

Position Paper

E.DSO Position on “The Union of Skills”

July 2025

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1. E.DSO

European Distribution System Operators (E.DSO) is the association representing Europe's leading electricity distribution system operators (DSOs), responsible for managing electricity distribution grids throughout Europe, with some 200 million connected customers. E.DSO works to enable the energy transition, foster innovation, and ensure a reliable and sustainable electricity supply for all European citizens.

2. Executive Summary

E.DSO calls for urgent EU action to address critical skills shortages threatening Europe's energy transition. With the electricity sector requiring hundreds of thousands of new workers by 2030, E.DSO recommends:

- Establishing an EU Grid Academy with €50 million annual funding¹;
- Creating EU-wide certification standards for energy professionals;
- Implementing targeted gender diversity programs to address the current 20% female workforce representation in the sector; and
- Launching a European public awareness campaign to attract talent to grid careers.

Without immediate coordinated action, skills shortages will delay decarbonisation targets and undermine Europe's industrial competitiveness.

3. Introduction & Policy Context

As the energy sector undergoes a rapid transformation driven by decarbonisation, digitalisation, and decentralisation, the skills and competencies required to operate and evolve Europe's electricity distribution networks are changing profoundly. In this context, E.DSO is committed to

¹ The €50 million annual funding represents less than 0.1% of Europe's €67 billion yearly distribution grid investment needs through 2050. This amount provides seed funding to scale successful national initiatives – such as France's "Grid Schools" – across all EU Member States, while leveraging additional industry and Member State investments. The funding level aligns with the scale of creating 2-7 million new energy jobs projected from the level of grid investments, ensuring that these positions can be filled with qualified workers. Compared to the EU's €44.2 billion total skills funding and recent €600 million energy infrastructure commitments, this targeted investment represents a strategic allocation to unlock and make best use of hundreds of billions in planned energy infrastructure deployment.

supporting the development of a highly skilled workforce, capable of meeting the technical, digital, and environmental challenges of the future.² This position paper outlines E.DSO's vision and recommendations for building a Union of Skills that empowers DSOs and other actors across the whole industry – Transmission System Operators (TSOs), energy producers, retailers and manufacturers – current and future employees – to lead the energy transition and deliver on Europe's climate and energy objectives.

The concept of a skills' shortage is not new in the discussion around electrification; on the contrary, the skills gap is often mentioned as a critical bottleneck to the energy transition. For example, the EU Action Plan for Grids³ highlights the urgent need to strengthen skills across the electricity sector to deliver on Europe's decarbonisation and electrification targets. It recognises that skills shortages in the electricity grid sector could seriously hamper the deployment of new infrastructure, digitalisation, and innovation. The Action Plan calls for stronger cooperation between industry, education providers, and policymakers to anticipate skill needs, modernise training, and promote technical careers, particularly targeting young people and underrepresented groups.

The energy transition is central to the European Commission's Competitiveness Compass⁴, which builds on Mario Draghi's report on the future of European competitiveness and translates it into actions. The European Commission stresses that a skilled workforce is one of the four critical drivers of long-term competitiveness, especially in strategic sectors like energy.

The Clean Industrial Deal Communication⁵ similarly recognises the vital role of skills for achieving the EU's clean tech ambitions. It points to the need for large-scale upskilling and reskilling initiatives, particularly in "net-zero sectors," where electrification plays a central role. It calls for fostering industrial skills academies and alliances, noting that training systems must adapt rapidly to support the development, production, and maintenance of clean energy technologies, including advanced grids and storage.

Finally, European Commission's Communication on "The Union of Skills"⁶ provides a strategic framework to address the skills challenges across critical sectors, proposing EU Skills Academies on key sectors for the green and digital transitions. The critical need of energy sector is specifically cited in the Communication, where it is noted that "The energy workforce will have

² E.DSO has a dedicated task force focusing on the topic of skills, reflecting its importance to the association's members.

³ Communication From The Commission to The European Parliament, The Council, The European Economic and Social Committee and The Committee of the Regions - [Grids, the missing link - An EU Action Plan for Grids](#). COM/2023/757 final.

⁴ Communication From The Commission to The European Parliament, The European Council, The Council, The European Economic and Social Committee and The Committee of the Regions - [A Competitiveness Compass for the EU](#). COM/2025/30 final.

⁵ Communication From The Commission to The European Parliament, The Council, The European Economic And Social Committee and The Committee of the Regions [The Clean Industrial Deal: A joint roadmap for competitiveness and decarbonisation](#). COM/2025/85 final.

⁶ Communication From The Commission To The European Parliament, The European Council, The Council, The European Economic and Social Committee and The Committee Of The Regions - [The Union of Skills](#). COM/2025/90 final

to increase by 50% by 2030 to deploy renewable energies, grid and energy efficiency technologies.”⁷ Furthermore, the network sector is specifically mentioned as an example, hinting at a possible EU Grid Academy. It recognises that skills shortages risk slowing down the green and digital transitions and highlights the need for targeted initiatives to support workers in developing the expertise needed for the energy transition. The Communication calls for "strategic action on skills" through stronger partnerships, better anticipation of needs, large-scale upskilling and reskilling programmes, and enhanced mobility and recognition of qualifications across Member States. Particularly in the energy sector, it stresses that building a skilled workforce is indispensable for achieving Europe’s decarbonisation, electrification, and competitiveness objectives.

4. Our views

The European Union has a crucial role to play in strengthening the grid workforce, by expanding training opportunities, fostering mobility, and promoting diversity. The large scale of the investments needed to meet electrification targets require a workforce fit for this purpose. Without a concerted, industry-wide effort to recruit hundreds of thousands of new people and give them the skills that are needed, the transition targets and Europe’s industrial competitiveness could be at risk.

The Union of Skills, announced by the European Commission, aims to facilitate deeper collaboration with educational stakeholders to develop targeted learning resources and align training programmes with sectoral needs, and encourages the mobility of Vocational Education and Training (VET) learners and workers. Furthermore, as part of the Net Zero Industry regulation, Net-Zero Academies should be established with the support of the European Commission through provisions of seed-funding.

Member States should cooperate to adapt skills programmes across all educational levels, develop best practices, and place strong emphasis on gender balance, given that only 20% of the sector’s workforce are women, according to the IEA⁸. Promoting inclusiveness and diversity must be a priority, encouraging DSOs and other actors to diversify their workforce. University-business partnerships and the launch of targeted EU Skills Academies for strategic sectors, including grids, are also welcomed, as crucial instruments to close existing skills gaps and to equip Europe’s energy workforce to the challenges ahead.

Innovation and digitalisation in the energy sector are already a pinnacle challenge for the industry. Being on top of this requires seed funding, matchmaking platforms, and logistical support to build cross-sector partnerships—linking DSOs, and AI startups for 5G edge AI solutions and strengthening open-source AI networks for tool development and knowledge

⁷ Footnote 31, p. 10

⁸ 2018 Data, [Energy and Gender – Topics - IEA](#)

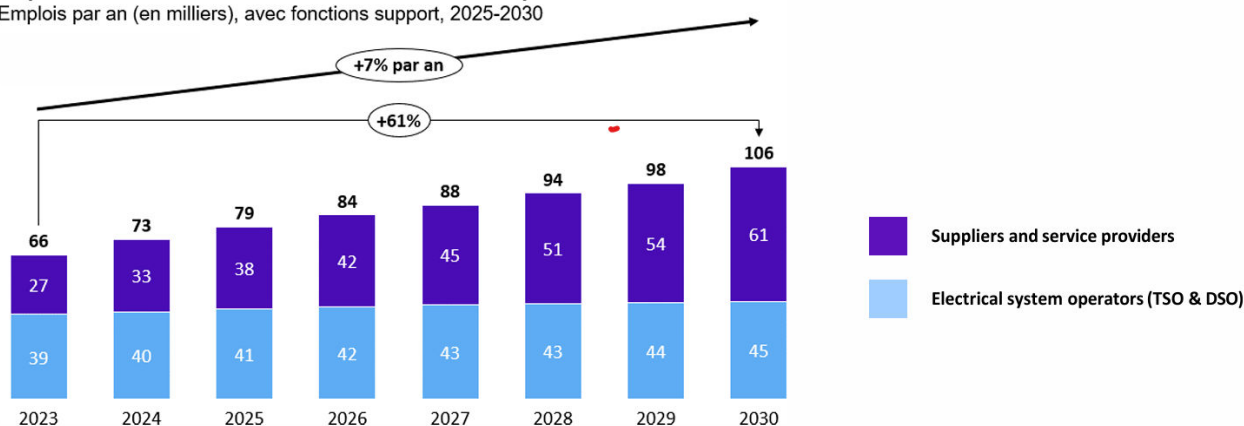
sharing. These efforts shall be led by EU and national funders, industry, utilities, TSOs/DSOs, and academia.

These new jobs range from highly technical engineering roles in transmission and distribution, related roles in information technology and data science, to the many manual and semi-skilled roles to install and maintain distributed, low-carbon infrastructure. This need of skilled and semi-skilled workers is notably affecting in terms of the increasing staffing needs of TSOs and DSOs, as well as the whole grids sector, including suppliers and service providers.

By way of example, French data collected in the framework of the sector-wide initiative “*Grid Schools for the Energy Transition*” are very representative of the evolution of the whole European electricity grids industrial sector and showcase the steady increase of workforce need notably among suppliers and system operators.

Besoins de la filière 2030

Emplois des métiers dans le secteur des réseaux électriques
Emplois par an (en milliers), avec fonctions support, 2025-2030



Data from Enedis presentation - The job needs of the French electrical grids sector due to the energy transition and the project of the Grids Schools to develop the skills required
The data show the number of jobs per year in thousands

E.DSO is committed to tackle these challenges, by giving relevance to good practices in skills and employment, collecting and assembling good practice cases in the industry, as well as setting up a functioning collaboration framework among its members, and ensuring its engagement and representation in broader industry initiatives. To this end, we intend to offer our viewpoint as regards the policy priorities and measures that are included in the Commission’s Union of Skills initiative.

Overall, we welcome the ambition and initiatives outlined, while also identifying areas where there is the opportunity to further strengthen the effectiveness and impact of the proposals. First, we welcome the call to implement EU Skills Academies, focused on key sectors for the green and digital transitions, with the network sector specifically mentioned – a positive sign for the possible establishment of an EU Grid Academy. We also commend the announcement of an industry-university network for the Cybersecurity Skills Academy, set to launch in June 2025. Equally important is the facilitation of mobility for apprentices through the development of a European vocational training diploma, covering both high school and higher education (including VET), with a pilot project through Erasmus+ in 2025–2026. This initiative, alongside

the Skills Portability Initiative announced for 2026, will help enhance mobility and recognition of qualifications across borders.

Furthermore, we support the upcoming strategy for vocational training to be developed by 2026 and the strengthening of Erasmus+ to ensure that it is more inclusive and accessible. We appreciate the emphasis on the cooperation between universities and businesses, illustrated by the launch of a transnational pilot partnership in sectors facing labour and skills shortages. Overall, we look very positively on the Communication's alignment of skills policy with competitiveness and strategic priorities, and we highlight that skills development is crucial for the grids sector as a whole, not only for DSOs. Initiatives such as Skills for the Green Transition, the Mobility for Skills Initiative, the Union-wide Micro-credentials Framework, and Skills for the Energy and Digital Transitions are particularly relevant and timely.

However, we consider that this initiative could be further improved, with the following recommendations:

- **Launch a European Energy Careers Campaign:** The Commission's approach is strongly focused on funding, which, while extremely important, does not in itself guarantee a significant increase in the number of workers in the energy sector. Raising awareness about careers in the grid sector is equally crucial. A European-level public awareness campaign could highlight the opportunities available in the energy sector, particularly in technical roles, making them more attractive to a new generation of workers. Partnering with actors such as schools and companies to showcase innovations in safety and describe career pathways would also strengthen engagement.
- **Implement Gender Diversity Targets:** Advancing gender inclusivity is well recognised, but it requires dedicated policy action. Promoting gender diversity targets with a binding timeline as well as high-quality unconscious bias training and allocating specific funding for cultural transformation within companies would help build a more inclusive sector. Regular reporting on gender diversity metrics and funding research on gender biases in STEM fields would provide the necessary data to track progress and implement effective solutions. These measures, taken together, would ensure a well-trained, diverse, and future-ready workforce for Europe's energy transition.
- **Create EU-Wide Professional Certification:** We urge the Commission to start working on the creation of an EU-wide recognised certification programme for energy professionals by 2026, to support targeted re- and upskilling initiatives, enabling workforce mobility across Member States and ensuring consistent competency standards for critical grid operations.
- **Establish EU Grid Academy by Q4 2025:** The Commission should launch a dedicated EU Grid Academy under the Net-Zero Industry Academies framework by Q4 2025, with initial seed funding of €50 million annually. This academy must coordinate with existing national initiatives like France's "Grid Schools for the Energy Transition" to avoid duplication and maximize impact.
- **Data-Driven Approach:** There is not enough data regarding skills shortages in strategic sectors and those lacking workers, although it is well established that STEM skills

(science, technology, engineering, and mathematics) are declining in the EU, and that women are underrepresented in these fields. The current state of play, therefore, needs to be better defined. For this reason, we urge the prompt creation of the European Skills Intelligence Observatory, as stated in the Union of Skills. If duly implemented, it can benefit the overall system. The proposed European Skills Intelligence Observatory must prioritize energy sector data collection, providing granular analysis of skills gaps, workforce projections, and training effectiveness metrics, to inform evidence-based policy decisions.

- **Accelerate AI and Digital Skills Integration:** A dedicated EU "AI in Energy" program should scale successful R&D hubs and Centres of Excellence, creating lasting innovation clusters that connect energy with mobility, ICT, and automation. This ecosystem would support data sharing, joint solutions, and systemic innovation through resource pooling and governance models led by EU institutions, national agencies, academia, SMEs, and industry. An AI-skilled workforce is also vital. Lifelong learning platforms, updated curricula, and certifications – developed by education providers, industry, and associations – must align with AI and grid trends, offering scalable, up-to-date training on human-AI collaboration, ethics, and technical skills.

5. Sector specific challenges

The electricity grids industry – and DSOs, as a critical player – continues to experience certain gaps, presenting opportunities for further growth. In training, programmes sometimes fall short of matching industry needs, with a clear need for more specialised, hands-on learning and support for career transitions. Recruitment and retention challenges persist, driven by high demand for skilled engineers in various sectors and the ongoing task of making the energy sector even more attractive to talent – including those who could transition from other industries. Finally, efforts to address gender imbalances and cultural biases in technical roles are gaining momentum, highlighting a commitment to creating a more diverse and inclusive workforce.

This said, the European Commission Communication on “The Union of Skills” specifically mentions four key strands, namely: *i) Build skills for quality jobs and lives through a strong educational foundation, with an inclusive lifelong learning approach; ii) Upskill and reskill an agile workforce mastering the digital and clean transition, notably those with lower and middle skills; iii) circulate skills with the free movement of people across the EU, unlocking the single market's full potential; and iv) attract, develop and retain talent.*

In this section, we highlight the challenges persisting along the four strands, as well as providing examples from our members initiatives to face those challenges.

The need to ensure a fit-for-purpose training, up-skilling and reskilling workers, is of paramount importance in the energy sector, where the transition is unprecedented. DSOs are in the forefront to tackle this challenge, with a range of initiatives promoted, often in synergy with educational institutions and other industry players. The lack of formal education on electricity

distribution networks presents a major challenge in Greece (specifically for its DSO **HEDNO**), in sourcing a skilled workforce, prompting the company to collaborate with a university to launch a Professional Postgraduate Program that aligns academic knowledge with industry needs. Recognizing a broader gap between education and practical skills, **Enel Grids** also implemented a Dual Engineering Apprenticeship Program. This Programme enables students to gain hands-on experience and technical training during their studies, while a separate three-year apprenticeship program combines theoretical with practical lessons. Mentoring was also introduced to train specialised blue-collar workers in response to a rising demand for technicians and field operators. **Enel Grids** also partnered with the Polytechnic University of Milan to launch the Smart Grids Executive Program. To meet the growing recruitment and skill demands driven by energy transition investments, major stakeholders including **Enedis**, RTE, and industry bodies, in France, initiated the “Grid Schools for the Energy Transition” in 2023 to adapt training programs and attract qualified talent across the sector. Meanwhile, **Enel** launched initiatives like “Energies for School” offering final-year vocational students a training path and “Energies for Growth,” targeted specifically to train unemployed or inactive individuals, which resulted in multiple hires in the whole supply chain.

As DSOs, we recognise the importance of skills portability and micro-credentials flexible solutions, trusted, and comparable across sectors and countries. Their effectiveness relies on broad engagement from various providers, alignment with qualification frameworks, and strong quality assurance to support their use in recruitment. To this end, **ESB Networks** in Ireland collaborated with a local university in the development of a post-graduate certificate program in Smart Sustainable Power Engineering – for full-time employees – in order to ensure that engineers can work with the changing requirements of renewable-intensive grids, thereby ensuring that the design of connections is done with an understanding of the latest techniques and understanding.

The energy sector in general is, for various reasons, often perceived as a less attractive industry job, especially as compared to other industries, which have a competitive advantage in recruiting talents from a limited pool. Adding, on top of that, the structural shrinking of the working population across Europe, the energy sector is facing significant challenges in recruiting. Moreover, energy industry experiences a huge gender imbalance starting from the very first choice of women significantly less often choosing STEM subjects. DSOs are not exempted from this broader industry trend, on the contrary, they are a prime example. Some DSOs have undertaken actions that proved to be effective in tackling those challenges, for example **Dutch System Operators** foster initiatives like the AI-driven Job Matching Platform run jointly by the 3 main DSOs and the TSO. **ESB Networks**, **E-REDES**, and **Dutch DSOs**, have specific programmes aiming to address the gender imbalance by promoting diversity and increasing the participation of women in STEM fields, through targeted recruitment, mentoring, and awareness campaigns. Evidence shows that those programmes markedly improved the attractiveness of the sector to women.

The lack of basic digital skills, particularly in regard to Artificial Intelligence (AI), can undermine the EU’s competitiveness in the global technological race. To this end, **European Technology &**

Innovation Platform for Smart Networks for Energy Transition (ETIP SNET), stresses the importance of building a future-proof, skilled, and mobile energy workforce proficient in AI. Europe should initiate and expand AI upskilling via the AI Skills Academy in close collaboration with universities, vocational training providers, industry partners, and certification bodies. Foundational AI training modules – covering AI concepts, generative AI in European Smart Grids, data basics, ethics, and cybersecurity – should be tailored for current energy sector professionals such as operators, engineers, and technicians. Initial efforts should include piloting micro-credential programs for in-demand skills, launching energy-focused AI Centres of Excellence or training hubs (linked to AI Factories), and conducting sector-wide AI skills needs analysis. Building on this, joint aster's programmes in "AI in Energy" should be co-designed and delivered by academic and industry stakeholders. Structured university/industry certification tracks should be established to address the growing need for specialised AI expertise. To ensure long-term adaptability, lifelong learning platforms should be deployed to offer continuously updated curricula, human-AI collaboration training, and advanced credentials, including specialised professional certifications for AI in energy. These efforts aim to close the critical skills gap, foster ethical and efficient AI system adoption, and ensure a resilient, innovative European energy workforce. Key actors include Education Ministries and Agencies, the AI Skills Academy, universities, vocational training providers, TSOs/DSOs, industry associations, certification bodies, technical institutes, and lifelong learning providers, supported by EU and national funding.

What is more, the growing digitalisation of the energy sector requires robust actions from companies, in order to tackle digital divide, and to increase digital literacy and digital well-being. For example, the DSO **E-REDES** set up, jointly with the Portuguese Directorate-General of Education, a “Digital Academy for Parents” aiming to empower parents and guardians with the digital skills necessary to navigate the digital world and support their children’s education. The academy offered free, in-person training sessions covering basic digital skills, online safety, digital citizenship, and online resources for managing electricity and water consumption.

6. Conclusions

The transition to a decarbonised, digitalised, and decentralised energy system represents one of Europe’s greatest opportunities and challenges for the coming decades. The development of a skilled, diverse, and future-ready workforce is essential to delivering on the EU’s climate, competitiveness, and energy security goals. E.DSO supports the European Commission’s communication on the “Union of Skills”, deeming this initiative as a crucial enabler for ensuring that critical objectives stemming from the main transitions, with a focus on the energy sector, are met. E.DSO welcomes the proposed actions, from EU Skills Academies to enhanced mobility, certification, and inclusion strategies.

However, funding alone will not bridge the skills gap. Raising awareness of energy careers, improving gender diversity, fostering partnerships between education and industry, and

embedding digital and AI competencies in training pathways are all essential to ensure impact. Equally, a deeper understanding of workforce needs, supported by robust data and forecasting tools, like the European Skills Intelligence Observatory, must underpin future policy action.

Europe's electricity grids are at the centre of the energy transition. Therefore, E.DSO is fully committed in working with industry partners, policymakers, and all other relevant stakeholders to tackle skills gap challenges.

DSOs are already working on multiply fronts in tackling relevant challenges such as increasing the attractiveness of the sector, tackling underrepresentation and gender imbalance issues, as well as providing high quality opportunities to train, upskill and reskill workers. A collection of DSOs' success cases in these areas can be found in [E.DSO website](#).

Key takeaways

E.DSO commits to:

- Collaborating with the European Commission on EU Grid Academy development.
- Sharing member best practices through our dedicated website platform.
- Participating in the European Skills Intelligence Observatory data collection.
- Supporting pilot programs for professional certification and mobility initiatives.

We call on the European Commission to:

- Prioritise energy sector skills development in funding allocations.
- Establish an EU Grids Academy.
- Create an EU-Wide Professional Certification.
- Promote gender diversity in the electricity/grids sector.
- Launch a European Energy Careers Campaign.
- Develop a European Skills Intelligence Observatory.
- Accelerate Digital & AI Skills Integration.
- Ensure meaningful industry participation in program design.
- Monitor progress through regular reporting and stakeholder consultation.

E.DSO is a European association gathering leading electricity distribution system operators (DSOs) **shaping smart grids for your future.**

www.edsoforsmartgrids.eu