles, Lithium, Lithium Batteries, Lithium-ion Batteries, Manganese, Nickel, Power Distribution, Power Generation, Power Systems, Power Transmission, Powertrain, and Smart Grid.

The US lags behind other auto manufacturing leaders in EV skill acquisition, with 3.7% of auto workers possessing EV skills — about half of the percentage of the UK. This could change, as emissions regulations are tightened and the Inflation Reduction Act takes hold. While the Inflation Reduction Act aims to spur domestic US economic growth, it covers certain production and manufacturing activities in Canada and Mexico — reflecting the importance of a robust North American supply chain for EVs.

Notably, Canada and Mexico are among the less-mature EV markets that have seen annualized growth of greater than 14% per year between 2018 and 2023 in the share of auto workers with EV skills. Turkey, Spain, and India also fall into this category. India, where 5.1% of auto workers now have EV skills, experienced the greatest five-year jump from 2018 to 2023 (140%).

Share of automotive industry workers with at least 1 EV skill (2017-2023)

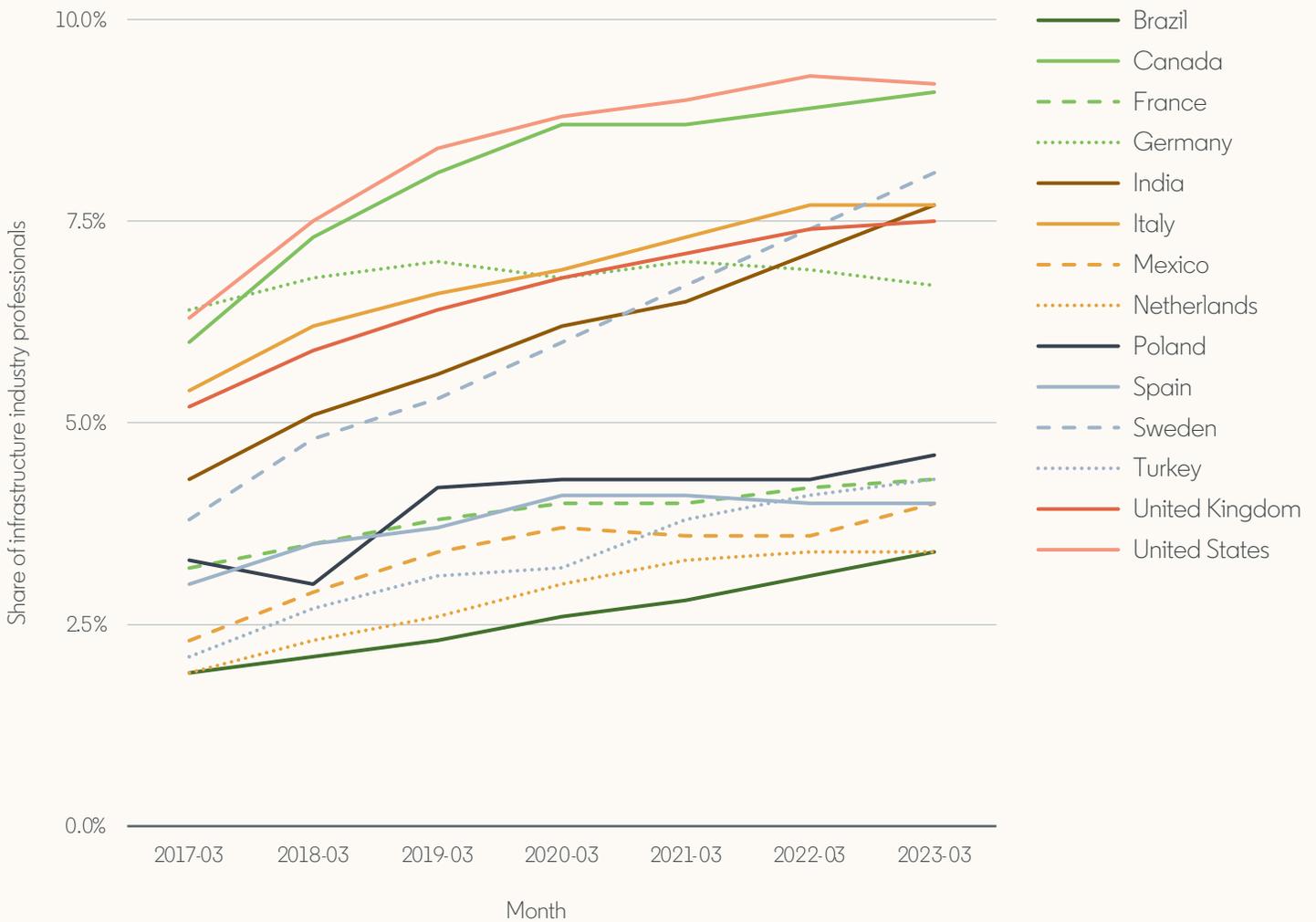


Hiring in EV-adjacent industries

It's not surprising that the automotive industry is hiring more workers with EV-related green skills. What's less obvious, but equally important, is that other industries are increasingly seeking out these workers, too.

This trend is driven by the need to support the transition to EVs — for example, by creating vehicle-charging stations and factoring EVs into energy demand management.

Share of infrastructure industry professionals with at least 1 EV skill (2017-2023)



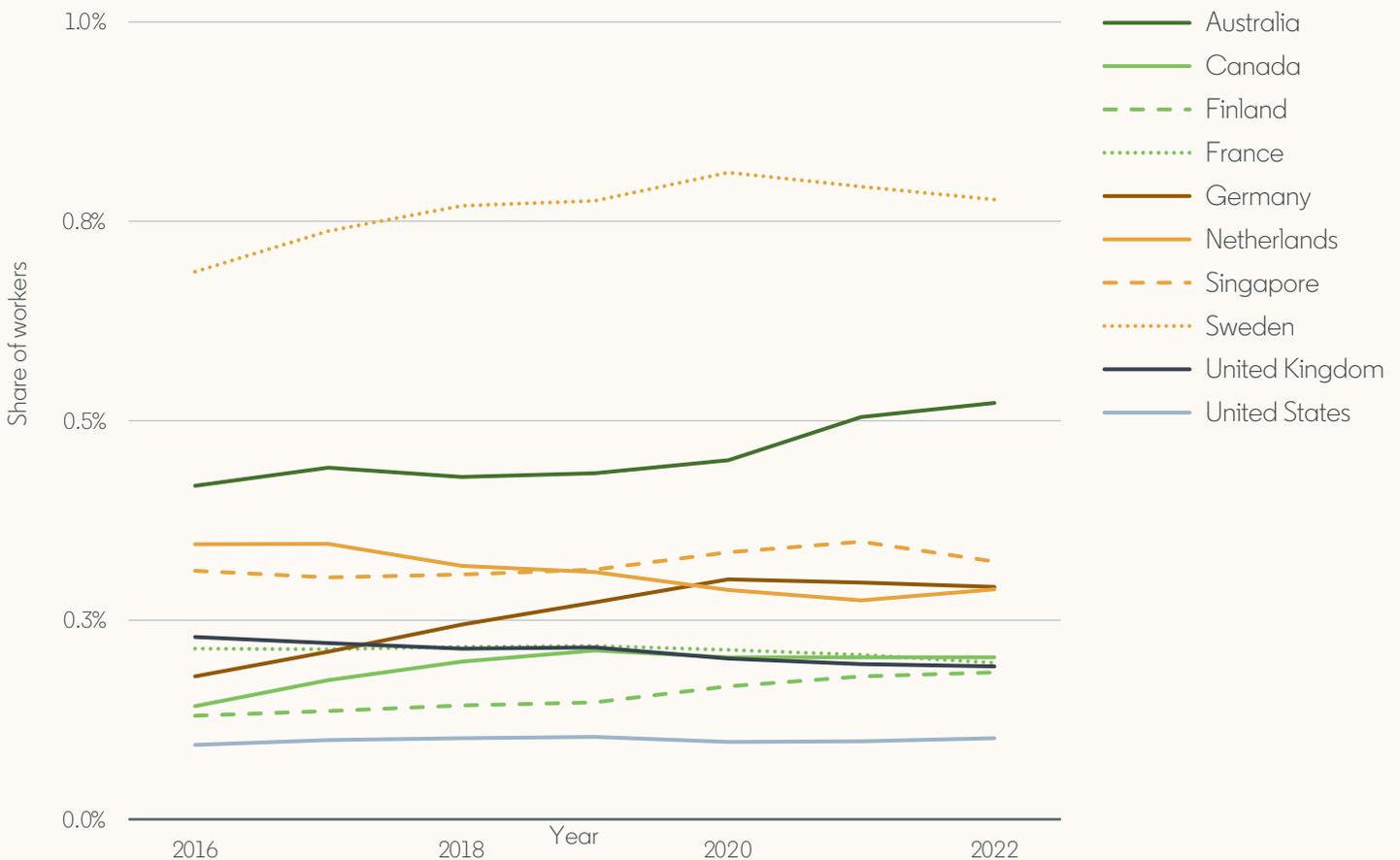
The presence of EV-related green skills among workers in EV-adjacent industries, like utilities and electric power transmission, is greatest in the US. Sweden, however, is posting the sharpest increase in this regard. In both countries, the growth is being driven by a combination of consumer demand and governmental policies that incentivize the development of EV-charger networks.

Beyond EVs: The role of public transit

EVs present an environmentally superior option to internal-combustion-engine vehicles, particularly when charged with electricity from renewable sources. The transition to EVs alone, however, is [not sufficient for curbing transportation-related greenhouse gas emissions](#).

The most successful approach to mitigating transportation’s contribution to climate change will also include increasing use of public transit and reducing solo trips in cars. As the charts below indicate, Sweden leads the world in public transportation employment, with 0.8% of the workforce (using LinkedIn members as a proxy) working for such organizations. This compares to 0.3% in Germany and 0.1% in the US. Sweden also leads in public-transit hiring, with 0.5% of new hires overall joining public transit organizations — compared to 0.2% in Germany and 0.1% in the US.

Share of workers at public transit agencies/companies



Policy implications

Moving forward, it will be critical to increase production and use of zero-emission vehicles, including cars as well as heavy-duty trucks and machinery. This shift will set off ripple effects across the economy, as we develop the infrastructure to support widespread EV use. Incentivizing demand and production through emissions regulations are important policy tools in the EV transition, but the economic benefits will only be realized if governments and businesses bring workers along. This means examining how to upskill auto workers so they can move to an EV assembly line or otherwise participate in the value chain. These efforts will be especially important in cities and regions where the economy depends on auto manufacturing.

Questions to consider:



How can governments forge partnerships among labor unions and other critical stakeholders to cultivate green skills within the auto industry workforce — so that workers can propel the shift toward zero-emission vehicles, help their companies stay competitive, and secure their own future employment prospects? What employee development and reskilling efforts should companies themselves be investing in? How can we ensure that the auto industry workers of today are part of the EV solutions of tomorrow, and how can we protect workers during the transition to EVs?



How can policymakers pair regulatory changes to emissions requirements with workforce-development investments — across the auto industry, downstream (utilities, home electric upgrades, EV-charging infrastructure), and within upstream supply chains (new minerals, high-tech manufacturing, etc.)?



Looking beyond passenger vehicles, how can we develop realistic plans for transitioning heavy-duty trucks toward EVs?



As we transition to EVs, what will the downstream impact be for those who work in places like gas stations and auto repair shops? How can we get ahead of these changes, to promote green skills and other newly necessary expertise — in software and IT, for example — within these segments of the workforce?



What strategies can policymakers put in place to reduce carbon from the EV supply chain, particularly in hard-to-abate sectors like steel? How can governments and businesses leverage green skills development to ensure that sustainable production methods are the default approach across the entire EV value chain?

Finance

A critical enabler that's starting to green — but still lags far behind



The whole-of-economy transformation required to combat climate change will require enormous investments in new infrastructure and innovation, from EV charging stations and solar power facilities to tech startups developing new climate solutions. And as climate change continues to set off natural disasters like flooding and wildfires, we also need new financial mechanisms to mitigate the economic impact on those most adversely affected.

Given the importance of having the financial tools to implement proven solutions, we need the financial sector to be among the most green. Our data shows that is far from the case.

Looking at the big picture, finance lags behind

While the median green talent concentration across all industries is 12.3% (meaning that one in eight workers have green skills), it's only 6.8% for financial services (meaning that one in 15 finance workers have green skills). This places finance below industries ranging from energy and mining to agriculture and manufacturing when it comes to the concentration of green talent.

Even in Germany, which has the greatest concentration of green talent in its finance industry, just 11.3% of finance workers have green skills. Austria comes in second, with 10.9%, followed by Colombia (10%), Luxembourg (9.6%), and Portugal (9%). In the US, 8% of finance workers have green skills, while in the UK 7.6% do.

While green talent concentration gauges the share of workers in an industry who have at least one green skill, another way to assess green skills penetration is to examine green skills intensity. This metric is calculated based on the average number of green skills held by industry workers, meaning that workers with zero green skills are averaged with workers boasting more than a dozen.

Singapore's finance industry leads by this measure, with a green skills intensity score of 5. This indicates that the Singapore finance industry workforce has five times as many green skills as the global industry average of one. While 92.2% of Singapore's finance workers have no green skills, the 7.8% who do are likely to have multiple green skills.

In the US, the green skills intensity score of the finance industry is just 1.3. Not only is this low compared to other global financial centers, it's among the lowest green skills intensity scores for any US industry.

An explosion in certain sustainable finance skills

A promising development is that workers in the US and Europe are quickly acquiring a set of skills at the intersection of finance and sustainability.

Skills in carbon accounting, carbon credits, emissions trading, impact assessment, and sustainability reporting are among the fastest-growing green skills in the US and the European Union (EU).

Concentration of green talent in the finance industry

6.8% Global median

11.3% Germany

10.9% Austria

10% Colombia

9.6% Luxembourg

9% Portugal

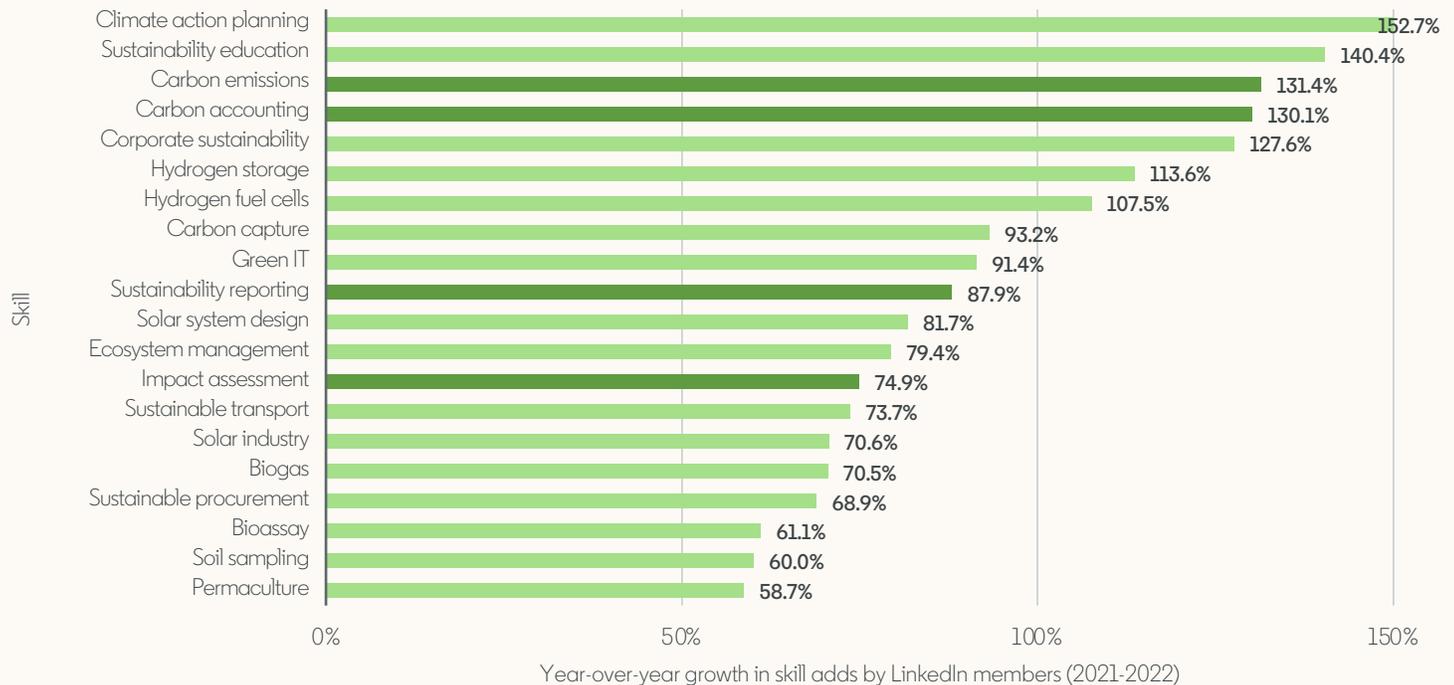
8% United States

7.6% United Kingdom



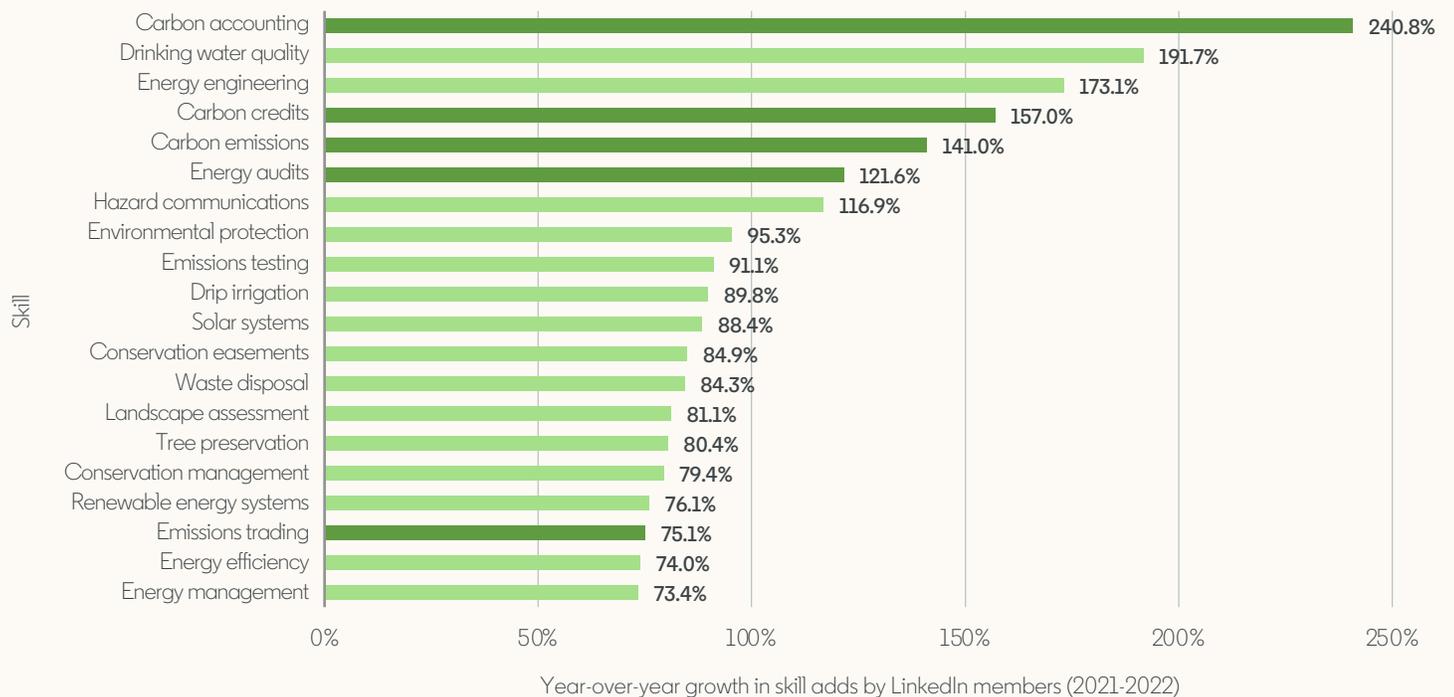
Fastest growing green skills in the European Union (2022)

■ Belongs to the 'Environmental Auditing' or 'Environmental Finance' green skills category



Fastest growing green skills in the United States (2022)

■ Belongs to the 'Environmental Auditing' or 'Environmental Finance' green skills category



In the US over the last five years, for example, we have seen a 157% increase in the share of members adding carbon credits as a skill and a 75% increase in the share of members adding the skill of emissions trading.

Signs of momentum

There are other signs of momentum. The finance industry is greening relatively quickly, with the concentration of green skills growing by a median of 14.8% over the past year. This compares to 12.3% growth among workers across the economy, 6.6% growth in utilities, and 11.7% growth in manufacturing.

In countries like Luxembourg, Malta, Singapore, Ireland, and Lithuania, the share of green talent in finance grew by more than 20% over the past year. Four of those five countries, of course, are in the EU. Like with EVs, the EU is at the forefront of leveraging public policy to require more climate-friendly approaches or influencing markets to move in that direction.

Finance is also among the industries showing the fastest growth in hiring for green jobs — those that have sustainability at their core and generally require extensive green skills. The share of hires into green jobs in finance rose by 17% from 2021 to 2022. This suggests a transition, while nascent, is underway in the finance sector where it is actively recruiting for green job titles.

Growth in share of hires in finance
Between 2021 and 2022

+17%

Green jobs



Finance industry green talent trends (2023)



Policy implications

The whole-of-economy transformation required to save our planet cannot happen without strong support from the finance industry. This will require a sharp increase in finance-industry workers with green skills, coupled with policies that incentivize the deployment of capital toward fighting climate change.

Questions to consider:



How can we incentivize financial institutions and investors to deploy more capital toward fighting climate change?



How can we support climate entrepreneurs in becoming investment-ready, so they can access capital markets more quickly and effectively? What are other viable strategies for improving the quality of climate-enhancing investments, or rebalancing the opportunity-risk calculation, in a way that spurs further investment?



How can governments leverage regulatory changes and adjustments to reporting and disclosure requirements to encourage climate-friendly investment?



What are the most effective strategies for incorporating finance-related green skills into upskilling programs and continuing education courses that are required to maintain certifications?

Transitioning to a greener economy

Green skills position workers to get green jobs. They also unlock opportunities for doing all jobs in a more sustainable way.



Workforce data on transitions into green jobs — or jobs that are not traditionally considered green but increasingly involve some focus on environmental sustainability — offers critical insight for policymakers intent on developing a green talent pipeline. This insight is crucial for ensuring that as many people as possible benefit from the opportunities that the green transition presents.

As our analysis demonstrates, the growth in demand for green skills is already outpacing growth in the supply of green talent.

Between 2022 and 2023, the share of green talent in the workforce grew by a median of 12%, while the share of job postings requiring green skills grew 22.7%.

This supply-demand disconnect is likely to rise considerably without significant workforce investments — particularly in sectors like finance, manufacturing, and renewable energy — as policies designed to curb climate change are introduced and rolled out in countries around the world.

The US Inflation Reduction Act, Canada’s Sustainable Jobs Plan, and the European Green Deal all allocate substantial funding toward creating jobs that are fully or partially focused on fighting climate change. In the six months immediately following the passage of the Inflation Reduction Act, the climate nonprofit Climate Power estimates, [US employers created 100,000 clean energy jobs](#). Research from BlueGreen Alliance suggests [this figure will rise to nine million jobs by 2032](#).

Filling these new roles, and powering the green transformation more broadly, will require two types of workforce transitions. The first type is when workers transition into green jobs (those which exist to fight climate change, such as solar panel installer, sustainability manager, and energy auditor) or jobs that increasingly include core sustainability-related components (such as civil engineer, facilities manager, and policy advisor).

The second type of transition is more subtle in that workers remain in their jobs — but the jobs themselves evolve, requiring a greater emphasis on sustainability. LinkedIn data reveals that the skills profile for the average job changed 24% between 2015 and 2022 — and that green skills are increasingly among the newly added skill requirements.

We can accelerate both of these transitions by taking a skills-based approach to talent strategy, as outlined in our [“Skills-First: Reimagining the Labor Market and Breaking Down Barriers”](#) report. As that report details, skills-based hiring — as opposed to hiring based on previous title or credentials — unlocks opportunity for employers and workers. By focusing on workers’ specific skills and helping them build the skills needed to fuel our transition to a green economy, we can boost their prospects of finding a lasting role as the economy shifts.

Worker transitions into green jobs

The first type of transition that’s needed is for more workers to transition into green jobs: those that have sustainability baked into their missions. Green jobs can be difficult to break into. They tend to require combinations of multiple green skills, which are difficult for those without green experience to acquire. Our data shows that, typically, 81% of workers who transition into green jobs have at least some green skills or prior green experience.

Our data, however, also points to several areas of opportunity for workers seeking to become part of the green transformation.

1 STEM and other critical green-adjacent skills

2 The rise of new green roles

3 Gateway jobs



1 STEM and other critical green-adjacent skills

There are certain non-green skills that increase workers' chances of successfully transitioning into jobs that have sustainability as an ancillary, if not core, component of the role. STEM skills are at the top of the list, since many green jobs are grounded in science and math fundamentals. Digital skills are important, as companies develop and deploy tech-enabled solutions to achieve their sustainability objectives. Expertise in utilities, mining, and agriculture are useful because these industries are greening rapidly. Public administration is another sought-after skill, as employers engage in more elaborate compliance and policy activities related to climate change.

Skills of LinkedIn members transitioning into green jobs

How much more (or less) likely are workers who move into green and sustainability-related jobs to have certain skills?



2 The rise of new green roles

Green roles that are relatively new and/or growing quickly represent another clear area of opportunity for workers without prior green experience. As hiring increases for relatively novel jobs like energy specialist, solar consultant, and sustainability manager, we are seeing employers hire candidates with similar or adjacent skill sets — even if those candidates don’t have green skills, per se. The chart below lists green jobs that are growing quickly in different countries and that are less difficult for those with no prior green experience to break into. Individuals who transition into these roles likely possess expertise in other relevant areas, like business strategy, negotiation, and project management.

Green jobs with the most opportunity for workers without prior green experience, by country

Country	Green job	Percentage of 2022 hires with no green experience	YoY growth (2021–2022)
Australia	Energy specialist	52.2%	36.9%
	Energy manager	26.3%	16.9%
	Environmental technician	24.0%	16.2%
France	Wind turbine technician	37.1%	33.1%
	Solar consultant	35.1%	16.5%
	Sustainability manager	33.9%	37.5%
Germany	Energy specialist	38%	23.1%
	Solar consultant	32%	46.7%
	Sustainability manager	28.8%	62%
India	Agronomist	32.2%	35.8%
	Environmental scientist	28.9%	20.8%
	Environmental health safety director	24.9%	31.5%
Indonesia	Energy analyst	40%	24.6%
	Agronomist	35.1%	37.3%
	Sustainability manager	21.6%	19%
Ireland	Safety manager	45.6%	12.9%
	Sustainability manager	32%	50.4%
	Wind turbine technician	25.3%	14.6%

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Green jobs with the most opportunity for workers without prior green experience, by country

(continued)

Country	Green job	Percentage of 2022 hires with no green experience	YoY growth (2021–2022)
New Zealand	Health safety environment officer	39.3%	10.9%
	Environmental health safety specialist	33.1%	8.4%
	Sustainability manager	21.7%	27.4%
Singapore	Energy specialist	45.1%	1.7%
	Sustainability manager	29.4%	45.8%
	Safety manager	26.5%	5.5%
United Arab Emirates	Energy specialist	29.3%	6.6%
	Safety manager	21.0%	7.1%
	Geologist	18.5%	7.4%
United Kingdom	Waste management specialist	57.3%	19.8%
	Solar consultant	43.8%	42.8%
	Energy auditor	43.1%	15.8%
United States	Solar consultant	50.5%	12.7%
	Waste management specialist	49.7%	9.3%
	Environmental technician	32.9%	12.7%

3 Gateway jobs

Gateway roles can be stepping stones that give workers the opportunity to acquire the green skills they’ll need to move on to traditional green roles, which are more likely to require prior green experience and technical green skills. In fact, roughly 41% of workers who move into jobs that involve sustainability — but do not have it as a core purpose — have no prior green experience. They do, however, tend to come from jobs that have nine to 11 overlapping skills. When workers gain green skills and experience through gateway jobs, they’re in a better position to land green jobs in the future.

The green evolution of jobs themselves

The second type of transition that we need is for jobs themselves to evolve, incorporating greater numbers of green skills in deeper, more impactful ways. Jobs from fashion designer to fleet manager to financial analyst can be performed in a more sustainable way if those who hold them have and use green skills.

There are promising signs that this transition is underway. Take, for example, professions related to supply chain management. For many companies, the path to reducing carbon emissions is through their supply chains. This places procurement and supply chain professionals on the front lines of fighting the climate crisis. As the very nature of these roles shifts, more workers are developing the green skills that are now required to do them well. As a result, carbon accounting and sustainable procurement are among the fastest-growing green skills in the US and EU.

The chart below lists several job titles not typically thought of as green jobs — but that increasingly require certain green skills. Workers who develop the green skills associated with their jobs position themselves to stay competitive in their fields and contribute directly to the fight against climate change. At a time when many organizations’ sustainability strategies involve shrinking the carbon footprint of their buildings, for example, more facilities workers are leveraging skills in energy efficiency.

Green skills are increasingly relevant across more job titles

Examples of green skills and the titles where they are growing

Climate change

Meteorologist
Agriculture Specialist
Policy Advisor
Marine Biologist
Agriculture Specialist

Energy Efficiency

Plumbing Engineer
Utilities Manager
Project Sales Engineer
Vice President, Facilities
Heating and Air Conditioning Engineer

Environmental Awareness

Park Manager
Safety Assistant
Geographic Information System Officer
Geographer
Archaeologist

Sustainable Design

Architectural Manager
Landscape Architect
Director of Interior Design
Urban Planner
Construction Administrator

Agronomy

Sales Operations Assistant
Entomologist
Winemaker
Technical Sales Representative

Renewable Energy

Business Engineer
Project Finance Analyst
Distribution Engineer
Land Acquisition Manager
Project Sales Engineer

Erosion Control

Director of Public Works
Construction Inspector
Survey Project Manager
Civil Designer
Transportation Engineer



In thinking about worker transitions, it’s also interesting to note the green skills that are growing most quickly in different parts of the world. In the EU, these are climate action planning, sustainability education, carbon emissions, carbon accounting, and corporate sustainability. In the US, they’re carbon accounting, drinking-water quality, energy engineering, carbon credits, and carbon emissions.

Policy implications

It's not enough for organizations to create more green roles, to be filled over time by a new generation of green-minded workers. The magnitude and urgency of the climate change problem requires that today's workers learn green skills on the job.

By identifying the most relevant green skills for each role and industry, we can develop targeted, tailored reskilling programs. And by extending reskilling opportunities to workers in countries that have been left behind during previous periods of economic growth, we can expand access to the economic opportunities that the green transformation will unlock.

Questions to consider:



How can governments work with the private sector to accelerate skills-based hiring so that companies broaden the pool of talent available to help them meet sustainability goals?



How can governments leverage granular analyses of real-time skills and hiring data to better understand which types of worker transitions are the smoothest? Can we identify the most promising gateway jobs, which allow workers to make an intermediary step before moving on to other green jobs? How can we support workers who may be forced to take pay cuts during the transitional period?



How can we create impactful upskilling and on-the-job training programs, so workers can cultivate the green skills needed to contribute to emissions reductions and remain competitive in their fields? How can we maximize investments in these upskilling efforts?



How do policymakers and the private sector work with educators and institutions of higher learning to ensure relevant green skills are part of the curricula for all fields of study so every student has a strong foundation in sustainability principles and practices? How do we encourage the development of new degree programs to cater to growing demand for workers with specialized green skills?



How can government, business, and workers work together to accelerate the green transition through skills development?

Our ambitious green goals require the rapid proliferation of green skills.



Climate change and environmental degradation reduce productivity and destroy jobs, and their effects fall disproportionately on the most vulnerable. Action to combat these processes can potentially create millions of jobs — but this requires a bold effort ... to invest in people's capabilities to realize their full potential and contribute to the productivity of enterprises.”

— International Labour Organization, [“Skills for a Greener Future: A Global View”](#) report

The global economy is only as strong as the human beings who power it, and the whole-of-economy green transformation that the moment demands will only take place if green skills proliferate throughout the global workforce. Technology is critical, of course — but human workers are the ones who will develop new technologies, invest in them, and implement them on a daily basis to make every job a green job.

World leaders are increasingly vocal about the urgent imperative to halt climate change. But so far, ambitious goals and proclamations have not translated into a bounteous array of concrete policies and programs that equip workers with the green skills needed to drive this transformation.

Workers in every sector of the economy and at every level of their organizations — from executive-level chief sustainability officers to gas station attendants — need and deserve to be part of the solution. At LinkedIn, we will continue

analyzing data from more than 900 million users worldwide to gauge how the global workforce, and the specific industries that comprise it, are tracking toward green skills development and green jobs growth.

In the coming months, we will delve further into industry-, country-, and gender-specific data to identify glaring gaps and areas of notable success. We hope that early successes, particularly in transitioning workers into green skills development and green jobs acquisition, can point to promising strategies that can be implemented elsewhere.

LinkedIn looks forward to partnering with industry leaders, policymakers, governments, non-profit organizations, educational institutions, and workers. Together, we can accelerate the changes that are needed to save our planet and ensure equitable access to the enormous economic opportunities that this challenge presents.

LinkedIn Economic Graph