Towards Attractive Workplaces and a Just Transition in the European Electricity Sector

FINAL RESEARCH REPORT

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VISIONARY ANALYTICS

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Contents

Abbreviations

AI	Artificial Intelligence
CEE	Central and Eastern Europe
COVID-19	Coronavirus Disease 2019
CPD	Continuous Professional Development
CVET	Continuing Vocational Education and Training
DDETS	Directions Départementales de l'Emploi, du Travail et des Solidarités (Departmental Directorates for Employment, Labour, and Solidarity)
DGEFP	Délégation Générale à l'Emploi et à la Formation Professionnelle (General Delegation for Employment and Vocational Training)
DREETS	Directions Régionales de l'Économie, de l'Emploi, du Travail et des Solidarités (Regional Directorates for Economy, Employment, Labour, and Solidarity)
E&I	Equality and Inclusivity
E&T	Education and training
EC	European Commission
EDEC	Engagement de Développement de l'Emploi et des Compétences (Employment and Skills Development Commitment)
EDF	Électricité de France
EESC	European Economic and Social Committee
EP	European Parliament
ESF+	European Social Fund +
ETFO	European Fair Transition Observatory
EU-27	27 Member States of the European Union
EU	European Union
EWCTS	European Working Conditions Telephone Survey
GPEC	Gestion Prévisionnelle des Emplois et des Compétences (Forward-looking Management of Jobs and Skills)
HE	Higher Education
ICT	Information and Communication Technology
ILO	International Labour Organization
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
ITT	Initial Teacher Training
IT	Information Technology
IVET	Initial Vocational Education and Training
JTF	Just Transition Fund

JTM	Just Transition Mechanism
JT	Just Transition
KPIs	Key Performance Indicators
MOOCs	Massive Open Online Courses
MS	Member State
NECPs	National Energy and Climate Plans
NGO	Non-governmental Organisation
OECD	Organisation for Economic Cooperation and Development
PSLF	Public Sector Loan Facility
PV	Photovoltaics
RDD	Recovery and Resilience Dialogue
RE	Renewable Energy
RHC	Renewable Heating and Cooling
SEE	Southeastern Europe
SES	Socio-economic Status
SMEs	Small- and Medium-Sized Enterprises
STEM	Science, Technology, Engineering and Mathematics
the Council	The Council of the European Union
TJTPs	Territorial Just Transition Plans
UFE	L'Union Française de l'Electricité
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations' Children Fund
VAE	Validation des Acquis de l'Expérience (Validation of Prior Learning)
VET	Vocational Education and Training

Executive Summary

The electricity sector is at the core of Europe's decarbonisation efforts to achieve net zero by 2050, not only through eliminating emissions in electricity production but also by enabling the electrification of transport, heating, and other sectors. Heightened energy security concerns in the EU have reinforced the urgency of a decarbonised electricity sector that does not depend on fossil fuel imports. Despite agreeing ambitious targets and substantial investment, the EU risks severe bottlenecks in delivering the energy transition if shortages of trained and qualified workers are not addressed, including by achieving gender equality and attracting future talent to the sector. Anticipating change and reducing existing and emerging skills gaps is therefore essential.

Responding to these needs, the project "Towards Attractive Workplaces and a Just Transition in the European Electricity Sector" (AWJEES, 2025-2026), undertaken by the European social partners for electricity (EPSU, industriAll Europe, and EURELECTRIC), seeks to develop an analysis of the sector's most pressing challenges and provide practical guidelines to their membership on three interlinked themes: the **Just Transition (JT), Gender Equality, and Knowledge and Skills**. By investigating key challenges, offering practical guidelines and putting emphasis on best practices from trade unions, employer organisations and other relevant organisations (e.g., civil society), the report equips social partners with the tools to strengthen social dialogue, tackle workforce challenges, and better promote a fair, inclusive, and sustainable transition. To achieve the project objectives, key **research questions** were established and customised for each of the three topics: 1) what are the main challenges for social partners in each of the topics?; 2) what best practices exist for social partners to tackle identified challenges?; 3) what, if any, guidelines/frameworks currently exist to support social partners to further each of the three topics? This study employs several **research methods**: a literature review; six interviews with EU-level stakeholders; an open call for best practices; two focus groups with EU-, national-, and company-level electricity-sector stakeholders; an in-person Launch conference; and an in-person Midterm workshop.

The **key challenges for social partners in the JT** include those associated with the rapid transformation of the electricity sector, including the decarbonisation and structural and technological changes, and the need to support workers. There is also the need to adapt to the effects of the climate crisis (e.g., storms, droughts, and heatwaves) and uphold safe working conditions. The transition also impacts workers and companies by exposing them to risks such as financial insecurity due to job loss or transition, health and safety concerns, while also requiring many occupations to adapt to new skill demands. The rapidly changing environment also pressures social partners to navigate fragmented JT policies and a complex policy landscape at the EU, national, and regional levels. In addition, skills anticipation and forward-looking studies, as well as comprehensive and accessible data, are crucial for developing, monitoring and evaluating the JT plans, although not always sufficiently developed. Moreover, EU financial instruments support regions, workers, and vulnerable groups in the energy transition, but challenges remain due to limited and inconsistent involvement of social partners in planning and implementation, and insufficient funding to support all affected. **To address this, good practices already exist at the EU, national, and company levels, and certain guiding points emerge**. Social partners can help create EU or national JT frameworks and a shared understanding of JT, and support multi-stakeholder collaboration (e.g., through collective agreements and joint projects), particularly by embedding regional and local context within national JT plans. Promoting data sharing, transparency, and monitoring of JT plans is another action that can help ensure that job creation and job-to-job transitions consider not only quantitative measures but also job quality and practical implications (e.g., training access, working conditions, psychological, relocation support) across the entire value chain. Comprehensive data and anticipation studies are critical for developing, implementing, and monitoring JT plans and their impact on workers, companies, and communities. Moreover, collaborative work with stakeholders should help raise sectoral awareness among wider society, including the electricity sector's contribution to European climate goals, employment opportunities and education and training pathways. Lastly, social partners can identify and leverage available EU funding opportunities to implement JT projects.

Social partners face numerous **challenges in achieving Gender Equality in the electricity sector**, as the electricity and, more widely, the energy sector remains male-dominated, with women representing only about 25% of the workforce in the EU (EC, 2024b) and often being concentrated in lower-skilled or administrative roles. While management-level commitment to gender equality has grown, women still face barriers such as glass ceilings, limited advancement opportunities in technical roles, and a higher prevalence of fixed-term contracts. Despite the great progress the sector has demonstrated over the years, some persistent challenges, found mainly in male-dominant workplaces, tend to include the prevalence of gender stereotypes, lack of role models, lack of childcare support measures, and the lower share of women entering STEM fields, all of which limit recruitment, retention, and progression. These factors continue to contribute to persistent inequalities in pay, career progression, and representation, despite significant positive change in recent years. To increase gender balance, **social partners have a number of ways of contributing to the creation of more attractive and inclusive workplaces for women** in the electricity sector. These include taking action that is supported by multi-stakeholder collaboration, fostering social dialogue and collective bargaining efforts to ensure commitment to inclusive policies, targets, and strategies. Social partners should tackle gender-biased recruitment practices and support the sector in ensuring inclusive, non-discriminatory approaches that promote diversity. Such approaches include increasing leadership opportunities for women, facilitating and strengthening women's professional networks, and supporting the visibility and recognition of the achievements of women role models. Social partners have a strong role in addressing job quality and working conditions, ensuring safe, supportive and flexible working environments that meet the needs of women and increase the attractiveness of the sector. Finally, trade unions and employers' organisations have an important role in promoting investment in the training of women that would address future skills needs and open up opportunities for career advancement and occupational change.

The **key challenges for ensuring Knowledge and Skills** for the sector include limited awareness of the electricity sector among children and young people, as well as the sector's significant role in achieving climate-neutral goals. While renewable and non-renewable sources of energy are explicitly included in school curricula in almost all European education systems, the extent to which they cover and make visible the role of the electricity sector remains unclear. Low awareness may also be attributed, in part, to the distance between the supply chain and the end user, leading to a passive engagement or lack of key touchpoints for young people. A key related issue for youth, choosing their career paths, is the lack of understanding of employment opportunities in the sector, due to a lack of clear communication on career paths and job values, which requires greater inter-sectoral cooperation. However, competition for talent remains a factor constraining cooperation due to the prevalence of ageing societies and other structural issues, such as youth unemployment. Some social partners face difficulties in reaching education and training institutions, including a lack of financial and human resources to organise initiatives engaging young people in those institutions. The lack of youth-led initiatives to increase the visibility of the sector for young people itself further limits the attractiveness. **Good practices that can be further taken by social partners** include the creation of an engaging storyline for youth about the sector, gradually building throughout the different age sections and/or education levels and targeting the skills needed in the sector (including basic and advanced digital, social, and entrepreneurship skills). Work-based learning opportunities (e.g., apprenticeships, internships), new, flexible forms of learning (e.g., Massive Open Online Courses - MOOCs, micro-credentials) and other joint projects with education and training providers (e.g., mentorships, competitions, scholarships, site-visits) should help increase the awareness, explain career opportunities and attract young people to the sector. Enhanced visibility campaigns and strategic communication on attractive career opportunities can help unlock and attract more youth to the sector. Tailored outreach and measures are needed to further ensure that underrepresented groups of young people are included. Lastly, the topic is also closely linked to two other topics explored: 1) JT, as the skilled graduates are needed to enter the electricity workforce, with skills needed to ensure climate goals; 2) gender equality, as making STEM and related fields more attractive is key to increasing the number of women working in the electricity sector and their skills.

These issues, closely interlinked among the three investigated topics, highlight several **overarching guiding points** for social partners active in the electricity sector, which, if implemented systematically, may facilitate a fair and equal JT, gender equality, and attract knowledge and skills:

Figure 1. Summary of key overarching findings and recommendations across all three topics of the study

Awareness of the sector's added value and career opportunities among the wider society

- Promote awareness by educational outreach, recruitment and visibility campaigns (e.g., partnerships, networks)
- Raise awareness on career opportunities for youth, women and underrepresented groups, showcase role models
- Promote employment and education opportunities to young people (e.g., site visits, workshops, open days, competitions, mentorships, apprenticeships)

Stakeholder collaboration for shared JT understanding

- Foster multi-stakeholder cooperation to create a common understanding of JT, inclusion actions, support measures for workers and companies affected, up- and re-skilling measures
- Engage with policy-makers to co-create regulatory frameworks, ensure funding mobilisation, infrastructure and institutional capacity
- Seek and promote collaboration with education and training providers to align curricula needs, sub-sectors

Availability of skills anticipation mechanisms and comparable data on JT

- Advocate for data transparency and accessibility (e.g., workforce demographics, employment projections), create forward-looking studies (i.e., foresight, impact studies), promote forward planning (e.g., skills anticipation, training needs)
- Create data-sharing protocols, platforms of excellence for good practices and knowledge sharing
- Ensure accountability mechanisms and monitoring responsibilities within collective agreements (e.g., joint monitoring committees)

Ensuring diversity and inclusion of underrepresented groups

- Promote tailored approaches taking into account context-specific needs of the targeted groups (e.g., women, youth)
- Promote work-based learning and training opportunities, innovative ways of learning (e.g., micro-credentials) and recognition of qualificatoins
- Support and advocate for better working conditions and work culture to target stereotypes and/or actual underlying barriers

Rapidly changing skill needs

- Support workers undergoing job loss or job-to-job transitions with up- and re-skilling efforts, work-based learning, and collaboration with education and training institutions
- Promote measures to include underrepresented groups
- Leverage EU and national/regional funding opportunities

EU financial instruments for JT

- Leverage and advocate for EU and national/regional fundings opportunities for implementation of JT and gender equality plans, knowledge and skills initiatives
- Utilise funds for social partner-led initiatives
- Promote awareness of funding opportunities (incl. stipends and scholarships for pursuit or education and training)

Source: Visionary Analytics, 2026

1. Introduction

The electricity sector is responsible for the generation, transmission, distribution, and sale of electricity. It plays a crucial role in the European Union's (EU) energy policy, and achieving the EU's aims of providing secure, sustainable, and affordable energy for European citizens and businesses. In 2022, approximately 1.4 million people were employed in the EU's network energy supply sector, which includes electricity, gas, steam, and air conditioning supply, highlighting the sector's continued importance as a significant source of employment (Eurostat, 2025). Developing a better understanding of the electricity sector and its workforce has become increasingly important in order to adapt to the green and digital transitions whilst upholding the principles of the Just Transition (JT), ensuring fairness and equity. However, research on the electricity sector is often approached within the broader energy sector, which can obscure sector-specific insights and limit the ability to draw relevant conclusions to guide actions. Increasing understanding of challenges and opportunities specific to the electricity sector supports social partners in taking informed and proactive steps to facilitate a fair, inclusive, and sustainable transition in the sector.

The overall aim of the study is to identify the main challenges and best practices within the electricity sector in relation to three topics: **1) JT; 2) Gender Equality; 3) Knowledge and Skills**. The study's main objectives are to support the JT in response to decarbonisation and digitalisation, providing an overview of the main challenges affecting the electricity sector's contribution to the JT, promote gender equality by addressing workplace imbalances and barriers affecting the achievement of women in the electricity sector, and identifying approaches to enhance the attractiveness of the electricity sector for young people and foster collaboration with educational institutions to prepare the workforce for present and future industry needs. Additionally, the study focuses on enhancing social dialogue by providing evidence-based recommendations and guidelines for social partners to better support them in relation to the three thematic topics.

To achieve its objectives, the study employs a variety of **methods**, including a literature review, interviews, an open call for best practices, focus groups, and inputs from the Launch conference and Midterm workshop. The literature review analysed a wide range of sources to identify and summarise the key challenges facing the electricity sector, as well as identify a preliminary list of best practice examples. This data was complemented by data collected through six interviews conducted with EU-level stakeholders and two focus groups conducted with EU-, national-, and company-level electricity sector stakeholders. To expand the repository of best practice examples and improve representation across geographical and organisational levels, an open call for best practices was also launched. To add, launch and midterm project events were used to collect additional social partners' insights and feedback. This report shares the key findings, recommendations, and guidelines from the collected data, following its analysis, triangulation, and validation. For a more detailed overview of the methodology, please see Annex 2.

The **geographic scope** of the study is 27 Member States (MS) of the European Union (EU-27), using national and lower-level insights (e.g. regional, local, company) to analyse challenges and best practices, where relevant. In some cases, good practices were also noted from countries beyond the EU. The identification of current challenges is based on information sources since 2020 (the most recent 5 years). This timeframe was selected to ensure relevance to the rapidly changing landscape of the electricity sector. However, some older sources were included based on their relevance or for contextual insight, determined on a case-by-case basis, with priority given to the most recent literature. When discussing the skills and knowledge required in the electricity sector, including the attractiveness of the electricity sector to young people, the following education levels were considered: lower and upper secondary education, vocational education and training (VET), and higher education (HE). Other levels, such as primary education, were also considered as and when relevant, but were not the main focus of the research.

Certain **limitations** of the study should be noted. Firstly, while the study prioritises resources that are specific to the electricity sector, due to the scarcity of resources explicitly focusing on the electricity sector, in addition to the blurred distinction between the electricity sector and the broader energy sector in some literature, this was not possible. In these instances, a clear indication, where such is possible, is made to clarify the context and relevance of the information used. Additionally, data scarcity limits the study's ability to take an intersectional approach to gender equality and consider intersecting factors such as age and socio-economic status. To add, due to the scope of the study and some social partners being more active than others during the project, a comprehensive mapping of best practices across all MS was not feasible. Instead, the study aims to balance the coverage of different MS, types of organisations, and levels (e.g. practices implemented by employer and employee organisations, companies, etc.). However, some imbalances may remain due to variations in best practice examples across different countries/regions. Lastly, the majority of analysed good practices do not have impact assessments available or other measures proving their effectiveness.

This report can be used by social partners to deepen their understanding of the challenges facing the electricity sector, enabling them to develop appropriate responses, support the JT and gender equality, and improve the supply of knowledge and skills for the sector. It can also serve as a practical tool to guide their efforts and responses. The practical guidelines for each of the three thematic topics (JT, Gender Equality, Knowledge and Skills) highlight the most pressing priorities and outline the roles that trade unions and employers' organisations can play in driving progress within them. Thus, it aims to support social partners in planning and implementing initiatives through the provision of best practice examples and guidance on the key aspects to consider. The key findings and recommendations summarise the most important overarching issues and set out the actions that should be prioritised by social partners. These could be used to inform the social partners' overarching approach, adapted to their own context.

The report is divided into **five chapters**. The present chapter (Introduction) provides an overview of the study's background, aims and objectives, methods, and limitations. The following three chapters (Just Transition in the Electricity Sector; Towards Gender Equality in the Electricity Sector; and Attracting Knowledge and Skills for the Electricity Sector) focus on each of the study's three thematic topics. Each of these chapters follows the same structure – beginning with a section that outlines the key challenges related to the topic and then introducing practical guidelines for social partners to address the identified challenges. The practical guidelines include best practice examples identified for the thematic topic. The final chapter (Key findings and guidelines) provides a summary of the key overarching findings and recommendations for trade unions and employer organisations.

The **annexes** provide an overview of available EU funding for JT plans (Annex 1), study methodology (Annex 2), and research tools used during the project, namely, interview questionnaire and the list of participants (Annex 3), the open call concept and invitation letter (Annex 4), the focus group concept and agenda (Annex 5), the focus group summary (Annex 6), a list of all collected best practices (Annex 7) and a midterm workshop summary (Annex 8).

2. The Just Transition in the Electricity Sector

Key challenges:

- **The EU electricity sector is undergoing rapid transformation** driven by decarbonisation, growing low-carbon generation, and pressures on infrastructure and labour, with social partners needing to address it, in particular, to support affected workers and companies with a complex set of measures from training to relocation, social and psychological support.
- **The fragmented and uneven policy landscape for Just Transition** across the EU, national, and regional levels creates coordination challenges for social partners, leading to difficulties in aligning training systems with industry needs. Social partners agreed on the value of a common European understanding of JT.
- **Comprehensive, up-to-date and data and skills anticipation** are crucial for monitoring and evaluating the impacts of the JT and creating effective policies. However, despite the legal obligations, access to quality and open data is not currently granted in all MS. Company, local, regional, and national-level data should also be made available.
- Conceptual confusion of JT risks reductionist approaches that overlook **social equity and regional disparities**, and may exacerbate inequalities by disproportionately benefiting certain groups (regions, workers).
- **Changing skill needs** are creating significant **skills gaps and mismatches** in the electricity sector, particularly in technology/digital, specialised technical, and soft skills, requiring social partners to strengthen training, reskilling, and access to/develop skill anticipation systems.
- **EU financial instruments are mobilising to support regions, workers, and vulnerable groups** in the energy transition, but challenges remain due to limited and inconsistent involvement of social partners in planning and implementation and limited funding to support all affected.

Key guidelines:

- **Create and/or strengthen EU and national/regional JT frameworks** to create a shared understanding of the JT, ensure coherence between JT plans, and optimise resources and stakeholder efforts.
- **Support multi-governance and multi-stakeholder collaboration**, for example, through collective agreements, to facilitate responsive, fit-for-purpose JT plans, in particular considering regional and local-level contexts and needs.
- **Promote anticipation and forward planning**, data and knowledge sharing mechanisms to ensure effective development and implementation of JT plans (e.g., foresight, impact studies, employment data, skills observatories).
- **Ensure that job creation and job-to-job transitions within JT plans consider new employment opportunities** beyond quantitative measures (i.e. number of new jobs created) and also emphasise the quality of new jobs and change management as well as practical implications such as location, skill needs, and training access throughout the entire value chain.
- **Raise sectoral awareness**, including the electricity sector's contribution to European climate goals, employment opportunities, and education and training paths among wider society.
- **Map, identify and leverage available EU funding** opportunities to implement the JT Plans.

This chapter will provide an overview of the JT in the electricity sector. Section 2.1. will outline the key challenges for social partners contributing to JT plans. Section 2.2. will provide practical guidelines for social partners to contribute to JT plans, showcasing best practices from across the EU.

2.1. Key challenges

This section will provide an overview of key challenges for social partners contributing to JT plans based on a literature review, exploratory interviews, focus groups, and in-person events. The Chapter also examines in more detail skills mismatches and skills gaps in the electricity sector before discussing the role of EU funding in developing JT plans.

2.1.1 Key concepts and definitions

While JT recognition and its use are growing, confusion persists about its meaning (Abram et al., 2022). Various institutions and organisations aimed at defining or conceptualising JT. At the EU level, with the launch of the European Green Deal (European Commission, 2019a), the EC set out an ambition to transform the EU's economy into a resource-efficient, competitive and inclusive one. Energy is one of the main policy areas that

the EU Green Deal addresses. It highlights that more electricity and greener electricity should be provided to sectors such as transport and industry. This highlights the importance of electrification in the EU (e.g. transition to electric cars) and the transition within the electricity sector to decarbonised energy in achieving the goals of EU climate policy. At the same time, the European Pillar of Social Rights and its Action Plan (EC, 2021b) set out EU targets aimed at strengthening the social dimension of the green transition in the areas of employment, skills, and social inclusion by 2030. In that context, the EU Green Deal introduces **the concept of a just transition,** recognising that each EU region faces unique economic and social circumstances, leading to different needs for achieving carbon neutrality. This recognition led to the establishment of the Just Transition Mechanism (JTM) (European Parliament and Council of the European Union, 2021) (see 2.1.4 for further discussion). However, the EU provides no explicit definition of JT and instead uses the concept widely, operationalising it through instruments (e.g., JTM, Just Transition Fund - JTF) rather than a single formal definition.

> ***Just transition*** *involves maximizing the social and economic opportunities of climate and environmental action, including an enabling environment for sustainable enterprises, while minimizing and carefully managing challenges. It should be based on effective social dialogue, respect for fundamental principles and rights at work, and in accordance with international labour standards* (ILO, 2023, p.3)

In this study, the concept of JT is informed by the joint statement issued by the European electricity sector's social partners – EPSU, industriAll and Eurelectric (industriAll, EPSU, Eurelectric, 2021a). The statement refers to a set of JT principles, including a strong social dimension and social dialogue between trade unions and employers, inclusion of social partners in the strategic planning carried out by regional and national governments, and ensuring no region is left behind. The guiding principles, acknowledged by the electricity sector's social partners, are based on the International Labour Organization's (ILO) JT guidelines (ILO, 2015; 2023). Further, the report also refers to **JT plans**, which refer to structured, funded plans with clear objectives, targets and measures developed collaboratively among governments, social partners and other stakeholders to manage employment transitions at the national/regional and/or company level.

When referring to **quality jobs**, ETUC Resolution on Defining Quality Work is used, which refers to six following features: 1) good wages; 2) work security via standard employment and access to social protection; 3) lifelong learning opportunities; 4) good working conditions in safe and healthy workplaces; 5) reasonable working time with good work-life balance; 6) trade union representation and bargaining rights (ETUC, 2017). From an institutional perspective, the EU's foreseen Quality Jobs Roadmap should support workers in transition by ensuring JT, anticipating change, and enabling quicker interventions (European Parliament, 2025). International organisations also offer concepts, approaches, and indicators to understand and measure quality jobs, for example: UNECE's Quality of Employment Framework (UNECE, n.d.); ILO's Decent Work and the 2030 Agenda for Sustainable Development (ILO, n.d.); Eurofound's research on job quality indicators (Eurofound, n.d.).

2.1.2 Overview of key challenges

As the urgency to meet clean energy goals in the EU drives electrification, social partners must address the **challenges associated with the rapid transformation of the electricity sector,** including the decarbonisation of the sector and structural and technological changes (industriALL et al., 2021b). The electricity sector is growing within the broader energy sector – in 2024, electricity generation from solar photovoltaics (PV) surpassed that from coal in the EU (International Energy Agency (IEA), 2025) and, in the next thirty years, electricity demand is forecast to grow four times faster than demand grew over the last thirty years (Eurelectric, 2024). This is driven by higher consumption from the deployment of electric end-use technologies such as electric vehicles, data centres, and heat pumps (IEA, 2025). Within the electricity sector, shifts towards low-carbon electricity are also reshaping the sector. Renewable electricity generation in the EU is growing and is forecast to reach a share of 56% of total electricity output by 2027 (IEA, 2025). In addition, the

need to invest and develop infrastructure to improve energy security against threats such as war, cyber-attacks, and climate change has also been highlighted (Eurelectric, 2025; IEA, 2025). These developments put additional pressure on existing challenges, such as labour shortages and low funding, in addition to creating new challenges.

Rapid transformation of the sector was one of the most discussed challenges in the interviews and focus groups. In particular, participants highlighted the challenge of creating and maintaining resilient electricity infrastructure as well as the need to support workers and meet training needs. Moreover, participants at the in-person event underlined the importance of adopting a stance of technological neutrality in policy. Policymakers may face pressure to act quickly regarding climate goals, leading them to endorse specific technologies (e.g. wind, electric vehicles), for example, due to their maturity, scalability, or visibility. This can compromise the principle of technology neutrality and compromise the flexibility needed to achieve the energy transition, as well as undermine fairness, innovation and competitiveness in the EU (Sustainability Directory, 2025). On the other hand, technology neutrality is a market-oriented approach that is contested (Azar and Sanden, 2011). Within the limits of what is technologically feasible and fit for the purpose of decarbonising the sector, it is also the aim of the energy policy to choose what technologies are more suitable in a given context and how legislation and, possibly, incentives can support their development.

Another contextual factor that requires electricity social partners to remain agile and responsive is the **need to adapt to the effects of the climate crisis** on workers. Extreme weather events such as storms, droughts, and heatwaves cause widespread power disruptions (IEA, 2025) and underscore the need to uphold safe working conditions. For example, the European Environment Agency (2024) warns of increased occupational health risks for indoor workers in the electricity sector during heat waves. These conditions create both physical and psychological risks, for example, when long shifts are required to restore services (Skiotytė, G. et al, 2025). Some MS have implemented measures to protect workers from climate-related risks. For example, Spain has introduced "climate leave" for workers - up to four days of paid leave if they are unable to get to their workplace due to extreme weather conditions (EPSU, 2024c). On the other hand, such measures also require mechanisms to ensure continued electricity service, as it becomes more weather-dependent. Thus, less predictable weather events pose a challenge for social partners in ensuring workers' working conditions during extreme weather, while balancing the need to maintain a consistent electricity supply.

Fragmented policies and regulations related to JT create a complex policy landscape (ETUI, 2022). This requires social partners to navigate inconsistent policies and directives from the EU, national, and regional authorities, which can result in misaligned priorities, unclear responsibilities, and redundancy. Social partners must be responsive to new EU and other-level policies in the rapidly evolving policy context of the electricity sector. The high pace can place social partners in a reactive position. Focus group participants highlighted that rapid changes in the regulations and legislation on JT may result in a lack of shared JT understanding as well as differences between policies and interpretations (e.g., between and within MS, between the EU and MS), which can complicate planning, particularly for companies operating in multiple countries. Additionally, the fragmentation of the policy landscape was reported to hinder the alignment and adaptation of training systems with industry needs, as well as create additional difficulties reaching agreements between and within social partner bodies. Moreover, Midterm workshop participants observed that the regulatory environment varies widely across MS, creating unequal conditions for companies and workers. For example, in Spain, JT is supported by robust legal frameworks and social dialogue mechanisms, whereas other MS may lack clear structures or coordination. Compounding this challenge is the fragmented stakeholder

Since the European Green Deal (EC, 2019a), **EU-level developments** have included: the European Pillar of Social Rights and its Action Plan (EC, 2019b), European Climate Law (European Parliament and Council of the European Union, 2021), the Fit for 55 package (EC, 2021a), the RePowerEU Plan (EC, 2022a), the EU Action Plan for Grids (EC, 2023a) and, most recently, the Electricity Market Reform Regulation and Directive (EC 2024a; 2024b), the Affordable Energy Action Plan (EC, 2025a) and the Clean Industrial Deal (EC, 2025b).

landscape, with over 100 trade unions and 48 employers' organisations in the electricity sector identified at the national level in the EU[1] (Eurofound, 2022). This adds complexity to coordination efforts and underscores the need for clearer and more integrated governance mechanisms.

A challenge for trade unions, in particular, is the absence of an EU framework directive for the JT that would structure timely and effective consultation to protect workers' rights, jobs, and working conditions. However, it is important to note that this position is not considered a key challenge by employers' organisations. The European Commission (EC) has been repeatedly called upon to develop an EU framework for the JT, including international organisations, institutions, and trade unions (e.g., International Labour Organisation (2023), European Parliament (2023b), the European Economic and Social Committee (EESC) (2023), EPSU (2024a), ETUC (2024), and ETUI (2024)). This matter has been further discussed during the project's Midterm workshop. Its participants agreed on the importance of ensuring a common European understanding of JT but differed on whether this should take the form of a joint EU directive on JT or other mechanisms. Some participants highlighted that a shared European framework could help promote minimum JT standards across countries - particularly in those where social dialogue and policy support are weak - and could facilitate access to EU funds for transition activities. However, other participants argued that a binding directive would be unnecessary and burdensome, given that employment (incl. training) competences rest primarily with the MS and/or their respective regions. Instead, some participants favoured a flexible, supportive mechanism that would encourage coordination, capacity-building, and the exchange of good practices without imposing uniform regulations. This reflected a shared understanding of the desired content and objectives of EU action (clarity, access to funding, and consistency), but not of its legal format or enforcement mechanism.

Another relevant challenge is the **lack of availability of comprehensive and/or comparable data.** Such datasets are crucial for monitoring and evaluating the impacts of the JT and creating effective policies (EC, 2024b). However, despite the legal obligations set out by the Regulation on the Governance of the Energy Union and Climate Action (implemented to ensure compliance with the Paris Agreement) that MS must develop National Energy and Climate Plans (NECPs) based on a common template, access to quality and open data is not currently granted in all MS (Climate Action Network Europe, 2024). To add, considerable disparities between the scope and quality of NECPs and the EC have further heightened issues, including inconsistencies that remain in the framework, the need for updates to reflect recent EU and international legislative and policy initiatives, and the need to simplify and streamline reporting obligations (EC, 2024c). Without data available for social partners, assessing climate and energy trends, particularly in relation to NECPs, remains a challenge. To address this, there is an urgent need for greater data availability, including up-to-date, high-quality, and official data that is freely accessible, unrestricted, and presented in easily readable formats (Climate Action Network Europe, 2024).

As presented above, the **conceptual confusion of the meaning and concept of JT** can lead to a reductionist approach to the JT that frames the transition in overly simplistic terms (e.g. focusing only on the fossil fuel industry/workers) and that overlooks crucial justice dimensions such as social equity, regional disparities, and the needs of workers from disadvantaged backgrounds (Abram et al., 2022; Armeni, 2023). The JT may also widen the gap rather than reducing it (Pellegrini-Masini et al., 2020). For example, incentive-based programmes such as those for electric cars or photovoltaic panels implemented to promote end-user participation may disproportionately benefit high-income households, thereby perpetuating existing socio-economic disparities in access to energy and further marginalising lower-income households (Abram et al., 2022; Carrosio and De Vidovich, 2021). Another study on Norwegian retrofit subsidies found them to be heavily focused on high-income households (Egner et al., 2021).

[1] Present in all MS except Luxembourg.

The issue of **regional disparities** in relation to both how they are impacted differently by the JT as well as in the resources and capacities they have to adapt to it was also raised in the interviews and focus groups, underlining the importance of this issue. Some regions may fall behind or bear most of the costs of the JT. For example, renewable or decarbonised energies need to be installed where the natural resources of wind and solar are available; therefore, possibly moving generations from regions hosting traditional fossil fuel plants to other areas. In addition, less well-off regions often bear more of the costs of energy infrastructure because residents in wealthier areas have more capacity (e.g., lobbying against the developments). As another example, a study on England found that local democratic deficit (e.g., low voter turnout) is a predictor of positive planning outcome for windfarms (van der Horst and Toke, 2010).

Ensuring JT for all requires examining **distributional effects** and addressing the barriers and obstacles that, if removed, could create equal opportunities for **disadvantaged groups and vulnerable communities** (e.g., low-income households, people with disabilities, migrants, and distributional effects by gender and age) (ETUI, 2022). Overlooking such aspects not only impedes the development of mitigation measures that can prevent impacts disproportionately impacting certain groups but also overlooks opportunities for creating a more inclusive workforce as the development of new and green sectors provides an increasing number of possible entry points for underrepresented groups such as women, older workers, workers with migration/refugee backgrounds, people with disabilities, and young people. Additionally, participants in the Midterm workshop highlighted that subcontracted and agency-employed workers represent a large share of the electricity sector workforce but are frequently excluded from training, reskilling, health and safety, and equality initiatives. Such workers across the entire value chain should have equal access to JT-related measures, preventing a two-tier workforce. All in all, these examples show that a narrow understanding of JT forces social partners to focus not only on negotiating specific actions but also on advocating for the recognition of broader justice dimensions as essential components of effective and comprehensive JT plans.

Challenges amongst involved stakeholders to collaborate on the development and implementation of JT plans persist, as these plans require complex multi-level governance and multi-stakeholder coordination. Social dialogue plays a fundamental role in facilitating a JT (International Labour Organisation, 2022). While social dialogue may not always lead to a sectoral convergence, the electricity sector's social partners signed two joint statements on the JT in the last several years (industriAll, EPSU, Eurelectric, 2017; 2021a). Beyond other principles, it highlights collective bargaining at national, sectoral and/or company-level as an essential tool to support existing workers and newly created jobs. At the same time, social partners highlight the need for this commitment to be shared with institutions and other relevant stakeholders beyond the electricity sector, but "throughout the entire electricity value chain" (industriAll, EPSU, Eurelectric, 2021a, p. 6). Additionally, the commitment of public/government authorities (at the EU, international, national, regional, and/or local level) is necessary to ensure comprehensive social dialogue and cooperation with social partners (International Labour Organisation, 2022). Thus, JT calls for multi-stakeholder **participatory mechanisms and inclusive governance**, which are critical to ensuring the vision of a fair transition.

To add, in the focus group discussions, the issue of **public misinformation** about decarbonised energy and resultant political and public resistance to green initiatives was raised. Although broad support for taking action to address climate change has been reported among EU citizens (EC, 2023b), concerns have been raised by citizens about the costs and burdens of implementing certain measures, resulting, for example, in local opposition to wind farms (European Council on Foreign Relations, 2024). As such, public resistance may affect workers undergoing upskilling or reskilling, or young people pursuing relevant qualifications to enter the workforce in the low-carbon sector. Citizen participation in JT is critical, ensuring transparency, capacity building, information and new forms of environmental democracy and democracy at work (ETUI, 2022).

The impact of the JT on both workers and companies also presents challenges. The European Working Conditions Telephone Survey (EWCTS) 2021 highlighted that fewer workers within the electricity, gas, steam and air conditioning supply report better work sustainability than most sectors and the EU average (Eurofound,

2022). While this demonstrates the comparative benefits of working in this sector, working conditions still require improvement. Almost a fifth of workers within the sector still report difficulties making ends meet, and nearly a third report that their health and safety are put at risk due to work. Around one-third also report physical and/or emotional exhaustion and being at risk of burnout (Eurofound, 2022). Additionally, compared with other sectors, a small share of workers shows high levels of engagement, such as being enthusiastic or feeling full of energy at work. These issues could also be exacerbated by the rapid transition of the sector and occupations – according to data collected in 2021, the majority of workers in the electricity, gas, steam and air conditioning supply sector were in occupations that were identified to likely be impacted by greening (Eurofound, 2024a). For instance, facing increased demand or requiring enhanced skills.

The production and supply of decarbonised energy is decentralised and, as such, smaller companies may enter the sector. However, this can pose risks if an **adequate health and safety work culture** has not been established (Eurofound, 2024a), as well as the **quality of contracts,** as in smaller companies, there may be more temporary positions or less protection (e.g., less compensation for illegitimate or consensual redundancies is available in Italy). Additionally, given the high dependency of the location of resources used for electricity, there are challenges related to the location and relocation of workers within the sector. Many projects, such as offshore wind farms and solar parks, are typically located in remote areas with limited public infrastructure. This issue was identified as a key challenge in the interviews and focus groups, affecting job quality and the attractiveness and accessibility of jobs in the electricity sector for underrepresented groups such as women and young people.

Additional challenges for social partners include **supporting workers in the electricity sector to access reskilling and upskilling opportunities** that respond to labour market transformation by the JT and **limited EU funding** available for supporting JT plans. These challenges are discussed in more detail below.

2.1.3 Skill gaps and skill mismatches

Within the electricity sector, rapidly changing skill needs driven by the green and digital transitions present a key challenge for social partners. These shifts result in skills gaps and skills mismatches that risk workers' rights and conditions, as well as having industry bottlenecks.

A **skills gap** describes a situation where there is a deficit of skills required to perform a certain job.

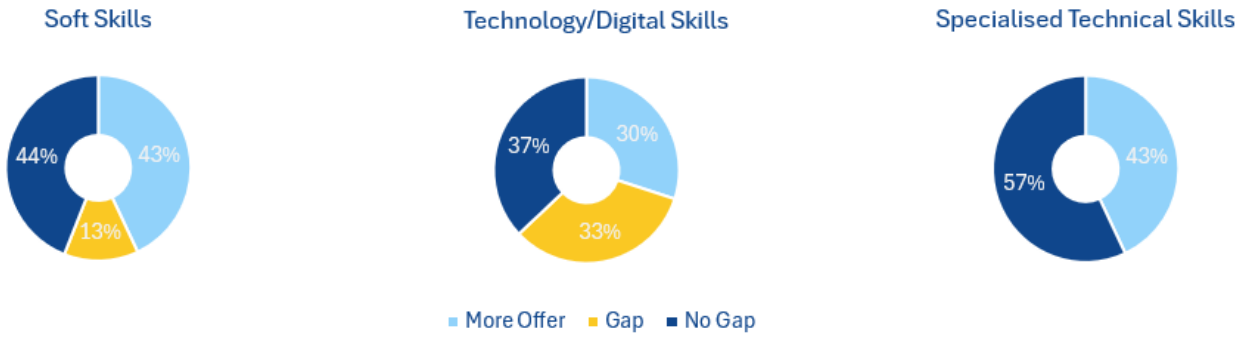
A **skills mismatch** describes the misalignment between the skills possessed by the labour supply and those demanded by the labour market.

The decarbonisation of the energy sector will create a demand for skills within existing occupational profiles in addition to the creation of entirely new profiles (Fondazione Giuseppe Di Vittorio, 2023). Within the electricity sector, the occupations perceived to become the most impacted by decarbonisation shifts, structural and technological changes, and the creation of new business models are the roles of Network Electricians, Network Engineers, and Household Metering Technician (industriALL et al., 2021b). To add, for electrification to reach the zero-net transition, a wide set of workers is and will be needed, including electrical contractors, electric vehicle professionals, grid expansionists, heat pump technicians, solar specialists, wind workers, and digital wizards (Electrification Alliance, 2023). The **most in-demand skill categories** forecast **within the electricity sector up until 2028 are technology/digital skills, soft skills, and specialised technical skills** (industriALL et al., 2018). This projection aligns with findings from the more recent report (industriALL et al., 2021b) which highlighted that electricity stakeholders[2] evaluated the same three skill categories (technology/digital skills, soft skills, and specialised technical skills) as the most important skills needed in the next 10 years. Notably, the perceived importance of soft skills has grown, with survey respondents reporting it as a skill needed, increasing from 9% in 2017 to 22% in 2021.

[2] Companies, trade unions, national employers' associations, education or training providers.

The perceived current skills gaps in new entrants to the workforce were predominantly in technology - digital (62%), specialised technical (30%), and soft (19%) skills. Figure 2 shows the anticipated skills gaps for the skills needed in the next 10 years. The broader energy sector reflects this trend, underlining the importance of digital skills (EC, 2022c). In particular, highlighted skill gaps include those related to the use of **cloud services, digital platforms, cybersecurity, and communication technologies** (Education for Digitalisation of Energy, 2022). Highlighted skill mismatches where the offer exceeds demand include skills related to **big data/data analytics, artificial intelligence, and energy management systems** (Education for Digitalisation of Energy, 2022).

Figure 2. Skills needed in the next 10 years



Source: Visionary Analytics based on industriALL et al. (2021b)

Training and reskilling are key dimensions of working conditions and help protect workers during the JT (Eurofound, 2023). **Upskilling and reskilling** opportunities are necessary to support workers in adapting to changes in their job and/or job-to-job transitions due to the JT and close existing and future skills gaps and skills mismatches. Upskilling refers to short-term targeted training to improve and/or update knowledge, skills, and competences, whereas reskilling is training to acquire new skills to access a new occupation or new professional activities (Cedefop, 2025). The challenge of skills mismatch and shortage of skilled labour in the electricity sector was emphasised in the focus groups, especially the need for more tailored training and greater career support for workers. Social partners play a key role in employee training, including:

- mobilising resources;
- anticipation and identification of skills needs;
- information, support and guidance;
- validation of skills, competences and qualification and recognition; and
- supporting quality, transparency, and efficiency in employee training provision (BusinessEurope et al, 2018).

In particular, **challenges exist for monitoring and anticipating skills** (JRC, 2022). Barriers to translating skill needs collected through skill anticipation systems into responses include a lack of detailed data, insufficient consultation with key stakeholders and experts, overly specific results, and skill measures that do not align clearly with policymaking variables (JRC, 2022). For example, at the EU level, CEDEFOP and Eurofound conduct skills monitoring and anticipation work. The Cedefop Skills Forecast Tool enables data to be viewed at the level of the electricity sector, while the Skills Intelligence tool aggregates data under energy supply services (encompassing gas, steam, hot water, and other energy sectors), which are too broad for targeted insights. As such, social partners have addressed this gap themselves – for example, through the commissioning of the Skills2Power (2021) report. Additionally, various Blueprints for sectoral skills cooperation have been developed under the EC's Erasmus+ programme or Pact for Skills to implement them (European Commission, n.d.-c; n.d.-d). However, none specifically on electricity sector have been yet implemented, but rather focus on, for example, renewable energy (RESkill 4NetZero, FLORES). Such sectoral skills alliances also enhance synergies with other initiatives and stakeholders (e.g., Centres of Vocational Excellence, smart specialisation strategies). Such examples of developing sectoral Skills Strategies, including Skills Observatories, indicate possible

avenues and next steps for the electricity sector. The need for a European Observatory on Just Transition was also called for by the social partners (industriAll et al, 2021a). The Midterm workshop participants also highlighted the importance of anticipation and forward planning. Addressing these challenges requires social partners to engage in and advocate for anticipation mechanisms, such as territorial impact studies, labour market foresights, and university–industry partnerships.

2.1.4 The role of EU funding

According to the EP, the EC's investment in energy in the EU is expected to reach EUR 396 billion per year between 2021 and 2030 and EUR 520-575 billion per year between 2030 and 2050 (European Parliament, 2023). The bulk of spending is expected to come through the Recovery and Resilience Facility, Cohesion policy funds, and Modernisation fund, among others, with the JTF and Social Climate Fund supporting a socially fair transition (European Parliament, 2023a).

The European Green Deal established the **JTM to provide targeted support to those most affected by the transition towards a climate-neutral economy** (EC, 2019a). For example, the JTM supports regions heavily reliant on carbon-intensive and coal-related industries. In interviews and focus groups, the importance of addressing regional disparities was emphasised, particularly in relation to the differing economic and resource capacities that enable or hinder regions from effectively implementing plans related to the JT. The JTM is expected to provide around EUR 55 billion during the 2021-2027 budget period and consists of three pillars:

- Just Transition Fund (JTF)
- Just Transition Scheme under the InvestEU package
- Public Sector Loan Facility (PSLF).

To access support through the JTF, MS are required to **prepare and submit Territorial Just Transition Plans** (TJTPs). TJTPs define the territories in which the JTF will be used and set out the challenges in each territory as well as their development needs, objectives for 2030, and the types of operations and governance mechanisms proposed to attain them. As the TJTPs are designed to focus on specific regions, they are not intended as a comprehensive JT national strategy or policy. Whereas NECPs are mandated strategies that set out MS's climate and energy objectives, policies, and measures, TJTPs focus specifically on addressing the socio-economic impacts of the energy transition and mechanisms to mitigate negative consequences. Whilst NECPs and TJTPs are separate, they should be aligned with one another to ensure a coherent plan at national and regional levels. Social partners usually have input in their country's TJTPs, providing suggestions through stakeholder consultations. However, only six MS[3] indicated structures that involved social partners in all phases of TJTPs (design, monitoring and evaluation) (Eurofound, 2023). Moreover, the **involvement of social partners does not necessarily mean that their input is taken into** account. For example, social partners in five MS[4] reported that they considered their proposals to have not been seriously considered in their country's TJTP (Eurofound, 2023).

By the end of 2024, EUR 10.2 billion had been allocated to selected JTF projects and EUR 1.5 billion of public investments were mobilised by the PSLF in Czechia, Greece, France and Sweden. A total of **18 MS have received technical assistance support to implement the JTF,** and ten JT Platform conferences were organised by the Directorate-General for Regional and Urban Policy, EC, for all stakeholders in JTM regions. However, of the eight key performance indicators[5] for the programme, assessment data is only available for enterprises supported, which is reported to have made moderate progress (EC, 2025c).

[3] EE, DE, DK, FI, LU, and PL.
[4] BG, EE, EL, IT and RO.
[5] Key performance indicators: Enterprises supported; Additional production capacity for renewable energy; Additional capacity for waste recycling; Jobs created in supported entities; Annual users of new or modernised public transport; Overall investment mobilised; Number of projects receiving financing under the facility; Greenhouse gas emissions reduced, where relevant.

Besides JTM, the Fit for 55 package introduced the **Social Climate Fund, which is aimed at supporting vulnerable households, micro-businesses, and transport users** most affected by the new emission trading system for buildings and road transport. This fund will mobilise up to EUR 86.7 billion over the 2026-2032 period. Similarly to the JTF, access to the Social Climate Fund is contingent upon MS submitting Social Climate Plans, which outline how they plan to allocate and use the funds. The regulation outlines that each MS is to submit Social Climate Plans to the EC by June 2025 and the consultation of social partners alongside other relevant stakeholders is highlighted in order for MS to design, implement, and amend the Social Climate Plans to meet the needs of the local, regional and national contexts (European Parliament and the Council of the European Union, 2023). Additionally, the regulation outlines that MS must submit their plans to the EC after a public consultation of stakeholders, including social partners and include a summary of the consultation and how the input of stakeholders in reflected in their plan. According to ETUI, the JTF has limited resources, is dedicated mainly to helping coal regions, and the Social Climate Fund focuses on a rather specific target, calling for an extended JTF and Social Climate Fund (ETUI, 2022), which is also advocated for by the electricity social partners (industriAll et al., 2021a).

Other EU financial and technical instruments available to support the JT include the Cohesion Policy funds, the Modernisation Fund, the NextGenerationEU Programme and the Recovery and Resilience Facility. More details of these, and other available funds, can be found below in the Annex 1.

2.2. Guidelines for social partners in contributing to Just Transition plans

JT Plans create a framework to support stakeholders affected by the green transition and promote just and equitable outcomes. Such frameworks can encompass actions such as mobilising stakeholders, developing shared understanding and objectives, analysing impacts and opportunities, creating and implementing strategies, aligning research, education, and finance, and monitoring (Climate Investment Funds, 2025). JT Plans can take different forms, varying based on factors such as policy context, governance level of the plan (e.g. EU, national, regional, company-level), the coordinating and involved stakeholders (e.g. social partners, governmental authorities, civil society organisations), the plan's focus (e.g. job creation, re-skilling and up-skilling, gender equality), and the implementation and monitoring mechanisms which may be formalised through either legal frameworks or voluntary agreements. Accordingly, the stakeholders responsible for JT plans may vary by plan type. Moreover, different stakeholders play different roles across different JT plans. Some broad guidelines for social partners to support the JT have been previously created. For example, A trade union guide of practice for a Just Transition (industriALL, 2022) and Guidelines for a just transition towards environmentally sustainable economies and societies for all (International Labour Organisation, 2016). However, to date, there are no guidelines for social partners in the electricity sector to contribute to JT Plans.

The section begins by presenting practical guidelines related to the broad, overarching development of JT Plans, focusing on their governance. It will then examine specific elements that are often integral to JT Plans, such as knowledge-sharing and raising sectoral awareness. It will then examine specific elements that are often integral to JT Plans, such as knowledge-sharing and raising sectoral awareness. By exploring these aspects in greater detail, the section aims to provide a comprehensive understanding of what effective JT Plans may look like at both an overarching level and in practical implementation.

Figure 3. Practical guidelines - Just Transition

Source: Visionary Analytics based on the analysis conducted

These practical guidelines are based on data collected and analysed from the literature review, in-person events, exploratory interviews, an open call for best practices, and focus groups (see Annex 2 for details). They do not comprehensively list every consideration social partners must make when contributing to JT plans, but highlight key insights identified from the analysis, either originating from or relevant to EU MS. Given the complex and interconnected nature of JT and its stakeholders, the guidelines intersect and overlap and should be understood as complementary rather than standalone. This chapter reviews plans led by diverse stakeholders, including the EU, national and regional governments, social partners, civil society organisations, and companies, illustrating the variety of approaches JT plans can take. The guidelines are accompanied by a discussion and examples of best practices. Examples vary in detail due to the recent start of some practices or limited availability of information, but where possible, they describe key actions, success factors, challenges, and impacts. Blue best practice boxes show initiatives at EU, national, or regional levels, while green boxes highlight company-level initiatives.

Practical Guideline 1: Create a shared understanding of the JT

Create and/or strengthen EU and national JT frameworks to foster a shared understanding of the JT, ensure coherence between JT plans, and optimise resources and stakeholder efforts.

Role of trade unions and employers' organisations:

- Promote a shared understanding of the JT, engaging with diverse stakeholders (across different types, including policymakers, companies, civil society organisations and different industries, e.g. nuclear) to improve alignment around its goals and implementation. For example, through awareness-raising campaigns and social dialogue.
- Contribute to the development of JT plans by engaging in dialogue with EU-level and national/regional and local level stakeholders, sharing industry insights to ensure that policies are practical and aligned with industry and workers' needs.

As discussed in section 2.1.1, fragmented JT plans and policies can undermine their individual and collective effectiveness, hindering the electricity sector's ability to adapt to the needs of JT. Addressing this fragmentation requires coordinated frameworks and robust planning efforts from all stakeholders involved. To guide this, it is key to build a shared understanding of the JT and establish a framework for actions to enable consistent, effective development of JT plans across all governance levels. The framework is suggested to create a common understanding of the JT at multiple levels, including at the EU, national, regional, and company levels and a shared vision for the JT. During research, a few frameworks for the JT Plans were identified. Higher-level (i.e. EU and national level) frameworks can support the coordination and development of JT plans. These frameworks can create a shared understanding of the JT and model coordination between stakeholders, promoting more effective collaborations and actions.

As introduced in section 2.1.3: The role of EU funding, TJTPs are a specific type of JT plan required to access funding from the JT Fund set up by the EC. TJTPs are drafted by MS governments and outline the territories intended to benefit from the EC's JT Fund, detailing the territories' challenges, development needs, and objectives to be met by 2030. The EC provides a template for developing TJTPs. This template highlights some of the considerations and elements that should be included when creating a JT plan – for instance, assessment of consistency with other national, regional, or territorial-level strategies and details of monitoring, evaluation, and responsible entities. For more details, see Box 1.

Box 1. Developing JT Plans: Creating a shared understanding best practice example (EU level)

Template for territorial just transition plans, EU, 2021

Annex 1 of the Regulation of the EP and the Council of 24 June 2021 establishing the JTF provides a template for the TJTP to be prepared by MS in collaboration with the relevant local and regional authorities of the involved territories.

The template contains the following components:

- Description of the transition process at the national level towards a climate-neutral economy, including a timeline aligned with EU 2030 energy and climate targets, Description of the transition process at the national level towards a climate-neutral economy, including a timeline aligned with the EU 2030 energy and climate targets.
- Explanation of why specific territories are most negatively impacted and eligible for JTF support.
- Analysis of social, economic, and environmental challenges in affected areas, including job losses, depopulation risks, and development goals.
- Description of how JTF support will mitigate transition impacts, including job creation and preservation.
- Assessment of consistency with other national, regional, or territorial strategies.
- Details of partnerships, monitoring, evaluation, and responsible entities.
- Outline planned actions and their expected impact on easing the transition.
- If supporting larger enterprises, a list and show that job losses would otherwise exceed job gains.
- For high-emission industries, a list of projects that significantly cut emissions and protect jobs, exceeding EU benchmarks.
- Identified coordination with other relevant EU initiatives.
- Highlighted synergies with other parts of the JTM.

Source: Visionary Analytics based on the linked source and the Launch conference

Another example of an EU-level initiative creating a coordinated framework to support the JT while embedding social dialogue and stakeholder collaboration is the EU Transition Pathways initiative, discussed in more detail in Box 2. Developing JT Plans: Creating a shared understanding best practice example (EU level) The EU Transition Pathways initiative demonstrates how a higher-level, participatory framework can guide sectoral transitions in industry by promoting actionable planning and shared responsibility. Additionally, it fosters alignment with relevant EU-level policies such as the European Green Deal and, through its stakeholder platform, supports stakeholders' access to learning and funding opportunities.

Box 2. Developing JT Plans: Creating a shared understanding best practice example (EU level)

EU Transition Pathways, EC, 2023 – ongoing

The EU Transition Pathways, implemented by the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, brings together industry, public authorities, social partners and stakeholders to cooperate to create an ecosystem transition pathway for each industrial ecosystem identified by the initiative. The industrial ecosystems relevant to the electricity sector include: Energy – Renewables; Energy Intensive Industries, and Electronics.

Based on the blueprint for the transition pathways of industrial ecosystems, the following elements will be addressed in an actionable plan: infrastructure; investments and funding; regulation and public governance; research and innovation, techniques and technological solutions; skills; social dimension; and sustainable competitiveness. Each transition pathway will be co-created through public consultation and drafted by the EC and industrial ecosystem stakeholders. Stakeholders can commit to the implementation of each pathway through an open call.

The EC has also launched the EU Transition Pathways Platform to support stakeholders with content, including learning opportunities and funding resources, as well as best practices and communities of practice.

Source: Visionary Analytics based on linked sources and the Launch conference

Whilst these EU-level initiatives can support social partners to contribute to JT Plans, the literature review (EESC, 2023; European Parliament, 2023b; ETUI, 2022; International Labour Organisation, 2023) in addition to participants in interviews and focus groups stressed the need for further action at the EU-level (e.g., clear JT strategy, extended funding and its eligibility, skills observatories). In addition to improving understanding and coordination, participants in interviews highlighted that establishing a legal obligation for action may help social partners overcome resistance from less motivated stakeholders and improve accountability across MS; however, the modalities of such a framework were not consistent among the social partners.

Moreover, focus groups emphasised the need for trade unions to actively engage in shaping regulatory frameworks, including legislation in European institutions and national governments, to reach fair agreements. Doing so promotes transparency and strengthens multi-level social governance through collective agreement (i.e. across European, national, regional, and company levels). It also reflects the reported need for social partners to engage with other stakeholders, such as local organisations, rather than confining discussions among themselves.

Compared to EU-level JT plans, company-level JT plans tended to take more focused approaches (e.g. specific reskilling initiatives), although more comprehensive company-level JT Plans were also identified during this study. For example, Box 3 showcases a best practice from the electricity company, Endesa. The socio-economic plan to support the Spanish region of Andorra's transition to a sustainable energy industry was reported to be developed through a 2-year participatory process, involving local institutions and representatives from all sectors (Endesa, 2024). This best practice example also demonstrates how effective JT plans are often embedded within broader policy frameworks – the initiatives are aligned with the national JT Strategy, which is in turn linked to the Paris Agreement and supported by legal frameworks that reinforce environmental and social commitments. These different types of stakeholders, as well as their respective levels of governance, highlight the importance of a shared understanding of JT, ensuring effective, coordinated action.

Box 3. Developing JT Plans: Creating a shared understanding best practice example (Regional level)

Andorra (Plan de Futuro para Andorra). Endesa (Spain), 2022 – 2027

The company Endesa has outlined a comprehensive plan focusing on **supporting the socio-economic impact** of renewable energy development in the Andorra region. It aims to generate the **equivalent of 5,000 jobs**, to which another 1,300 equivalent jobs generated in the support plan could be added. and secure 500 fixed, long-term positions in the surrounding area by 2029. Of these, over 370 will be directly linked to the renewable energy project. The plan also includes **over 300,000 hours of training** and benefits approximately 5,500 people from 2023 to 2025. The initiative aims to diversify the local economy and promote job stability through strategic partnerships and long-term infrastructure development.

The renewable development proposed by Endesa for Andorra does not only involve the construction of new wind and solar capacity, but also the **hybridisation of these projects** and storage with two battery plants. The plan influences the primary, secondary and tertiary sectors. In the primary sector, the plan integrates renewable energy with traditional primary sector activities and supports local people by having agreements with shepherds and beekeepers in the area. For the secondary sector, agreements have been signed with other companies, to construct a solar tracker factory in the area around the thermal power plant generating 40 permanent jobs once it is operational, and with Pretersa, aiming to expand the precast concrete industry located in La Puebla de Híjar, which will generate another 80 jobs in the area, at least 30% of which will be for women. Another of the industrial initiatives developed for Andorra is the construction of a second-life center for wind turbines that will generate 32 permanent jobs, provide electricity for 3,800 beneficiaries (through a collective self-consumption development program in collaboration with 10 municipalities in the Just Transition area) and **promote autonomy** and energy efficiency in these localities. In the tertiary sector, the plan supports sustainable local commerce and tourism by, for example, employing tour guides in the area. Overall, the plan aims to benefit more than 5,000 people with preference given to the most **vulnerable groups in rural environments**, such as young people, women and the unemployed.

Source: Visionary Analytics based on linked source, Launch conference, and focus groups

EU and national-level policies and JT plans also play an important role in funding JT plans. See Practical Guideline 6 for more details.

Practical Guideline 2: Support multi-governance, multi-stakeholder collaboration

Support multi-governance and multi-stakeholder collaboration, for example, through collective agreements, to facilitate responsive, fit-for-purpose JT plans, in particular considering regional and local-level contexts and needs within national plans.

Role of trade unions and employers' organisations:

- Encourage policymakers and/or other JT plan leads (e.g. employers for company-level JT Plans) to tailor JT plans to regional, social, and economic contexts, and address the specific needs of affected communities by involving relevant stakeholders and promoting a comprehensive understanding of different regions' resources and capacities. This includes supporting the engagement of local stakeholders, such as community groups, youth groups, and workers.
- Where possible, actively participate in all stages of JT Plan development, including design, planning, and implementation, to ensure that workers' and employers' interests are represented throughout.
- Utilise collective agreements to create JT Plans and/or as strategic instruments to support the implementation of JT Plans, ensuring that the collective agreements are suited to the needs of workers and provide protection for affected workers. Ensure that the collective agreements are suited to the needs of employers and promote corporate social responsibility.
- Consider embedding the monitoring responsibilities within collective agreements, establishing concrete targets for measuring progress, monitoring committees as well as transparent data sharing practices.
- Support companies in translating JT plans into policies and procedures on a company level, including transforming company culture.

The importance of coordinating and connecting stakeholders at different levels of governance is crucial for ensuring effective JT plans that efficiently use resources, connect to broader policy goals, and are fit for practical industry and worker needs. Interviews highlighted that there is a need for social partners to show a clear commitment to align with the JT and broader climate goals. It is suggested that a clear show of support from social partners on these issues would help bring stability and credibility to overall objectives and achieve EU-level goals. Additionally, it is key that social partners are actively engaged throughout the entire development of JT plans to ensure an inclusive development process. In particular, participants highlighted the importance of trade unions' involvement in the design stage to ensure that workers' interests are represented and reflected in the plan's objectives and strategies.

As well as representing their own members' interests, focus groups highlighted the role of social partners to engage local stakeholders in JT Plans. For example, creating networks with local youth groups and civil society organisations, to ensure that JT plans reflect their views and needs. This inclusive engagement is suggested to strengthen social dialogue and ensure that JT Plans are tailored to and adaptive to the needs of the affected people and areas. Moreover, trade unions play an important role in the monitoring of JT Plans, ensuring transparency and accountability.

The focus groups also highlighted the role of social partners to negotiate collective agreements for workers affected by the green transition. Having such agreements in place was stressed to help workers. Additionally, collaboration facilitated through social dialogue was explained to enable better coordination with national and regional authorities, which can help ensure that industrial change is aligned with available funding and territorial development plans. This coherence addresses the fragmentation discussed in the previous section.

Box 4 showcases two examples of national-level collective agreements from Spain and Italy. In the first agreement, the role of trade unions to facilitate collaboration between the involved stakeholders and actively monitor the JT Plan's implementation to ensure accountability is outlined. Both agreements involve trade unions and companies; in the case of Spain, the agreement is also signed by the public authorities (two ministries). The importance of government involvement – at local, regional, and/or national levels - in collective

agreements was highlighted in the focus groups. Focus groups indicated that government support is essential for the workforce, training, and related initiatives to create sustainable, long-term change. This underscores the importance of creating collaborative frameworks to bring together diverse stakeholders at different levels of governance.

Box 4. Developing JT Plans: Collective agreement best practice examples

Agreement for a Just Energy Transition for thermal power plants in closure (Acuerdo por una transición energética justa para centrales térmicas en cierre: el empleo, la industria y los territories), Spain, 2020 – 2035

The Agreement was signed in April 2020 between the Spanish Government (Ministry for the Ecological Transition and the Demographic Challenge and the Ministry of Labor and Social Economy), the companies with thermal power plants in closure (Endesa, Iberdrola, Naturgy and EDP), and trade unions (CCOO Industria and UGT, FICA). The main objective of the Agreement is to support the 2,740 workers affected by the closures of 15 thermal power plants in Aragon, Andalusia, the Balearic Islands, Castile and León, Galicia, and the Principality of Asturias. The Agreement involves relocating workers and supporting them in searching for alternative employment opportunities in the affected areas. This is achieved through companies' decarbonised energy projects and other activities, through the government's provision of aid through the Just Transition Agreements, and with the participation of trade unions to facilitate and monitor compliance with commitments.

In 2025, the following progress has been reported:

- Industrial and energy projects promoted by the involved companies create approximately 2,276 long-term jobs.
- A job centre has been opened by the JT Center for workers affected by the closure of coal power plants.
- More than EUR 6 billion in private investment has been mobalised to support the deployment of these industrial and energy projects.
- More than EUR 960 million has been granted by the JT Institute and the Institute for the Diversification and Saving of Energy.
- Three Monitoring Committee meetings have taken place (in 2022, 2023, and 2025) and two monitoring reports and summaries have been published.

Agreements between Enel and the Italian national trade unions for managing the redeployment of staff from decommissioned thermal and coal-fired power plants, Italy, 2013 - ongoing.

Enel's commitment to achieving full decarbonization by 2040 has required a profound industrial transformation, centered on the gradual shutdown of thermoelectric and coal-fired power plants. Because these changes have significant social implications, Enel and the Italian electricity-sector unions have developed a shared approach aimed at protecting workers while advancing the energy transition.

Between 2013 and 2019, as Enel began decommissioning 23 obsolete thermoelectric plants, the company and the unions introduced measures such as voluntary early retirement, internal mobility, and extensive training and reskilling programs. This collaborative framework made it possible to avoid layoffs and to relocate more than a thousand employees within the Group, often into new roles that many later described as opportunities for professional growth.

From 2019 onward, the focus shifted to phasing out coal. Several plants — Bastardo, La Spezia, Civitavecchia, and Brindisi — have already closed, while Portovesme-Sulcis will shut down in 2028, and Fusina is being converted to gas. Enel and the unions have managed the transition through agreements that provide upskilling, reskilling, voluntary exits, and new hiring to ensure generational renewal and long-term employment stability.

Alongside workforce measures, Enel has also supported the territories affected by plant closures. The company has encouraged the reconversion of local supply chains, introduced social safeguard clauses in tenders, and promoted initiatives for sustainable development, youth training, worker reskilling, and business innovation. Together, these actions illustrate a model of energy transition that combines environmental ambition with strong social responsibility.

Source: Visionary Analytics based on linked sources, focus groups

Practical Guideline 3: Promote anticipation and forward planning

Promote transparency and effective planning and monitoring of JT plans by strengthened ancticipation mechanisms and forward planning. This includes sharing JT plans, including monitoring metrics, evaluation results, and related data such as employment statistics, re-skilling and up-skilling needs, labor market foresights, impact studies and best practices. Knowledge-sharing platforms such as conferences, online repositories, and networks can support peer-learning.

Role of trade unions and employers' organisations:

- Advocate for the establishment of transparent, accessible data that enables accurate monitoring of JT plans, leading the way by example where possible by sharing collected data. More specifically, this includes advocating for:
    - Forward-looking skills observatories, JT impact, foresight studies and strategies.
    - The development and adoption of updated job/skill classifications and occupational profiles that align with industry needs.
    - The sharing of best practices, including both best practices that were successful in achieving their objectives and those that did not, to inform future practices.
    - The integration of clear data-sharing protocols within JT plans to ensure transparent reporting on progress towards objectives.
    - Transparent reporting from companies on employment and training metrics.
- Advocate for up-to-date regional, national, and sectoral-level data and collaborate with relevant stakeholders (e.g. skills intelligence agencies, policy makers) to collect this.
- Consider actively using available data to monitor implementation of JT plans and assess progress against agreed objectives, encouraging accountability amongst stakeholders.
- Regularly monitor own organisation's progress in relation to JT plans it is involved in and report on this, including qualitative analysis (such as key learnings, successful practices) in addition to quantitative data.
- Encourage companies to share relevant data with social partners and other stakeholders, in compliance with applicable data protection and transparency standards. Promote and share monitoring tools to help employers make evidence-based decisions and adapt JT plans as needed.

Anticipation and forward-looking insights, as well as transparent and accessible data, are key for the development of JT Plans – for planning and needs assessments, monitoring, training alignment with industry needs, and knowledge sharing, including the scaling of best practices. During the creation and development of JT Plans, data helps inform decision-making. For example, identifying needs and monitoring the effectiveness of measures. This helps JT Plans adapt as needed to the rapidly evolving landscape and also supports other stakeholders to learn from experiences and best practices, strengthening the development of their own JT Plans, going beyond quantitative data. indicators and related reporting also ensure that monitoring of JT plans can take place and allow for ongoing evaluations and adjustments, as needed.

Data reporting may include statistics on employment, such as knowledge and skills, gender representation, availability and participation in training programmes, occupational health and safety, and other workforce demographics. In addition, data on the green transition, such as on decarbonised energy projects, may also be reported. Indicators in relation to energy affordability and energy poverty affecting wider society should also be considered. Together, this data would help to assess the current industry and worker needs and identify any gaps that need to be addressed. It also plays a key role in forecasting employment needs (REJEnerAXion project, 2024). Employment forecasting anticipates the transition's impacts on employment and local areas and allows proactive measures to be taken to ensure that the workforce will be ready. It also guides the development of JT Plans. For example, the aforementioned FLORES project developed Skills Strategy based on a comprehensive skills observatory (see Box 5 below).

Box 5. Developing JT Plans: Promote knowledge and data-sharing best practice example (International project)

Offshore Renewable Energies partnership in the Pact for Skills (FLORES), Spain, Greece, Belgium, France, Italy, Portugal, the Netherlands, and the United Kingdom, 2023 – 2025

The FLORES project is part of a broader initiative to strengthen **skills development in the offshore renewable energy** (ORE) sector - a fast-growing subsector of the European electricity industry. Coordinated by the CETMAR Foundation, the project brings together stakeholders from education, research, and industry to address emerging workforce and innovation challenges in maritime technologies. Lucía Fraga Lago, Training Area Coordinator at CETMAR, who presented the project during the Midterm workshop, outlined the sector's diversity, encompassing wind, wave, tidal, and current-based technologies at varying stages of

maturity, and noted the expected growth from 80,000 jobs today to over 200,000 by 2030. This rapid expansion underscores the pressing need to align training systems with labour market needs and close existing skills gaps. The project brings together partners from eight countries, working within regional clusters such as the Baltic, Atlantic, Mediterranean, North Sea, and Outermost Regions to coordinate pilot actions and adapt training offers to local contexts.

The presentation traced the project's origins to the MATES Blueprint, an Erasmus+ project launched in 2018 to create the first **Maritime Technologies Skills Strategy**. This strategy provided a foundation for future work by analysing skills intelligence, identifying mismatches, and formulating long-term actions and 32 strategic recommendations. Building on these results, the Pact for Skills - an EU initiative to unlock public and private investment in skills - expanded the partnership into a large-scale European cooperation framework. Within this context, FLORES became the first joint project to operationalise the Pact's ambitions, aiming to establish five Centres of Vocational Excellence (CoVEs) in Southern Europe to address training and innovation needs in offshore wind energy.

Key project activities were structured around four working groups: **Observatory, Skills, Careers, and Partnerships**. The Observatory analyses current and future skills needs, while the Skills group promotes innovative lifelong learning approaches, including repositories of training materials and helpdesk support for VET providers. The Careers group develops educational and promotional materials - such as multilingual career videos, card games, and ambassador interviews - to engage students and teachers, with notably high feedback scores from educators. The Partnerships group works to foster durable regional cooperation, leading pilot actions in the Baltic, Atlantic, and Mediterranean regions and identifying barriers to long-term collaboration, such as limited contact points or recognition mechanisms.

Source: Visionary Analytics based on linked source and project's Midterm workshop report.

Within many MS, there are already skills intelligence systems which social partners can support and use.[6] In France, a government initiative brings together industry and social partners in the electricity sector to understand current and future employment and skill needs – for more details, see Box 6.

Box 6. Developing JT Plans: Promote knowledge and data-sharing best practice example (National level)

Employment and Skills Development Commitment (Engagement de Développement de l'Emploi et des Compétences, EDEC), France, 2018 – ongoing

The EDEC (Employment and Skills Development Commitment) for the electricity industry is a tool of the Ministry of Labour, Employment and Integration, supported by the General Delegation for Employment and Vocational Training, that aims to **anticipate the employment changes** and **support forward-looking management of jobs and skills.**

The EDEC brings together key electricity sector stakeholders - employers' organisations, trade unions, industry representatives, and national and regional public authorities. For example, L'Union Française de l'Electricité (UFE), Think Smartgrids, and Industries Méditerranée. The EDECs can be concluded at the national level by the DGEFP (General Delegation for Employment and Vocational Training) or at the regional or territorial level by the DREETS (Regional Directorates for Economy, Employment, Labour, and Solidarity) and the DDETS (Departmental Directorates for Employment, Labour, and Solidarity). They can be conducted at the national level or a territorial level (regional, departmental, employment pool, etc.) as part of territorial GPEC (Forward-looking Management of Jobs and Skills) projects.

EDECs aim to implement operational actions that help professional organisations adapt their GPEC, training, and certification tools. They seek to **secure the career paths** of active workers by enhancing employability, facilitating career management, streamlining recruitment, and supporting mobility. Another key goal is to strengthen quality social dialogue on employment and training issues.

The implementation of EDECs involves the construction of digital foresight **tools** (e.g., job-skills barometers, dynamic GPEC portals), business or training frameworks, self-diagnostic tools, qualification certification or bridges between professions or certifications; construction of tools aimed at promoting the attractiveness of professions in a branch or sector, employment/training courses, teaching tools, etc. For companies in a professional branch, sector or territory, it provides HR and thematic support services, experimental training actions, skill assessments, and tutoring.

EDECs are characterised as flexible tools that support employment and training strategies across levels, with the Ministry of Labour funding up to 30% of eligible actions. This encourages professional organisations to align with employment policy goals such as upskilling low-qualified individuals, promoting mobility, improving HR in small businesses, fighting discrimination, retaining senior workers, and developing VAE (Validation of Prior Learning).

Source: Visionary Analytics based on linked source and focus groups

[6] For example, OSKA in Estonia and SOLAS in Ireland.

Another example of an initiative that addressed data gaps in efforts to increase expertise and strengthen collaboration amongst social partners and other relevant stakeholders is the REJEnerAXion project (see Box 7). This EU-level project investigated the impact of the green transition on employment, working conditions, and employment structures.

Box 7. Developing JT Plans: Promote knowledge and data-sharing best practice example (EU level)

REJEnerAXion, Belgium, France, Germany, Hungary, Italy, Slovakia, Spain, Poland, 2022 – 2024

REJEnerAXion was an EU-funded project that aimed to study the impacts of the clean energy and sustainability transition on employment, working conditions, employment structures, sectoral, territorial and regional, and socio-environmental levels. Additionally, it aimed to increase expertise, including the analysis and exchange of best practices of industrial relations and social dialogue for a just energy transition, and identify practical recommendations for addressing challenges related to the clean energy transition. Additionally, it aimed to increase expertise, including the analysis and exchange of best practices of industrial relations and social dialogue for a just energy transition, and identify practical recommendations for addressing challenges related to the clean energy transition. Its actions included:

- European and national baseline reports
- 24 case studies for each of the involved countries
- Analysis of industrial relations experiences related to the JT
- Three European workshops disseminating the findings of European and national reports
- Video clip and infographics about main activities

Source: Visionary Analytics based on linked source

To support the development and management of relevant data-sharing systems that enable meaningful data comparison, it is important to have updated professional profiles based on classifiable skills. In 2024, an Italian collective agreement (see Box 4 for more details) highlighted the need for bridging the gap between the language used in company job descriptions and public classifications. This was underlined in order to help social partners access public funding more effectively. This raises two key points: firstly, the need for a more unified understanding of job occupations, and secondly, the issue of fragmented language and concepts.

Aligning company job descriptions with public classification systems can improve access to public funding (Italian collective agreement, 2024) and ease the use of available data (e.g., employment, sectoral forecasts). Within the EU, the International Standard Classification of Occupations (ISCO) is frequently used to classify occupations, creating internationally comparable data. Social partners can support this process by promoting transparency and contributing to the regular updating of professional profiles that reflect real workplace contexts. This, in turn, strengthens data systems and monitoring mechanisms. The second issue speaks to the larger problem of the fragmentation and complexity of the JT and the need to create a collective understanding. Creating a shared language and terminology is a practical tool that can help achieve this. Efforts towards this have been identified, for instance, in the guide of practice for trade unions for a JT published by industritALL (2022), the annex includes a list of contract language that can be used and adapted for JT work.

Creating platforms for sharing best practices can also help develop JT Plans. For instance, during interviews, the role social partners could play in the new European Fair Transition Observatory (ETFO) was highlighted. The ETFO aims to support the implementation and monitoring of fair transition policies across the EU, and create opportunities for mutual learning and exchange, including the sharing of best practices. The ETFO is planned to launch as a two-year pilot in 2025. Additionally, another initiative that aims to share best practices is the industriALL Just Transition digital platform. This includes a repository of European initiatives, featuring an interactive map which shares news and information at national and company-level for European countries, where available.

Practical Guideline 4: Promote quality job creation and facilitate job-to-job transitions

Ensure that job creation and job-to-job transitions within JT plans consider new employment opportunities beyond quantitative measures (i.e., the number of new jobs created) and also emphasise the quality of new jobs, as well as practical implications such as location, skill needs, and training access.

Role of trade unions and employers' organisations:

- Proactively support members and workers to participate in professional development activities and training for re-skilling and up-skilling.
- Promote the integration of quality job creation in JT planning and support workers undergoing job-to-job transitions, including consideration of employment conditions, career development opportunities, and alignment with local labour market needs.
- Ensure that workers across the entire value chain, including subcontracted or agency workers, have access to JT-related measures, including up-skilling/re-skilling.
- Promote inclusive and empathetic change management and social and psychological support for the workers affected by the JT, including their families, based on needs.
- Identify common training needs across employers and facilitate cooperation and organisation between employers to jointly deliver and/or organise training.

The importance of considering the JT at the regional level was emphasised by participants due to the region-specific impacts of the transitions. The social and economic consequences of the green transition vary widely depending on local contexts such as the dominant sectors and available resources (European Parliament and the Council of the European Union, 2021a).

Related to this, interview and focus group participants emphasised the importance of job location in the electricity sector and the need to account for this in JT Plans. For instance, job creation in decarbonised energy sectors intended to mitigate the employment losses in coal-dependent regions is often located in different geographical regions. This requires workers to relocate and thereby limits the accessibility of the new employment opportunities for the affected workers and communities. Another challenge is that decarbonised energy jobs are often in remote areas. A lack of public infrastructure, such as schools and housing, poses challenges for workers and may pose particular challenges for workers with families and underrepresented workers, such as women who often carry greater caregiving responsibilities. Therefore, social partners need to draw focus in JT Plans to go beyond quantitative job creation targeted to include mechanisms that address and support social and practical challenges related to job-to-job transitions, including job location and worker relocation.

A good practice example of regional JT planning and social partner engagement is the JT Observatory in Asturias. Within Asturias, coal mine closure and phasing out of coal power plants were reported to severely or directly affect 57 of its 78 municipalities (EC, 2024e). The JT Observatory was created to support Asturias' adaptation to the transition to alternative, sustainable sectors - more details on this can be found in Box 8. The initiative serves two key functions in supporting social partners to develop JT plans: firstly, by facilitating social partners' participation in policy development through its robust cooperative model, and secondly, by providing a transparent and robust data-driven framework for managing JT (industriALL, 2024). These aspects reflect two key roles of social partners, and trade unions in particular – fostering cooperation through social dialogue and advocating for and contributing to transparent data systems that support the development and monitoring of JT Plans.

Box 8. Developing JT Plans: Promote quality job creation and facilitate job-to-job transitions best practice example (National level)

Just Transition Observatory (Observatorio Transición Justa), Spain, 2019 – ongoing

This initiative aims to support the regional energy transition in Asturias, a region formerly reliant on its coal-mining industry. It aims to pre-emptively address skill requirements to facilitate a smooth transition and focuses on transforming transition risks

into opportunities. This includes creating 6,300 new job opportunities by 2030 and mobilising EUR 6.5 billion in investments for diverse sustainable sectors such as energy storage, circular economy initiatives, and renewable energy.

The Just Transition Observatory adopts a four-pillar approach to supporting people:

- **Skills:** The initiative works to anticipate skills needs, conduct skills audits, and link labour supply and demand to proactively meet shifting skill needs.
- **Cooperation:** The initiative brings together key actors and fosters private-public dialogue through its cooperation model, involving the Asturias government, trade unions, employers' unions, municipalities, universities and research centres, as well as other key stakeholders.
- **Support for Workers:** The initiative provides information, consultation and support for workers, including welfare support.
- **Economic Diversification and Transformation:** The initiative promotes new job opportunities in renewable energy and supports regional structural change.

Additionally, to effectively monitor and evaluate the regional energy planning, the Observatory conducts the following actions:

- Monitoring strategies and Key Performance Indicators (KPIs)
- Technical reports related to the JT in Asturias
- Research and open data
- Dissemination
- Communication channel with citizens.

The Observatory has developed a tool that covers around **500 Key Performance Indicators (KPIs)** spanning climate, energy, economic, and employment dimensions. These KPIs enable stakeholders to track progress towards both individual objectives as well as collective impact on overarching goals. Additionally, specialised software for regional energy systems is used to monitor and evaluate the Asturian energy sector.

The governance structure features the Directorate-General for Energy and Mining of the Government of Asturias and Foundation of Asturian Energy as the executive committee, the Regional Government of Asturias and The JT Institute as the advisory committee, and trade unions, employers, associations, universities and technological centres as the consultative committee. Other involved stakeholders include environmental and civil associations.

Source: Visionary Analytics based on linked sources, interviews, focus groups, and IndustriAll (2024)

Company-level JT plans identified during research generally had a more targeted scope, addressing more specific aspects of the JT, such as re-skilling and job creation. For example, providing a professional training course for photovoltaic panel installers – see Box 9 for more details. The role of social partners in company-level JT plans is important. For instance, one company representative highlighted in the Open Call for best practices that working with labour associations was instrumental in delivering their plan and helped the company overcome the practical challenge of scheduling training in a way that accommodated workers' existing activities.

Box 9. Developing JT Plans: Promote quality job creation and facilitate job-to-job transitions best practice example (Company level)

Professional training course for photovoltaic panel installers, Enel Italia Spa (Italy), 2021 – 2024

The company Enel Italia Spa offered a professional training course for photovoltaic panel installers for workers in the thermoelectric sector located in the areas of Civitavecchia and Montalto. The course aimed to provide initial training for workers to be employed on construction sites for the construction of photovoltaic solar systems and is part of the re-skilling process for local companies. The course was 44 hours and included both theoretical training modules and practical exercises carried out at the Enel Power Plant in Civitavecchia. An exam was scheduled at the end of the course to verify the knowledge and skills of the participants in line with the specific professional profile. Nearly 200 people were reported to have attended the course.

Source: Visionary Analytics based on linked sources and focus group

As another example, the Agreement on Active labour policies (see Box 10), which was established by the Bilateral Commission of the Electricity Sector on Training (Italy), is a framework that promotes skills development opportunities for workers in the industry. Staff training is seen as one of the pillars of labour policy in the context of the energy transition and, therefore, has been pushed by social partners into sector

policy. By providing educational resources and apprenticeship opportunities, social partners can help electricity companies improve the employability and skills portability of their workers.

Box 10. Developing JT Plans: social partners reaching an agreement on training (National level)

Agreement on Active Labour Policies at the Electricity Sector Level, Bilateral Commission of the Electricity Sector on Training (Italy), 2025 - ongoing

The Italian electricity sector is undergoing profound transformations driven by the energy transition, highlighting critical challenges, including skills mismatches, the need for lifelong learning, and the importance of attracting younger generations into the sector. Recognising that effective training policies are central to addressing these challenges, employer organisations and trade unions within the Bilateral Commission of the Electricity Sector on Training jointly developed an agreement on active labour policies.

The agreement, finalised in September 2024 after more than a year and a half of preparatory work, applies from April 2025 to over 150 companies and 55,000 employees across the Italian electricity sector. It positions **staff training** as a cornerstone of active labour market policies, ensuring workers are equipped to navigate future sector needs.

Key actions and objectives of the agreement include:

- Establishment of digital training booklets that improve workers' skill portability and employability, both within and beyond the electricity sector.
- Strengthening re-employability by aligning workforce training with emerging needs of the sector.
- Promoting entry orientation towards sector careers among students through school-based initiatives, testimonials from industry professionals, and the promotion of dual apprenticeship models.

The agreement was developed within the Bilateral Commission, composed of six representatives from employer organisations and six from trade unions (Flaei-Cisl, Filctem-Cigl, and Uiltec-Uil). Their collaboration ensured that both employer needs and worker perspectives were fully represented in shaping the policies. Universities and public bodies also contributed expertise and support. The drivers of success lie in the structured bipartite social dialogue and the active involvement of external partners.

Source: Visionary Analytics based on open call findings

To add, another angle to look at the issue is making sure that the qualified professionals are taking care of the qualified work, thus attracting people with lower skills, who may help do preparatory work or other tasks. These workers, meanwhile, may be trained up (e.g., by the usage of micro-credentials, validation of non-formal learning or other flexible career pathways). Mobility of workers, although it may be problematic in certain contexts, should also be considered as a means of tackling skills shortages and mismatches.

The role of trade unions supporting employees and connecting them to training and employment opportunities was also highlighted, especially by the focus groups. In the interviews, the importance of improving outreach to prospective workers was stressed. Lastly, Midterm workshop participants highlighted that JT is not only economic but also deeply social, affecting communities, families, and workers' well-being. Thus, Midterm workshopparticipants highlighted the integration of sociological and psychological expertise to support workers adapting to new roles, technologies, and workplaces, especially older workers who may experience isolation in more digital environments. Similarly, the new generation of jobs will have different characteristics, often involving greater interaction with AI or remote systems, which can leave some workers feeling isolated or disconnected. Thus, social partners should accompany and support workers through these cultural and technological adjustments, ensuring inclusivity and empathy in change management.

Practical Guideline 5: Promote sectoral awareness alongside education and training opportunities

Raise sectoral awareness, including the electricity sector's contribution to European climate goals, employment opportunities, and education and training paths among wider society.

Role of trade unions and employers' organisations:

- Promote awareness of the electricity sector's contribution to European climate goals and the availability of quality jobs in the green transition. Highlight the sector's contribution to climate action in a public message to enhance its visibility and career destination.

- Support collaboration within and between social partners, educational and training providers, civil society, and public authorities. Connect workers and companies to information such as education and training initiatives.
- Support educational outreach efforts, especially in communities most affected by the green transition.

In order to achieve the JT in the electricity sector, investment in raising public awareness of the sector is needed, both on its contributions to the EU and national climate goals and the employment opportunities it offers. The need to raise sectoral awareness was consistently emphasised by stakeholders throughout the project and linked to the following areas:

- **Supporting public buy-in** for sustainable infrastructure projects, such as wind farms and grid modernisation.
- **Addressing resistance to change** by providing clear and accessible information about the benefits and impacts of the transition.
- **Enhancing the sector's attractiveness** as a long-term, quality employment destination.
- **Helping workers access opportunities** for education and training and career mobility.
- **Promoting an honest and clear character of green jobs,** acknowledging that such are not always "clean".

Participants highlighted the importance of raising awareness of the electricity sector from an early age, embedding it at all levels of the school system. Engaging young people is underlined as part of building a future-ready workforce. For more information on promoting education and training for young people, please see Chapter 4. Additionally, outreach must be inclusive and target underrepresented groups such as women, rural areas, and communities most affected by the green transition. For more details on gender equality, see Chapter 3.

Best practice examples, such as 'Electric Treasures' in Spain and the Åsbro Training Center in Sweden (see Box 11 and Box 12) demonstrate the power of collaborative, cross-sectoral approaches to outreach and training. These initiatives highlight how trade unions, employers, education and training providers, and public authorities can work together to build a strong, skilled, and motivated workforce. The "Electric Treasures" exhibition in Spain (see Box 11) demonstrates a creative method to raise awareness of the electricity sector and connect people with the industry.

Box 11. Developing JT Plans: Raise sectoral awareness best practice example (Company level)

"Electric Treasures. The Evolution of Energy in Andalusia" Exhibition, Endesa (Spain), 2025

The Endesa Foundation, in collaboration with the Seville School of Engineering, displayed an exhibition on the electricity sector for educational and dissemination purposes and to contribute to the training of future professionals. The exhibition consisted of historical pieces that aimed to show the technological evolution of the electricity sector over the last 100 years. The collection includes appliances, devices, and electrical components, demonstrating the progress of generation and distribution processes in the electricity sector and the different uses of electricity including the latest technological advances.

Source: Visionary Analytics based on linked source

Whilst raising awareness is one key step, it must be done in conjunction with specific, practical measures that support access to education and training opportunities that prepare individuals for employment in the electricity sector. Box 12 showcases an example of a training centre in Sweden that helps create a future-ready workforce for the electricity sector through collaboration between industry, social partners, and the education and training provider.

Box 12. Developing JT Plans: Raise sectoral awareness best practice example (National level)

Åsbro Training Centre, Sweden, 1948 – ongoing

Åsbro Kursgård is a **training centre** and cooperation project between the employers' organisation, trade union, and the government, focused on providing training and courses within the electricity sector. With over 75 years of experience, it offers training that leads to jobs, plays a key role in delivering vital skills to the energy industry and ensures collaboration between

employers, schools and the government. There are two schools near the area where the training centre and the yard are located, making it easier for the students to come by bus in the mornings.

The centre is established across **130 hectares** and hosts a wide range of **technical installations, from 0.4 kV to 400 kV**, including power lines, switchgear, substations, and stations. It also features a solid cable network and a complete hydropower simulator with associated control equipment. The training area includes hilly forest tracks and terrain for practical exercises with tracked and off-road vehicles, enabling participants to perform tasks that cannot be learned in theory.

The centre provides **additional training** for professionals in all types of roles within network and contracting companies, as well as for newcomers to the electricity sector. It also offers conference and meeting opportunities. The centre welcomes course participants, people from companies, authorities, colleagues in the industry and encourages study visits from groups. By 2024, the centre has recorded 25,849 training days.

Source: Visionary Analytics based on linked source and open call

Lastly, participants at the Midterm workshop noted that the public image of JT and "clean jobs" can be overly idealised, creating unrealistic expectations. Honest communication about the challenges of transition is needed, acknowledging that green jobs are not always "clean" and that transitions can involve disruption.

Practical Guideline 6: Identify and leverage funding opportunities

During the development of JT Plans, it is necessary to establish how they will be funded to guarantee their successful implementation. This requires mapping and identifying available EU funding to find eligible funding opportunities.

Role of trade unions and employers' organisations:

- Identify and proactively leverage available EU funding opportunities that can support the development of JT Plans and/or related measures (e.g., Skills Observatories, Blueprints), including collaborating between social partners and other stakeholders.
- Share knowledge about available funding opportunities with other social partners and employers, especially SMEs, to maximise impact.
- Use identified funds to put JT Plans and related initiatives, such as social dialogue platforms and training, into action.

By identifying, using, and sharing knowledge about EU funding opportunities, social partners can transform JT Plans into practical, funded actions – ensuring that measures laid out in JT Plans can be implemented. EU funding instruments such as the JTF, European Social Fund + (ESF+), Erasmus+ and the Recovery and Resilience Dialogue (RRD) offer support for implementation of JT Plans. For more details, see section 2.1.3: The role of EU funding. Additionally, a list of relevant EU funds can be found in Annex 1. Social partners play a key role in accessing these funds not only for their own initiatives, but also to help other stakeholders understand and use them. Access to appropriate funding can determine whether a JT Plan can be successfully translated into meaningful, tangible outcomes for workers and communities.

Funding plans need to be addressed in JT Plans to ensure that they are feasible and can be implemented. This demonstrates the importance of integrating funding considerations from the outset. Taking a proactive approach to mapping funding opportunities could help stakeholders move more efficiently from planning to implementation and improve coordination among stakeholders. Social partners already acknowledged various initiatives, such as the Pact for Skills, by the EC and invited members to seize such opportunities (industriAll et al, 2021a). Box 13 showcases an example of EC's funding being used by social partners to support trade unionists in contributing to JT plans in Belgium and the Netherlands.

Box 13. Developing JT Plans: Raise sectoral awareness best practice example (Regional level)

Social dialogue fit for the EU Green Deal: pilot projects in Flanders and the Netherlands, Belgium, Netherlands, 2023 –2025

The project aims to empower trade union representatives to take a proactive role in company climate discussions. Through launching eight pilot projects within multinational companies in Flanders and the Netherlands, the initiative aims to demonstrate how JT plans, "climate roadmaps", can be developed and implemented with active participation from workers to ensure that

companies' futures are fit to meet climate goals and socially just. The project provides training and guidance to trade unionists so that they can enter into informed discussions with relevant stakeholders. The project ultimately aims to share good practices at the national and European level on "social climate dialogue". Lessons learnt were shared in the 2025 publication and can be found here. The project is funded under the 2022 call for "Social innovations for a fair green and digital transition", part of the EaSI strand of the ESF+. The call has a budget of EUR 10 million. 17 projects were selected for funding.

Source: Visionary Analytics based on linked sources and interviews

From the analysis of best practices, a number of practices were found to access financial support through partnerships with electricity companies and local governments. This highlights the potential role of combining public and private funding to develop and implement JT Plans. Importantly, several initiatives demonstrated that although programmes may be resource-intensive upfront, they delivered strong returns over time by building skilled workforces, increasing job readiness, and creating more resilient employment pathways.

3. Towards Gender Equality in the Electricity Sector

Key challenges:

- **Underrepresentation of women.** The electricity and broader energy sectors remain male-dominated, with women comprising about a quarter of the workforce in the EU. Women are especially underrepresented in technical and decision-making roles, while more often concentrated in administrative, HR, and support functions.
- **Barriers to career advancement.** Women face structural obstacles, including glass ceilings, family-related penalties, gender stereotypes, and limited access to senior roles. While their share in management and senior positions has grown in parts of Europe, representation on boards has stagnated or declined in some regions.
- **Working Conditions and Workplace Culture.** Women are more likely to be employed on fixed-term contracts. Non-inclusive workplace cultures and hiring practices, and lack of inclusive training/equipment design may further limit women's retention and satisfaction. Visibility of female role models is lower.

Key guidelines:

- **Promote continuous social dialogue and collective bargaining efforts** for gender equality across the electricity sector, ensuring it is embedded in company policies, targets, and strategies, and backed by clear commitments to change.
- **Broaden women's entry pathways** by implementing inclusive, non-discriminatory recruitment practices that actively drive gender diversity.
- **Advance women's leadership** by building skills, increasing visibility of female leaders, and challenging harmful gender stereotypes.
- **Foster flexible, safe, and supportive workplaces** that improve job quality and allow women to balance family and professional responsibilities.
- **Strengthen professional networks** for women by supporting efforts of employers and organisations in creating spaces to exchange experiences, access mentoring, and build connections.
- **Invest in training and upskilling** to help women remain in the sector and progress into technical and leadership positions as the industry evolves.

This chapter will provide an overview (section 3.1) of key gender equality challenges that women face in the energy sector, highlighting how certain barriers prevent women's entrance and advancement in the industry. The following section (section 3.2) will provide practical guidelines for social partners to attract and retain more women in the electricity sector.

While this chapter primarily focuses on measures to improve gender equality in ways that directly benefit women, it is important to acknowledge that non-binary and transgender individuals, as well as other disadvantaged groups such as migrants, also face significant barriers in the electricity sector. Their inclusion is equally vital to ensuring a fair and JT. The decision to concentrate on women in this study reflects both the evidence base available and the persistent structural underrepresentation of women in the sector. Nevertheless, the broader principle underpinning these recommendations is inclusivity, and many of the proposed measures can serve as a foundation for addressing inequalities faced by other groups in future work.

3.1. Key challenges

There is a scarcity of literature surrounding gender equality in electricity, specifically; therefore, most of the section will refer to the energy sector as a whole, specifying where possible. Furthermore, the recent literature on gender equality in the energy sector is quite limited in terms of the EU geographical scope; therefore, global or multi-regional data was used to fill any gaps in the topics discussed. This section synthesises insights uncovered during desk research, enhancing the findings with information obtained from interviews, focus groups and in-person events.

The energy as well as the electricity sectors remain male-dominated (Eurofound, 2020; JRC, 2020)). It has been estimated that in 2022, women made up around 24% of employees in the energy sector in the EU, which is far less than the share of women in the total labour force (around 46%) (EC, 2024a). In comparison, globally in 2022, women made up around 16% of the energy sector and 39.5% of the whole economy (IEA data, 2024). It has been widely observed that women are more drawn to work in renewable energy (RE) as they make up around 32% of the sector globally, compared to the 22% share in the traditional gas and oil industries (IRENA, 2019). It has been argued that RE creates more opportunities for women's involvement given its stronger social function and multidisciplinary dimension (Sumarno et al., 2024). However, a more recent study (EC, 2024a) has not found any indication that the share of women is larger in the renewable as opposed to the conventional energy sector in the EU.

When discussing gender imbalances in the energy sector's workforce, it is important not only to evaluate its composition but also to look at the kind of positions women occupy. Research shows that women within the industry tend to be represented more strongly in low-skilled than high-skilled occupations, although the share of women in low-skilled jobs has declined (from 34% in 2011 to 31.4% in 2022). The share of women in high- and medium-skilled groups has experienced a steady increase in the aforementioned period (EC, 2024a). Studies have pointed out that **often women's roles are limited to managerial support functions**, such as clerical, administrative, paralegal work, human resource and public relations related roles as opposed to core technical activities of the sector, where they are underrepresented (Sumarno et al., 2024; JRC, 2020). In Europe as well as globally, **women face barriers, such as glass ceilings**[7], which do not allow them to rise above a certain level of seniority (IRENA, 2022; Shatilova et al., 2021; Feenstra & Creusen, 2021). Research has shown that in the economy overall, jobs within human resources tend to have limited decision-making power and strategic input, and therefore fewer advancement opportunities within an organisation (International Labour Organisation, 2019). In the energy sector, highly specialised technical roles tend to be subject to better career advancement opportunities (JRC, 2020).

An overview of regional or country-level data allows for a better understanding of the status of gender balance in the sector's professional roles in different part of Europe. In 2022 women made up around 28% of the workforce in the largest energy companies in Central and Eastern Europe (CEE), which is a two-percent increase from 2018. To add, more women have advanced to senior management positions, with a 14% (2018) to 23% (2022) (Beck & Pánczél, 2023). However, **while higher representation was observed in senior management and the overall sector, the percentage of female board members has shrunk** from 17% (2018) to 14% (2022) in CEE, with nearly all countries[8] (apart from Czechia and Bulgaria) reporting a decrease in the four-year period (Beck & Pánczél, 2023). Adecco Institute (2020) similarly finds that in Spain, women made up 28.5% of the surveyed energy workforce and 22.5% of senior management. A survey in Germany estimated that women made up 56.7% of leading positions in marketing and 41.4% in HR departments, but in technology and manufacturing comprised only 7.4% of leaders (PWC, 2022). By 2021 in the Duch energy sector, women's participation had never exceeded 22%, going as low as 16% at senior employment levels (Feendstra & Creusen, 2021).

In 2022, **only 28% of management positions were occupied by women** in the EU energy sector (EC, 2024a).

Europe's Northern countries have fared better than the rest of EU when it comes to ensuring gender equality in more senior roles, although further strive for gender balance is needed. In the Nordic energy sector, women have been estimated to hold around 31% of all decision-making power. They were also shown to make up around 28% of energy companies' full-time equivalents. In the Nordic countries, women made up around 32% board members and only 16% of board chairpersons (Elamson et al., 2022). Regarding the C-suite positions,

[7] IRENE, 2022: "**Glass ceiling**" refers to an unstated barrier to advancement in a profession. It affects women and members of minority groups in particular.
[8] PL, SK, SI, HU, RO, HR, RS, UA.

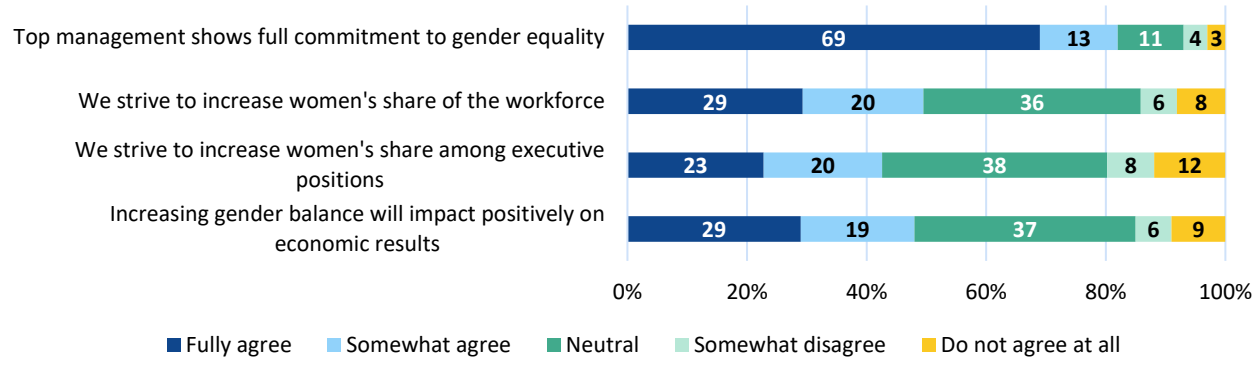
women are least represented among energy company CEOs and COOs, with men filling 84% and 88% of the positions, respectively. The only position where women occupy the majority (71%) is CHRO (Elamson et al., 2022), which is in line with the finding that women hold mostly non-technical supporting positions.

Generally, women tend to assume a greater burden in domestic work and care in relation to men and, therefore, **prefer working shorter and more predictable hours**. In regard to flexible contracts, the EU energy sector has been performing quite well – **women were reported to hold around 68.1% of part-time contracts in 2021**. Similarly, in the same year women (15.2%) were more likely to be on part-time contracts than men (2.4%), although this share for women still seems to be lower than in the whole economy (18.2%) (EC, 2024a). As shown by survey results from countries[9] participating in the Equal by 30 initiative, workplace flexibility was evaluated by both men and women as a strength of the electricity sector (EQUAL by 30 & Diversio, 2021). However, in terms of occupational stability and security, women (around 10%) were found more likely to be on **fixed-term contracts** than men (6-7%) and less likely to be self-employed in the energy sector (EC, 2024a). Furthermore, based on interview findings, one of the issues women might face, especially when transferring from more traditional to clean energy-based sectors, is that the employee **contract length tends to be shorter** due to the work being more project-based. This can mean less job stability for people coming from other industries, which becomes a problem, especially for women with family responsibilities.

A study on the energy companies in CEE and Southeastern Europe (SEE) (Beck & Pánczél, 2023) surveyed reasons for joining the industry across genders and found them to be quite similar. The three most valued aspects were **long-term job security**, **being part of a successful company** and **training/learning & development possibilities**. Women tended to value the aspects of work-life balance and the excitement/fulfilment of the work slightly more than men; men, however, attributed more importance to the aspects of working in a high-tech environment and high salary at a noticeably greater rate than women (Beck & Pánczél, 2023). This could potentially be explained by women occupying more administrative than technical positions in the sector, as well as there being significantly fewer women in the higher ranks.

A survey (EC, 2024a) of European HR managers in the energy sector revealed company attitudes towards gender balance (see Figure 4). As findings indicate, the large majority of companies report top management showing full commitment to achieving gender equality (82% fully or somewhat agree with this statement), however, only around half indicate aiming to increase the share of women in their workforce (49%) and executive positions (43%).

Figure 4. Company attitudes towards gender balance in the energy sector



Source: EC, 2024a

[9] EU countries include: IT, FI, SE, DE, FR, AT, NL, ES.

One study revealed (EC, 2024a) which factors European energy companies perceive as contributing most to gender imbalance: 49% of the participants noted "**scarce supply of qualified women on the labour market"**, 41% indicated "**beliefs that men are better suited for certain types of jobs than women"**, and 29% perceive "**female employees having more difficulty to manage work-life balance"** as an obstacle, although only half as many participants identified "lack of company support for work-family balance" as a problem.

Studies have been conducted on **gender equality in European energy/electricity cooperatives**[10]. These cooperatives serve as forms of collective action in energy communities where participants, based on their shared community objectives and values, collaboratively invest, produce and sometimes consume energy (De Gioannis et al., 2024; Carroll, 2022). A European survey on energy cooperatives found that a gender balance of 40-60% (neither men nor women should make up less than 40% or more than 60%) was only found in 17% of organisations (Kaur et al., 2022). Research by Łapniewska (2019) found that most European electricity cooperatives do not promote gender equality or include it in their documents, although they would be interested in good practices. The study also revealed that most **prominent reasons for the low participation of women identified by cooperatives were traditional societal roles, low share of women pursuing education in Science, Technolology, Engineering and Mathematics (STEM) as well as the perception that energy cooperations are technologically complex** (although, as the study finds, members are not required to have specialised technical skills) (Łapniewska, 2019). This reinforces the observation that women in Europe tend to abstain from applying to jobs where they do not meet all of the requirements (IRENA, 2019; Vassilopoulou et al., 2021). Furthermore, a comparative analysis of energy cooperatives in Italy and Belgium revealed that women with stronger inclinations toward gender stereotypes had lower self-assessment of knowledge about energy than men but a greater tendency to increase it after joining (De Gioannis et al., 2024). In Germany, the imbalanced representation of women in leadership roles of RE cooperatives was attributed to a lack of awareness of opportunities and financial resources, as well as scarcity of time for volunteer-based workload (Karakislak et al., 2023).

Women in the energy sector tend to face numerous obstacles that impact their recruitment, retention, promotion, advancement, and leadership. One of the most prominent challenges facing gender equality is the **culturally embedded perceptions of social norms and gender stereotypes**, present in male-dominated industries. Masculine norms of the energy sector can influence the career choices of children and young people as well as working professionals (EC, 2024a; IRENA, 2022; JRC, 2020). Interview findings suggest that women may grow up conditioned to think that certain male-dominated industries are only meant for men and, due to these prevalent gender stereotypes, fail to consider numerous occupations as possibilities, do not pursue education in STEM or vocational training. Furthermore, the industry appears to attribute high importance to the engineering profession, closely linked to masculine norms, which can become a challenge for women experiencing pressure to match the associated professional expectations with their personal identities (Naukkarinnen & Bairoh, 2022). In male-dominated STEM fields, women, as opposed to men, experience significantly lower chances of finding employment and therefore need more support in entering and staying in their field (JRC, 2020). Findings from interviews and focus groups indicate that **traditional clean electricity sectors**, such as hydropower, **can maintain long-established male-centred workplace cultures** that reinforce gender stereotypes, which are not attractive to female professionals. By contrast, newer and emerging **clean energy sectors**, such as wind or solar energy, **tend to demonstrate greater flexibility**, allowing them to shape workplace cultures that are more inclusive and better suited to a diverse workforce.

[10] Energy communities, also known as **energy cooperatives**, are legal entities that empower citizens, small businesses and local authorities to produce, manage and consume their own energy. They can cover various parts of the energy value chain, including production, distribution, supply, consumption, and aggregation. Energy communities may vary depending on their location, involved actors and provided energy services. Source: European Commission, 2022.

Kahsar (2019) has formulated a hypothesis that the **gender imbalances in the electricity sector are due to deeper personality imbalances** – different personalities account for differences in career choices. The theory frames the electricity industry as dominated by authoritarian sociotechnical structures, emphasising large-scale, top-down and coordinated problem solving, naturally attracting a narrow range of occupational personality scores (Kahsar, 2019). Gender stereotypes can enforce not only entry but also career advancement barriers. It has been shown that **women in leadership roles tend to be subject to more micro-aggressions** (i.e. being interrupted, receiving remarks on emotional condition, having judgment called into question) than men – micro-aggressions become less frequent as men gain seniority (McKinsey, 2024).

Women may face a **family penalty** – the assumption that an orientation towards family cannot be associated with professional success, which makes family responsibilities into barriers to career advancement (Schwerter & Ilg, 2021). Women in solar PV globally have expressed the notion that **insufficient maternity and paternity leave** are among the greatest barriers to women's retention. In this industry, a **lack of childcare facilities** has also been cited as a barrier to advancement (IRENA, 2022). An interviewee emphasised that **remote locations of some jobs** in the electricity sector can make it more difficult to attract women, as well as young talent in general. These groups tend to be more apprehensive about moving or commute from urban and populated areas to remote working sites (e.g. in large power plants, installations like wind or solar farms, hydroelectric plants, energy storage facilities, etc.) where it can be more difficult to find various services and facilities for needs like healthcare and childcare.

Research shows that male-dominated STEM fields have been known to enforce **hiring practices that favour male candidates** (Bertogg et al., 2020). **Unconscious biases** can negatively impact hiring outcomes, and experiments with **gender-blind hiring policies have shown that such practices can be overcome**. Although it has been noted that the specific targeting and encouragement of women can influence women's perception of job opportunities, emphasising inclusivity in job advertisements can create bias in certain roles and make women question whether their employment is based on competence or the need to achieve a gender balance (Sumarno et al., 2024).

Lack of gender targets as well as unsupportive and non-transparent workplace policies have been known to enforce barriers for retention and progression of women in the solar PV industry (IRENA, 2022) and in the energy sector as a whole, as emphasised by interview participants. **Pay gaps** have been identified as one of the challenges that can affect women's willingness to (re-)enter or maintain a career in a male-dominated industry. A study revealed that in the energy sector 37% of women, but only 25% of men, noticed a gender pay gap in their company. This notion is even more pronounced in RE, with 43.8% of women indicating a pay gap (EC, 2024a).

Interview and focus group findings highlighted that aspects such as **undesirable working conditions, physical demands of occupations** and **health and safety concerns** can be off-putting to many women who consider working in electricity. It has been noted that although the sector is evolving and becoming increasingly technological, some work still requires certain physical capacity which can exclude women from participating in certain occupations. Furthermore, concerns for the design of trainings as well as the equipment used in certain occupations have been brought up, as they are typically designed for the needs of men and can pose safety risks for female professionals.

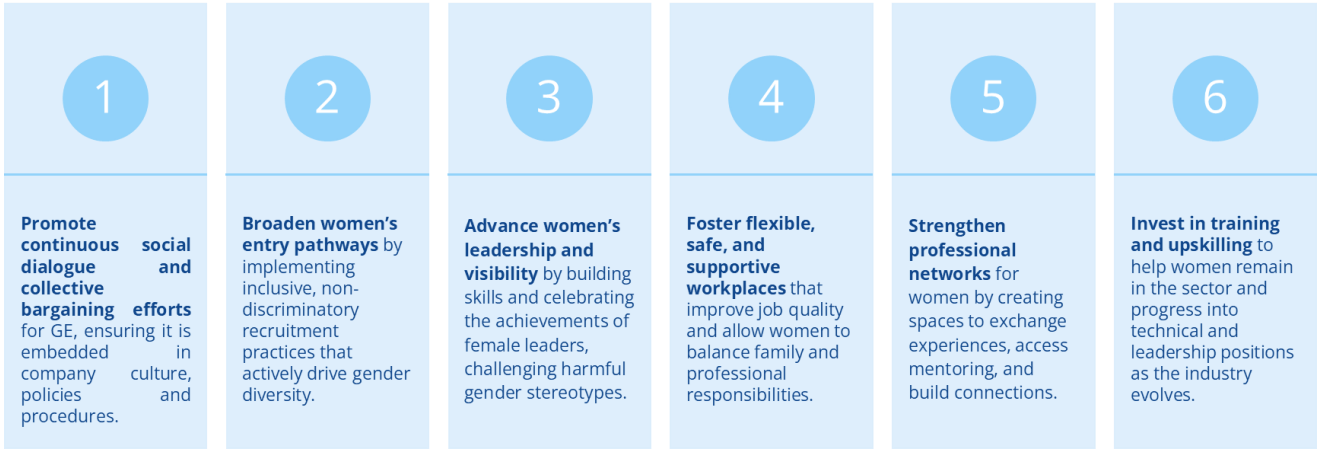
Based on interview findings, the **lack of female role models** in the electricity sector also serves as barriers of entry. Research has suggested that the visibility of female role models can be a key factor in determining women's interest in the energy sector. Women in energy cooperatives in Italy and Belgium more so than men recognised the importance of the presence of women in boards of directors (De Gioannis et al., 2024). Furthermore, Beck and Pánczél (2023) have uncovered a positive link between change in share of female board members in utility, oil and gas companies and change in female participation in engineering at universities in the period of 2018-2022.

Research in solar PV suggests that **the size of a company or organisation can determine the availability of benefits**, such as maternity or paternity leave, fairness in policies, training opportunities, which are more accessible in larger rather than smaller organisations. However, smaller organisations tend to offer more opportunities for remote and part-time work (IRENA, 2022). Among European electricity cooperatives, as size increased, so did the share of women (although their share in boards of directors did not seem to exceed ¼ at any size range) (Łapniewska, 2019).

3.2. Guidelines for improving gender equality in the electricity sector

As highlighted in the previous section, the electricity sector remains a male-dominated one, prompting actions that would increase gender equality. Measures must be taken to combat the barriers to entry and retention faced by women, focusing on enhancing the attractiveness of the sector by improving aspects such as job quality and workplace democracy. The following sub-sections will outline guidelines and recommendations for social partners, suggesting the main areas of focus and exploring practical approaches and solutions to prevalent gender balance challenges. The first practical guideline will outline general recommendations surrounding social dialogue and inclusive policies. The next ones will tackle themes of enhancing the attractiveness of the sector to women, ensuing retention and career advancement of women.

Figure 5. Practical guidelines – Gender Equality



Source: Visionary Analytics based on the analysis conducted

The practical guidelines have been developed based on the data gathered through desk research and literature review, in-person project events, exploratory interviews, an open call for best practices, and findings from focus group discussions, all conducted during this study (see Annex 2 for details). The practical guidelines outlined in this section have been similarly formulated and are subject to common limitations as those addressed in section 2.2. In addition, it is important to emphasise that although the data was collected with a specific focus on the electricity sector, some recommendations for gender equality draw on broader observations from the energy sector as a whole, as well as lessons learned from other male-dominated industries that would be applicable in this context.

Practical Guideline 1: Promote stakeholder social dialogue and policy adoption for gender equality

Advocate for social dialogue on gender equality among stakeholders in the electricity sector and encourage commitments to change. Ensure gender equality is systematically considered by mainstreaming it into company policies, targets, and plans.

Role of trade unions and employers' organisations:

- Encourage and pursue multi-stakeholder discussions and social dialogue about the importance of gender equality within the electricity sector on the international, national, regional and/or company level, facilitate and contribute to best practice exchanges.
- Pursue collective bargaining efforts to advance questions such as equal pay, better working conditions, work-life balance and workplace democracy, and gather support towards gender equality initiatives from relevant stakeholders.
- Support women's participation in social dialogue and collective bargaining.
- Encourage and support employers in adopting gender equality measures in their policies (e.g., diversity plans, gender mainstreaming efforts). Help set targets and suggest practical strategies through sharing relevant best practice examples, tools and recommendations, providing insights.
- Engage with public authorities to gain their support towards developing and implementing gender equality plans.
- Advocate for data transparency and accessibility among electricity stakeholders, contribute to the creation and adoption of useful tools and metrics, and facilitate data pooling.

It is crucial for social partners to ensure that gender equality is not overlooked amid the significant transition taking place in the electricity sector. While the current workforce is predominantly male and therefore most affected by these changes, the transformation will also generate numerous new jobs requiring additional workers and new skills. This makes it more important than ever to emphasise the value of inclusivity and collaborate in the creation of entry points for new female professionals.

Based on study findings, it is crucial that social partners pursue **multi-stakeholder discussions**. Barriers that women face in the electricity sector tend to not be rooted in single workplaces and institutions but are structural and cultural. Gender inequality is a complex issue that requires systematic approaches and shared ownership, pursued on multiple levels – company, national, regional and international. Furthermore, it is important to involve stakeholders from numerous backgrounds, such as sectoral actors, representatives of educational institutions, relevant women's organisations and associations, governments, etc.

The EC Equality Platform for the Energy Sector (see Box 14) is an example of an initiative meant to tackle the issue of gender equality in a multi-faceted approach through promotion of inclusive and diverse workspaces. The platform unites electricity stakeholders (national/regional authorities, EU institutions, international organisations, associations, networks, companies, service providers, think tanks, research institutes and more) in the voluntary commitment to create equal opportunities through actions, such as the development of diversity strategies and plans, installation of specific facilities for women, among others. The platform ensures accountability of stakeholders through implementation progress reports in member meetings. Such multi-stakeholder engagement platforms can be replicated on national/regional levels to facilitate the importance of and navigate the gender equality topic.

Box 14. Gender Equality: example of stakeholder dialogue (EU level)

Equality Platform for the Energy Sector, EC, 2021 - ongoing

The EU is committed to achieving its climate neutrality goal by 2050 and recognises the important role of the energy sector, which will enable the shift towards clean energy, creating green jobs and technologies. It is also a priority of the EU to guarantee equal opportunities at all sectoral levels and reach the minimum gender balance (40% female participation) by 2050, which will require an additional 200,000 women to become employed in energy. Although the share of women in the sector's workforce is increasing, there needs to be an acceleration of this process, especially in decarbonised energy.

To address the underrepresentation of women and other under-represeted groups, an Equality Platform was created by the European Commission to promote a more inclusive, diverse and equitable environment. It is meant to function as a forum where energy stakeholders can share and discuss equality-related issues and concrete actions that would improve equality in the sector. The commitment of members to inclusivity and diversity is the most important element of this practice, as this is a platform based on participation.

Some of the key actions of the Equality Platform include:

1. Promoting inclusive workplaces through guidelines and best practices.
2. Supporting women to become entrepreneurs and leaders in the energy sector.
3. Advocating for anti-discriminatory policies within the energy industry.
4. Facilitating discussions and sharing experiences across the sector.

Furthermore, some companies that are part of this initiative can sign a *Declaration on Equal Opportunities for All in the Energy Sector*, which involves voluntary commitments to: 1) endorsing diversity, 2) implementing inclusive policies towards gender, ethnicity, age, and sexual orientation, 3) combating recruitment, career development and remuneration biases, 4) increasing the representation of women and disadvantaged groups in decision-making roles, 5) promoting work-life balance and non-discrimination, 6) attracting diverse talent to the energy sector.

So far, the platform has expanded its participation to 25 full members and 15 signatories. Participants include national, regional and local authorities of EU countries, EU agencies and institutions, international organizations, companies, associations, foundations, NGOs, trade unions, research institutes, law firms and consultancies in the EU. The Equality Platform has successfully facilitated dialogue through the organisation of events and meetings, providing a forum for member discussions and sharing of experiences and best practices. Some inclusive initiatives of the platform members include the Global Women's Network for the Energy Transition (GWNET) (see Box 21 for further description), as well as the Florence School of Regulation (working in collaboration with Lights on Women), which offers access to online courses that cover many topics in energy and climate regulation, driving educational opportunities for women in the sector.

Source: Visionary Analytics based on linked sources in the box

Based on interview and focus group findings, **social dialogue** and **collective bargaining** efforts are seen as effective means of tackling gender inequality and are often at the root of such progress. Through social dialogue, trade unions and employer associations can help maintain the relevance and importance of the gender equality topic. Moreover, social partners should facilitate and contribute to **best practice exchanges**: encourage electricity stakeholders to share their gender equality initiatives, disseminate them through relevant means of communication to companies and other sectoral actors, and consult them on the application of the practices in their national/regional contexts. Social partners should especially put effort into fostering dialogue in countries where the role and influence of social partners is weak. This includes countries that tend to have low memberships of unions and employers' organisations, where the work of social partners is fragmented and where social dialogue at the company level is the lowest, such as Portugal, Greece, Malta, Poland, Cyprus, and the Baltic states (Eurofound, 2024b). Social partners should strive to **include equality clauses in collective agreements** that concern issues such as equal pay, flexible work options, parental leave, and training provisions.

Through social dialogue, trade unions could also initiate tripartite discussions, involving unions, employers and governments when developing equality-strengthening frameworks. For example, French social partners have been very active in the last couple of decades in their effort to promote gender equality in the energy sector. Box 15 outlines a couple of examples of initiatives meant to encourage companies to commit to and strive for the diversification of their workforce.

Box 15. Gender Equality: the case of social partner and government involvement in France (National level)

Agreement on Gender Diversity and Equality in the Workplace, French Electricity and Gas Industries (IEG) (France), 2024 - 2028

Despite long-standing commitments, gender gaps remain significant in the French electricity and gas industries: women represent just 28% of the workforce and only 18% in technical roles. Progress has slowed due to barriers such as the glass ceiling, gender bias in mobility, pay gaps, and unequal family responsibilities.

To address these issues, the *2024–2028 Agreement* was signed by employer organisations (UFE, UNEMIG) and trade unions (CFE-CGC, FCE CFDT, FNME CGT, FNEM FO). Its objectives are to increase women's participation (30% overall by 2030; 20% in technical roles by 2027), guarantee equal pay, improve career opportunities, and foster inclusive workplace cultures.

Key actions include:

- Targeted and bias-free recruitment campaigns, partnerships with schools, mentoring programmes, and retraining pathways into technical fields.
- Balanced promotion and mobility, leadership coaching, and equal access to training for all employees.

- Biennial pay gap analyses and development of methodological tools to ensure compliance with EU pay transparency rules.
- Flexible working, equitable parental leave, childcare support, and studies on the impact of maternity and part-time work.
- Gender-sensitive health and safety measures, commitments against sexist behaviour, and inclusion for employees with diverse gender identities.

Trade unions and employer organisations played a central role in negotiating the agreement and continue to oversee its implementation, develop common tools, conduct studies, and run the Equality Observatory. Employers are tasked with translating the agreement into concrete workplace measures covering recruitment, training, promotion, pay equity, work–life balance, and anti-violence policies. Companies must also collect and share data to track progress. The agreement sets measurable goals to reduce gender gaps, strengthen diversity and inclusion, and make the sector more attractive.

Accord d'entreprise, France, 2019-ongoing

French legislators have mandated collective bargaining efforts for companies with an unbalanced gender distribution. Companies must annually (or at least once every four years if a collective agreement on the periodicity of compulsory negotiations has been reached) negotiate the renumeration and professional equality between women and men. This can include establishing measurable objectives for reducing gender gaps in pay and promotion, access to training, quality of life, representation in decision-making roles, working conditions. Since 2019 companies with at least 50 employees must also publish their Gender Equality Index, which measures wage disparities between men and women, and negotiate corrective measures if the score is below a set threshold. If companies fail to either negotiate or implement measures, they are subject to a penalty payable by the employer. This is an example of how policy can mandate companies to strive for gender equality and make this issue a part of their company policy and strategy, materialising into real measures for change.

There are similar initiatives in other European countries, such as Spain, where companies are mandated by the government to have an equality plan that would also be approved by relevant social partners.

Source: Visionary Analytics based on focus group and interview findings, provided documents ("Accord relatif à la mixité et à l'égalité professionnelle," n.d.) and linked sources in the box

Social partners must ensure that **women continuously participate** in the dialogue and negotiations on gender equality. This involves not only guaranteeing their presence in events, discussions and negotiations with electricity sector stakeholders, but also securing meaningful roles for women within trade unions and employer organisations. It is important to push stakeholders to empower women to speak for themselves when deliberating gender equality issues.

To ensure proper policy adaptation for tackling gender inequality, social partners can advocate for the **adoption of gender equality targets and strategies for companies**, which would concern goals for gender balance in decision-making roles, commitments to change in workplace culture and practices (see Box 16). To uphold these, social partners could encourage:

- **Gender audits**, whereby companies periodically **assess their workplace policies**, recruitment and promotion practices, can be a useful internal tool for identifying structural or unintentional barriers to gender equality and for supporting evidence-based improvements. And although public transparency is advised, there are important limitations and risks to consider – public disclosure of audit results may expose companies to reputational risks, particularly where shortcomings are identified despite the absence of deliberate discrimination.
- **Equality committees**, ensuring joint employer and employee focus on equality and inclusion.
- **Gender mainstreaming** efforts, encouraging stakeholders, especially electricity companies, to incorporate a gendered lens into everything they do. Mainstreaming requires assessing the implications for both men and women of any action, legislation or policy at all levels and areas, making sure gender inequalities are not perpetuated and applying a gender-responsive approach. This includes conducting gender analysis in projects and initiatives, maintaining a gender strategy and action plan, and ensuring gender-responsive monitoring and evaluation (UN Women & UNIDO, 2023). This is a crucial step in ensuring safeguards against male biases and "gender blindness" – unintentionally excluding and

overlooking women's concerns and perspectives, not explicitly aiming to include them (Mang-Benza, 2020).

Box 16. Gender Equality: inclusion of gender targets in company policy (Company level)

Fifty-Fifty Project, Engie (France), 2020 - ongoing

At ENGIE, women made up just over 24% of management in 2020, highlighting the need for stronger action to address gender disparities. In response, the company launched its *Fifty-Fifty Project*, an ambitious initiative aimed at achieving managerial parity by 2030. The project is grounded in ENGIE's 2017 European agreement on professional equality and is closely aligned with the United Nations (UN) Sustainable Development Goals.

The initiative sets out to transform managerial culture, ensure equal opportunities, and combat sexism across all group entities. Its central objective is to raise the share of women in management to 50% by 2030 through a combination of internal promotions and external recruitment, while fostering long-term cultural change within the organisation. The company is striving to achieve this goal through the introduction of parenthood policies, support for women's networking, use of the professional gender equality index, addressing gender pay gaps, partnerships with schools and other organisations, and awareness campaigns.

Source: Visionary Analytics based on linked sources in the box

Based on the interviews and some participants of the focus group, setting up **gender quotas** for the share of women in companies' workforces or decision-making positions (e.g., work councils, committees, boards and management) could have positive outcomes in the short-term. For example, these measures can push and obligate companies to search for female professionals with relevant expertise more actively or invest in the training of women for future roles. However, it must be noted that **gender quotas do not overcome the structural barriers** that hinder gender equality and therefore are not necessarily a long-term solution. If gender quotas are put in place, it is important to ensure safeguards to prevent women from becoming "nominal" hires – employed to meet the quota but not meaningfully involved in the work of the company. Due to the numerous drawbacks of this approach, if considered, gender quotas should be implement as a temporary solution to act as a stepping-stone to a more inclusive workplace, accompanied by other measures. Lastly, rigid gender quotas are generally not considered as an appropriate measure by the employers.

During expert interviews, the **backlash** from political or societal actors against diversity and inclusivity measures was highlighted as a barrier that can stifle progress in wide range of sectors of the economy. It has been observed that the notion of a "gender ideology" has become increasingly prevalent in the EU. Social partners should play an active part in tackling this backlash, continuing their efforts to promote the importance of a JT for all, regardless of their gender, race, sexual orientation, social, cultural or economic background.

Study findings suggest a scarcity of data on gender equality in the European electricity sector, as evidence-based social dialogue depends on it. Social partners should promote **transparent data collection and accessibility** among stakeholders, and encourage the creation of common methodologies, metrics and data pooling platforms that could be applied on numerous levels. Social partners can also advance policymaking by conducting impact studies and assessments with participatory or mixed-methods approaches, supported through EU grants or other financial instruments. These actions would improve understanding of women's needs and enable ongoing monitoring of progress.

Practical Guideline 2: Adopt inclusive recruitment practices for women

Strengthen entry pathways for women by promoting inclusive and non-discriminatory recruitment methods that actively encourage gender diversity.

Role of trade unions and employers' organisations:

- Promote the adoption of standardised and unbiased recruitment and hiring processes, support employers by providing relevant recommendations, templates, and examples.
- Encourage recommended diversity training for recruiters.

Promote consideration of women from broader talent pools, diverse backgrounds and non-linear career pathways. Promote collaboration with relevant educational institutions to facilitate a smooth transition of young talent into the workforce.

- Advocate for measures that would improve recognition of qualifications and experience from outside the EU. This includes strengthening information and guidance services for migrants, promote greater involvement of employers in recognition procedures.

Based on interview findings, social partners should advocate for **more inclusive recruitment and hiring procedures** that would allow electricity companies to tap into women's talent pools more effectively. It is important to ensure a structured and unbiased selection, involving clear, standardised interviews and scoring systems, diverse recruitment panels (Vassilopoulou et al., 2021). Selection could be based on competences and growth potential, not only experience, which women might lack in male-dominated sectors. Companies could be encouraged to implement diversity training for recruiters and to require gender-balanced shortlists during the hiring process (Engendering Utilities, 2019). Box 17 below details the inclusive recruitment practices of Iberdrola Group (Spain).

Box 17. Gender Equality: inclusive company hiring practice (Company level)

Inclusive Recruitment and Hiring, Iberdrola Group (Spain), 2025 - ongoing

At Iberdrola, the recognition that a diverse, skilled, and motivated workforce is essential to business success has driven the adoption of a comprehensive *Equality, Diversity and Work-Life Balance Plan*. Negotiated alongside the company's new Collective Bargaining Agreement, this plan prioritises the consolidation of progress in inclusive recruitment and equal opportunity practices. The objective of the initiative is to ensure fairness, equal treatment, and non-discrimination in all recruitment and hiring processes, thereby guaranteeing that the company attracts and retains the best talent. The plan specifically aims to prevent bias in selection procedures, expand opportunities for underrepresented groups, and foster an inclusive corporate culture aligned with Iberdrola's values and strategic goals.

Key actions include:

- Recruitment and selection procedures that evaluate candidates solely based on knowledge, skills, and competences, excluding any discriminatory criteria.
- Guarantees against discriminatory content or questions in selection processes, with particular attention to avoiding gender bias in hiring for management roles.
- Commitment to include candidates from underrepresented genders in shortlists wherever possible, and to give preference to the underrepresented gender in cases of equal suitability.
- Use of inclusive, non-stereotyped language and images in job postings and communications.
- Providing training for recruiters and managers on equal opportunity practices, supported by awareness-raising activities.
- Application of these principles in internal recruitment, ensuring equal access to career development.
- Restrictive use of temporary contracts, favouring indefinite and full-time positions to promote quality employment.
- Voluntary exit interviews to identify and address possible discrimination or equality-related issues influencing employees' decision to leave.

Iberdrola's inclusive recruitment approaches have strived for gender equality long before the plan, demonstrating tangible results. For example, at the time of the study, around 70% of new hires under the age of 30 are women, and the proportion of women in leadership roles has doubled since 2014. Additional measures, including flexible working hours, expanded parental leave, and support for women in corporate governance through sponsorship and training, have reinforced the company's attractiveness as an inclusive employer.

Source: Visionary Analytics based on focus group findings and provided documents (Iberdrola group, 2025)

Stakeholders should be encouraged to ensure transparency around new career opportunities for women, both internal and external recruitment, by providing full access to relevant information and actively encouraging women to apply, particularly for roles in traditionally male-dominated areas. Social partners should advise electricity companies to use gender inclusive or neutral language in job advertisements, be critical of demanding job requirements, and widen recruitment channels (Equal4Europe, 2021). As described in Box 18, Gotland's Elnät AB (Sweden) provides an example of an initiative that chose to **actively target women in their training and recruiting efforts**. In an attempt to find candidates from a variety of

backgrounds with a promise to upskill them for work in the electricity sector, entry barriers were lowered, and women applicants were strongly encouraged.

Box 18. Gender Equality: successful recruitment and training of women (Company level)

Attracting Women to the Electricity Sector, Gotlands Elnät AB with Seko (Sweden), 2023 – 2024

The electricity sector in Sweden, as in many countries, continues to struggle with gender imbalance, particularly in technical and operational roles. Traditional recruitment practices often attract predominantly male applicants, limiting diversity and reinforcing stereotypes about energy-related work. To create a more gender-equal workplace, *Gotlands Elnät AB*, in social dialogue with the local union *Seko* (Service och kommunikationsfacket), launched a targeted training and recruitment initiative between 2023 and 2024.

The aim was to widen access to the electricity sector by lowering barriers to entry, while explicitly encouraging women to apply. By signalling a preference for female candidates and offering training positions that required no prior industry experience, the company sought to attract applicants from a broader talent pool and build long-term gender balance.

Key actions and objectives of the initiative included:

- Advertising five trainee positions with the explicit message that prior sector experience or education was not required and that female applicants were particularly welcome.
- Organising recruitment through a rigorous selection procedure, involving phone calls, online and in-person interviews.
- Implementing a training programme that combines paid learning and practical on-the-job training to equip new hires with the necessary technical skills.
- Engaging in sustained social dialogue between the company and the local trade union, ensuring mutual support and legitimacy of the programme.
- Promoting the electricity sector as an attractive and viable career path for women from diverse professional backgrounds.

The talent programme attracted 162 applications, 30% of them coming from women, which has been received as a great achievement in and of itself. All five participants (four women and one man) successfully started their training by trying out different technical specialisations and are receiving practical knowledge while employed at the company. The initiative demonstrated that a clear, welcoming message to women—stating that their skills and perspectives were needed—was key to overcoming perceived barriers.

The programme was born out of active dialogue with the local union, which played a central role in shaping the initiative. While the company ultimately financed and implemented the programme independently (which turned out to be quite costly), union involvement ensured that employee perspectives were included and that the recruitment drive was aligned with broader equality objectives.

Source: Visionary Analytics based on open call findings and provided documents (Energi Företagen, 2024)

Based on interview findings, to attract young talent, the sector should offer working conditions that would be attractive (see Practical guideline 4). Therefore, social partners could advocate for recruitment efforts that feature family-friendly work-life balance policies, offer indefinite contracts and flexible working time arrangements, showcase a welcoming culture and commitments to diversity and equality. Including information on training and mentoring opportunities, affiliations with women's networks can be an attractive step. Transparency about **pay** and provisions on clear salary ranges could encourage women to apply for positions currently requiring negotiation. Transparency on career progression with clear development pathways should also be encouraged. Social partners can promote collaboration with educational institutions in fostering a smooth transition into working life in the electricity sector. However, as recommended by EC (2024a), the energy sector as a whole could benefit from exploring **non-linear career pathways**, i.e. diversifying its recruitment by straying from expectations of a STEM educational and professional profile and including a wider range of academic backgrounds and tapping into larger talent pools.

Lastly, to attract more women from refugee or migrant backgrounds, as well as those with relevant experience but without formal qualifications, social partners could prioritise **improving the recognition of qualifications, competences, and work experience** both within and beyond the EU. This can be achieved through advocating for aligned qualification frameworks, establishing sector-specific recognition procedures or fast-track validation provisions, and promoting work-based assessments. More specifically, trade unions

should be inclined to strengthen their information and guidance services to help women better understand recognition procedures and available resources. Employers' organisations have a role in promoting the greater involvement of employers in recognition procedures and the creation of flexible and labour market-oriented recognition pathways (EC, 2024d). This is to ensure that industries do not reject potential female talent.

Practical Guideline 3: Promote women's leadership and visibility of role models

Enhance women's leadership capabilities, increase the visibility of women in leadership roles and counter harmful gender norms.

Role of trade unions and employers' organisations:

- Help employers recognise the benefits of investment in leadership and management training for employees. Advocate for the integration of commitments towards women's leadership targets during collective bargaining.
- Promote investment in leadership and management training for employees. Support the organising of joint training for several companies, especially for SMEs.
- Highlight the importance of recognising the achievements of women and promoting their visibility. Encourage stakeholders to enhance the visibility of female role models through means of internal and external communication.
- Promote funding opportunities and other support tools meant for women entrepreneurs and female leaders in the electricity sector.
- Encourage and support employers in fostering partnerships between women professionals and educational institutions, act as a liaison or platforms for establishing these connections (e.g., assisting in the development of programmes, networks).

Study participants highlighted the importance of **supporting women's leadership development** within the sector. It is crucial that electricity stakeholders continue to nurture female talent, providing women with opportunities to develop their skills and apply them in the workplace. Social partners can encourage stakeholders to integrate leadership goals in social dialogue through commitments in collective agreements, targets or quotas for women in leading positions. Social partners can also support investments in leadership and management training with the opportunity to apply these competencies through clear career progression pathways.

Based on findings from interviews and focus groups, it is essential for social partners to help **enhance the visibility of women role models**, especially in the more traditional clean energy sectors. Female leaders are important both for women currently working in the sector as well as young women who are still in education or are only looking to get into the industry. Female role models not only inspire and motivate professionals but also contribute to the fight against established gender stereotypes, and have the potential to increase positive competition within companies. Some focus group participants noted that there is not enough effort being put into enhancing the visibility of female role models in the sector. Therefore, social partners should encourage electricity stakeholders to enhance their communication efforts through relevant channels, especially through media, social advertising and societal actors (EC, 2024a), emphasising women's success stories, celebrating their achievements through industry awards and recognition, and urging their female professionals to actively participate in gender equality forums, internal and external events and campaigns, and networks. School visits and collaboration with educational institutions could also help engage women further in a more targeted way (see Chapter 3.2 for engagement of youth).

The Back to School initiative (Italy), detailed in Box 19 below, is a great example of outreach to girls and young women that companies can perform when striving for gender balance, ensuring visibility of role models and their stories and contributing to the fight against gender stereotypes.

Box 19. Gender Equality: outreach of female role models (Company level)

Back to School, Enel Italia Spa (Italy), 2023 - ongoing

Women remain significantly underrepresented in STEM fields, a gap that has direct consequences for gender equality in the energy sector and beyond. Recognising the urgency of this challenge, *Enel Italia Spa* launched the *Back to School* initiative in 2023 to inspire and empower young women to pursue STEM studies and careers.

The programme's primary objective is to raise awareness of opportunities in STEM and promote female participation in technical and scientific fields. By connecting high school students with role models—female professionals from within Enel—*Back to School* seeks to dismantle stereotypes, foster confidence, and build pathways for future generations of women in STEM.

Key actions undertaken by the initiative include:

1. Inspirational talks, career counselling sessions, and shadowing opportunities led by Enel's female STEM professionals who share their career journeys and practical experiences.
2. A competition rewarding outstanding STEM project proposals from students, with scholarships awarded to support higher education in STEM.
3. Partnerships with educational institutions to integrate project activities into students' learning experiences.
4. Creating links between Enel mentors and students to sustain motivation and long-term engagement.

Since its launch, the programme has reached over 3,000 students, including 2,000 female participants. Forty-two female STEM professionals from Enel have engaged as mentors, and five scholarships have been awarded to outstanding project proposals. The initiative has fostered a cultural shift by challenging traditional gender stereotypes in education and encouraging schools and families to support girls in pursuing scientific and technical careers.

Some challenges the initiative encountered include maintaining sustainable engagement of mentors and coordinating logistics with schools. These were addressed through an internal campaign that promoted the value of mentorship, creating a strong community of STEM mentors, the provision of a standardised toolkit for mentors, and flexible guidelines allowing independent organisation of activities.

Internal networks and employer organisations within Enel actively supported the initiative by promoting participation, aligning it with Enel's broader Diversity, Equity, Inclusion and Belonging strategies, and ensuring that the contributions of mentors were formally recognised and valued.

Source: Visionary Analytics based on open call findings

Interview findings suggest that social partners should advocate to broaden financing and other support options for **women entrepreneurs** – it can have a direct link to whether women can enter the transforming clean energy sector, especially as key industry leaders. This could entail making financing opportunities more well-known, especially for women-led projects, promoting already developed tools, training and consultations for women in electricity. The W4RES initiative is a great example of the support women entrepreneurs and companies can receive when it comes to strengthening female leadership in the Renewable Heating and Cooling (RHC) industry (see Box 20).

Box 20. Gender Equality: support for women's leadership in RHC (EU level)

W4RES (Women for Renewable Heating and Cooling), EU, 2020 – 2024

Women remain underrepresented in leadership positions across the renewable energy sector, particularly in technical fields such as Renewable Heating and Cooling (RHC). Recognising that women have the potential to act as key change agents in driving the energy transition, the EU-funded W4RES project was launched in 2020 to scale up women's involvement in the deployment and market uptake of RHC solutions. Implemented by a consortium of 12 partners across eight European countries, the initiative sought to empower women with the knowledge, skills, and networks necessary to lead in this sector.

Key objectives and actions:

- Delivered webinars and training courses on female empowerment, leadership development, and gender-responsive business planning.
- Provided women entrepreneurs and professionals with practical market-introduction support, including consultancy and technical assistance for launching gender-responsive RHC solutions.
- Developed gender mainstreaming tools (e.g. gender self-assessment instruments, communication guidelines, gender audit recommendations) to help energy organisations embed inclusivity in their operations.
- Created a RHC forum – a collaborative platform where women leaders and experts could exchange good practices, showcase competencies, mentor peers, and connect with stakeholders.

- Supported 50 women-led RHC projects with tailored business and innovation services, helping to accelerate market uptake.

W4RES directly supported 56 women leaders, offering over 70 tailored support services in areas such as EU funding proposal writing, innovation management, and business concept development. By spotlighting female experts as mentors, the project not only enhanced individual women's leadership capacities but also demonstrated the sector-wide value of female leadership. The initiative successfully amplified women's visibility, strengthened their entrepreneurial capacity, and positioned them as role models in a sector critical for Europe's climate and energy targets.

Source: Visionary Analytics based on linked sources in the box

Practical Guideline 4: Encourage the improvement of job quality

Create flexible, safe, and supportive workplaces that improve the quality of occupations in the sector and enable women to balance family obligations with their professional careers.

Role of trade unions and employers' organisations:

- Advocate for inclusive workplace culture in the electricity sector. Encourage the adoption of inclusivity and diversity training for senior staff.
- Promote the improvement of work-life balance through family-friendly policies and flexible working arrangements for those with care responsibilities.
- Encourage the adaptation of occupations to lessen their physical demands, ensuring their wider accessibility. Encourage investment in the infrastructure of remote working locations and suitable equipment that accommodates the needs of female employees.
- Highlight the benefits of adopting work-life balance policies that enhance employee well-being, workplace satisfaction, and work efficiency. Share best practice examples and provide personalised practical guidance for companies in adopting policies for job quality improvement.

Social partners should encourage stakeholders to **improve the inclusiveness** of the electricity sector. Firstly, electricity stakeholders should make sure that the occupations where gender imbalances are most prevalent are suitable for women to enter. That can mean ensuring that many tasks can be done by any gender, regardless of their physical capacity, achievable through the adoption of innovative technologies, automation, and digitalisation. Secondly, improving inclusiveness also means encouraging a workplace culture change, which could help prevent women from leaving the sector due to issues of sexism or sexual harassment, or for failing to get promoted into leadership roles. Taking into account the direct impact of senior or managerial professionals on working conditions and career progression, it can be important to ensure these professionals receive inclusivity and equality training.

Social partners have a significant role in **promoting work-life balance**. Electricity stakeholders must recognise the expectations and responsibilities of domestic work and early childcare that are still being primarily placed on women and strive to improve working conditions to accommodate the needs of all professionals with family responsibilities through family-friendly policies, available to both men and women. The best practices in Box 21 from Enel Spa (Italy) and Ignitis Group (Lithuania) present great examples of initiatives taken at the company level to ensure work-life balance in the workplace for employees with childcare and family responsibilities. It introduces benefits for parental leave and childcare opportunities that go beyond the industry standard and substantially contribute to empowering women and men alike to pursue their careers without having to sacrifice their family obligations, creating an inclusive organisational culture. Furthermore, the role of social partners has been crucial in the formation of the initiative of Enel Spa through a collective bargaining approach.

Box 21. Gender Equality: company measures for work-life balance (Company level)

Collective Agreement on Parenthood and Work-Life Balance, Enel Spa (Italy), 2025 - ongoing

In Italy, Enel Spa has built on its strong tradition of collective bargaining to enhance parental leave and work-life balance arrangements, going beyond what is legally required. The most recent collective agreement, signed on 5 November 2024, introduced a comprehensive package of measures designed to support employees during critical phases of personal and family life.

The main objective of the agreement is to strengthen **family-friendly policies**, promote gender equality, and encourage shared responsibility for caregiving between men and women. By expanding parental leave rights, offering new forms of paid leave, and supporting childcare needs, Enel aims to create a more inclusive workplace culture where parenthood and caregiving are valued and supported.

Key actions introduced by the agreement include:

1. Paternity leave**:** 20 days of fully paid leave, in addition to the 10 days mandated by law.
2. Parental leave: Enhanced compensation of 90% for the first three months (compared to the legal 80%), 60% for additional "non-transferable" months, and 45% for three "interchangeable" months (above the legal 30%).
3. Child-related leave: Paid leave for children's school transitions (nursery, kindergarten, first day of primary school), as well as one day for secondary school graduation. An increase to 10 days of paid child sick leave.
4. Grandparents leave and elderly assistance: One day of paid leave for the birth of grandchildren. Two days of paid leave to support ageing parents.
5. Serious family reasons: Five days of paid leave in cases of death, serious illness, or hospitalisation of first-degree relatives (including in-laws).
6. Supplementary pension: Company contributions to a supplementary pension fund for children under three years old.

Challenges to implementation include ensuring that these benefits are consistently applied across different company departments and promoting cultural change so that both women and men equally take advantage of the expanded entitlements.

The success drivers of this initiative are the strong **involvement of trade unions** through the bilateral company committee on Equal Opportunities, a long-standing tradition of collective bargaining within Enel's Italian operations, and an inclusive organisational culture that actively values caregiving roles. Importantly, the agreement promotes not only maternity support but also shared parental responsibilities, helping to challenge entrenched gender stereotypes.

The measures potentially benefit all 30,000 employees within Enel Italy. By increasing paid leave entitlements and providing flexible family support, Enel has strengthened employee wellbeing, improved work-life balance, and enhanced its reputation as a leading employer in the electricity sector.

Ignitis on Gender Equality, Ignitis group (Lithuania), 2022 – 2025

At Ignitis Group, one of the largest energy companies in the Baltic region, men make up 68% of employees while women account for 32%. In addition to gender imbalance, the company faces challenges related to age distribution, with only 2% of employees under the age of 24, and the majority falling within the 37–56 age group. Such demographic imbalances limit diversity of perspectives and create barriers to inclusivity and innovation.

To address these challenges, Ignitis Group launched its ***Diversity, Inclusion and Wellbeing Strategic Plan 2022–2025***, a roadmap designed to build a workplace culture that ensures equal opportunities for all employees. The plan is operationalised through annual action plans co-created with employees across the Group, ensuring active participation and ownership of the initiatives. One of the key categories of action concerns work-life balance and ensuring a **family-friendly workplace**.

Some of these key actions include:

1. Maintaining contact with employees on parental leave by sending regular newsletters with updates on company activities, training opportunities, and events.
2. Developing guidelines for employees and managers on how to prepare for, manage, and return from parental leave smoothly.
3. Offering support to employees with children, including weekly summer camps at the office led by experienced educators and a dedicated children's room at the main headquarters.
4. Providing financial benefits to employees who give birth, adopt children, raise three or more underage children, or care for a child with a disability.
5. Offering additional paid leave days for life events such as marriage, bereavement, a child's illness, or short-term sickness.

In 2022, a survey conducted by the Lithuanian Diversity Charter ranked Ignitis Group first among the 20 largest companies in Lithuania in terms of preparedness to ensure equal opportunities, highlighting its leadership role in diversity management. Furthermore, in both 2022 and 2023, Ignitis Group was awarded the international *Top Employer Lithuania* certificate, recognising excellence in human resource management, employee wellbeing, diversity, and inclusion practices. These results confirm the company's progress in embedding diversity and equality principles into its operations and culture.

Source: Visionary Analytics based on open call findings and linked sources in the box

It is especially important to ensure **sufficient infrastructure** for employees who work in more remote areas. Due to the possible lack of services or facilities in such remote locations, sector stakeholders must be inclined

to meet the needs of a diverse set of employees. This can include ensuring clean and gender-appropriate housing and sanitation facilities, reliable transportation links, accessible healthcare, maternity and reproductive health services, childcare support, etc. As suggested by study participants, this can be increasingly important when trying to reach women from disadvantaged groups. Initiatives such as safety shelters, housing programmes (especially when concerning work in remote locations) could be considered, as they have been quite successful outside of Europe.

Electricity companies should be encouraged to adopt more **flexibility towards working time**, exploring opportunities for alternative working hours, part-time work or the possibility to reduce working hours, remote or hybrid work. Research findings have shown that adopting more flexible working time arrangements was perceived as the most effective measure to improve gender equality in the energy sector (EC, 2024a). Workplaces can adopt measures, such as flexible entry/exit hours, fixed daily working time slots with the possibility to spread the remaining work hours throughout the year, a possibility of weekly working time accumulation for early departure on the last working day and more. Companies could be encouraged to establish more flexible schedules for teleworking staff while respecting the right to digital disconnection outside working hours (excluding instances of agreements about on-call availability or emergency response outside standard working hours, where such obligations are clearly defined within working conditions).

Practical Guideline 5: Build women's networks and encourage peer support

Encourage the creation of and participation in platforms and practices where women can share experiences, seek guidance, and strengthen their professional networks.

Role of trade unions and employers' organisations:

- Encourage electricity companies to integrate mentoring into their company practices, with experienced women supporting new female recruits.
- Support women's networking and mentoring initiatives by providing resources, promoting visibility to electricity stakeholders, and encouraging their collaboration in career development efforts.
- Promote employer collaboration with women's associations and networks by facilitating connections and showcasing benefits. Support employers in building their own professional networks by sharing best practices, providing recommendations, and developing tools or platforms.

As observed by interview participants, **mentorship programmes** have been gaining traction in the industry, proving to be a great way to introduce women into the sector through the mentoring and guidance of another female professional. Not only do these types of mentorships provide visibility to women in leadership who can become role models for female employees, but they also provide support when navigating through the challenges that are unique to women in these male-dominated industries. It is common for mentorships to take place inside the company, although they could also be offered through specialised community networks. Whatever the format, it is important that they be supported and advocated for by social partners.

Furthermore, fostering **women's networking** in the electricity sector can also be important, as it helps female professionals connect and gain access to new opportunities, open career pathways, facilitate knowledge sharing, and counter isolation in a male-dominated industry. Social partners can support networking by promoting the establishment of women's associations or forums at the EU, national or even company level and help enhance their visibility through social dialogue. Social partners can also advocate linking networks with career development, integrating women's networking into training and leadership programmes. Financial and logistical support can also be helpful in sustaining networking efforts.

The initiatives of Women in Energy (WONY) and Global Women's Network for the Energy Transition (GWNET) (see Box 22) strive to promote leadership among women in the energy sector through guidance, advocacy, training, and networking opportunities (Boston Consulting Group, 2023). These examples target the low participation of women in company boards and decision-making positions by prioritising empowerment and

acceleration of women's careers. The practices are quite similar in their approach, although WoNY primarily works in CEE, while GWNET is a global organisation.

Box 22. Gender Equality: promoting the networking and mentoring of women (International level)

Women in Energy (WoNY), EU, 2017 - ongoing

The energy sector in CEE continues to face challenges of gender imbalance, particularly at leadership and decision-making levels. Despite progress in recent years, women remain underrepresented on company boards and in top management positions. This underrepresentation hinders the potential for innovation, efficiency, and competitiveness within the electricity sector, especially at a time of rapid energy transformation.

To address these issues, Women in Energy (WONY) was established as a non-profit association in 2017. Funded by leading energy companies including E.ON, MET Group, and MVM, and supported by multiple international partners, WONY works to increase the proportion of women leaders in the energy sector, both in Hungary and across the wider CEE region. Its overarching objective is to foster a strong professional community of women in the sector, enabling them to access career development opportunities, reach top decision-making roles, and inspire future generations of female professionals.

WoNY provide guidance, training, and leadership development programmes tailored for women in the energy industry. It also creates structured networking opportunities to connect women professionals from different areas of the electricity sector. The association runs mentorship schemes, including dedicated programmes for university students, to prepare young women for careers in energy. The programmes have shown to increase the visibility of female top managers and board members to act as role models and encourage younger women to pursue leadership roles. WoNY also facilitates collaboration across national and international stakeholders in the energy industry to build a supportive and diverse community. This is done through the organisation and hosting a variety of events from site visits in the CEE to lounge meet-up with members.

WONY has contributed to the rise of visibility of gender equality issues within the energy sector in CEE. By offering training and mentorship to women already in the sector and to students preparing to enter it, WONY has contributed to building a pipeline of future female leaders. It has also created a recognised platform where women professionals can support each other, helping to foster a culture of inclusivity and competitiveness in the context of the ongoing energy transition.

Global Women's Network for the Energy Transition (GWNET), Global, 2017 – ongoing

The global energy sector remains heavily male-dominated, particularly at leadership and decision-making levels, limiting opportunities for women to shape the future of energy. To address these imbalances, GWNET was launched in 2017 with the mission of empowering women to play a more active role in advancing the energy transition.

GWNET accelerates women's careers in the energy sector through four main pillars:

1. Networking: facilitating connections among women across disciplines and regions.
2. Advocacy: producing knowledge and resources that highlight the role of women in the energy transition.
3. Mentoring: leading structured programmes that pair mentees with carefully selected mentors from a pool of over 1,100 experts worldwide, facilitating personalised mentoring.
4. Training: offering career coaching and tailored support to strengthen women's professional skills and leadership capacity.

GWNET has grown into a global network of more than 4,800 members from over 150 countries, including both individuals and organisations. Its mentorship programmes have supported over 945 women, including 220 who completed training in 2022 alone. By creating visibility for women in energy, fostering international collaboration, and equipping participants with leadership skills, GWNET is contributing to more gender-balanced and inclusive energy transitions worldwide.

Source: Visionary Analytics based on linked sources in the box

Practical Guideline 6: Promote investment in training and career progression for women

Support women's training to help them remain in or advance into technical and leadership roles in a transforming sector.

Role of trade unions and employers' organisations:

- Encourage employers to invest in the re- or upskilling of their female employees for occupational transition into future-oriented careers or for career progression.
- Facilitate collaboration among companies for joint training.
- Promote the importance of women pursuing training that would improve their digital skills.

- Encourage a review of training material to ensure unbiased content, adapt work gear and equipment to guarantee the health and safety of female employees and/or trainees. Support this by providing guidance or training plans.
- Support women in pursuing occupational change (e.g., through providing information and resources on career opportunities, training, recognition of qualifications, networking, etc).
- Highlight the importance of providing training for employees coming back from long periods of leave.

Study findings show that certain jobs (e.g., grid monitoring and control, power plant operations) in the electricity sector, which used to be very labour-intensive, are becoming increasingly technological and therefore more accessible to women. Although, especially in clean energy, this has come with a shift in requirements with some occupations needing either advanced information technology (IT), engineering or technical knowledge and skills. Due to only a small part of women choosing to pursue STEM education or vocational professional training, it is essential for the sector to offer women opportunities to acquire skills needed to fill technical roles through training either within or outside companies.

Based on interview findings, social partners should encourage companies to explore and create opportunities for re-skilling and up-skilling. Electricity stakeholders should **invest more in the training of women** for more technical, traditionally masculine roles where a shortage of female professionals is prevalent. Training like this could be offered to women who are new recruits or to female employees who are already part of companies and would be interested in reorienting their line of work, e.g., from an administrative position into a technical role. Forward-looking training like this would not only help bridge current or future skills gaps caused by the green transition but could also open up career progression pathways for more women, contributing to the cultural and leadership shift of the sector. Therefore, it is important to link training to career progression pathways. For example, partnering with industry employers when designing and implementing training programmes to ensure placements or internships for participating women.

Social partners should focus on ensuring adequate **training programmes that would cater to the needs and characteristics of women**, moving away from those that were designed solely for the male workforce. This could include the design of gender-sensitive training content that would remove prevalent gender biases, include examples of role models and success stories of women, and integrate modules on soft skills, such as leadership. More sessions could be organised by female trainers, coaches or mentors to ensure that trainees encounter female role models. Moreover, ensuring that essential tools of fieldwork occupations, such as work equipment and gear, are tailored to the needs of women is a crucial step in ensuring the health and safety of female staff, removing practical barriers to entry.

Social partners could encourage companies to **provide meaningful support for female professionals attending training**. This could include childcare support, allowances, or subsidies that would provide the means through which women could pursue professional development opportunities outside their regular working schedule. Furthermore, training could be offered at more flexible times to accommodate the needs of women with childcare responsibilities, and it could be organised in different blended learning formats, including physically accessible training sites. Social partners could advocate for (**re)training opportunities** for employees returning from longer periods of absence from work. This could include employees returning after contract suspension, family-related leave, or sick leave. Retraining opportunities could also be offered to women whose occupations become redundant due to technological change, ensuring that talent is maintained within the industry and new positions are being filled.

Interview findings suggest that social partners should advocate for **addressing the digital divide** between men and women where such a divide persist. Disparities in the EU have been observed between genders, emphasising the slightly lower levels of digital skills in women (EIGE, 2020), although it is uncertain to what degree this applies to the EU electricity sector. As the use of artificial intelligence (AI) and other digital technology is becoming more prevalent in the electricity sector, especially in grids, social partners should be

inclined to make sure that women are being steered towards training (e.g., work-based learning, micro-credentials, massive open online courses (MOOCs), targeted mentorships) meant to strengthen these competences to ensure they keep up with the expectations of the sector in the future. Trainings could be organised within companies if sector-specific knowledge is needed or through external partnerships.

4. Attracting Knowledge and Skills for the Electricity Sector

Key challenges:

- **Awareness and knowledge of the electricity sector among young people** is crucial to attracting them to the electricity sector. The challenge is linked to the intangibility of electricity, the distance between the end user and the supply chain, the lack of touchpoints in early ages, and the unclear coverage of the electricity sector in education and training curricula.
- **Understanding of employment opportunities in the electricity sector** is critical, as well as youth knowledge of diverse career paths and job values, and youth role models, which is currently limited. To add, lack of coordination between stakeholders, resource constraints, and limited social partners' access to schools further deepen the issue.
- **Young people also face structural barriers** such as a lack of recognition of acquired competences via informal/non-formal learning, portability of qualifications across the EU, and youth unemployment. There is also competition for youth talent with other sectors, and insufficient youth entrepreneurship.
- **Persistent skills gaps and mismatches pose a major challenge for young people** entering the electricity sector, driven by insufficient digital and soft skills, and alignment between training systems and labour market needs, which can be further improved. Flexible learning opportunities are crucial (e.g., micro-credentials, internships, MOOCs, apprenticeships).
- **Misconceptions about working conditions and/or unattractive working conditions should be targeted** to showcase the opportunities in the electricity sector to young people. Identified barriers to entering and staying in the sector and obstacles to participation due to socio-economic inequalities and gender inequalities should be overcome.

Key guidelines:

- **Create an engaging storyline about the electricity sector** by working collaboratively with the education and training providers. This storyline should gradually build students' understanding and related skills from an early age (i.e., starting in primary education) and extend its focus not only to young people but also to their parents and carers.
- **Ensure that education and training are fit-for-purpose for the labour market** by fostering collaboration between education and training providers (e.g., site visits, competitions, scholarships, industrial doctorates). Engage families and teachers, ensuring they are equipped to teach their students about the sector.
- **Provide work-based learning opportunities, such as internships and apprenticeships** and new, flexible forms of learning (e.g., micro-credentials, MOOCs) to help young people transition from education and training to the labour market.
- **Support sector-wide recruitment and visibility campaigns, and career guidance**, including highlighting employment opportunities and routes to enter the sector, showcasing role models, using youth-friendly channels.
- **Implement tailored outreach and support mechanisms targeting underrepresented and marginalised groups** of young people to promote inclusivity within the electricity sector and make it a more attractive and diverse field.

This chapter will provide an overview of key challenges for social partners contributing to attracting knowledge and skills for the electricity sector. Section 4.1 will discuss the key challenges for social partners to increase the attractiveness of the sector to children and young people (henceforth referred to as young people) and equip them with the knowledge and skills needed to enter the sector's workforce. Section 4.2 will provide practical guidelines for social partners to attract knowledge and skills to the sector.

4.1. Key challenges

Engaging young people is essential to building a skilled, innovative future workforce capable of supporting the electricity sector's transition toward digitalisation and sustainability. This section will outline key challenges for social partners related to improving the attractiveness and increasing the knowledge and skills needed for the electricity sector based on the in-person events, literature review, exploratory interviews and focus groups conducted for this study.

A key challenge shared by social partners during interviews and focus groups is limited awareness amongst young people of the electricity sector, including its broader benefits, such as the role of electrification in helping the EU achieve its climate-neutral goals. Renewable and non-renewable sources of energy are explicitly

included in curricula in almost all (37 out of 39[11]) European education systems for lower secondary schools and a high proportion (29 out of 39[12]) of primary schools (EC, EACEA, 2022). However, the extent to which this covers the electricity sector is unclear based on available data, and there is scarce research exploring young people's understanding of the electricity sector or broader energy literacy in Europe. A survey in Canada found that the majority of young people (aged 18-36) had either positive or neutral impressions of the electricity sector (50% and 37%, respectively). **Young people who were not interested in working in the electricity sector did not necessarily hold more negative impressions of the sector, but tended to have less knowledge about the industry** (Electricity Human Resources Canada, 2020). This highlights that a lack of knowledge about the electricity sector may be a key barrier to attracting young people to the workforce.

Low awareness of the electricity sector may be attributed, in part, to the intangibility of electricity itself and the distance between end users **and the electricity supply chain** (Dominitz, 2023). As such, consumers tend to engage with electricity in a passive, "background relationship" rather than as an actively considered and understood resource. This was raised in the interviews and focus groups as a key barrier to young people's understanding of the sector. One of the primary mechanisms for consumer engagement with the electricity sector is electricity billing (Domonitz, 2023). However, as young people are not typically responsible for paying household electricity bills (Keller et al., 2022), they lack this key touchpoint for developing awareness and understanding of the electricity sector. This highlights the importance of creating learning opportunities for young people to engage with consciously, reflect on, and understand the electricity sector.

The interviews and focus groups emphasised the need to engage students from a young age and teach them basic skills and knowledge to understand the electricity sector, which can then be subsequently built on and developed during higher levels of education and training. Concerning primary education, it was suggested that to support children in understanding the complex and abstract concept of electricity, an explorational and fun approach should be taken to inspire curiosity. Additionally, the need to target and involve parents and/or carers was highlighted, given their influence. For secondary school students, greater emphasis was placed on developing more specific skills and knowledge related to the electricity sector. Also, the need for secondary school students to be aware of the employment opportunities to guide their career choices was underlined.

A key related issue is young people's **lack of understanding of employment opportunities in the electricity sector**. According to the 2021 Skills2Power report, the most reported issue for improving the attractiveness of the electricity sector is communication on career paths, followed by strong job values, and sectoral communication targeting youngsters (industriALL et al., 2021b). All countries participating in the study[13] reported the need to coordinate with industries to coordinate on planning the benefits of investing in training and underlined the need for greater inter-sectoral cooperation, for example, with construction, mechanics, and legal (industriALL et al., 2021b). Country-specific issues also exist. For instance, in Hungary, the importance of showcasing career opportunities as well as leveraging available scholarships was stressed, and in France, the need for creating robust measurements for the evaluation of initiatives aimed at attracting young people was underlined (industriALL et al., 2021b).

The lack of information available to young people on climate change and energy issues, and the lack of employment opportunities and youth-led initiatives, were also identified by the European Youth Energy Forum (2022) as key barriers to engaging youth in the energy transition. A global survey of 4,000 young people aged 18-30 found that while there is strong interest in careers in the energy sector, there is a need for greater collaboration between the industry and schools (OPTICO, 2024). In particular, the research highlights the importance of working with primary and secondary educators to ensure young people have access to information about the range of career pathways available in energy. This includes showcasing career

[11] Not captured by: Belgium (nl) nor the Netherlands.
[12] Not captured by Belgium (fr; de; nl), France, the Netherlands, Poland, Slovakia, Slovenia, Turkey, North Macedonia.
[13] France, Hungary, Italy, Spain and Sweden.

opportunities outside of STEM - "Engineering" was one of the most commonly reported roles among surveyed young people when they were asked to share roles within the energy sector and was noted around four times as frequently as other non-STEM roles such as "Compliance/Regulatory", "Policy Analysis" and "Legal" roles (OPTICO, 2024). This highlights the need for the electricity sector to showcase all employment opportunities.

In addition, **youth entrepreneurship may help strengthen and disrupt the sector** in a positive way. Youth in the EU, in general, are interested in setting up their own business (46% of respondents), however, only 9% have started a business, and 14% more took steps to start it (EC, 2022b) Although not specific to electricity sector, the most common barriers to youth entrepreneurship were lack of resources or capital, financial risks, insufficient knowledge and entrepreneurship skills. Local-level initiatives and entrepreneurial projects by youth teams may help increase ownership of the energy transition, alongside coaching and mentoring.

The interviews and focus groups highlighted the following barriers social partners may face when trying to raise awareness of the electricity sector, both in terms of increasing general understanding of the sector and its importance and the promotion of career opportunities within the sector:

- Limited collaboration between stakeholders such as social partners, education and training institutions, companies, and government can result in fragmented and/or duplicated efforts. As such, outreach campaigns may fail to create an engaging narrative and sustained interest in the sector.
- Navigation through the administrative and safeguarding protocols within formal education and training contexts.
- Constrained financial and human resources may limit social partners' and companies' capacity to develop and implement outreach initiatives.

The **low visibility of young people in the electricity sector** also poses a challenge to increasing the attractiveness of the sector. In 2023, less than 6% of workers in the electricity, gas, steam and air conditioning supply sector were aged 24 years or under, while 35% were over 50 (Eurostat, 2024a). This taps into the larger demographic issue already facing Europe – ageing societies, as the share of the 55+ age group is expected to grow to 40% by 2040, in contrast to 30% back in 2012 (Eurostat, 2023). This highlights that there will be **fewer young people available to attract to the electricity sector**, in addition to a pool already being limited due to competition between different sectors, as well as other prevalent issues such as youth unemployment, NEETs (youth not in education, employment or training).

The youth shortage may also be partially addressed through **mobility** options that make the sector more attractive. To add, attracting migrants - youth from abroad may also pose a challenge in terms of **recognition of acquired skills or qualifications – skills portability** across the EU is one of the initiatives planned under the Union of Skills (EC, 2025e), in addition to other planned initiatives, such as a European degree, a new European VET diploma, and European school alliances. Skill recognition is also particularly relevant to the electricity sector, for example, when countries face large weather events, with neighbouring countries sending workers and materials to help repair damaged powerlines and other electrical infrastructure. Such a measure would further strengthen European resilience, and opening the labour market may entice employers to offer better working conditions.

The low representation of young people in the electricity sector also appears inconsistent with reported trends of young people **increasingly seeking careers aligned with sustainability** (Deloitte, 2024). For instance, 57% of young people (aged 15-39) reported an aspiration to work in the green economy (including the renewable energy sector) in the next 10 years (Accenture, 2021). This gap may reflect "youth washing", the tokenistic inclusion of young people rather than facilitating the real inclusion of their needs and contributions (European Youth Energy Forum, 2022), which highlights the need for representation of young people within the sector.

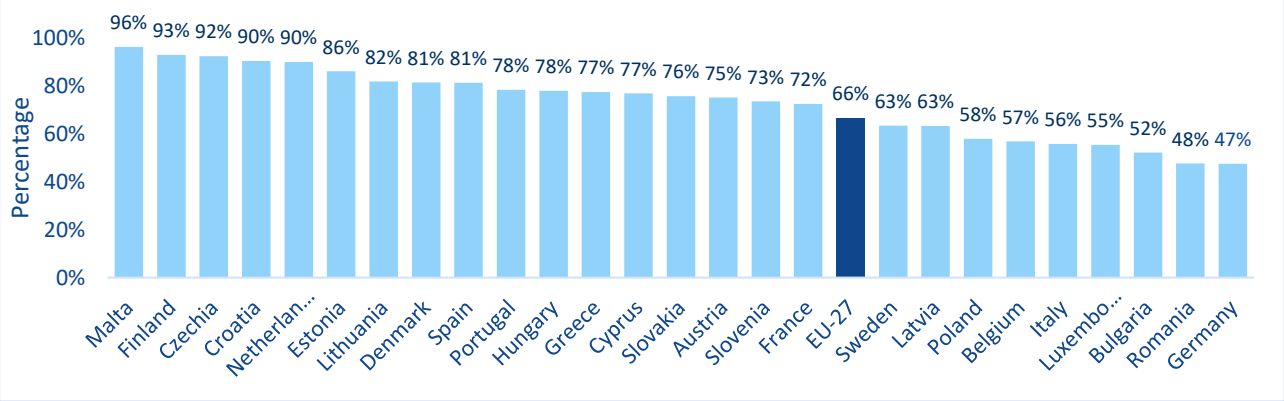
A further challenge is the **skill gaps and/or skill mismatches for young people leaving education and entering the workforce.** The above-mentioned Union of Skills highlights the challenge in Europe of an insufficient supply of skilled graduates from vocational education training (VET) and higher education (HE). It

draws attention to the downward trend in 15-year-olds' performance in mathematics, reading and science as indicated by PISA data, and to the fact that nearly half of young people lack basic digital skills (EC, 2025e). The Union of Skills emphasises the need to build solid foundations in education and training, to provide more support for STEM, and to develop VET systems to address skills shortages and mismatches.

A 2018 report found that VET providers considered the current education and training offer matched only 39% of future skills needs (industriALL et al., 2018). Occupational categories that exhibited the highest imbalances included Commerce and Trading, Back-Office employees, Operations and Maintenance, and ICT Specialists. This underscores the ongoing need for stronger collaboration between VET systems and industry to better align skills provision with labour market requirements. The more recent industriALL et al. (2021b) Skills2Power report also highlighted that a fragmented education and training offer creates a need for education and training systems to better adapt to current and future needs of the electricity sector. For example, in Italy and France, sectoral training and education offers tend to overlook alignment with national systems in favour of regional needs and in Sweden, the limited geographical spread of training providers creates challenges.

As highlighted in section 1.2.1, one of the **most in-demand forecast skill categories within the electricity sector is technology/digital skills**. Young people are commonly assumed to possess digital skills due to being "digital natives" - individuals who were brought up in the digital age (Janschitz and Penker, 2022). However, across the EU, an average of 44% of young people (aged 16-19 years) were reported to lack basic or above-basic digital skills (Eurostat, 2024b). To add, the 2023 International Computer and Information Literacy Study (ICILS) study[14] found that only 43% of eighth-grade students possessed only basic digital skills (EC, 2024a). High variance was also identified within and between countries. Generally, students from higher socio-economic backgrounds performed better than their peers from lower socio-economic backgrounds (EC, 2024a). According to the study, gender differences were also evident, with girls outperforming boys on average, and students with migrant backgrounds or non-native language speakers tended to have lower scores, although this varied across contexts. Additionally, most countries experienced either a decline or little progress in their performance compared to previous ICILS cycles, indicating an urgent need for interventions addressing this to avoid growing future skills gaps.

Figure 6. Percentage of 16-18 year olds with basic or above basic digital skills by country, 2023



Source: Eurostat (2024b)

The increasing importance of soft skills in the electricity sector could also lead to skills gaps and/or mismatches for young people seeking to enter the electricity sector, as the development of these skills is often overlooked in formal education (Cinque and Kippels, 2023). A study conducted with VET students aged 14-19 years from six EU countries[15] and their teachers, trainers, and/or employers showed that, on average, only

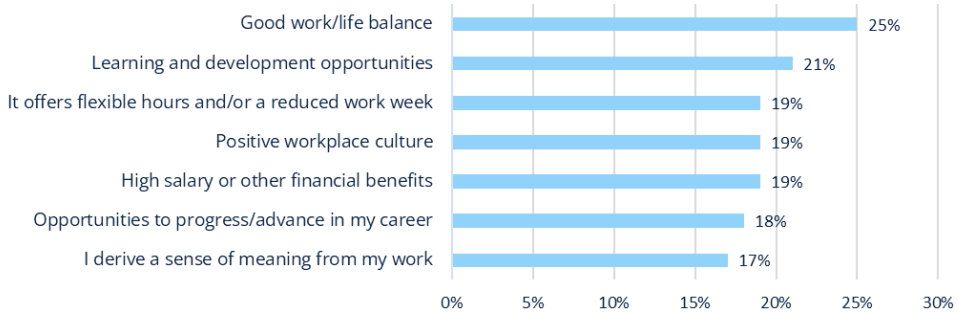
[14] Conducted in 22 EU countries: Austria, Belgium (Flanders), Croatia, Cyprus, Czechia, Denmark, Finland, France, Germany (North Rhine Westphalia), Greece, Hungary, Italy, Latvia, Luxembourg, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia, Spain, and Sweden.
[15] Germany, Hungary, Italy, Latvia, Poland, and Spain.

60% of teachers/trainers/employers considered their students competent in the soft skills surveyed (Playing4Soft Skills, 2021).

The form and ways of learning are also important, in addition to skills and the actual formal curricula or informal/non-formal learning content. This links with the already mentioned forms of learning in Chapter 2, such as massive open online courses (MOOCs), micro-courses and micro-credentials, work-based learning opportunities (e.g., internships, dual apprenticeships), which may give young people an opportunity to "taste" certain fields and gain more practical knowledge about it. To add, although a European framework for quality and effective apprenticeship (EFQEA) exists, certain challenges limiting the attractiveness of apprenticeships remain, for example, clarifying the status of the learner (e.g., a student, a worker), ensuring a structured approach to training, the duration and content of apprenticeships, beyond others (CEDEFOP, 2021).

Additionally, **misconceptions about working conditions and/or unattractive working conditions can reduce the attractiveness of the electricity sector to young people**. Identified barriers to entering and staying in the energy sector include salary (International Energy Agency, 2022), ageism, obstacles to participation due to socio-economic inequalities (e.g., financial barriers to education and training) (European Youth Energy Forum, 2022) and gender inequalities (see section 3.1). Moreover, to create attractive working conditions, workplaces need to respond to the shifting priorities of young people. Top reasons why Gen Zs (19–30-year-olds) reported choosing their current organisation included good work/life balance, high salary or other financial benefits (19%), positive workplace culture (19%) (Deloitte, 2024). See Figure 7 for more details. This suggests that paying attention to and addressing these priorities is essential to attract young people.

Figure 7. Top reported reasons for choosing work organisation amongst 19–30-year-olds



Source: Visionary Analytics based on Deloitte (2024).

4.2. Guidelines for attracting knowledge and skills to the electricity sector

To attract skills and knowledge to the electricity sector, coordinated actions are needed across all education levels. The practical guidelines in this chapter have been developed based on the data collected and analysed from the literature review, in-person events, exploratory interviews, an open call for best practices, and focus groups conducted during this study (see Annex 2 for details). The practical guidelines outlined in this section have been similarly formulated and are subject to common limitations as those addressed in section 2.2. They highlight key areas of action for social partners (see Figure 8).8

Figure 8. Practical guidelines - Knowledge and skills

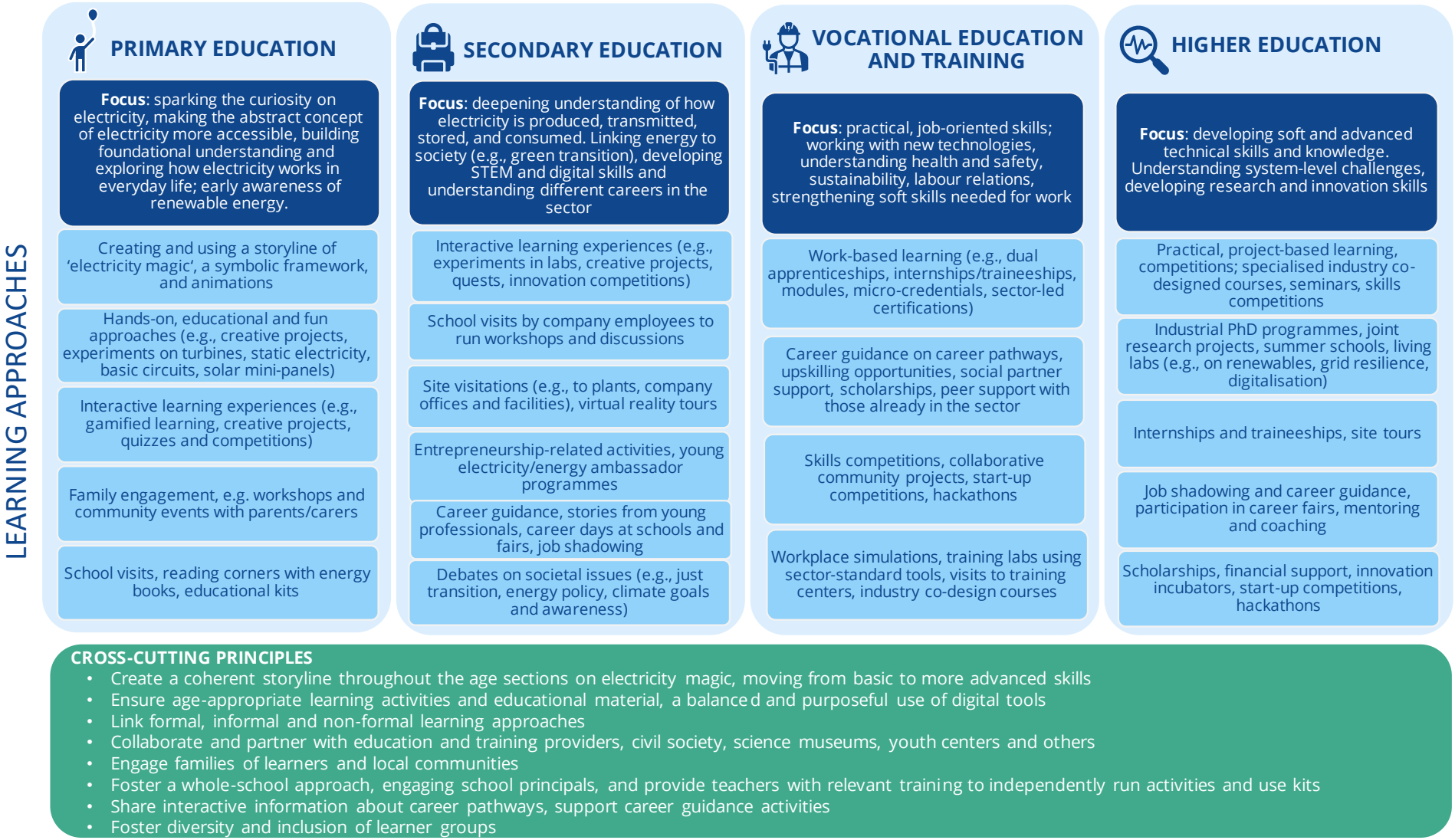
Source: Visionary Analytics based on the analysis conducted

The first three practical guidelines thus focus on creating a compelling storyline in education and training, offering practical advice on how to create learning opportunities that are engaging and cohesive across education levels, while the rest follow on to more specific, targeted actions.

Participants in the study emphasised the importance of tailoring actions to the relevant educational level, particularly during the in-person events and focus groups, to maximise the effectiveness of actions targeting young people. Participants highlighted that young people at different levels of education have different capacities, needs, and contexts, and underlined the need to adapt approaches to these factors. For instance, while emphasis was placed on providing more general knowledge and skills related to electricity and the electricity sector during primary school level to spark interest in the sector, for young people in higher levels of education (e.g. secondary level, VET, and HE) more emphasis was placed on providing more technical and/or specific knowledge and skills such as understanding of specific career paths. As such, the practical guidelines differentiate actions by educational levels where relevant.

A summary figure highlights the key focus for each education level, with examples of learning approaches and types of intervention social partners could engage with (Figure 9).

Figure 99. Key focus for each education level



Source: Visionary Analytics, based on the analysis conducted

Practical Guideline 1: Encourage engaging, interactive learning experiences

To increase understanding of the electricity sector, schools, social partners, and employers can work together to create an engaging storyline about the electricity sector, gradually building students' understanding and related skills. This should start from an early age (i.e., primary education onwards) and focus not only on young people but also on their parents/carers.

Role of trade unions and employers' organisations:

- Encourage electricity sector stakeholders (e.g. companies) implementing activities to build a coherent storyline that develops from basic to more advanced skills and concepts throughout young people's education, taking into account educational level, relevant school curricula, and other initiatives that students might have previously participated in.
- Consider working with schools and/or encouraging employers and employees to work with schools to design and implement engaging, age-appropriate learning activities that introduce students to the electricity sector (e.g. workshops, talks, open days, mentoring schemes, competitions, entrepreneurship initiatives).
- Engage parents/carers in addition to students (e.g. through family workshops, community events) in their initiatives to inform them about the role and benefits of the electricity sector.
- Engage with teachers (e.g. through "train-the-trainer" events) in their initiatives to facilitate them with the knowledge, skills, and resources to teach others about the role and benefits of the electricity sector.
- Promote sector visibility and initiatives through partnerships and networks (e.g. between schools, VET providers, universities, companies, civil society organisations), encouraging young employees in the sector to share their experiences. Participate in career fairs to raise awareness of the electricity sector.
- Encourage employers to host company site tours and/or send workers to education and training institutions to introduce the electricity sector (e.g., have day-release allowances, hours for volunteering).

Participants from interviews and focus groups highlighted that at the **primary education level**, there is a need to engage children in a fun, hands-on educational approach, focusing on sparking their curiosity and interest in electricity. Interactive learning experiences, such as games, experiments, and creative projects, can help young students make the abstract concept of electricity more accessible, as well as encourage them to explore how electricity works in everyday life. At the primary level, emphasis was placed on creating a foundational understanding, such as a basic understanding of what electricity is and what it is used for, which can be built on in later education levels. A storyline of "electricity magic" was also suggested. A best practice example of engaging young people is provided by OffshoreWind4Kids. In addition to creating hands-on, exciting opportunities for young people to learn about electricity, it also offers events for the whole family and offers teacher training to "train the trainer" – see Box 23 for more details.

Box 23. Knowledge and Skills: Civil society organisation best practice example

Wind4Kidz, Offshore Wind 4 Kid (EU), 2021 – ongoing

Wind4Kidz is an educational programme for young people to provide them with hands-on sessions to understand wind power. Wind4Kidz is a global programme but, within the EU, offers free workshops in Belgium, the Netherlands, Germany and Luxembourg, supported by local partnerships and Erasmus+ funding. The programme teaches young people about the fundamentals of wind energy. The school workshops are held for students aged 8 to 15 and take a hands-on approach to teaching wind energy – the workshops involve building turbines in groups, indoor experiments using a ventilator, and testing turbines in the school playground. Wind4Kids also offers teacher trainings (held online or in-person) for wind energy professionals and teachers so that they can teach the Wind Curriculum.

The programme is run by the civil society organisation, Offshore Wind 4 Kid. The organisation was created to teach students about offshore wind energy. It connects with young people through events such as interactive demonstration days for families, a shop with educational items designed to inspire young people, the "Floating Wind Challenge" and a dedicated job board to explore more than 1,000 career opportunities. Due to the large interest, the initiative has already been active in more than 20 countries.

Source: Visionary Analytics based on linked source and Launch conference

At the **secondary education level**, greater focus was placed on deepening young people's understanding of the electricity sector and related knowledge and skills. During lower secondary, students tend to develop more basic skills and knowledge, building on their primary education and during upper secondary, they move to more specialised learning, developing more advanced skills and knowledge. Throughout the secondary level, continuing an inspiring, hands-on approach remains important to motivate and engage students.

Gamified approaches can increase interest and enthusiasm, for example, to engage young people with the energy transition through an online, interactive tool (see Box 24 for more details). The best practice example outlined below also includes site visits for students and school visits by professionals. These are two key methods that were stressed for engaging students. Whilst also possible at the primary level, these kinds of events were stressed to be most important at secondary, VET, and HE levels because, at these stages, students are in a position to make choices about their education and training or preparing to enter the workplace (see Practical Guideline 3 for more information on career guidance).

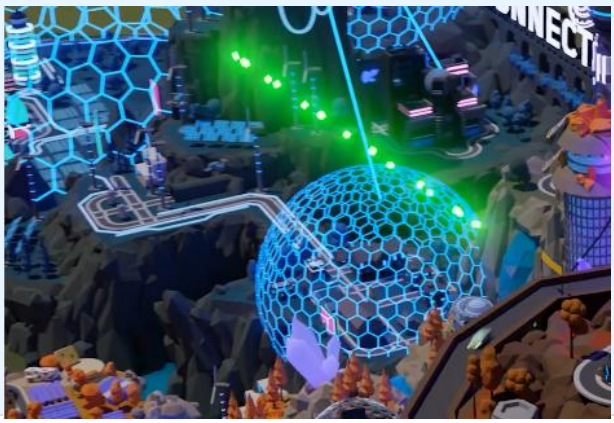
Box 24. Knowledge and Skills: Social partner best practice example

Forindustrie: The Extraordinary Universe, France, 2023 – ongoing

Forindustrie is an educational and innovative tool to present the wealth of industrial professions to young people seeking guidance and a future, co-built by industrialists, the National Education and the employment network. Each year, it launches a "Grand Challenge" available to students (at secondary education level and/or higher education) and job-seekers to participate in. The initiative aims to combat preconceived ideas about the energy sector and to talk about the real challenges of tomorrow's energy industry and its professions, with varied interactive information (quizzes, business videos, meetings with professional speakers). The best participating groups receive prizes, such as site visits offered by companies throughout France. Gamification elements of the tools include:

- **Videos and quizzes:** browse content from industry partners, watch videos, test knowledge through quizzes;
- **Inter-world exploration:** navigate between different "worlds" (different regions) to discover different professions in the energy sector;
- **Golden Rooster Hunt:** earn bonus points by finding hidden golden roosters in the different worlds
- **Robot customisation:** customise your robot guide for the game;
- **Fragments and spheres:** find fragments to repair the Technodome and collect spheres to preserve skills;
- **Alliances:** create alliances with other participating groups;
- **Exceptional Quests:** additional quests available every week.

In 2024, 4,859 classes and groups participated in the initiative – totalling 102,834 participants. Additionally, the initiative had 224 partners, including 193 industrial companies. The tool can be accessed using browsers, tablets, or smartphones. It was inspired by video games - screenshots showcasing gameplay are shared design below:



Source: Visionary Analytics based on linked source

At the HE level, a hands-on approach can also play an important role in increasing the visibility and attractiveness of the electricity sector whilst providing an opportunity for young people to apply and develop their soft and advanced technical skills and knowledge. Practical, project-based learning can help students apply theoretical knowledge in real-life contexts and support them in applying their knowledge and skills. To add, research and innovation skills, system-thinking are in focus. Social partners can collaborate with HE

institutions on industrial doctorate studies, innovation-related research studies, and summer schools. One example is the Formula Student Competition, a global competition where university students design, build, and test their own electric race cars (see Box 25 for more details).

Box 25. Knowledge and Skills: Non-profit organisation best practice example

Formula Student, Global, 1996 – ongoing

Formula Student (FS) is Europe's most established educational engineering competition and celebrated its 25th anniversary in 2023. The annual competition tasks university teams to design, build and race a single-seater race car in nine months, with over 600 teams taking part every year from all over the world. Formula Student has both an electric class (for electric cars) and a class for combustion cars. The project is organised by the Society of Automotive Engineers International in collaboration with industry partners. It provides students with a hands-on opportunity to demonstrate and develop technical, engineering design, and manufacturing skills in addition to soft skills such as team building. Each team has to present their single-seater race car to a hypothetical manufacturing firm and undergo a series of tests.

Source: Visionary Analytics based on linked source and interviews

In **VET,** the focus should be on practical, job-ready skills for work in the sector, including emerging competences (e.g., smart grids, digital, decarbonisation technologies). Work-based learning approaches are in focus, such as dual apprenticeships, fostering industry and education partnerships. Site visits, real work simulations, skills competitions and other approaches can support practical learning with a combination of soft skills needed to work in a team. To add, peer learning from apprentices or those young professionals already in the sector can help understand career pathways and workplace dynamics.

Underlying these activities is the importance of coherence across educational levels to create a clear, connected storyline that begins in primary and continues through secondary education to VET/HE and beyond. This approach helps young people gradually build knowledge and skills and sustain their interest in the electricity sector. Ensuring that actions at different education levels are aligned can help young people make informed decisions about their education and training and career opportunities in the electricity sector. To add, skills gaps and mismatches, as discussed in Chapter 2 are crucial to consider when developing the content and curricula of initiatives for and with young people.

Additionally, participants from interviews and focus groups underlined the importance of focusing not only on young people, but also on engaging other key actors, such as parents/carers and teachers. Parents/carers have a significant influence on their child's chosen career path. By introducing the electricity sector and highlighting its opportunities and benefits early on, parents/carers may be more inclined to encourage their children to consider it as an attractive and rewarding career path. Teachers also play an important role in facilitating students' understanding and awareness of the electricity sector and can inspire students to explore the electricity sector further. Lastly, an idea for electricity companies to develop industrial tourism, with open-door events during school vacations for children, their parents, and their teachers, was shared by one participant.

Practical Guideline 2: Support collaboration between education and training institutions, social partners, and employers to align education and training offers with industry needs

To ensure that education and training courses are fit-for-purpose for the labour market, collaboration between education and training providers, social partners, and employers is essential. Creating partnerships to align curricula with industry supports young people's transition from education and training to the labour market.

Role of trade unions and employers' organisations:

- Encourage, and participate where relevant, in collaboration and partnerships between industry, social partners, education and training providers and government to ensure that curricula are adapted to match labour market needs, including continuous updates in line with green and digital transitions.
- Support the development of alternative pathways to teaching and industry placements for educators to keep their knowledge and skills up-to-date and strengthen connections within the electricity sector.

- Encourage the collaboration between education and training providers and companies to provide educators with opportunities to participate in industry placements (e.g., lending staff for teaching or "train-the-trainer" activities). Ensure that educators have the knowledge and skills to effectively teach students about new and emerging technologies, such as smart grids and digital tools

Bridging the gap between industry and education and training is key to creating a future workforce. This requires education and training systems to be adaptive and responsive, ensuring that the skills and knowledge taught align with those required by the labour market. Whilst Practical Guideline 3 in Chapter 2 discusses skills anticipation in more detail, this guideline focuses specifically on collaboration between industry and education and training institutions. It also discusses how such partnerships can create opportunities for young people to develop and deepen knowledge and skills in the electricity sector. Through this, the risk of skills gaps and mismatches is reduced, and young people receive greater support transitioning from education and training into the labour market.

Several identified best practices showcase partnerships between industry and education and training. Box 26 presents two such examples, highlighting some of the different forms these partnerships can take. The Endesa Chair with the University of Seville is a collaboration primarily between only two partners – Endesa and the university -, focused on strengthening connections between industry and education within HE. In contrast, the Grid Schools for the Energy Transition involves many stakeholders, including social partners and companies, and offers training for electricity sector professions for young people at secondary education and HE levels. Both examples include a focus aligning training programmes with labour market needs.

Box 26. Knowledge and Skills: Collaboration in education and training

The Grid Schools for the Energy Transition (*Les Écoles des réseaux pour la transition énergétique,* France, 2023 – ongoing

To address the recruitment and skill needs necessary for the green transition in the electricity sector, stakeholders in the electrical grid sector created the partnership, the "Grid Schools for the Energy Transition". This was initiated in 2023 by Enedis (French Distribution System Operator), RTE (French Transmission System Operator), educational institutions, professional organisations and social partners. Its target audience is secondary school students, and it has the following objectives:

- **Adapting training programmes** (both initial education in schools and professional training) to better align with the needs of the sector and education and training systems.
- **Expanding training pools to meet recruitment needs,** not only with respect to meeting quantitative employment targets but also in terms of quality (e.g. increasing the representation of women and promoting social inclusion).
- **Contributing to the French electrical grid industrial sector's structure** to address training and recruitment issues and secure the sector's investment programs and support the decarbonisation of the French economy.
- **Increase the attractiveness of the electricity grid sector**, by raising awareness campaigns in schools (e.g. with immersive or digital games to explore our professions, discovery internships).

One of its key actions is offering training for professions in the electricity sector both in general (high school education) and vocational education. The trainings are designed in partnership with companies within the electricity sector and reflects the current professional needs within the sector. For example, in response to sector developments, some programmes include specific focuses on electrical engineering and telecommunications and digital technology. The courses are available through work-study programmes and internships, and include support from professionals and experts in the sector. The trainings are available for Bac through to Bac+3 levels (ISCED 3-6).

Endesa Chair with the University of Seville, Endesa (Spain), 2008 – ongoing

The Endesa University of Seville Chair of Energy Innovation aims to promote training, research, knowledge transfer and scientific dissemination in the field of energy innovation. Its objective is to move towards an efficient and sustainable energy evolution model and to stimulate technological and social excellence in electricity distribution, encouraging the participation of the administration, the research community, suppliers, customers and other social actors.

The initiative addresses thematic areas such as quality of service, energy efficiency and environmental respect, and the use of new technologies for the development of intelligent distribution networks and the promotion of sustainable energy systems. A key action of the Chair is its collaboration with the master's degree and interuniversity doctoral programme in Electric Power Systems. Many Endesa professionals have combined their company roles with part-time teaching at the University of Seville. This

connection has created a valuable two-way relationship, as the students and the university benefit from instruction enriched with practical experience in the energy sector. Other actions include:

- Assigning **awards** for the best final degree and master's degree projects within the University of Seville's School of Engineering;
- Facilitating an **annual course** with the Menéndez Pelayo International University at the School of Energy.
- Participating in **international conferences and forums** to disseminate research findings.
- Development of **research projects** with Endesa, for example:
    - Study of the carbon footprint in eCity Seville.
    - Technical-economic evaluation of a network with high photovoltaic penetration.
    - Analysis of short-circuit behaviour in medium-voltage network

The collaboration ensures training meets industry needs by promoting young talent, developing students' professional skills, strengthening the energy transition through higher education, and creating ecosystems of innovation and sustainability that reflect current sector demands.

Source: Visionary Analytics based on linked source and focus groups

Another way of integrating industry with education and training is by attracting educators from industry or offering industrial doctorates. The importance of having educators with industrial experience was emphasised in the interviews, highlighting a different but complementary approach. Participants shared that educators with direct industry knowledge are better placed to engage students, as their real-life experience can provide tangible, practical examples that help bridge the gap between theory and practice. In contrast, educators without industry experience may rely too heavily on theoretical knowledge, which is considered to result in a less engaging learning experience. One way to encourage individuals with industrial experience to teach is by creating attractive alternative pathways to becoming a teacher (EC, 2021c). Across Europe, 18 education systems reported alternative teaching qualifications – these tended to be either short, professional-oriented programmes or employment-based training. For example, see Box 27.

Box 27. Knowledge and Skills: Collaboration in education and training

Certificate of Aptitude for Teaching in Secondary Education (CAPES), France, 1950 – ongoing

France has several alternative routes involving a series of examinations for candidates who want to become certified teachers. For public primary schools, candidates must pass the Competitive Examination for the Recruitment of School Teachers (Concours de Recrutement de Professeurs des Écoles, CRPE). To teach general education subjects in middle and private general high schools, candidates can participate in **CAFEP-CAPES (Certificate of Aptitude for Teaching in Secondary Education) competition**. After obtaining these certificates, the candidates can successfully enter the French public or private education systems. The CAPES competition has three types. The **External competition** is aimed at candidates with Master's diplomas and involves tests for admission. The **Internal Competition** is targeted at those who have completed more than 3 years of teaching (or documentation) services in a private educational establishment under contract or in a public service as a public agent in the last 6 years and have a BAC+3. This path is aimed at contractual workers in the public or private sector. In this case, candidates must take a written test or file for eligibility and take an oral test for admission. Finally, the **Third competition** targets candidates who have exercised a professional activity for at least 5 years under private law contracts. In 2024, 7,507 candidates were admitted to the competition.

Further Education of Teachers (FET) (Vidareutbildning av Lärare, VAL), Sweden, ongoing

Most of these teachers (63%) in Sweden have no formal education in pedagogy or teacher training (Skolverket, 2021). To address this, **Further Education of Teachers (FET)** was introduced. The programme is implemented by **eight HE institutions**, intended for teachers who have not completed teacher education but have gained teaching experience in pre-school, after-school club, primary school, upper secondary school or equivalent adult education, often based on their subject knowledge or industry experience. This link to industry allows professionals to enter teaching more easily, as their practical expertise in a subject provides a strong foundation for classroom instruction. Thus, the programme aims to close the gap and provide teaching qualifications. Applicants to the FET must have extensive teaching experience and credits from previous studies. FET students must be practising teachers at least half-time during their studies and in the subjects, forms and levels appropriate to their degree. An overall assessment, known as a "validation", of the individual applicant's academic record and length of service as an unqualified teacher is carried out at the time of application.

Source: Visionary Analytics based on linked sources

A related issue was the need for educators' own knowledge and skills to be kept continually up to date with green and digital advances so that they can effectively prepare students (see Chapter 2 on skill needs). Providing opportunities for educators to gain experience in industries can help educators stay up to date with the necessary knowledge and skills and enable them to provide students with practical examples of theoretical

applications. For example, in Malta, the VET provider Malta's College of Arts, Science and Technology, has an industry placements for teachers initiative that ensures that professional staff, unit writers, and lecturers stay on top of industry practices and equipment (Cedefop, n.d.). This includes offering Erasmus+ mobility programmes to teaching staff to visit industry abroad and featuring industry placements in their pilot mentor training programmes.

However, the need to review funding structures when integrating new technologies into curricula was also highlighted by interviews and focus groups. Participants raised the issue that investments into new equipment frequently did not cover training educators on how to use and teach them. Therefore, it is key that "training-the-trainer" costs are factored into infrastructure development and technology procurement costs. Sharing of equipment with the industry as part of the collaborations or training provision for the trainers provided by company staff may be encouraged. Lastly, additional innovative ways of learning should be considered (e.g. micro-credentials, acquiring new micro-qualifications), as this may offer more flexible learning opportunities or give "taste" to new fields.

Practical Guideline 3: Promote work-based learning opportunities for young people

Work-based learning opportunities, such as internships and apprenticeships, help young people transition from education and training to the labour market. Providing work-based learning opportunities for young people in the electricity sector can increase young people's awareness of the sector and available career paths and make these more attractive.

Role of trade unions and employers' organisations:

- Advocate for work-based learning to be considered by policymakers, education and training providers, and companies, highlighting its benefits.
  - Encourage the collaboration between education and training providers and companies to provide work-based learning opportunities, including apprenticeships and internships.
- Engage, where possible, in the development and/or assessment of work-based learning.
- Provide support and guidance to employers related to work-based learning, in particular, targeting support to small- and medium-sized enterprises (SMEs).

Several best practices utilise work-based learning to enhance awareness and attractiveness of the electricity sector. Such a learning form can help bridge the gap between education and employment, smoothing the transition from education to the labour market (Council of the European Union, 2020). Work-based learning is offered at different educational levels, primarily targeting **upper secondary education, VET, and HE.** Apprenticeships and other forms of work-based learning for young people (e.g., internships) can increase the attractiveness of employment in the electricity sector to them by providing insights into the sector. Additionally, work-based learning can serve as an essential entry point into the workplace for young people through some identified practices, such as post-training hiring agreements. Encouraging employers in the electricity sector to participate in work-based learning programmes (including for non-technical roles) increases the sector's visibility amongst young people and is mutually beneficial for them and employers. It provides young people with some career security and a supportive framework to prepare for the workplace. Employers, in turn, can tailor training to their specific needs.

Work-based learning during upper secondary education can support young people who are making decisions about their next education and training and/or employment steps. For instance, an internship in the electricity sector may attract secondary school students to choose a related VET or HE course with the aim of pursuing a career within it. The importance of work-based learning is particularly highlighted in VET. The 2020 Council Recommendation on VET (Council of the European Union, 2020) and the 2021 Council Resolution on the European Education Area (Council of the European Union, 2021) set a target that 60% of all recent VET graduates had a period of work experience as part of their studies, which was reportedly exceeded by 2022

(Cedefop, 2022). For young people in HE, work-based learning offers valuable opportunities to apply their advanced theoretical knowledge in a real-world setting, ensure their skills and knowledge are up to date with industry needs, and enhance their employability.

Social partners can support work-based learning by raising awareness of its benefits and encouraging their members to take part in such opportunities by highlighting its advantages, such as tailoring training to better align with company needs and increasing access to skilled talent. Social partners can also support work-based learning by providing information to their members, such as how to participate, different roles and responsibilities, and the support and resources available. In particular, tailored guidance, including practical steps, may help SMEs, which typically have more limited resources and experience in this area. To add, social partners can also participate in the design and/or assessment of workplace learning. For trade unions, this can provide opportunities to advocate for fair working conditions for young people. For example, ETUC Youth is a member of the European Youth Forum, which sets out banning unpaid internships as a key action for youth rights (European Youth Forum, n.d.). Social partner involvement can help ensure that the young people, employees, and employers are adequately supported throughout the entire process of work-based learning, and to optimise the positive impact. Lastly, social partners can also support the partnerships between policy-makers, education and training providers and industry by encouraging and facilitating structured dialogue and collective agreements. Best practice examples of work-based learning can be found in Box 28.

Box 28. Knowledge and Skills: Work-based learning best practice examples (Company level)

Dual apprenticeship school-work programme, e-distribuzione SpA (Italy), 2014 – ongoing

e-distribuzione SpA, a company in Italy within the Enel group, has run school-to-work apprenticeships since 2014. These programmes aim to address the company's operational staffing needs by bridging the gap between school education and the requirements of the workplace. The model enables students to start engaging with the company while still at school, developing key soft skills and gaining early professional experience. It also promotes collaboration between schools and the company by adapting traditional education to include practical laboratory hours within a business environment. This helps to optimise post-graduation training by combining formal education with hands-on learning, thereby better preparing young people for technical careers at Enel.

CEZ Group Network, Czech Republic, ongoing

The CEZ Group is one of the largest energy companies in the Czech Republic, engaged in the generation, distribution, trade, and sales of electricity. To manage the changing needs of the energy sector, the CEZ group considers early recruitment and training of new colleagues to be critical. It cooperates with over 100 secondary schools, VET institutions, and universities, organising events such as student programmes and internships. To support the strategic recruitment of specialised staff for nuclear operations, close cooperation was established with the Secondary Vocational School in Hněvkovice, where the apprenticeship course of welding and piping for nuclear power was opened. Two-week internships have been set up for students at technical universities so that they can understand in detail the operation of the company. CEZ has a high proportion of young employees who contribute to the energy sector (12% of its employees are between 18 and 29 years old) relative to the EU average (under 6%). Additionally, over a third of the new employees recruited over the last five years have been young people under the age of 30. This indicates the success of such initiatives in increasing the attractiveness of the sector.

E.ON degree apprenticeships, E.ON (United Kingdom, Germany), ongoing

E.ON, one of Europe's largest energy companies, offers degree apprenticeships for young people who have completed secondary education. The four-to-five-year programmes enable participants to work full-time, study for a fully funded degree, and earn a salary. The degree apprenticeship programmes available are adapted to the skills needed by E.ON as a business. In 2024, the following degree apprenticeship programmes were offered: Engineering, Project Management, Digital Technology, Environmental Specialist, Quantity Surveyor, Accountancy and Taxation Professional.

Source: Visionary Analytics based on linked source, desk research, focus groups

Practical Guideline 4: Provide clear, accessible information and guidance on career pathways, sector-wide recruitment and communication campaigns

Support the sharing of information on career pathways in the electricity sector, including employment opportunities for students and provide information on education and training routes to enter the sector. Increased visibility and communication campaigns, promoting the impact of the electricity sector via attractive channels to build trust and engagement.

Role of trade unions and employers' organisations:

- Promote awareness of career opportunities and pathways in the sector, for example, highlighting information sources and/or providing career information on own platforms.
- Support career guidance initiatives by contributing sector insights and information on job profiles.
- Encourage employers and workers to contribute to career fairs, workshops, and/or industry presentations for schools to raise awareness on career pathways.
- Collaborate on sector-wide recruitment campaigns to challenge increased competition for talent.
- Improve visibility of the sector by strategic communication campaigns. Promote inclusivity and work-life balance, putting an emphasis on how the electricity sector contributes to wider societal and environmental goals through communication channels that are attractive to youth.

One of the key challenges for attracting young people is a lack of understanding of the employment opportunities and the career pathways within the electricity sector (for more details on this challenge, see section 4.1). Providing clear career guidance may include sharing information such as employment opportunities within the sector, the necessary skills and qualifications, and advice on how to obtain them. Interviews and focus groups also highlighted the importance of clear communication about job security and the types of jobs available through different education and training pathways. Whilst showcasing career opportunities available in the electricity sector can begin as early as primary education, actions aimed at improving understanding of different career pathways tend to focus on the age groups that are closer to making choices about their next education and training or career steps (i.e. at secondary, VET, and HE-level).

Career guidance can be shared through different media, for example, by career counsellors or online platforms. Providing young people with such information empowers them to make informed choices about their education and training and careers. For example, showcasing attractive employment opportunities to students may inspire them to pursue employment in the electricity sector and equip them with an understanding of the steps they need to take to achieve this. To add, Midterm workshop participants highlighted the need to develop sector-wide recruitment campaigns to target the talent shortage and increased competition with other sectors. Additionally, interview participants emphasised the importance of increasing young people's visibility in the sector. For example, role models can inspire young people, and demonstrate that the sector offers attractive and rewarding careers. See Box 29 for best practice examples of providing career guidance and increasing the visibility of young people.

Box 29. Knowledge and Skills: best practice examples

MyEnergyFuture, OPITO (Global), ongoing

MyEnergyFuture is a **digital platform** that combines career signposting, film content, and STEM **outreach events** that address different energy sectors, including oil, gas, wind, nuclear, hydrogen, carbon capture and storage. It showcases the diversity of career pathways available within the energy sector, both inside and outside traditional STEM focus. For example, it includes a wide range of careers in the following domains: Planning and Operations; Logistics and Support Services; Infrastructure Management; Engineering, Design and Construction; Science, Data and Analytics. It also identifies both current and future jobs – highlighting that the energy sector is rapidly evolving and that new roles and careers are continually being created. The initiative includes creating a platform for "**Energy Influencers**" – young professionals working in the energy sector – and a video of them discussing their jobs and the projects they work on in an engaging way for students. This provides role models for young people, as well as helping showcase different career opportunities in the sector.

EDF, Global, ongoing

EDF has dedicated information on early careers, including an **outline of the skills and behaviours** EDF considers when assessing early-career applications in its selection process. **Guidance** for completing early-career applications is also provided in addition to advice from current early-career employees. In addition to **work-based learning offerings** (work experience, industrial placements, and apprenticeships), EDF has created a free **interactive mini-course**, "GradSims", designed to help young people understand the energy sector and roles available. "GradSims" includes videos from graduates discussing their experience and sharing their day-to-day routine and examples of real-life tasks to raise awareness of different career pathways.

Source: Visionary Analytics based on linked source and Launch conference

Interviews highlighted the need to increase awareness of other types of roles available in the sector, such as human resources, customer service, and policy. An important aspect of the best practice implemented by OPITO, MyEnergyFuture, is the emphasis on raising awareness of careers beyond technical/STEM roles, which tend to be the primary type of role associated with the electricity sector. Showcasing this diversity of careers within the sector can tackle outdated stereotypes and make it more attractive to a broader range of people, including those who may not have a background or be interested in technical/STEM fields.

Another mechanism reported during focus groups and the best practice open calls for was career fairs. Career fairs are opportunities for companies and/or professionals and schools to meet with students, with the aim of increasing students' understanding and knowledge about different professions and companies, job requirements, and different education and training pathways. A number of companies in the focus groups and open call for best practices reported participating in career fairs to showcase their job opportunities and attract young talent. Social partners can endorse and encourage such events to create opportunities for young people to learn more about the electricity sector. Career fairs tend to be most common in HE, but can also be organised to the benefit of secondary school and VET school students.

Additionally, participants from interviews and focus groups underlined the importance of also targeting parents/carers due to the significant influence they have on their child's chosen career path. By introducing the electricity sector and highlighting its opportunities and benefits early on, parents/carers may be more inclined to encourage their children to consider it as an attractive and rewarding career path. As such, opportunities include inviting parents/carers to events such as career fairs or talks alongside young people.

Lastly, during the project interviews, it was suggested that the electricity sector would benefit from a strategic communication plan and a greater social media presence, as this would enable stakeholders (e.g. companies) to more easily and directly reach young people. Midterm workshop participants also noted that such promotion should focus on the factors influencing career decisions, showcase the work culture, inclusivity, and work–life balance, and emphasise how careers in the electricity sector contribute to wider societal and environmental goals. To add, they stressed the need for a stronger focus on strategic communication and public engagement, as the sector is still widely perceived as costly or hazardous rather than innovative and purpose-driven. This should be done through, for example, awareness campaigns, partnerships with schools and the media, and storytelling that highlights the sector's role in the green transition. Participants emphasised that this would help rebrand the industry, build public trust, and attract new generations motivated by sustainability and innovation. For example, Électricité de France (EDF) has an account on the popular social media platform TikTok - edfofficiel – and uses this to share content promoting awareness of careers and advances in the company, including efforts to attract more women to the sector. As of July 2025, the account had over 49,500 followers and 357,700 likes on its videos.

Practical Guideline 5: Promote inclusivity and diversity across education and training and employment opportunities

Tailored outreach and support mechanisms targeting underrepresented and/or marginalised groups of young people promote inclusivity within the electricity sector, making the electricity sector a more attractive and diverse sector.

Role of trade unions and employers' organisations:

- Encourage efforts to increase visibility and recruitment of underrepresented groups in the electricity sector, such as women (e.g. through open days, professional school visits).
- Tackle stereotypes from early education and childhood care and advocate policymakers to research and implement initiatives addressing this.
- Encourage members to participate in tailored outreach initiatives for underrepresented groups, such as arranging for women professionals to go into schools.

- Promote fair working conditions for young people in the workplace, including inclusive recruitment, training and hiring practices. Leverage collective agreements addressing inclusivity and diversity.

Tailored outreach and support mechanisms targeting specific groups of young people, such as girls and young people who are from disadvantaged backgrounds, can increase inclusivity and diversity in the electricity sector and help address labour shortages. As discussed in detail in Chapter 3, gender equality is a key issue within the electricity sector and addressing it requires a comprehensive approach tailored for all education levels.

Research indicates that children by the age of three begin to internalise gender stereotypes, and that different types of toys can impact girls' perceived career options (King et al., 2021). This highlights the need to consider and address gender stereotypes from the earliest stages of education. In **early education and childhood care (ECEC)** and **primary education,** initiatives may focus on the curricula, learning materials, and inclusive toys and activities, empowering girls to take an interest in STEM more generally. Additionally, early exposure to women role models is significant. During the focus groups, participants highlighted the need to increase efforts aiming to make women in the electricity sector more visible to ensure that girls see women role models. Social partners may raise awareness of the need to tackle stereotypes from ECEC onwards and advocate for policymakers to research and implement initiatives addressing this.

During **primary and secondary education,** structured initiatives and events that allow young people to deepen their interest in STEM and explore the electricity sector in particular can increase attractiveness. For example, the German initiative, Girls'Day, demonstrates how early experiences can positively influence girls (see Box 30 for more details). Girls'Day is an annual event during which organisations are invited to organise an open day for girls aged 10 and over. This initiative for girls has been shown to have a positive effect – 90% of participating girls assessed the initiative as "good" or "very good", 41% expressed an interest in an internship or training in the organisation they visited, and 27% of organisations decided to offer an employment contract to former Girls'Day participants (Kompetenzz, 2024).

Box 30. Knowledge and Skills: Social partner best practice example

Girls'Day, Germany, 2001 – ongoing

Girls'Day – Future Prospects for Girls is a nationwide career-orientation project for girls. On Girls'Day, female students aged 10 years and older learn about professions and subjects of study, with a share of less than 40% being women. The project is funded by the German Federal Ministry for Family Affairs, Senior Citizens, Women and Youth, and the German Federal Ministry of Education and Research. Expanding women's spectrum of vocational choices is the central project objective. Girls'Day are mostly offered by technical companies, companies with technical departments and technical training facilities, universities and research centres with a STEM focus. In various events, girls can test out their skills and come into contact with internship supervisors or human resources managers.

Back to School, Enel (Italy), 2023 – ongoing

Back to School is an initiative aimed at **addressing the persistent gender gap** in STEM fields, where women are still significantly underrepresented and empowering them to pursue STEM studies and careers in sectors critical for future societal development, such as energy transition, digitalisation, and environmental sustainability. The initiative's voluntary and bottom-up approach ensures authentic engagement, while close collaboration with schools facilitates a smooth integration into students' educational paths. Back to School has had over 3,300 participants so far and involved over 2,000 girls throughout Italy, supported by the enthusiasm and competence of about 40 STEM experts of the Group, who, through meetings in high schools throughout Italy, have shared their experience to guide and motivate students in the third, fourth and fifth year. Key actions include:

- **Inspirational talks** delivered by STEM professionals.
- **Career counselling** in the third and fourth years of high school. This includes conversations on specific issues to help them make better-informed choices about their future studies and careers.
- **Shadowing** experiences. Youngsters can spend days **working side-by-side with a professional** to begin to understand the mechanisms and language of the world of work, as well as the opportunities open to those who study STEM subjects. Additionally, the participants have the opportunity to carry out an **orientation period at the company headquarters**, valid for the recognition of 20 hours of PCTO (paths for transversal skills and orientation).
- **Scholarships**. Girls who are about to complete their high school diplomas can take part in a competition to win a study grant that will cover all the university fees of a three-year degree in a STEM subject at one of our national public academic partners.

Source: Visionary Analytics based on linked source and Launch conference

Providing financial support, for instance, through scholarships, was another one of the reported mechanisms for increasing the attractiveness of the electricity sector. This is particularly important for young people in **secondary education, VET,** and **HE,** who may otherwise lack the material resources to pursue further education and training. Other, non-financial forms of support frequently reported by best practices include career guidance and mentorship, and targeted outreach such as talks (see Practical Guideline 4). Box 31 showcases two company-level best practices that aim to improve access to education and training, leading to employment in the electricity sector. The #EnergySmartSTART initiative highlights how financial and non-financial outreach activities can increase the attractiveness of the sector. In addition, the initiative sends professionals into schools and arranges educational site visits for schools to empower students.

Box 31. Knowledge and Skills: Social partner best practice example

Flow Your Talent Scholarship Programme, AELEC (Spain), 2024 – ongoing

Endesa's "Flow Your Talent" scholarship programme is aimed at recent university graduates and offers more than 170 scholarships per year. These grants last 12 months and combine practical training in the company with academic training. The academic training includes a Master's Degree in Organisational Management, Key Skills and Data Analytics, taught by the Camilo José Cela University (UCJC) in an online format and fully funded by Endesa. This master's degree aims to improve the professional skills of interns, covering soft skills, communication, people management and change management. The programme seeks to provide a collaborative learning environment and prepare young people to face the challenges of the energy sector.

#EnergySmartSTART, Ignitis (Lithuania), 2022 – ongoing

#EnergySmartSTART is a programme in Lithuania that brings together energy companies' initiatives to **address the shortage of energy specialists** amidst the green transition and aims to strengthen the interest of students in the topic of energy. The participants are HE students, pupils in grades 7-11, teachers of grades 7-11 and wider society. Launched in 2022 to commemorate the 130th anniversary of the Lithuanian energy sector, the initiative involves several actions:

- **Excursions** to the energy facilities.
- **Education** about the energy sector. The programme also offers information about career possibilities in the energy sector by organising expert **educational visits to the schools**, and helps students learn about career opportunities in the field through firsthand stories and experiences that make the field more attractive. The programme educates students from grades 7-11 on energy and responsible energy consumption. **Online training** will be organised for the teachers of 7-11 graders. It also organises visits to educational institutions.
- Funding for educational institutions and HE, used for **scholarships and financial support** for first-year and second-year students in energy study programmes. From 2024, scholarships available to the best universities abroad.

In 2022, Ignitis Group donated 150 thousand euros to 8 HE institutions, providing the possibility to disburse scholarships to 50 1st-year students. Since then, 135 excursions were organised to energy sector-related sites in Vilnius, Kaunas and Kruonis. Additionally, 90 educational institutions have been visited by more than 3500 pupils. The scholarships support studies in energy-related fields, and the excursions give students firsthand exposure to energy production, distribution, and infrastructure. Some recent changes in society have shown that the number of Lithuanian school students who see the energy sector as promising in terms of career opportunities is growing. 60% of students and 58% of schoolchildren who were surveyed believe that the energy sector could be an attractive career option in the future (Ignitis group, 2023). The perception of the former group has improved by 4 percentage points, and the latter group by 8 percentage points. This was shown in a survey conducted by KOG Institute for Marketing and Communication Sciences at the initiative of Ignitis Group, a renewables-focused integrated utility.

Source: Visionary Analytics based on linked source and Launch conference

These outreach activities showcase how a targeted approach, supported by active involvement from social partners, can increase the attractiveness and accessibility of the electricity sector for more young people, thereby enhancing inclusivity and diversity. Whilst this practical guideline primarily focuses on initiatives for education and training, in particular efforts ensuring there are fair and equitable working conditions (e.g. through equality and inclusivity (E&I) initiatives) are important complementary actions. For more information on women's visibility and outreach, see Practical Guideline 3 in the Gender Equality chapter.

5. Key Findings and Recommendations

This Chapter provides a synthesis of the key overarching findings and recommendations of the report (see Table 1). It ties together the challenges investigated in all three key topics – JT, Gender Equality, and Knowledge and Skills. It then presents the key overarching recommendations for social partners, connecting the topics and emphasising the most relevant aspects of the practical guidelines. Recommendations meant to be implemented at the company level (Comp), national (Nat), and EU levels (EU) have been marked in brackets. Annex 8 (section 6) contains further suggestions for the dissemination of these guidelines as well as ideas for further research.

Table 1. Key findings and recommendations

Key Findings	Recommendations for social partners
A. **Sectoral awareness** among the wider society has been noted as an overarching issue to be addressed by electricity stakeholders. This includes a general understanding of the sector's broader impact on the achievement of climate-neutral goals and the use of decarbonised energy sources. Furthermore, the lack of information about the potential career pathways and opportunities within the sector is a significant barrier to attracting women and young talent into the sector's workforce.	• **[all levels] Promote awareness of the electricity sector's contribution to European climate goals and the availability of quality jobs** in the JT. This includes supporting educational outreach efforts, especially in communities most affected by the JT, through educational campaigns and visibility measures (e.g., local community partnerships, strategic communication campaigns). • **[Com, Nat] Raise awareness on opportunities for women and other underrepresented groups** in the sector, enhancing the visibility of role models, showcasing their success stories and achievements in the industry. • **[Com, Nat] Through strategic communication campaigns, actively promote employment opportunities, education, and training pathways to young people**. This can include motivating young employees in the sector to share their professional experiences, hosting site tours, visiting educational institutions, and co-creating engaging learning opportunities with children and youth (e.g., through workshops, competitions, open days, work with career guidance professionals to improve awareness).
B. **Multi-level, multi-stakeholder cooperation is a key factor for succeeding in JT,** as social partners face a fast-evolving policy landscape and inconsistencies in policies across the EU, national/regional and local levels. Collaboration among social partners at all levels (e.g., international, national/regional, local, and company levels) with **education and training providers, industry actors, policymakers, and other stakeholders** is essential to adapt to evolving contexts proactively and to develop a shared understanding of the JT.	• **[all levels] Leverage social dialogue and collective agreements to foster a shared understanding of JT** and bring together social partners, policy makers, and other relevant actors on EU, national/regional and local, company levels. Collective agreements can help establish specific commitments to JT plans, gender-inclusive measures and education and training activities. • **[EU, Nat] Engage with policymakers on the EU and national/regional levels.** Advocate for the alignment of regulatory frameworks, ensuring additional support through the mobilisation of funding, infrastructure, and institutional capacity. Pursue meaningful partnerships with the public sector and make use of its resources on JT plans, gender equality action plans, education and training-related activities. • **[Com, Nat] Proactively collaborate with education and training providers, civil society, and other organisations**. This can include curricula updates aligned with labour market needs, various initiatives (e.g., scholarships, site visits, competitions) and support for young people in their transition from education to the electricity sector workforce. Customise approaches and learning objectives per different age section and education levels to accommodate the needs of children. Co-create and support 'train-the-trainer' initiatives, industrial doctorate studies, work-based learning opportunities, higher education scholarships and other opportunities. Collaborate with the civil society and other organisations (e.g., science museums, libraries) to support non-formal learning activities with children and youth. • **[Com] Collaborate with representatives from relevant (sub)sectors** (e.g., nuclear, wind, solar, hydro, and emerging technologies) to advance JT plans through measures such as shared workforce planning and knowledge sharing; improve the standing of gender equality through the organisation of cross-sectoral mentoring and recruitment programmes, joint visibility

Key Findings	Recommendations for social partners
	campaigns; enhance the attractiveness of the sector to young people through, for example, unified awareness campaigns, interdisciplinary training opportunities.
C. **Availability of skills anticipation mechanisms and consistent, comparable data** has been identified as a challenge for electricity social partners. Comprehensive, accessible, and up-to-date data are crucial for developing, implementing and monitoring JT plans and gender equality-related measures in the electricity sector. Transparent and accessible information, including various impact, foresight, anticipation, and forward-looking studies, is essential for social partners, as it enables informed decision-making, progress monitoring, and the evaluation of the impact of measures taken.	• **[all levels] Actively promote data accessibility and transparency** by advocating for and adopting standard metrics, indicators and methodologies and by supporting the development of shared data-management protocols and sectoral platforms. Strengthened coordinated data pooling will enable more accurate assessments of electricity, climate trends, improve understanding of skills and training needs, workforce demographics, employment projections and job mobility. Enable the development of new skills, classifications, and occupational profiles – Electricity Skills Observatory. • **[Nat, EU] Develop forward-looking, anticipatory studies.** Collaborating with researchers, engage and develop projects, studies that would generate new, forward-looking knowledge on the electricity sector, taking into account medium- and long-term trends (e.g., emerging, mega trends, wildcards). Such studies can benefit from both qualitative (e.g., foresight) and quantitative (e.g., projections, forecasts) methodology. The studies should take into account both the potential futures of employment and electricity-specific topics. Such new evidence can serve as a background for developing the Electricity Skills Strategy. • **[Com, Nat] Create accountability and monitoring responsibilities within collective agreements**. This concerns both the monitoring of measures outlined in JT plans, as well as commitments to improve gender equality and inclusivity in the sector. This can be done through the establishment of benchmarks and indicators, KPIs, joint monitoring committees, reporting and transparency mechanisms, and conducting assessments and impact studies. Accountability measures should also be considered through public endorsement and awareness, financial or reputational incentives, include energy affordability and poverty indicators.
D. **The diversity and inclusion of underrepresented, vulnerable and disadvantaged groups** are essential in ensuring fairness and social sustainability. Social partners' efforts to address barriers to equal opportunities are crucial for unlocking untapped potential and ensuring the legitimacy of the JT. This includes creating sectoral entry points and working conditions catered to various groups, such as women, people with refugee or migrant backgrounds, people with disabilities, other socio-economic disadvantages and young people.	• **[all levels] Promote tailored approaches in JT planning, gender equality, and knowledge and skills development initiatives** by adapting actions to the specific needs, capacities, and contexts of targeted groups. This is especially important when considering measures for supporting workers in affected communities, including women from disadvantaged groups, and attracting young people (incl. girls within and outside STEM education) from different levels of education and training. • **[Com] Advocate for the adoption of better working conditions – job quality** that would increase the attractiveness of the sector to women and young talent. This can entail supporting change in working culture, creating inclusive, positive, and open work environments, promoting work-life balance and family-friendly policies, offering fair financial compensation, ensuring health, safety and well-being conditions that would be appealing and welcoming to women, youth and people from disadvantaged backgrounds.
E. **Rapidly changing skill needs** within the electricity sector are leading to notable gaps and mismatches, especially in digital and technological competences, specialised technical expertise, and soft skills. Persistent skills gaps and mismatches continue to pose challenges not only for sector employees, facing job loss or job-to-job transition, but also for young people entering the workforce, driven by insufficient alignment between	• **[Com] Promote work-based and flexible learning opportunities**, highlighting their importance to companies, policymakers, education and training providers. This includes, for example, expanding opportunities for apprenticeships, internships, micro-credentials and other novel forms of learning. These should be oriented towards digital, soft skills, and specialised technical skills. Future-oriented training for up- or reskilling workers can help the sector address current and future skills shortages, ensure commitment to JT plans, and build a competent workforce. • **[Com, Nat] Ensure that workers along the entire value chain (incl. subcontracted workers)** are included when considering and providing up- and re-skilling opportunities, and other measures in relation to JT, gender equality and knowledge and skills. Subcontracted workers and their

Key Findings	Recommendations for social partners
education and training systems and labour market needs.	representatives, when subcontracting cannot be avoided, should be ensured of the same working conditions and supported to avoid the worsening of labour conditions and income discontinuity. • **[Com, Nat] Support employees who are undergoing job loss or job-to-job transitions** by considering employment conditions, psychological support, relocation services and future-oriented career advancement opportunities. Consider providing tailored support to the families of those affected (e.g., relocation costs).
F. **EU financial instruments for JT** are used to mobilise efforts and support regions, workers, and vulnerable groups in the energy transition, but challenges remain due to limited and inconsistent involvement of social partners in the design, delivery and implementation phases, as well as limited funding to support all affected.	• **[all levels] Leverage and advocate for EU and national/regional funding opportunities** to support the development and implementation of JT and gender equality plans, knowledge and skill initiatives. Advocate for the creation of national/regional funds that support a JT. Utilise funds to finance social partner-led initiatives (e.g., anticipation studies, skills strategies, specialised training). Promote awareness of funding opportunities for those willing to join the sector, including stipends and scholarships for youth to encourage the pursuit of education and training related to the field.

Source: Visionary Analytics, 2026

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Annex 1 – Available EU Funding for the Just Transition

Table 2. Available EU funding

Fund	Total budget (billion, EUR)	Fund duration	Relevance for social partners in the electricity sector
Just Transition Fund	19.32	2021-2027	• Support for regions reliant on fossil fuels and high-emission industries through actions such as reskilling. • Social partners have input into the TJTPs developed by MS which outlines how the needs of the targeted regions and planned actions.
Social Climate Fund	86.7	2025-2026	• Support for the most affected vulnerable groups, such as households in energy or transport poverty. • May be used to support structural measures and investments in energy efficiency and renovation of buildings, clean heating and cooling and integration of renewable energy, as well as in zero- and low-emission mobility solutions. • Social Climate Plan, drafted by a MS (in consultation with various actors, including social partners), list and explain all planned measures and investments in support of vulnerable households, transport users, and micro-enterprises (EC, 2025d).
Recovery and Resilience Facility	650	2020-2026	• Funds available to MS are directed toward reforms and investments in energy efficiency, renewable energy, and networks. The RRF Regulation also requires that social partners be consulted in both the preparation and implementation of these reform and investment plans. The social partners should be regularly and extensively involved at various levels and phases of RRF implementation (Rodriguez Contreras et al., 2024). • The national plans, through which RRF is implemented, include a REPowerEU chapter, which outlines reform and investment contributing to energy and climate-related reforms and investments, one of them being “reskilling the workforce towards green skills”.
InvestEU Fund	26.2	Since 2022	• Supports four main policy areas, covering points including energy (e.g. renewables, efficiency, smart systems), infrastructure interconnection, and gender equality in skills, education, training, and related services. • Eligible final recipients of financing include natural or legal persons in the EU or Third Eligible Countries, such as private entities, project companies, large corporates, midcaps (including small midcaps), SMEs, public sector bodies, PPPs, private companies with public purpose, and non-profit organisations. • Operates via two compartments: EU and MS. The EU compartment focuses mainly on EU policy priorities and investments with EU value added. The MS countries can set up an MS compartment and contribute a part of their shared management funds, up to 2% of their shared management fund allocation, via their Partnership Agreements. Under the Member State compartment, loans, guarantees or equity investments can be offered as a complement to other public and private investments. • Social partners are not typically recipients of the funding but can play a role in supporting projects involving technical

Fund	Total budget (billion, EUR)	Fund duration	Relevance for social partners in the electricity sector
			consultations, like energy audits, for the sustainable energy transition.
Modernisation Fund	48 (estimated)	2021-2030	• The Modernisation Fund supports 13 lower-income MS and promotes investments in 6 priority areas, one of them being just transition in carbon-dependent regions to support redeployment, reskilling and upskilling of workers, education, job-seeking initiatives and start-ups. • Places strong emphasis on public consultations, especially for large-scale projects and investment reviews, which must occur before submission to the EIB. MS manage these consultations per national rules, including stakeholder selection and timing.
Innovation Fund	40 (estimated)	2020-2030	• Focuses on highly innovative technologies and flagship projects within Europe that can bring about significant emission reductions. The eligible sectors are energy-intensive industries, renewable energy, energy storage, and CCUS. • In further developing the Innovation Fund, the Commission is assisted by the Innovation Fund Expert group. It consists of representatives from organisations, Member States' authorities and other public entities, as well as representatives of a common interest.
Cohesion policy	392	2021-2027	• Cohesion Policy is delivered through specific funds. The European Social Fund Plus (ESF+) is dedicated to support jobs and create a fair and socially inclusive society in EU countries. It can be used for the adaptation of workers to change, reskilling, education and training, job creation in the energy sector, and the social integration of people at risk of poverty or social exclusion. • The ESF+ Committee addresses issues related to implementing ESF+ programmes. Each MS is represented by one government official (including the ESF+ Head of Mission), one workers' representative, and one employers' representative, each with an alternate. The Committee also includes one representative from Union-level workers' and employers' organisations. Depending on the agenda, relevant stakeholders, such as civil society organisations, may be invited (EC, n.d.-a).
Connecting Europe Facility	5.84	2021-2027	• CEF Energy focuses on cross-border renewable energy projects, interoperability of networks and better integration of the internal energy market. • Social partners can participate in public consultations, including infrastructure users (energy consumers, producers, suppliers, etc.), environmental NGOs, and project promoters (e.g., renewable energy developers) (EC, n.d.-b).
LIFE Clean Energy Transition sub-programme	1	2021-2027	• Targets market barriers to the sustainable energy transition, focusing on policy support, technology and skills, private finance, local investment projects, and citizen engagement. • Eligible partners include public bodies (all levels), private companies (incl. SMEs), international organisations, research institutions, education and training institutions, NGOs/NPOs, and other relevant entities. • Aims to enhance multi-stakeholder dialogue, empower citizens in the clean energy transition through collective actions and

Fund	Total budget (billion, EUR)	Fund duration	Relevance for social partners in the electricity sector
			community initiatives, and strengthen collaboration between local authorities and citizen-led efforts.
EU renewable energy financing mechanism	-	2020-ongoing	• Financing mechanism to enable EU countries to work more closely together on the uptake and promotion of renewable energy, making it easier to achieve both EU and national targets, in line with the European Green Deal. • The mechanism links countries that voluntarily pay into the mechanism (contributing countries) with countries that agree to have new projects built on their territory (hosting countries). • MS should ensure the active involvement of social partners in the preparation of integrated national energy and climate plans, and minimise administrative complexity in meeting public consultation requirements.
Horizon Europe	95.5	2021-2027	• The research and innovation funding programme supports energy-related projects primarily through the Climate, Energy and Mobility cluster. This includes areas such as energy supply, systems, storage, clean transport, buildings, and industrial facilities in energy transition. • Participants include any legal entities—public or private, including international organisations, as well as social partners, provided they are established legal entities. The programme promotes intra-state partnerships and cooperation with various authorities, stakeholders, and partners. Eligible entity partners include public bodies, NPOs and NGOs, and education and training institutions.
EIB	10-12 (per year, estimated)	Since 2019	• The Energy Lending Policy, adopted by the Bank in 2019, focuses on transforming the energy sector through energy efficiency, low-carbon energy supply, innovation, and enabling infrastructure. • It informs the EIB's stakeholders—shareholders, borrowers, promoters, partners, and civil society organisations such as non-profits, NGOs and community organisations—as well as the wider public about the types of energy projects that align with the Bank's objectives, how these projects are assessed and prioritised, and how the Bank supports EU energy policy. • The Bank also intends to strengthen the dialogue with MS to efficiently support national energy and climate plans.
European Globalisation Adjustment Fund for Displaced Workers	1.47	2021-2027	• Special instrument that offers support to workers (self-employed, temporary and fixed-term) who lose their jobs due to the transition to a low-carbon economy, among other things. It can be used for career advice, education and training, entrepreneurship and business creation. • National or regional authorities implement and manage EGF cases. Social partners engage in extensive consultations during the preparation of coordinated support packages and applications. The Commission shall also provide information and clear guidance to social partners at both Union and national levels on the use of the EGF (European Parliament and the Council of the European Union, 2021b).
Technical Support Instrument	0.864	2021-2027	• Provides tailor-made expertise to MS for designing and implementing reforms. Support can take the form of strategic

Fund	Total budget (billion, EUR)	Fund duration	Relevance for social partners in the electricity sector
			and legal advice, studies, training, and expert missions, and may be offered at any stage of the reform process. • MS can request support to prepare, amend, implement and revise their national recovery and resilience plans under the Recovery and Resilience Facility. • Support may be provided directly through the Commission's in-house expertise or with other providers of technical support: experts from EU Member States' national administrations (TAIEX), international organisations, private firms and consultancies, individual experts from the private sector. • The TSI provides technical support to MS in a wide range of policy areas, including green transition (climate action, circular economy and energy transition).

Source: Visionary Analytics based on European Parliament (2023) and sources indicated in the table

Annex 2 – Methodology

The research has been conducted in four phases: Beginning of the study and kick-off meeting (KoM); Research and compiling of data; Midterm workshop and drafting of the study; Finalisation of the study and the recommendations. This annex outlines the methodology and deliverables for each of these phases. Figure 10 provides an overview of the study research design, including phases, methods, and deliverables, which will be discussed in more detail.

Figure 10. Overview of study research design: phases, methods, and deliverables

Source: Visionary Analytics, 2024

The research questions and methodology were updated in line with the outcomes and decisions made during the KoM, Table 3 presents the research objectives, research questions, and study methods.

Table 3. Research questions per study objectives

Research objective	Research questions	Study methods
1. Provide an overview of the main challenges affecting the electricity sector's contribution to just transition plans, map best practices to support just transition (JT) plans in the electricity sector and create guidelines for social partners to create their own and/or contribute to national just transition plans.	• What are the main **challenges** for social partners in contributing to JT plans? What is the role of EU funding in supporting JT plans? • What are the most critical **skill gaps and skill mismatches** in the EU electricity sector? • What **best practices** exist for social partners to support national and regional JT plans, esp. affected **workers** (e.g. job-to-job transition schemes, upskilling/reskilling practices)? • What, if any, **guidelines/frameworks** currently exist to support social partners to develop JT plans in the electricity sector? How can social partners engage with national and regional authorities to develop and implement JT plans?	• Literature review • Open call • Interviews • Focus groups
2. Provide an overview of the main challenges affecting the achievement of gender equality in the electricity sector, map best practices to support gender equality in the sector and create a set of recommendations for actions on gender equality in the electricity sector.	• What are the main **challenges** facing the electricity sector to achieve gender equality? • What **best practices** exist for social partners to support the achievement of gender equality and **equitable career progression** in the electricity sector (e.g., gender quotas, succession planning, systemic pay disparities, transparent pay scales, and broader inclusivity measures)? • What, if any, national and regional **guidelines/frameworks** currently exist to support social partners in addressing gender equality in the electricity sector?	• Literature review • Open call • Interviews • Focus groups
3. Identify the underlying challenges of attracting young people for work in the electricity sector, map best practice examples implemented by companies or unions to teach young people	• What are the most critical **challenges** in making the sector attractive to young people, i.e. students at schools? How does it relate with the identified skills mismatches and gaps in the sector? • What **best practices** exist to increase the attractiveness of the electricity sector for young people (including practices implemented by companies or unions)?	• Literature review • Open call • Interviews • Focus groups

Research objective	Research questions	Study methods
about work in the sector and create practical recommendations for social partners and schools on how to increase the attractiveness of the sector.	• How can these identified practices be **systematically integrated** in relation to the role of social partners (e.g. raising awareness of skill gaps, providing students with vocational guidance and counselling) to promote the electricity sector?	

Source: Visionary Analytics, 2026

Literature review. The main purpose of the literature review was to collect relevant evidence to answer the research questions. The literature review covered a wide range of sources, including:

- Primary sources (e.g., policy documents, recommendations, agreements, resolutions, position papers published by EPSU, industriALL Eureletric, BusinessEurope, SGI Europe, SMEunited, European Trade Union Confederation (ETUC), European Trade Union Committee for Education (ETUCE), European Parliament, European Commission and other social partners and EU institutions)
- Grey literature (e.g., studies, evaluations, policy reports, white papers, media reports, guidelines)
- Academic literature (e.g. peer-reviewed papers, working papers, conference papers).
- Quantitative and qualitative data databases.

Identified literature was screened for relevance, recognition (citation rate), timespan, and availability. If relevant, quality checks were performed, and the literature was analysed.

Best Practice Open Call. The aim of this task was to map best practices at European, national, regional, local, sectoral and company levels for addressing challenges related to social partners' contribution to just transition plans, gender equality, and knowledge and skills within the electricity sector. The open call to collect best practices in the Electricity sector was launched on Alchemer™ and ran between 4 April 2025 and 16 May 2025 (see Annex 4 for Open Call concept and invitation). As a result, 34 practices were collected, capturing:

- 7 different countries (IT 38%, ES 24%, FR 18%, SE 9%, TR 6%, BE 3%, CY 3%).
- Topic (one practice may cover more than one topic): Just transition 9 (26%); Gender equality 15 (44%); Knowledge and Skills 21 (62%).
- Stakeholder type: Employer organisation 11 (32%), Trade union 5 (15%), Civil society organisation 2 (6%), Public authority 1 (3%), Company 15 (44%).
- Level of implementation (one practice may have several levels of implication): National-level 26 (76%), Local-level 4 (12%), Regional-level 5 (15%), Company-level 11 (32%), EU-level 1 (3%), International 1 (3%).

The Open Call was distributed to 127 organisations on behalf of VA, while members of the project partners were reached by the project partners directly. 5 Linkedin posts were disseminated. In total, including all research methods, 74 practices in 16 countries (some practices found were international or EU-wide) were collected. Collected practices were detailed in an MS Excel file. Practices were additionally captured from the literature review, interviews, focus groups, and in-person events. To investigate further, practices featured in the main report were followed up on via emails or additional desk research.

Interviews. The aim of the task was to gather expert insights from European-level stakeholders to inform all research objectives on the key challenges facing the electricity sector, as well as identify best practice examples. The interviews were semi-structured, guided by a questionnaire. Each interview was scheduled for 60 minutes and conducted online via Microsoft Teams™. Interview summaries were created for every interview and sent to the participants for validation. In total, six interviews were conducted as part of the project – three with representatives from European institutions, two with representatives from international organisations, and one with a representative from an EU-level civil society organisation. See Annex 3 for the interview questionnaire and list of interview participants.

Focus Groups. The aim of the focus groups is to gather relevant European and national-level social partners and electricity sector stakeholders16 to share their insights in relation to the study objectives. Focus group invitations were circulated to members of EPSU, industriALL, and Eurelectric, in addition to being sent directly to a list of 60 stakeholders identified by the research team. Initially, four focus groups were planned, with the capacity to host a maximum of 80 participants. However, due to low interest in registrations, the decision was made to merge the focus groups. Two focus groups were conducted, with a total of 16 participants:

- 10th June 2025 focus group: 6 participants
- 12th June 2024 focus group: 10 participants.

Both focus groups were conducted via Microsoft Team™ and took 2 hours. In advance of the focus groups, participants were sent a Background Information document. This provided participants with an overview of the challenges and best practice examples identified from the literature review, interviews, and open call to prepare them for the focus group discussions. Following the focus group discussions, a summary of the focus groups was created and sent to all participants for validation. The focus group concept and agenda can be found in Annex 5. The focus group summary and list of participants can be found in Annex 6.

Phase 3 of the study included **drafting of the study**, taking into account the results and insights gathered from the different data collection methods (literature review, open call, interviews, focus group). This ensured that the drafted study considered all data collected, and see the full picture of the challenges, opportunities and best practices in the fields of the just transition plans, gender equality and education in the electricity sector. An **internal recommendation validation workshop,** which aim was to internally discuss, validate, and prioritise draft conclusions, recommendations and guidelines developed based on the triangulation of the collected data. All PT members (incl. external experts) participate in the workshop and discuss the validity and prioritisation of the conclusions, recommendations, and guidelines. The workshop was held Microsoft Teams™ technical platform.

During the preparation of the v1 of this report, midterm workshop and final conference of the project was yet to be conducted.

[16] Including trade unions, employer associations, education and training agencies/associations, electricity organisations/associations, industry representatives, education and training agencies/associations and and civil society organisations.

Annex 3 – Interview Questionnaire and the List of Interview Participants

Table 4.Interview questionnaire

Information about the respondent
Could you briefly present yourself? For example: 1) Which organisation(s) do you represent? What is your role in this/these organisation(s)? 2) What is your overall experience relevant to this project? 3) What are your main topics of activity - just transition plans, gender equality and/or knowledge and skills? *Based on the answer to 3), relevant questionnaire(s) will be chosen.*
Just Transition Plans
4) In your opinion, what are the **main challenges** that affect the electricity sector's contribution to **just transition plans**? 5) Are you aware of any challenges in particular for **affected workers?** 6) Are you aware of any particular **groups of workers** that are more vulnerable to challenges posed by the just transition in the electricity sector? How are they affected? 7) What do you consider to be the main **challenges that social partners** face when contributing to just transition plans in the electricity sector, and how could these be addressed? 8) In your opinion, what are the most critical **skill gaps and skill mismatches** in the EU electricity sector? *Skills gaps: a skills deficit which may affect workers employed by companies; Skills mismatches: misalignment between labour demand and supply due to various causes that make efficient allocation of existing skills in the labour market difficult.* 9) Are you aware of any **guidelines, recommendations and/or policies/frameworks**, which may involve social partners in the electricity sector related to just transition plans? [*If no, skip to Q10*] a. What are their names? Who created them? b. In your opinion, are they widely applied? Why/why not? c. How effective do you consider the guidelines and/or frameworks to be? What is this view based on? (e.g. personal experience, evaluations) d. What improvements or additional resources do you think are needed or could be mobilised, that are not sufficiently used? 10) How are these challenges and skill gaps/mismatches being **addressed by social partners and/or companies**, alone or in collaboration with other stakeholders, in the electricity sector? 11) Can you provide **specific examples** of any best practices (e.g. initiatives, programmes)? a. Title of best practice b. Name of organisation/institution leading the practices and partners (if any) c. Levels of implementation (European; International; National; Regional; Local; Organisation) d. Target group(s) e. Description (challenge it addresses, objectives, key actions, participants) 12) Outside of what is already being implemented in the electricity sector, what **proactive strategies or innovative approaches** are you aware of that social partners could adopt to address these challenges? 13) Based on your experience, what **key recommendations** should be given in **practical guidelines** for social partners to develop and contribute to just transition plans? 14) Could you provide any examples and/ or practical advice on how you consider that **EU funding** can be effectively accessed and/or implemented? For instance, are there are specific target groups, priority topics, or programme types that should be prioritised?
Gender Equality

15) What are the **main challenges** that affect the electricity sector's achievement of **gender equality**?

16) What are the main challenges for increasing the attractiveness of the electricity sector for groups **women from disadvantaged groups?** For example, women with care responsibilities, women with migrant/refugee background, ethnic minorities, women with disabilities.

17) What do you consider to be the main **challenges that social partners face** when contributing to gender equality in the electricity sector, and how could these be addressed?

18) Are you aware of any **guidelines, recommendations and/or policies/frameworks**, which may involve social partners in the electricity sector related to gender equality?

[*If no, skip to Q19*]

a. What are their names? Who created them?
b. In your opinion, are they widely applied? Why/why not?
c. How effective do you consider the guidelines and/or frameworks to be? What is this view based on? (e.g. personal experience, evaluations)
d. What improvements or additional resources do you think are needed or could be mobilised, that are not sufficiently used?

19) How are these challenges being addressed by **social partners and/or companies**, alone or in collaboration with other stakeholders, in the electricity sector?

20) Can you provide specific examples of any best practices (e.g. initiatives, programmes)?
a. Title of best practice
b. Name of organisation/institution leading the practices and partners (if any)
c. Levels of implementation (European; International; National; Regional; Local; Organisation)
d. Target group
e. Description (challenge it addresses, objectives, key actions, participants)

21) Outside of what is already being implemented in the electricity sector, what **proactive strategies or innovative approaches** are you aware of that social partners could adopt address these challenges?

22) Based on your experience, what **key recommendations** should be given to social partners for actions on gender equality in the electricity sector?

23) Are there **specific recommendations** that should be given to social partners and other organisations to effectively reach women from disadvantaged backgrounds?

Skills and Knowledge

24) What are the **main challenges** for increasing the **attractiveness of the electricity sector** for young people at secondary school?

25) What are the **main challenges** for increasing the **attractiveness of the electricity sector** for young people at other education levels (i.e primary school, VET, higher education, non-formal)?

26) What are the main challenges for increasing the attractiveness of the electricity sector for groups of young people with **disadvantaged** backgrounds? For example, young people with low-income backgrounds, young people with migrant backgrounds, young people with disabilities.

27) What do you consider to be the main **challenges that social partners face** when contributing to increasing the attractiveness of the electricity sector for young people, and how could these be addressed?

28) Are you aware of any **guidelines, recommendations and/or policies/frameworks,** which may involve social partners, aimed at systematically integrating good practices for increasing awareness/the attractiveness of the electricity sector targeted at young people?

[*If no, skip to Q20*]

a What are their names? Who created them?
b In your opinion, are they widely applied? Why/why not?
c How effective do you consider the guidelines and/or frameworks to be? What is this view based on? (e.g. personal experience, evaluations)
d What improvements or additional resources do you think are needed or could be mobilised, that are not sufficiently used?

29) How are these challenges being **addressed by social partners and/or companies,** alone or in collaboration with other stakeholders, in the electricity sector?

30) Can you provide **specific examples** of any best practices (e.g. initiatives, programmes with primary schools, secondary schools, higher education institutions, informal, non-formal education)
   a Title of best practice
   b Name of organisation/institution leading the practices and partners (if any)
   c Levels of implementation (European; International; National; Regional; Local; Organisation)
   d Target group
   e Description (challenge it addresses, objectives, key actions, participants)

31) Outside of what is already being implemented in the electricity sector, what **proactive strategies or innovative approaches** are you aware of that social partners could adopt to address these challenges?

32) Based on your experience, what **key recommendations** should be given to social partners and schools, to make the electricity sector more attractive and interesting to young people in **secondary school education**?

33) What **key recommendations** should be given to social partners and educational institutions to make the electricity sector attractive and interesting to students at other levels of education (i.e. primary school, VET, higher education, non-formal)?

34) Are there specific recommendations that should be given to **social partners and other organisations** to reach effectively specific groups of young people? For example, women, young people who are not in education, employment or training (NEET), young people with migrant backgrounds, young people with disabilities, neurodiverse individuals.

Closing questions

35) Is there anything you would like to **add** to your answers?

36) Are you aware of any **other best practices** related to just transition plans/gender equality/attractiveness of the electricity sector that we have not discussed already? Please share.

37) Are you aware of any **other stakeholders** that we should reach out to during our study? Please share.

38) Would you be willing to share our **open call for best practices** when it is launched?

Source: Visionary Analytics, 2026

Table 5. List of interview participants

No.	Name	Organisation Level	Stakeholder type
1.	-	EU-level	Civil Society Organisation
2.	-	EU-level	European Institution
3.	-	EU-level	European Institution
4.	-	EU-level	European Institution
5.	-	International	International Organisation
6.	-	International	International Organisation

Source: Visionary Analytics, 2026

Annex 4 – Open Call Concept and Invitation

Concept of the open call for best practices

Aims. The aim of this task is to map best practices at European, national, regional, local, sectoral and company levels for addressing challenges related to just transition plans, gender equality, and knowledge and skills within the electricity sector. The best practices will be collected during the literature review, interviews, and focus groups. In addition, an Open call will be launched via the websites and social media accounts of Client entities and Visionary Analytics. This document describes the approach and technicalities of this Open Call.

Due to the scope and budget of the project, we will not be able to implement a comprehensive mapping of the best practice examples under each thematic area (i.e. just transition plans, gender equality, and education). Instead, we will aim to provide a collection of rich examples under each of the three thematic areas, aiming to balance the coverage of different EU regions, types of organisations, and levels (e.g. practices implemented by employer and employee organisations at sectoral level, companies, etc.).

Open call approach

Table 6. Open call - overview

Purpose of the concept	Collect best practices from social partners and other organisations on Just Transition / Gender Equality / Knowledge and Skills in Electricity sector
Time frame for data collection	• Open call runs in April 2025 • Can be extended to May 2025, depending on the results
Forms of practices	• One-off or regular projects or initiatives • Policies or procedures (e.g., company, MS level)
Technical solution	• Online form in Alchemer survey platform, linked in a PDF invitation
Dissemination channels	• Sent via identified mailing list to Client's member organisations • Posted on the website and social media accounts of Client's organisations, Visionary Analytics • Shared with other identified relevant organisations (via email, social media, etc)
Language	English
Targeted participants	• Electricity sector social partners (employers' and employee organisations) • Civil society organisations, networks, education organisations, and other associations with a known focus on Electricity sector (or cross-sectoral initiatives)
Geo level	• Scope: EU-27 Member States • Levels: EU-27, cross-country, national, regional, local, company or school level initiatives / projects / practices
Relevance criteria	• Aims to solve challenges relevant to the project's objectives in at least one of the three topics (just transition / gender equality / knowledge and skills) • Targets electricity sector (e.g., workers, companies) either directly or indirectly, within other sectors (for cross-sectoral practices) • 'Signals' or indicates their success as some participants might provide practices that would not qualify as 'best' (e.g. no clear outcomes, lacking acceptance or overall not comprehensive information about its implementation and results). • Is recent, e.g. not older than from 2020-2025, with a focus on successfully finished practices or on-going but repetitive practices. • Preference will be given to practices involving Electricity sector's social partners (trade unions, employer organisations, their members or individual companies, workers groups)
Materials needed	• Email invitation • Project and Open Call description (pdf attachment/link) • Alchemer • Social media message • Mailing list
Expected result	• 15-20 practices in total (via Open Call), additional practices may be identified via other research methods

The call will be widely advertised through multiple channels and networks of contacts. Based on our experience, we estimate that stakeholders will need a minimum of one month to provide the information required, thus, given the project timeline, we suggest keeping it open in March-April 2025 and having May as a backup month during which the call can be extended, in case results are not satisfactory. The process may also include the provision of various clarifications to interested stakeholders in relation to the project and this call and repetitive reminders.

Incentives. To encourage participation:

- We will offer 2 bookstore vouchers for 70 EUR each for randomly selected submissions, taking into account comprehensive submissions (e.g., not one word). Vouchers will be bought for the bookstore that the winner will choose (e.g., for e-books, books, stationery, other material)
- Best practices will be featured in the final published research report and highlighted/shared during in-person project events, and other project activities for mutual learning. There will also be an opportunity to present the selected best practices at the in-person project events.

Non-response. We will send regular reminders to the mailing list and re-circulate social media messages (updating them every time with a new focus) to ensure that the call is visible. Once the Open Call and the collection of best practices via other research methods is finished, we will set up interviews with 5-7 selected relevant practices to go in-depth on their experiences. The selection will aim to target all three topics, ensure geographical variety (e.g., practices from different EU-27 regions) and levels of governance (e.g., practices from companies, social partner organisations, national projects).

Language. The call for practices and the form is in EN language. We will use Alchemer platform for the form implementation. In the form, participants will be informed that they can use other EU languages to fill it in. We will use DeepL to translate the answers.

Online form Template

Welcome to the Open Call for Best Practices in the EU's Electricity Sector!

This form is part of the "Towards Attractive Workplaces and a Just Transition in the European Electricity Sector" (AWJEES) project, implemented by social partners and co-financed by the EC. We are collecting **best practices** from social partners, companies, and organisations across the EU on Just Transition, Gender Equality, and Knowledge & Skills in the EU's Electricity sector. Please refer to the invitation letter for more information or check this description here: [PDF link].

Your contribution will help identify and share successful initiatives that support a fair transition, promote inclusivity, and strengthen workforce skills. The form takes up to 15 minutes to complete. We accept submission in English but you may also fill in the form in any language and your answers will be translated by the project team. If you consent to this at the end of your submission we may reach out to you after to clarify information about your best practice via email or an online interview.

As a thank you, participants will enter a prize draw to receive one of two 70 EUR bookstore **vouchers**. There will also be a potential opportunity to present the practices in the in-person events of the project. If you have any questions, feel free to contact Beatrice Leipute, Visionary Analytics at beatrice@visionary.lt

Table 7. Open Call – questionnaire

No.	Compulsory	Question	Question type	Scale/ dropdown list
0.	Y	I confirm that I have read the Privacy Statement of the Data Controller	Tick mark (if not checked, will not allow to continue the form)	-
1.	Y	In what country does the initiative that you are describing take place? If it takes place in more than one country, select the country that you are using as reference for your answers.	Dropdown list, single selection	List of EU-27 countries
2.	Y	What is the name of your organisation/institution?	Open field	-
3.	Y	What is the title of your best practice?	Open field	-

No.	Compulsory	Question	Question type	Scale/ dropdown list
4.	Y	Which of the project topics does your best practice refer to? Indicate all relevant.	Dropdown list, multiple selection	- Just Transition - Gender Equality - Knowledge and Skills
5.	Y	Select the level at which your practice is implemented	Dropdown list, multiple selection	- European - International (cross-country) - National - Sub-national/ regional - Local (e.g. municipality) - Organisation level (e.g., company/school)
6.	Y	What is the target group of your practice? Select all relevant from the list	Dropdown list, multiple selection	- Young people - Electricity sector workers - Electricity sector employers - Local communities and civil society - Policymakers - Other (please specify)
7.	N	Please provide the years of implementation for your practice (start – end year)	Dropdown list with years	Years 2020-2025 or ongoing
8.	N	How many participants did your practice include? Indicate different types, if any (e.g., school pupils, company workers)	Open field	-
9.	N	What is the total budget of your practice (incl. any co-funding from the EU, all sources)	Open field (numeric)	-
10.	Y	Please provide a brief description of your practice: the challenge it is addressing, objectives, key actions, participants.	Open field	-
11.	Y	What are the key results and/or impact of your practice? Briefly describe	Open field	-
12.	Y	What challenges, if any, were encountered in implementing the practice, and how were they overcome?	Open field	-
13.	Y	What are/were the key success drivers for implementing the practice?	Open field	-
14.	Y	What is/was the role of social partners (employer organisations and/or trade unions) in the implementation of your practice?	Open field	-
15.	N	Please provide relevant links to any information, and documents about your practice that we can use to further analyse it (in any language)	Open field	-
16.	Y	Upon completing this form, we may want to contact you to clarify your answers and/or obtain additional information. Would you be willing to share with us your contact details for a possible follow-up (e.g., email, online interview)?	Single choice binary (Yes/No), text fields	- Yes. - If Yes, please provide us with your contact details: name, surname; e-mail; telephone number - No
17.	N	Would you like to be informed about other study activities (e.g., focus groups, midterm workshop, final conference)?	Single choice binary (Yes/No)	Yes / No (joint with question 10, if 'Yes' to at least one – asks for contact details)
Closing	-	Thank you for submitting your best practice!		-

Invitation to the open call

Project and Open Call description

This document provides an overview of the Open Call process and background information about the project 'Towards Attractive Workplaces and a Just Transition in the European Electricity Sector' (AWJEES).

1. Open Call Overview

Why this Open Call? To achieve climate neutrality, the electricity sector is undergoing rapid transformation, driven by decarbonisation, digitalisation, and demographic changes. Anticipation of these changes and preparation for them is crucial in ensuring a smooth shift towards a more sustainable energy system. European social partners – both employers' and employees' representatives – play a critical role in ensuring a fair transition, fostering gender equality, and equipping workers with the knowledge and skills needed for the future as well as attracting youth to the sector.

To support these objectives, the AWJEES project is launching an Open Call to collect best practices from across Europe. These practices will help build a repository of successful initiatives that can be shared and adapted to strengthen the sector.

The best practices should be relatively recent and implemented within the past **5 years** (that is the period of 2020-2025). This criterion ensures the relevance of the experiences, showcasing their applicability to the current environment of the energy sector. Practices including social partners (Electricity trade unions and/or employers organisations or their members) will be given preference.

Who Can Contribute? We welcome best practices from the EU Member States:

- Electricity sector companies, industry associations, and trade unions.
- Civil society organisations and networks focusing on workforce development or gender equality.
- Educational and training institutions, non-formal education institutions - including those engaged in practices, for example, of upskilling workers for the sector, organising partnerships or activities for children and youth.

Submissions must **target the Electricity sector**[1] directly or indirectly (e.g., cross-sectoral initiatives with relevance to the industry). Practices should show have some form of evidence of being successful (e.g., accepted and clear outcomes, widely endorsed results, impact on participants, demonstrated change in the sector, replicated in different contexts). As we aim to collect **high-quality, transferable examples**, practices that lack clear outcomes or detailed implementation information may not be included in our final analysis.

The geographical scope of the Open Call is limited to the EU-27 Member States. Best practices and initiatives can be EU-wide, cross-country, national, regional, local, company, or organisations (e.g. formal or non-formal education institution) level. We seek to collect best practices from different EU regions and organisational levels. Non-EU practices may be considered, where relevant.

How to Participate? Participation is simple and quick! Submit your best practice via this online form. The answers will be overviewed and evaluated by the research project team. We will select a small number of representative practices (5-7 submissions) for in-depth interviews to gather further insights. Participation in these interviews is voluntary; your participation in the Open call does not commit you to taking part in an interview if you do not want to. You can fill in the form in your preferred language or reach out to the project team in case of related challenges.

The Open Call open until the **30th April 2025** and may be further extended.

Participants will be included in a prize draw to receive a **70 EUR bookstore voucher (two vouchers will be awarded)**. Additionally, selected best practices will be featured in the final project report and highlighted during project's in person events with a potential opportunity to present it in-person.

Mapping best practices is a crucial part of this project. The goal is to highlight practical, transferable solutions that social partners, companies, and policymakers can use to better navigate the changing environment of the electricity sector.

2. About the Project

"Towards Attractive Workplaces and a Just Transition in the European Electricity Sector" is a 24-month project co-financed by the EC (SOCPL-2023-SOC-DIALOG – Support for Social Dialogue) and led by **EPSU**, **industriALL**, and **Eurelectric**. The overall aim of the study is to identify the main challenges and best practices within the electricity sector in relation to just transition plans, gender equality, and workforce development. The study will focus on enhancing social dialogue by providing evidence-based recommendations and guidelines for social partners to better support them in relation to these topics. Read more about the project here.

Project Objectives

- Support fair transitions in response to decarbonisation and digitalisation, providing an overview of the main challenges affecting the electricity sector's contribution to the just transition. Map best practices and support the creation of guidelines for social partners to create/contribute to national just transition plans.
- Promote gender equality by addressing workplace imbalances and barriers, affecting the achievement of women in the electricity sector. Outline best practices supporting gender equality in the sector and create a set of recommendations for further actions.
- Identify approaches to enhance the attractiveness of the electricity sector and foster collaboration with educational institutions to prepare the workforce for future industry needs. Identify best practices implemented by social partners (employer organisations or trade unions) to introduce and teach young people about work in the sector.
- Strengthen social dialogue by providing evidence-based insights and practical recommendations.

To achieve these objectives the study will employ a variety of **methods**:

- A **literature review** is a central data collection method and will aid in summarising the challenges within the electricity sector and support the initial identification of best practice examples.
- **Interviews** with key stakeholders will highlight important insights about key challenges facing the electricity sector in relation to the relevant topics and provide best practice examples, serving as a foundation for further data collection.
- **Focus groups** will allow industry representatives to share their relevant experiences within the sector, addressing challenges and potential solutions related to the topics of interest.
- This **Open Call** for best practices will aid in adding to the collection of best practices, guaranteeing a better representation of geography and organisational levels.

For more information about the study and the Open Call, please contact:

- Beatrice Leipute (Visionary Analytics, Research Study Manager) – beatrice@visionary.lt
- Tuscany Bell (EPSU, Project Coordinator) – tbell@epsu.org

We look forward to your contributions!

This project is financially supported by the EC (Budget Line SOCPL-2023-SOC-DIALOG - Support for Social Dialogue).

Annex 5 – Focus Group Concept and Agenda

Focus group concept

Aims. This task features the organisation and implementation of **two online focus groups** with the purpose of collecting data on the challenges and potential solutions related to the three key topics of the study: just transition, gender equality, knowledge and skills in the electricity sector and best practices that address them. Initially, four focus groups were planned to be organised, however, due to lack of registrations, were merged and organised as two.

The aim of the focus groups is to gather relevant study stakeholders to share their insights in relation to the study objectives. A summary table below highlights the key information about this stakeholder engagement activity (see Table 8). In total, we propose conducting four focus groups.

Stakeholders. The invited stakeholder groups are outlined below. The numbers below indicate the maximum number of contacts identified so far. We will aim to have 15-20 participants per focus group, thus we are able to accommodate a maximum of 40 participants in all two focus groups. We identified a total of 123 relevant stakeholders to invite the focus groups:

- Primary groups (63 - indicative)
    - Employers' organisations (national level org., Electricity sector) – members of Eurelectric (27)
    - Trade unions (national level org., Electricity sector) – members of EPSU (12), industriAll (24)
- Secondary group (60):
- Civil society organisations (European level) (12)
- Education and training associations / agencies / authorities (European level) (19)
- Electricity/energy related, industry specific organisations / associations (European level) (19)
- Other organisations (European level) (10)

Each organisation will be requested to register a maximum of 1-2 participants (e.g., organisations may have more than one person who may be able to reflect on the questions). It is expected that not all organisations will respond to the call. In case all places will be registered for, the priority will be given to social partners (primary group).

All stakeholders will be invited to register for one of the four focus groups, given their date and time preference (availability, up to a maximum number per focus group). The dates and times vary, providing options on different weekdays and times (morning/afternoon). The aim is to mix employer organisations with trade unions to provide a platform for collaboration and co-creation for social partners. Alternatively, we may introduce separate focus groups – only for employer organisations and only for trade unions, however the research team believes that mixing would engage social partners in a dialogue and showcase diverse perspectives. Other secondary groups will join these two stakeholders to enrich discussions from different perspectives. In case of high interest, the priority will be given to the primary groups (participants will receive registration confirmation).

This approach also recognises that many representatives are likely to be generalists concerning the three study topics, making thematic divisions for the focus groups (e.g., a focus group on gender equality) less effective for capturing targeted insights.

Table 8. Summary

Aims	• Discuss challenges and opportunities for social partners in respective thematic areas (just transition plans, gender equality, knowledge and skills) within the electricity sector. • Identify and share best social partner practices already implemented or known • Reflect and collect initial ideas on the practical guidelines to be developed for social partners within the project scope

Mode	Online
Tool	MS Teams
Language	English
Duration	2 hours
Type of participants	Primary group: • Employers' organisations (national level org.) – members of Eurelectric • Trade unions (national level org.) – members of EPSU, industriAll Secondary group: • Civil society organisations (European level) • Education and training associations / agencies / authorities (European level) • Electricity organisations / associations (European level) • Other organisations (European level)
No. of participants	• 15-20 per one focus group, 30-40 in total • If there are less participants – breakouts will be smaller (min 3-4 people per breakout) or less breakout rooms will be organised
Registration	Via online form sent by email (VA sends to secondary groups, EPSU/industriAll/Eurelectric – primary group)
Handouts	Introductory brief of the workshop programme with background information for discussions
Agenda	See Table 8
Results	Focus group summaries to be shared with the Client and participants, key findings will feed into the draft and final reports of the study

Source: Visionary Analytics, 2026

Concept and agenda. We propose to keep the focus group approach and the programme uniform across all four focus groups (see Figure 11 and Table 9). Given the fully online setting planned for the focus groups, short, concise presentation, combined with our systematic approach to facilitation will ensure that participants stay engaged and attentive throughout, and will maximise our chances of gathering meaningful insights.

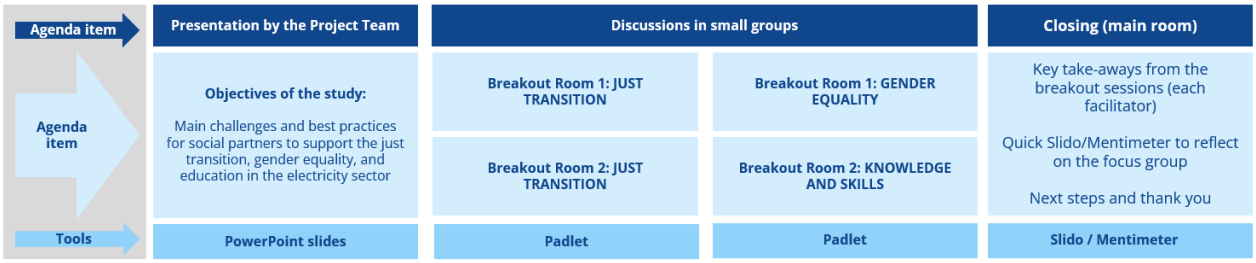
Figure 2 provides an approach we may employ for each of the focus groups. In this approach, we:

- Will organise a joint main room presentation, identifying collected challenges and best practices thus far for all three study topics (via desk research, open call, launch event, interviews)
- Split participants into breakout rooms twice:
- 1) all participants, split into three groups will be invited to reflect on the topic of Just Transition. As the topic is large and of crucial importance to social partners, it will be treated as a 'horizontal'-like topic, so that everyone can share insights on it. Three rooms will be identical, each with a facilitator to manage the discussion. Participants will be split into three rooms beforehand (based on the registrations), aiming to achieve diversity of participants in terms of stakeholder types (organisations) and geographical distribution in each room.
- 2) After a quick break, participants will be again split into three groups. This time, the topics will vary – one room might be on gender equality, second – knowledge and skills, third – again on gender equality (depending on the preference of the participants). We will register everyone's priorities in terms of topics and adjust each focus group depending on these choices. There may also be a continuation of Just Transition topic in one room, to continue the discussion.

Discussion in smaller groups (breakout rooms) will provide the opportunity for participants to discuss specific aspects more in-depth, based on the assigned discussion questions. A briefing note will be sent to participants before the focus groups, including the background information needed for discussion, focus group agenda

and its questions. In the end, facilitators will briefly summarise the key points from the discussions in the main room.

Figure 11. Our approach to focus groups



Focus Group Agenda

Table 9 presents a proposed focus group programme (analogous for each focus group).

Table 9. Focus group programme

Time (CET)	Agenda item	Detailed description
10.00 – 10.05 (‘5)	Welcome of participants and technicalities	Buffer for late participants. A slide on technicalities (e.g., muting, raising hands)
10.05 – 10.20 (‘15)	Presentation of preliminary findings of the study.	Presentation by the Project team containing the objectives of the study, main challenges facing the electricity sector with relation to three key topics: 1) just transition, 2) gender equality, 3) knowledge and skills. Best practices collected so far presented.
10.20 – 10.25 (‘5)	Breakout room discussion 1: introduction (main room)	Introducing the breakout room tasks, introducing Padlet, splitting into rooms
10.25 – 11.00 (‘35)	Breakout room discussion 1: Just Transition	Participants are split into three breakout rooms (5-7 participants per room). Each rooms is the same – focused on the Just Transition. Each room has a facilitator from the Project Team. Discussions follow the questions established (see below). Padlet is used to capture ideas and take notes. Padlet links provided in the chat
11.00 - 11.10 (‘10)	Technical break	Everyone is back to the main room, a slide announcing a technical break
11.10 – 11.15 (‘5)	Breakout room discussion 2: introduction (main room)	Introducing the breakout room tasks, splitting into rooms
11.15 – 11:50 (‘35)	Breakout room discussion 1: Gender Equality / Knowledge and Skills / Just Transition	Participants are again split into three rooms (5-7 participants per room), this time reflecting on different topics: Gender Equality, Knowledge and Skills. Depending on participants preference in the registration forms, there may be two identical rooms on one topic (e.g., two rooms are discussing Gender Equality, one – Knowledge and Skills). Alternatively, there may also be an extra room which will continue discussing the Just Transition (e.g., one breakout on GE, one – Knowledge and Skills, one – Just Transition). The final set up of topics will be decided based on the registrations for each focus group and study needs. Padlet links will be provided in the chat.
11:50 – 12:00 (‘10)	Debrief from the breakouts and closing	• Each breakout facilitator briefly presents the key takeaway from their room’s discussion (6 rooms x 1 min). We start with Just

Time (CET)	Agenda item	Detailed description
		Transition and continue with other topics as discussed in both breakout room sessions (6-8 min). • Participants are given a Slido/Mentimeter voting to individually reflect on the focus groups, add any additional thoughts and suggestions for the research going forward (5 min). • The focus group is closed with a brief introduction on the next steps in the research study and a thank you (2 min).

Source: Visionary Analytics, 2026

Questions in the breakout rooms. Each room will reflect a set of research study questions (preliminary). Specific angles / questions may be developed for the three different topics, e.g. for skills and knowledge – focusing on different education levels, for just transition – on skills gaps and mismatches. We will use Padlet with pre-filled challenges from the presentation so that participants can add their thoughts and reflections on their relevance, any opportunities and best practices (in line with the questions). In case participants are not sure how to use Padlet, facilitator will fill in answer on their behalf.

Registration and technicalities. To ensure sufficient participation, we will target more people than the forecasted number of focus group participants. Thus, the preliminary list of potential focus group participants includes more people than the expected number of participants. In case there are more participants than the capacity of the PT, preference will be given to Client's members (social partners) aiming for geographical balance within EU.

Attendance of the focus group will be invitation-based: to allow for effective management of invitations and registrations of participants we will use existing online registration tool Alchemer™ with automatic email campaign to send out the invitations. We will reach out to potential participants at least 2-3 weeks in advance to secure their participation. Closer to the event, the registered participants will receive the programme of the focus group (including questions to be discussed, any background information about the study) at least a few working days in advance. VA will send invitations to the secondary stakeholders, while EPSU/industriAll/Eurelectric will be invited to share the invitation with their members. All invitations and focus groups will be conducted in English.

Focus groups will be held on Microsoft Teams™ platform. These tools are well-known for participants and the PT which will ensure smooth organisation of the events. The chosen platform will be tested before the focus groups. The functionality of automatically dividing the participants into smaller online groups will be used to manage the breakout group discussions that will take place. The focus groups will be recorded. Each facilitator should locally record its breakout room and share the recording with VA after as such simultaneous recording to cloud is not possible. Registered participants will be asked to provide their consent via a separate consent form sent to them.

Results. In addition to the video and audio recordings, the PT will take notes during the entirety of all focus groups and their parts (e.g. main room and break-out discussions), reflecting comments given by the participants to be incorporated in the Draft and Final study reports. Automatic transcripts will also be used to make summaries of each focus group. Such summaries for all focus groups will be prepared in line with agreed summary templates (to be prepared by the PT). The PT will produce a stand-alone summary of each focus group, providing an overview of the main outcomes and comments made. Summaries (anonymous summary of discussions, not transcripts) of the focus groups will be sent out to the Client and also to the participants of each focus group to review and clarify any inconsistencies.

Annex 6 – Focus Group Summary

Focus group summary

This document summarises the focus group discussions that took place online on the 10th June 2025 (10:00 – 12:00 CEST) and 12th June 2025 (14:00 – 16:00 CEST) with study stakeholders. A list of participants can be found in the Annex.

Table 10. Focus group agenda

FOCUS GROUP AGENDA
Welcome
Presentation of preliminary findings of the study.
Introduction (main room)
Breakout room discussion 1: Just Transition
Technical break
Breakout room discussion 2: Gender Equality / Knowledge and Skills / Just Transition
Debrief from the breakouts and closing

Below, a summary of discussions per each study topic is presented.

Table 11. Focus group summary

Just Transition
Which of the identified challenges are the most relevant?
The following challenges presented by the research team were discussed: 1. Rapid transformation of the electricity sector (incl. shift towards renewables, increase in electricity demand). 2. Climate challenges (incl. risk to workers, risk to energy security). 3. Lack of comprehensive data on JT impact. 4. Impact of the JT on skill gaps and mismatches. 5. Lack of shared understanding of the JT and fragmented policies/regulations, high complexity. 6. No EU framework directive to anticipate and manage JT impacts. 7. Difficulties reaching agreements through social dialogue. 8. Challenges accessing and shaping EU fund spending. Participants in the focus groups discussed the importance of the different challenges presented and agreed that all of them are relevant issues that the sector must deal with. **Rapid transformation** (Challenge 1) of the sector was one of the most widely discussed challenges among the participants. To illustrate the issue, one participant gave an example of recent blackouts in Spain, which caused major disruptions, creating uncertainty and demonstrating unpreparedness for quick reactions related to the sector. One of the participants raised a concern that the old electricity infrastructure has not been rebuilt for 40 to 50 years, making it difficult to react to disturbances efficiently. This emphasised the importance of improving infrastructure to deal with unforeseen events. Another participant explained that the sector is rapidly shifting towards renewables and low-carbon solutions to achieve net-zero emissions, which raises two challenges. The first is that the current grid infrastructure may lack flexibility in capacity. The second is the difficulties of actively involving the employees and others affected by the energy transition process. The majority of participants emphasised that **rapid changes in the EU framework, regulations and legislation** (Challenge 5) create a fast-paced rhythm that is hard to follow, especially for social partners. One of the participants shared that this may result in a lack of shared understanding and fragmented policies, especially in companies operating in different countries. Participants agreed that different fragmented national regulations and interpretations of the regulations can complicate planning and alignment between countries. Moreover, it makes it difficult to reach agreements and compromises, not only considering counterparts but also parties inside

the trade unions. Another participant explained that the fragmentation and lack of clear understanding impact wider outcomes such as the creation of employee training systems, as they end up not being aligned with the industry's needs all the time, slowing down the ability to act quickly and efficiently. Another outcome mentioned was that the mismatch between training systems and industry needs, which is a result of fragmented policies, also prevents local, as well as private actors, from accessing funding efficiently when needed.

Concerning challenge 4, several participants discussed issues related to **skills mismatch and the shortage of skilled labour**. One of the participants raised the point that the shift demands new expertise, especially in the areas of digital technologies, renewable energy, and sustainable operations. The same participant explained that employees who are coming from fossil fuel industries lack the skills for successful adaptation. Mentioned complications included organisational outcomes, including reskilling programmes, hiring efforts, and employee retention, making supporting and creating a capable workforce harder. Another participant shared their experience that existing training programmes tend to be generic, without tailoring to specific needs and skillsets, while employees, especially the younger ones, are not given appropriate support to enter the career and increase their skills on the ground. Along with generic training, the training also tends to be slow, creating difficulties in rapid adaptation to the rapidly changing sector. Other points mentioned by the participants included that people sometimes lack training and must learn on the spot, as well as that the private sector is reluctant to invest in new skills, as it requires extra training, making it costly.

What key challenges are missing?

When discussing challenges that are missing, several participants in the focus groups pointed out the concerns related to the education system. One participant shared an insight that **school curricula do not encourage youth**, especially those between 10 and 15 years old or young girls, to engage in STEM-related activities, stimulating their interest in the field. Another participant agreed and added another issue, which is the **lack of nationwide guidelines** for the effective integration of STEM in mandatory school curricula, as the schools and other educational institutions are left to show individual initiative. Another participant highlighted the shallowness of the teaching, explaining that teachers at schools only present ideas about transition, power plants or wind turbines, without engaging in in-depth explanations that create a deeper understanding of the topic. Overall, the participants acknowledged the challenges related to education and noted it as one of the reasons why many students do not find the sector interesting and do not consider it for their future careers. Challenges related to school education are discussed further in the 'Knowledge and Education' section, below.

One of the participants shared another missing challenge, which was **territorial disparities within countries**. The participant pointed out that not every region has the same economic capacity to follow industrial reconversion projects. An example of Italy was provided, as some economically deprived areas in Italy may lack infrastructure, digital connectivity or an industrial base needed to attract new activities. The participant agreed that remote work is beneficial, but not enough, as the presence on the site is necessary.

Another participant noted **low retention of employees** as a challenge in the sector, explaining that the employees tend to leave the workforce early. The participant elaborated that the problem is especially significant because even though there is an increase in retirement age, employees do not want to stay in the sector and, as a result, switch jobs.

A participant emphasised local challenges related to **public misinformation about renewable energy** across media and internationally, which creates political and public resistance to change. The participant shared a recent example of wind turbines in the country and the initiative to build more of them. However, as explained by the participant, even a small number of individuals against a certain initiative is enough to stop a project related to just transition, leading to the termination of the wind turbines project. The participant discussed that people construct false, misinformed opinions, for example, that these sorts of initiatives might negatively affect their health, leading to opposition and hostility towards the projects.

One participant critiqued the **lack of a European vision** of what a just transition can bring. According to the participant, there is a lack of common understanding regarding just transition on multiple levels, including regional, national, and EU. This prevents the anticipation of the consequences of energy sector changes, and, as a result, it becomes difficult to design efficient future skills training. Moreover, the lack of shared vision extends to organisational levels, as companies demonstrate few initiatives to support the workers or increase their skills through guidance or training. The participant further emphasised that when organising training, it is essential to

tailor it to specific needs and to identify the new skills required, one must understand both the direction companies are taking and the broader industrial vision guiding the sector.

What have you been doing to overcome these identified issues?

One of the participants shared an example of a French initiative, which was a **skills observatory** launched in 2021. According to the participant, the project concerns several professional branches of French industry, to provide accurate and up-to-date figures on employment and training issues for social partners in the different sectors, notably including the electricity sector. Mentioned success outcomes included that the initiative was useful in building a clear vision of current and future challenges, internal employment and qualification.

Another solution shared by one of the participants was implemented in Spain. The participant explained the importance of an **agreement that was signed between the Ministry of Labour and the electricity companies** of Endesa, Iberdrola, Naturgy, and EDP. The purpose of the agreement is to offer retirements or record relocation within the group companies, while creating an employment pool from the remaining workers, in which they receive specific training, making positive contributions towards their skill set.

Following this example, a participant from **Italy** shared a similar initiative. The participant explained that in September 2024, the **Bilateral Commission**, composed of six members of the companies and six members of the unions, started examining the impact of digitalisation, technological innovation and energy transition on traditional electrical professions. It was established within the national electricity sector by the Collective Agreement. The outcomes of this Commission included developing a survey of new jobs, emerging skills in the Italian electrical sector, identifying areas for pay, new knowledge, competences and abilities for the workers.

Another participant from Italy shared another initiative in the country, which is the programme "**Repurposing**". According to the participant, the programme reflects the **commitment to transform underutilised asset into new hubs of renovation, sustainability and value for local communities**. The participant emphasized that the programme is evenly dispersed across local 35 industrial sites and local communities.

If you are not engaged in any good practices, what prevents you from implementing similar initiatives?

While in some cases, such as Spain's initiative, the government was involved, one participant strongly emphasised the need for **stronger government support**, both local and central, to achieve investment for the workforce, training and initiatives in the green industry. The participant highlighted that without the involvement of all sides, it is extremely unlikely to create sustainable change.

Another participant shared the need to **address individuals' resistance to change**, mostly through education. However, the participant discussed that school education is not enough, nor is educating only the youngsters. People hold misconceptions or doubts regarding just transition and how it is implemented in practice; therefore, wider groups such as parents of the students or the local community need to be involved to make the education more effective and reach broader social groups.

How can social partners and/or other organisations contribute to and develop just transition plans?

A common theme that was discussed by the participants was strongly related to the **role of the trade unions** and their participation in supporting the employees in a couple of ways. Firstly, one participant mentioned that the unions must act as a motivating force to inform the employees, as well as push them to learn new skills to adapt to technological changes. The importance of digital transition was also highlighted by another participant. Additionally, participants emphasised the need for job and skills training, focusing on job retention and having the best possible adaptation of training provision in the regions. Secondly, another participant, while talking about the role of the unions shared that they should actively engage in shaping regulatory frameworks by influencing legislation in European institutions and national governments to reach fair agreements, as a way to promote transparency, strengthen social governance through collective agreements across multiple levels, including territorial, company and European levels.

Participants also explored the **role of the social partners.** One of the participants discussed that they should help to negotiate collective agreements for workers affected by changes in conditions, such as redeployment or phase-out of fossil power plants, due to the transition. The importance of agreements was also emphasized by

another participant, who pointed out that having the best agreements in place helps to accompany the employees and smoothens the transition without leaving somebody behind. Social dialogue also enables better coordination with national ministries and regional authorities, as well as ensures that industrial change is aligned with available funding opportunities and territorial development plans.

Another **role of governing bodies and EU-level actors** was discussed by the participants. One of the participants shared an insight that government organisations should be involved in **setting up funds** and gave an example that they could be used in retraining. Another suggestion coming from another participant concerned the need for a **democratic European model of corporate governance** through employee participation on boards of directors and supervisory boards, fostering social dialogue at different institutional levels and creating a shared vision. The participant emphasised the importance of it by explaining the benefits of this, which included the ability to mobilise all stakeholders to give appropriate responses to the issues raised. Another suggestion from a participant included the need to shape the regulatory framework by lobbying EC, the European Council and the European Parliament. Lastly, one of the participants expressed that political decision-makers need to work in collaboration with the unions, to achieve positive outcomes.

Gender Equality

Which of the identified challenges are the most relevant?

A list of challenges identified by the research team included:

1. The energy sector (including electricity) is male-dominated.
2. Women are often limited to managerial roles.
3. Few women in leadership positions.
4. Women tend to require different working arrangements.
5. Perceptions of social norms and gender stereotypes.
6. Lack of gender targets and unsupportive workplace policies.
7. Gender pay gaps and lack of transparency.
8. Absence of women role models.

Among different challenges, several participants emphasised the presence of **gender pay gaps** (Challenge 7), making it one of the most important points in one of the breakout room discussions. One participant urged to create more understanding about the numbers and the reasoning why women are underpaid, emphasising the overrepresentation of women in lower-paid roles and pointing out biases in pay negotiations, which further contribute to the gender pay gap. In addition, anti-discriminatory legislation alone is not sufficient in eliminating the pay disparities.

Another significant challenge discussed in the breakout rooms was related to **leadership opportunities** (Challenge 3) for women. A participant from Italy shared that even though Italy has good anti-discriminatory laws, this does not prevent women from reaching the glass ceiling in their industries. Another participant shared that there is a lack of management quotas for women in the workplace. Another participant shared a similar insight regarding the challenge of a lack of management opportunities for women. An example was shared that nowadays, more women enter education related to STEM, but they still do not receive the same opportunities as their male counterparts, for example, to move into management positions. As a result, women do not have the same career progression, which cannot be explained solely by career breaks or maternal leave, and so highlights the need to **improve work culture**.

Several participants also discussed that the **energy sector is male-dominated** (Challenge 1), creating another issue for reaching gender equality. While, as previously mentioned, a significant portion of the management comes from STEM fields, which in most places are still male-dominated, the phenomenon creates a bottleneck, preventing women from reaching high positions. Consequently, men are promoted for most of the leadership and management positions. Another participant agreed that there exist many technical job profiles where most of the employees are men.

Several participants mentioned the importance of **gender quotas** in the workplace, which is related to Challenge 6. However, one of the participants brought up a different perspective on the quotas, suggesting that they should

be used more as a tool, rather than a solution to the challenge. The participant explained that for now, the quotas are a mechanism used to identify qualified women who could potentially be overlooked; however, more attention needs to be paid to make the career choices visible, increase engagement in schools and visibility of role models. As a result, this would encourage more people to join the sector.

One participant advocated for a more nuanced understanding of Challenge 8 related to an absence of women role models, arguing that the models exist, but there is a lack of effort in **raising their visibility.** Therefore, the participant emphasised the need for communication, sharing stories to reach a wider audience and reaching the gender targets.

What key challenges are missing?

Despite all the mentioned challenges, one participant brought in another idea that **the health and safety of the employees**, also from a gender perspective, is often overlooked. The participant emphasised the need to focus on several aspects of this issue. This included focusing on the impact of domestic and intrafamily violence in business, as it can heavily affect job performance, mental health and safety at work, as well as pay attention to reproductive and sexual health for women and men, and how it is affected by the workplace.

Another participant mentioned an additional challenge, which was that **the lack of women in the vocational training** reinforces existing overrepresentation of men in the field and minimises the ability to fulfil gender quotas.

What have you been doing to overcome these identified issues?

Participants identified several nationwide initiatives, as well as company-level programmes, aimed at tackling gender inequality in the workplace in the energy sector. A participant from France explained an **agreement that was signed in 2002 between the trade unions of the electricity and gas**. According to the participant, the agreement stimulates innovation within companies in the sector and communication about that, intending to develop gender equality in all professions and career paths. Another French initiative shared by the same participant was related to **a survey** that was collected during International Women's Day, where the responses were used in negotiations within the sector, and the efforts to create an inclusive and equitable work environment. Lastly, the participant mentioned the programme "**Women in Nuclear**", which was significant in promoting women in the nuclear and renewable energy sectors.

One of the participants explained **Spain's practice of making equality plans mandatory for all companies**. According to the participant, this agreement is signed by all the unions, creating a legal requirement and more legal protection. Practices in Spain include flexible hours, work-life balance policies, sponsoring women's sports and social causes, as well as great maternity/paternity leave support, as employees receive a salary for a full year, with a reduction in their work hours. Additionally, the participant shared promising insights, as the statistics showed that the number of women in the sector has doubled since 2014.

A participant representing the Enel group shared a **Diversity, Equity, Inclusion & Belonging (DEIB) programme** and its targets of reducing the pay gap within the company, which shows successful outcomes as Enel leads as one of the top 100 companies in terms of gender equality. The participant emphasised that the structural environment of a company, such as the levels of transparency, standardisation of salary demands, can play a role in the pay gap, while the DEI programmes are helpful tools to combat the issue. Based on the information provided after the focus group, Enel SpA, Enel Italia and Enel Sole have obtained the UNI/PdR 125:2022 Gender Equality Certification, a tool introduced by the Italian National Recovery and Resilience Plan (PNRR) to promote inclusive workplaces and reduce gender gaps. The certification, granted by an external stakeholder, requires compliance with a structured system of 33 qualitative and quantitative KPIs across six areas: culture and strategy, governance, HR processes, career opportunities, pay equity, and work-life balance. Dedicated Gender Equality Policies and Steering Committees ensure robust governance, systematic monitoring, and continuous alignment with certification standards.

If you are not engaged in any good practices, what prevents you from implementing similar initiatives?

One participant reflected on the existing barriers that prevent the successful implementation of various programmes or reaching collaborative agreements. The participant advocated for increased transparency in company policies as a useful measure to reduce the existing gender pay gap, especially given that countries are legally obliged to prevent gender discrimination.

What actions need to be taken by social partners and/or other organisations to address the gender quality topic?

One proposal that was emphasised by one participant included the use of **collective agreements that address salaries**. The participant explained that in this way, individuals are not left alone to deal with salary negotiations, which could reinforce the existing gender pay gap, and instead, they are supported by existing arrangements.

Another participant called for **building bridges between the renewable and nuclear sectors**, administering public surveys to help identify the barriers and potential solutions, and encouraging more women to become involved in the energy transition sector.

Knowledge and Skills

Which of the identified challenges are the most relevant?

Common challenges in the sector described by the research team and presented to the participants of the focus groups included:

1. Low awareness amongst young people of what the Electricity sector is (including its role in the just transition).
2. Low awareness amongst young people of the different career paths available (especially, outside of STEM).
3. Lack of role models/youth representation.
4. Curriculum mismatches with skills needed.
5. Lack of coordination between stakeholders.
6. Misconceptions about working conditions.

Several participants in the breakout room discussions recognised Challenge 1 of **low awareness among young people** of what the electricity sector is. For example, a participant from Belgium shared the situation of the country and explained that for most young people, the career paths of the sector are not clear and not visible enough. Another participant added that there is a lack of role models and good experiences, limiting the visibility and attractiveness of the sector. A similar point was raised by one of the participants who shared the situation in Slovenia and stated that young people nowadays show a lot of indifference toward the energy sector. The participant added that instead, the younger population chooses other career paths, such as law, to make more money, have a more convenient job with possibilities of working from home. Another EU-level representative argued that there is a lack of information on what the energy transition brings and how it functions, as well as the existence of heavy emphasis on the minuses, with benefits often being left out. Therefore, these reasons make the energy sector less attractive to the youngsters, who are yet to enter the workforce. However, this side was not supported by all participants. Examples of coming from representatives of Spain and Sweden showed that in those countries, the interest among young people is growing due to good job security levels. However, education and training opportunities for these young people were not available due to a lack of training schools.

The majority of the participants agreed that one of the most important challenges is related to **structural issues within education** (Challenge 4). For example, a participant shared an example of Sweden and highlighted that the country does not have enough training schools for young people to get the necessary skills to enter the electricity sector. The participant explained the disparity between the need to increase the workforce by 8,000 people by 2028 and the country having only two training schools, with the government not taking sufficient action. Another participant from Spain agreed that there is a need to promote vocational schools, collaborate with universities to promote studies leading to careers in the sector. Another point coming from a participant from

Slovenia suggested the need to change the school curriculum in all European countries and elevate its quality, considering important points for the energy sector.

Another issue raised was the **lack of coordination between stakeholders** (Challenge 5). One participant highlighted the need for greater collaboration between industry and schools, for example, increasing involvement of industry, having meetings, and going to schools to elevate the sector to a higher level of visibility.

What key challenges are missing?

One participant explained an additional challenge of **geographic and demographic disconnect**. According to the participant, some companies in Italy are far from where young people live, and whereas remote work is beneficial, physical presence while working in the sector is necessary. Additionally, the participant explained the problem of an ageing population in Italy, as the country has a higher number of older than younger people, reducing the size of the possible workforce in the future.

What have you been doing to overcome these identified issues?

A significant part of the participants shared their experiences or examples of the actions taken to address the existing problem, most of which have involved direct collaboration with educational centres. One participant shared an existing **collaboration between the University of Seville and Endesa**, which offers a Master's programme. Some teachers in the programme come from the university, while some are from the company, creating a balance between academic and practical skills, and, as a result, a lot of the students end up being hired at the end of their studies.

A similar practice was shared by a participant from Italy, where employers from companies such as Enel collaborate with technical and vocational schools to provide basic training to students. The students are later hired in their fourth and last year of schooling.

Another participant from Lithuania shared a project, **"Energy Smart",** developed by Ignitis Group, in which professionals in the field visit schools and introduce the electricity sector to students in an engaging, age-appropriate way to demystify the industry and its relevance.

One more example included a programme **"Back to School"** by the company Enel, in which women engineers visit their previous schools to meet the younger generation and spread the message about the scientific world, increasing the visibility of the sector and encouraging young girls to choose the field for their future.

Lastly, another participant illustrated Enel Italia's "Energies for School" project, which organised open days at 130 Italian technical schools to deepen understanding of the sector and its job and training opportunities. This event brings together students, teachers, and Enel's partner companies, offering a 120-hour training programme for final-year students. The training programme is designed by Enel for employees of its partner companies. After completing their schooling and training, the students are hired by Enel's partner companies. Not only does this project increase the visibility and attractiveness of the electricity sector and technical schools, but it also helps different parties of the sector – supports recruitment for the companies and job search for the newly graduated students.

One of the participants shared the example of Belgium and explained that the **joint sectoral training fund, together with the employer and employee representatives,** developed a practical exam which assesses technical competencies and can be taken voluntarily. If young people pass it, they get a recognised certificate that has a high value for their CV, while at the same time, they get the necessary knowledge and skills to get a job. According to the participant, the practice was useful in integrating sector-level standards into school education.

If you are not engaged in any good practices, what prevents you from implementing similar initiatives?

The **lack of involvement of the government** was mentioned as one of the barriers to implementing successful initiatives. One participant explained that while unions try to collaborate with high schools and universities, it is hard to achieve significant results without active involvement from the government side. According to the participant, one solution to this is to pressure the government more to take action to create more schooling opportunities.

What should be done by social partners and/or other organisations to attract knowledge and skills to the sector and increase awareness amongst young people in secondary education?
The participants emphasised the need to **make the sector real and relevant for young people**. Some of them emphasised further need to **send engineers to schools** for educational purposes to talk to students, especially those from underrepresented groups. Another suggestion coming from another participant was to increase **collaboration between social partners and companies by co-designing programmes,** promoting technical careers in schools and supporting the dual education model. One more participant shared the idea of implementing **open days** to reach students and increase visibility. One of the participants suggests **creating an exam** that can be voluntarily attended, based on the existing example of Belgium described above. In this way, training and skills can be implemented in the formal education, increasing individuals' employability later.
What should be done by social partners and/or other organisations to attract knowledge and skills to the sector and increase awareness amongst young people in other levels of education?
One participant emphasised the importance of **interactive workshops** for children in primary schools, as these methods help increase their understanding of sustainability and energy. Another participant agreed with this idea, explaining that solely higher education will not solve the problem and that children need to be taught what energy is at earlier educational stages, such as primary schools. One of the examples the participant gave was encouraging the engagement and understanding of the energy sector through **attractive methods, such as mobile app applications using game formats** or other interactive and stimulating ways. Moreover, the need for more **involvement in primary schools** was highlighted and the importance of consistent use of open days to understand work in the electricity sector, rather than holding them as one-off events.

Table 12. List of focus group participants

No.	Focus Group	Name	Country	Organisation	Stakeholder type
1.	1	-	Italy	-	Company
2.	1	David Pena	Spain	AELEC	Electricity Association
3.	1	Elizabeth Neau	France	CFE-CGC Energies	Trade Union
4.	1	Hans Diedrich	Spain	CCOO INDUSTRIA ESPAÑA	Trade Union
5.	1	Luigi Sedran	Italy	FLAEI CISL	Trade Union
6.	1	-	Sweden	-	Trade Union
7.	2	Benjamin Oudet	France	CFE-CGC Trade Union	Trade Union
8.	2	-	Slovenia	-	Trade Union
9.	2	Emanuela Preiti	Global level	FLAEI CISL	Trade Union
10.	2	Fabrizio Zaccheo	Italy	Enel Group	Company
11.	2	Giuseppe Macrì	Italy	Enel Group	Company
12.	2	Halina Jagielska	EU-level	European Youth Energy Network	Electricity Organisation

13.	2	-	Belgium	-	Trade Union
14.	2	Jacopo Piccagli	EU-level	SolarPower Europe	Electricity Organisation
15.	2	Jurga Subačiūtė-Žemaitienė	Lithuania	Lithuanian Industry Trade Union Federation	Trade Union
16.	2	Lavinia Ferri	EU-level	Enel	Company

Annex 7 – List of All Collected Best Practices

Table 13. List of all collected best practices

No.	Best Practice Title (EN)	Lead organisation	Dates	MS	Brief description
Topic 1: Just Transition Plans					
1	The Asturian Observatory for a Just Transition	Directorate-General for Energy and Mining of the Government of Asturias	2019 – ongoing	ES	The Just Transition Observatory of Asturias (OTJA) is a public initiative, led by the Government of the Principality of Asturias in collaboration with different regional entities, which aims to be a tool for citizen participation and dissemination of the Just Transition process in which Asturias is involved. By fostering engagement with social partners and leveraging scientific methodologies for data collection, the Observatory is paving the way for a more equitable and assertive transition in employment.
2	Future Plan for Andorra	Endesa	2022 – 2027	ES	Endesa outlined comprehensive plan, focusing on renewable energy development and economic revitalization. This initiative is expected to create approximately 6,300 jobs during the construction phase and establish 500 permanent positions by the end of 2027, thereby supporting the region's transition to a sustainable energy future.
3	Just transition in the closure of coal power plants	CCOO Industria	2020 – 2035	ES	The closure of thermal power plants includes the relocation of all affected personnel, training to adapt to new jobs, and the creation of new businesses in the areas affected by the closures. A total of 2,740 workers are affected by the closure of 15 thermal power plants and related auxiliary companies, located in Aragon, Andalusia, the Balearic Islands, Castilla y León, Galicia, and the Principality of Asturias.
4	Commitment to the Development of Employment and Skills (Engagement de Développement de l'Emploi et des Compétences (EDEC))	French Electricity Union (Union française de l'électricité)	2018 – ongoing	FR	This scheme proposed by the French government allows to conduct precise studies on present and future job numbers and impacts of a sector (here the electricity sector). After getting this picture, some actions are recommended and then implemented by various actors in order to solve some issues like skills shortages, need to open jobs to women, how to accompany workers whose jobs are strongly impacted by the energy transition.
5	Photovoltaic panel Installer	Enel Italia spa	2021– 2024	IT	To meet the demands of skills during energy transition, Enel created a course for workers specializing in the installation of photovoltaic panels with a theoretical part and a practical part for the total duration of about 80 hours. With this project Enel increase the availability of qualified staff, improving quality of workers and reduce safety and environmental risks. Nearly 200 people attended the course.
6	Higher Technological Institutes (Istituti Tecnologici Superiori)	Enel Italia spa	2021 – 2026	IT	To address the skills gap in the energy transition, Enel co-designed a specialized postgraduate course on renewable energy and storage systems. Developed with fellow engineers, the 1,800-hour program combines theoretical training and hands-on experience, with around 50% dedicated to internships. Courses are led by industry experts and professors. Delivered through an ITS Foundation, comprising a university,

No.	Best Practice Title (EN)	Lead organisation	Dates	MS	Brief description
					high school, municipality, and partner companies, the program is publicly funded and aims to promote renewables, reduce the skills mismatch, and train job-ready professionals.
7	REJEnerAXion	Fondazione Di Vittorio	2022 – 2024	BE, FR, DE, HU, IT, SK, ES, PL	REJEnerAXion aimed to study the impacts of the clean energy transition on employment, working conditions, and socio-environmental factors while analysing industrial relations and social dialogue across key European countries. The project seeked to enhance stakeholder expertise, identify challenges and best practices, and provide practical recommendations for a just energy transition in Europe.
8	Skills observatory (Observatoire Compétences Industries)	OPCO 2i	2021 – ongoing	FR	It is a platform serving 29 professional branches of French industry, aiming to provide precise and updated figures on employment and training issues and to provide tools to anticipate the evolution of skills needs. It assists and guides employment-training strategies. The role of the Observatory is to produce tangible and concrete elements of knowledge, which will allow the social partners of the professional branches, companies and public authorities to build a substantiated vision of the present and future issues in terms of employment and qualification in industrial companies, leading to more informed decisions.
9	Agreement: Fair Energy Transition for thermal power plants in closure	Ministry of Labour, Iberdrola, Naturgy, Endesa, EDP	2020 – ongoing	ES	The main objective is the maintenance of employment in the territories and their economic and industrial revitalisation. The parties commit to supporting workers and territories in the areas affected by the closure of 15 thermal power plants. As a result, the industrial and energy projects promoted by the energy companies that own the plants represent an estimated job creation of 2,276 long-term jobs. The deployment of these projects, which are at different levels of maturation, involves more than 6 billion in private investments. More than 960 million in aid has been granted in just transition areas from the ITJ and the IDAE. Job exchanges and training have been enabled.
10	Generation Climate Europe	Generation Climate Europe	2019 - ongoing	EU-level	Youth led environmental organisation working with the European Trade Union Confederation. GCE creates a platform for the youth to advocate for a just and green transition in Europe. It envisions a system that respects human rights and the planet, that includes the voice of youth, and acknowledges our common, but differentiated responsibility in achieving a carbon-neutral and sustainable world.
Topic 2: Gender Equality					
11	MÜKAD Student Scholarship	Association of Women Engineers and Architects (MÜKAD)	2018 – ongoing	BE	MÜKAD provide scholarships and mentorship support to women studying undergraduate programs in Faculties of Engineering (including those willing to work at

No.	Best Practice Title (EN)	Lead organisation	Dates	MS	Brief description
					the Electricity sector) and Architecture at public universities who need financial assistance. The goal is to support as many women students as possible.
12	Girls' Day	Kompetenzz	2001– ongoing	DE	Girls'Day is a nationwide career-orientation project for girls. On Girls'Day, girl students aged 10 years and older learn about professions and subjects of study. The girls get to know apprenticeships and courses of study in IT, crafts, natural sciences and technology, in which women have so far been rarely represented. They also meet female role models in leadership positions in business and politics. The aim is to expand the range of career choices among girls and young women, especially with regard to STEM professions and subjects.
13	Equality Platform for the Energy Sector	EC	2021 – ongoing	EU	This is part of the EU's broader commitment to promote gender equality and inclusion across various sectors, including energy. The platform was designed to help address the underrepresentation of women and other marginalized groups in the energy sector and to promote a more inclusive, diverse, and equitable environment.
14	The Grid Schools for the Energy Transition	Enedis	2023 – ongoing	FR	The Electrical Grid Sector Skills Initiative, launched in 2023 by Enedis, RTE, and other partners, addresses the growing recruitment and skills needs in the energy transition. The project focuses on expanding and improving training programs to meet sector demands, promote gender equality, facilitate career transitions, and enhance social inclusion. It also aims to align education with industry needs and attract young talent through awareness campaigns, immersive tools, and internships, supporting both sector growth and the decarbonisation of the French economy.
15	Women in Energy	WONY	2017 – ongoing	EU	Women in Energy is a non-profit association with the aim of increasing the proportion of women leaders in the energy sector, not only in Hungary, but also in the CEE Countries. WONY provides guidance and training, networking opportunities and programmes that aim to foster career development of women both for those that already work in the sector and for women who are interested in joining it.
16	Collective agreement about parenthood and work-life balance	Enel Spa	2025 – ongoing	IT	Within Enel's the Italian perimeter there is a strong tradition of collective bargaining about parental leaves and work life balance, which has progressively introduced many improvements beyond what is required by law. The collective agreements signed in recent years have introduced significant initiatives to support employers and family and work-life balance. The main objective of these measures is to support employees in a delicate phase of their personal and family life.
17	Back to School	Enel Italia Spa	2023 – ongoing	IT	Back to School is an initiative aimed at addressing the persistent gender gap in STEM fields. The project's goal is to empower women in high schools to pursue STEM studies and careers, promoting gender equality. Key actions include inspirational talks, career counselling, and shadowing experiences organized by Enel's womenSTEM

No.	Best Practice Title (EN)	Lead organisation	Dates	MS	Brief description
					professionals (mentors). A national challenge was also launched, awarding scholarships to the most outstanding STEM project proposals by students.
18	Ignitis Diversity, inclusion and wellbeing framework	Ignitis	Ongoing	LT	Ignitis promotes gender equality through the #EnergiseEquality initiative, using the UN's Barbershop Toolbox method to lead inclusive discussions. They support women in leadership via inclusive recruitment, mentorship programmes in collaboration with Women Go Tech, and visibility efforts for women experts. They also ensure gender-balanced shortlists and job ads.
19	She-nergy	Enerjisa Distribution Companies	2023 – ongoing	TR	She-nergy is a program organized to highlight the advantages of working in the electricity distribution sector and to encourage participation in this field, primarily targeting female engineering students (approximately 15% in Turkey) and all Electrical & Electronics Engineering students across universities in Türkiye. One of the key features of the program is promoting broad participation and inclusivity through the publicly available webinar sessions, tea talk events held with the winners of the quizzes conducted during the webinars, and the project process involving the participation of Electrical & Electronics Engineering students from various universities.
20	Gender Equality Research Project in Türkiye's Energy Sector: Women's Employment – Global and Local Dynamics	Green Collar Women's (YEYKAD) Association	2023 – 2024	TR	This study was carried out in 2024 in collaboration with the Green Collar Women's Association (YEYKAD) and the German Energy Agency (DENA) and aims to reveal the current status of gender equality in the Turkish energy sector. The research was conducted using survey data from 25 companies in the sector and semi-structured interviews with 14 women employees and managers. The project provides an in-depth look at women's employment status, career development opportunities and sexist attitudes.
21	Girls in Energy	Shell	2010 – ongoing	UK	Girls in Energy is a year-long engineering course for 14 to 17-year-old high school students, sponsored by Shell and delivered in partnership with North East Scotland College (NESCol) and Fife College The course is a mix of classroom study, industry visits and workshops, and students gain a National 5 (SCQF Level 5) in Skills for Work - Energy.
22	Agreement: Professional Equality	The Electric and Gas Industries Branch (IEG)	2002 – ongoing	FR	The agreement was signed in the Branch and employers committed themselves to address and proactively solve existing gender imbalances, with the aim to achieve balanced representations of men and women and at all levels of organisations. The agreement was updated several times.
23	Women in Nuclear	French Nuclear Society	1993 – ongoing	FR	The initiative is organised in 8 areas, aiming to: develop gender diversity by inspiring women to join the nuclear field; explain the interest of all nuclear applications, especially as a low-carbon energy source; promote sharing between women's

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					networks through concrete actions such as mentoring. It has over 300 members, and continues to promote women in the nuclear and renewable energy sectors.
24	Mandatory company equality plans	Spanish Government	2020 – ongoing	ES	According to article 46.1 of the Organic Law of March 2007 for effective equality between women and men, an Equality Plan is "an ordered set of measures, adopted after undertaking an assessment of the situation within a Corporation or Company, which aim to achieve equal treatment and opportunities for women and men, and to eliminate gender discrimination. Any company that has more than 50 employees is legally obliged to develop concrete equality objectives and ensure that equality is obtained in various areas, including career advancement, selection and recruitment, remuneration, etc.
25	Diversity, Equity, Inclusion and Belonging (DEIB) programme	Enel Group	Ongoing	International	The policy sets the strategic and organisational framework to guide Enel's initiatives and projects in matters of diversity, equity, inclusion and belonging with the mission to foster and tangibly drive the continuous improvement of global corporate environments and decision-making processes, starting with those related to human resources. The policy includes ten guidelines for translating DEIB principles into concrete actions, particularly in the areas of parenting and caregiving support; intergenerational exchange; gender and pay equity; cultural integration; inclusion of different abilities, neurodivergent conditions and vulnerability; and respect for sexual orientation and gender identity. Recognizing and valuing each individual's uniqueness, and ensuring fair and respectful treatment based on merit — with consideration for performance, commitment, and alignment with Enel's values — represent the foundation of our Policy.
26	Attracting women to the electricity sector	Seko, Service och kommunikationsfacket	2023 - 2024	SE	In 2023–2024, Gotlands Elnät AB, together with the local union Seko, launched a training and recruitment initiative to address gender imbalance in Sweden's electricity sector. The programme advertised five trainee positions requiring no prior experience and explicitly encouraged women to apply, combining paid learning with practical on-the-job training. It attracted 162 applications, 30% from women, and successfully recruited five participants (four women and one man) who are now training in technical roles. Active social dialogue with the union ensured the initiative's legitimacy, while clear messaging to women proved crucial in overcoming barriers to entry and promoting long-term gender balance.
27	Endesa PowerHer	AELEC	2022 - 2025	ES	Endesa launched the PowerHer initiative in 2022 as a national women's community to strengthen diversity, inclusion, and professional development. The programme promotes female talent by giving visibility to women in technical and management

No.	Best Practice Title (EN)	Lead organisation	Dates	MS	Brief description
					roles, while also creating mentoring and networking opportunities. With 310 participants, it combines awareness-raising, training, and support networks to foster equal opportunities and leadership growth.
28	Work-life balance	AELEC	2022 - 2025	ES	The work-life balance of our employees is of paramount importance to our company. In order to create a more flexible and equitable working environment, raise awareness and encourage co-responsibility and thus promote the well-being of employees and their families. To this end, it has a total of 62 work-life balance measures detailed in the Equality Plan included in its 6th Framework Agreement. Endesa is aware that these measures not only promote a healthy balance between professional and personal responsibilities but also have a positive impact on productivity and job satisfaction.
29	Mentoring for women	AELEC	2024 – 2025	ES	Mentoring for women is a programme designed to empower and guide women in their personal and professional development. Through one-on-one sessions with internal mentors, it fosters the development of key technical and leadership skills and provides guidance to advance their careers. Participants are connected with experienced female mentors who serve as role models.
30	Global Women's Network for the Energy Transition (GWNET)	GWNET	2017 - ongoing	Global	The Global Women's Network for the Energy Transition (GWNET) is dedicated to advancing the global energy transition by empowering women in the energy sector. Through interdisciplinary networking, advocacy, training, and mentoring, GWNET seeks to address gender imbalances in the energy industry and promote gender-sensitive actions that drive the energy transition worldwide.
31	Lights on Women	Florence School of Regulation	2017 - ongoing	IT	The initiative offers scholarships to women who contribute to innovative energy solutions, research and initiatives and accelerate a sustainable, diverse, resilient and just energy transition. It supports gender equality in the energy, climate, and sustainability sectors through four core actions: connecting women with opportunities via the Energybase platform, recognizing achievements through the LUCE Awards, empowering women with scholarships to advance their careers, and inspiring others by showcasing professional journeys on the Lights on Women Blog.
32	Women in Focus	CEZ Group	2022 - ongoing	Global	In 2022, CEZ Group launched *Women in Focus*, an international development programme designed for women in management positions. The initiative supports personal and professional growth through workshops with inspiring mentors and role models, while creating space for participants to share experiences. It builds on CEZ

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					Group's broader efforts to expand opportunities for women and strengthen their leadership potential.
33	W4RES	Q-Plan International Advisors PC	2020 - 2024	EU-level	W4RES #Women4RES is a 3-year-EU-funded project, which aims at scaling-up the involvement of women in the market deployment and uptake of Renewable Heating and Cooling (RHC) solutions via replicable support measures tested and validated across 8 European countries. The basic project concept stems from the recognition that women hold great promise as agents of change, helping us progress faster towards our climate and energy targets for 2030.
34	Procedure for Managers	INA	2021	HR	It is an objective and unbiased system, it ensures representation of all important competencies/areas of activities aimed to achieve efficient and professional performance of successors in their future managerial roles.
35	Cross Company Mentoring Program (7th Edition)	OMV Petrom	2021	Global	OMV Petrom implemented the Cross Company Mentoring Programme (7th edition) in 2021 under its diversity, inclusion, and non-discrimination department. The initiative facilitated knowledge sharing, skills development, and the creation of support networks across departments and companies, with 57% of mentees being women. Outcomes included an increase in women holding management positions (30.6%), cross-country mentorships (28%), and broader opportunities for leadership development. In total, the programme engaged six cross-company mentors and five mentees, fostering both professional growth and inclusivity.
36	Equality, diversity and work-life balance plan	Iberdrola	2025 - ongoing	ES	The main objective of Iberdrola's Equality Plan is to ensure real and effective equal opportunities between women and men across all levels of the company. It sets out measures to promote women's access to leadership positions, prevent workplace discrimination, support work-life balance, and foster inclusive practices for employees with disabilities. Additionally, the plan reinforces corporate social responsibility and raises staff awareness on equality, diversity, and shared responsibility, with compliance monitored by a dedicated equality committee. It aims to positively influence recruitment and workplace environment.
37	Accord d'entreprise	-	2019 - ongoing	FR	French legislation requires companies with an insufficient gender balance to engage in regular collective bargaining on pay and professional equality between women and men, including setting measurable objectives for reducing gaps in pay, promotion, training, and representation. Since 2019, companies with at least 50 employees must

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					publish a Gender Equality Index and implement corrective measures if scores fall below a threshold, with penalties for non-compliance.
38	Fifty-Fifty Projects	Engie	2020 - ongoing	FR	The initiative aims to transform managerial culture, promote equal opportunities, and combat sexism, with a central goal of increasing women's representation in management to 50% by 2030 through both internal promotions and external recruitment. To achieve this, the company implements parenthood policies, supports women's networks, monitors gender equality via professional indices, addresses pay gaps, and engages in partnerships and awareness campaigns.
39	Agreement on Active Labour Policies at the Electricity Sector Level	Bilateral Commission of the Electricity Sector on Training	2025 - ongoing	IT	Employer organisations and trade unions developed a 2024 agreement on active labour policies, applying to over 150 companies and 55,000 employees from April 2025, positioning staff training as a key tool for sector readiness. Key measures include digital training booklets to enhance skill portability, re-employability aligned with emerging sector needs, and initiatives to promote sector careers among students, supported through school-based programs, testimonials from industry professionals, dual apprenticeship models, and collaboration with universities and public bodies.
Topic 3: Knowledge and Skills					
40	Offshore Wind 4 Kids	Offshore Wind 4 Kidz	2021 – ongoing	BE	Through interactive hands-on activities both indoors and outdoors, this programme empowers kids to discover the science and technology behind clean energy solutions. The programmes include interactive demo days for families, engaging school workshops both indoors and outdoors, and team-building activities for students and professionals alike. It takes place in multiple countries where offshore wind is being developed or explored.
41	CEZ Group Network	CEZ Group	Ongoing	CZ	The CEZ Group is one of the largest energy companies in the Czech Republic, engaged in the generation, distribution, trade, and sales of electricity. It cooperates with over 100 secondary schools, VET institutions, and universities, organising events such as student programmes and internships.
42	Horizon Educational	Horizon Educational Group	2003 – ongoing	CZ	Horizon Educational designs, produces, and distributes STEM education kits and teaching materials to over 150 countries, enabling students from the ages of 6-21 to develop renewable energy technology skills through hands-on learning. The classroom equipment includes hydrogen fuel cell model cars, wind/hydrogen conversion kits, solar energy demonstration kits, and even complete full cell stacks. These are used by teachers to help students understand the key scientific processes behind the renewable energy technology of the future. The products come with lesson plans,

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					quizzes, and instructional videos – allowing teachers to make learning fun, innovative, and meaningful.
43	Forindustrie, the Extraordinary Universe (Forindustrie L'univers Extraordinaire)	French Electricity Union (Union française de l'électricité)	2023 – ongoing	FR	Educational and innovative tool to present the wealth of industrial professions to young people seeking guidance and a future, co-constructed by industrialists, the National Education system and the employment network. Directly inspired by video games, the new 100% digital season of Forindustrie, the Extraordinary Universe titled "The Secrets of the Technodôme" remains accessible all year round, even after the end of the Grand Défi.
44	Commitment to the Development of Employment and Skills: EDEC for the nuclear sector (Engagement de Développement de l'Emploi et des Compétences (EDEC))	French Electricity Union (Union française de l'électricité)	2021 – ongoing	FR	Collaborative initiative involving the French government, companies, and professional branches, including employers and trade unions. It focuses on mapping current and future jobs, skills, and training needs within the nuclear sector, while aligning education and training programs to meet these needs. The project also emphasizes apprenticeships as a key recruitment strategy and works to enhance the sector's attractiveness, with particular efforts to improve its image and increase women's participation in nuclear jobs.
45	The Embassadors' network scheme	French Electricity Union (Union française de l'électricité)	2010 – ongoing	FR	Approx 4000 staff members of our Union's companies commit themselves to go and present their job/company in schools enabling young pupils/students to get direct and lively testimony rather than theoretical presentations.
46	Energy for Growth	Enel	2022 – ongoing	IT	Training initiative that aims to prepare thousands of new technicians for the evolving energy sector, focusing on skills needed for power grid management and renewable energy. This program serves as a bridge between education and employment, supporting the energy transition while creating job opportunities for young people. The course lasts five weeks, with attendance in hybrid mode: distance and in person, at one of the test camps of the certified Training Institutes.
47	Energy for School	Enel	2021 – ongoing	IT	Energie per la Scuola is geared towards students in their last year at both technical and vocational institutes to direct them towards employment opportunities upon graduation offered by the Group's partners. The training course is free of charge and consists of a basic course totalling 120 hours inserted in the school curriculum during the fifth year that is a prerequisite for the acquisition of technical network jobs. It also includes a specialized practical course totalling 40 hours done after acquiring a diploma. The courses are provided by certified training institutes, in partnership with participating schools.

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48	Enel Innothon 2025	Enel Italia	2025	IT	National AI-focused competition launched by Enel Innovation and Recruiting Italy. Open to students and recent graduates from Italian universities, participants tackle one of six real-world challenges, ranging from grid loss detection to energy consumption optimization. Over three months, they develop technical solutions supported by Enel experts through online workshops. Finalists present their work at Pitch Day, with winners awarded a six-month internship in Enel's ICT or Innovation teams.
49	Dual engineering apprenticeship program	e-distribuzione SpA	2022 – ongoing	IT	Enel's University Apprenticeship Program bridges academia and industry through a dual model that allows engineering students to receive in-company technical training5while completing their degrees. Training areas include grid operation, IoT, automation systems, cybersecurity, and sustainable energy management. Developed with Roma Tre and L'Aquila universities, the program has involved 52 students since 2021, with the final cohort starting in September 2025.
50	Dual apprenticeship school-work program	e-distribuzione SpA	2017 – ongoing	IT	The main objectives of Enel's school-to-work apprenticeship model are based on the company's need to optimise the management of turnover in technical-operational positions. This model allows: anticipation of entry into the company already during the school period; aquisition right from school of the 'soft' skills essential for the world of work; opening of a constructive relationship between the company and the school in the modification of traditional training paths by providing for lab hours in the company; optimisation of the post-diploma training period for company professionalisation, making the most of school training and on-the-job training.
51	Professional apprenticeship for blue collars	e-distribuzione SpA	2020 – ongoing	IT	Enel's Grid Apprenticeship Program addresses the shortage of skilled blue-collar workers in electric distribution by training new technicians through a structured 3-year apprenticeship. Combining 640 hours of classroom learning with extensive field mentoring, the program focuses on safety, smart grids, automation, and IoT, preparing participants for key operational roles in a modernized energy system.
52	Energy for the future	Enel Italia spa	2022 – 2026	IT	Enel's Energy Education Project promotes awareness of the energy transition, sustainable consumption, and renewable energy among children, teachers, and families. Through five interactive workshops and an invention fair, children explore energy efficiency, circular economy, and STEM topics. The program includes teacher training and has engaged 800 children across 10 small villages, strengthening community ties and fostering environmental responsibility.
53	Specialized Technical Training – "Energies for	Enel	2022 – ongoing	IT	Enel's Energies for Growth program trains unemployed or inactive individuals to become skilled electrical network technicians through 200 hours of free, job-ready training. Energies for Schools targets final-year students in technical institutes, offering

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	Growth and Energies for Schools" Program				theoretical and practical courses to ease their transition into energy sector jobs, especially within Enel's supply chain, and support the development of renewable energy infrastructure.
54	Agreement: Active labour policies at the electricity sector level	Entire electricity sector	2025 – ongoing	IT	The agreement recognizes staff training as essential for managing the energy, digital, and demographic transitions in Italy's electricity sector. With support from universities and public bodies, it introduces a digital training booklet to improve workers' skill portability and employability. It also promotes sector careers in schools, encourages dual apprenticeships, and addresses the mismatch between job supply and demand. Implemented from April 2025, this agreement applies to more than 15- companies and 55,000 employees.
55	Agreement: New job skills, emerging skills and classification	Entire electricity sector	2025 – ongoing	IT	The bilateral commission examined how digitalization, innovation, and the energy transition have transformed traditional electrical jobs. The study identified around 70 new roles and work areas, reflecting changes in organization and the rise of fields like renewables, digital technology, and sustainability. A new classification system was introduced, linking job roles and pay to workers' skills and knowledge. All companies in the sector must now adopt this updated framework, replacing a structure that had remained unchanged for over 30 years. Implemented from April 2025, this agreement applies to more than 15- companies and 55,000 employees.
56	#EnergySmartSTART	Ignitis	2022 – 2025	LT, LV	This programme brings together energy companies' initiatives to address the shortage of energy specialists amidst the green transition. It visits schools and offers excursions to energy objects, scholarships for higher education, career guidance, and energy education for students and teachers (7-11 graders), with plans to expand nationally by 2025.
57	Energy School	edp	2017 – ongoing	PT	The Energy School is the EDP Foundation's programme to promote educational initiatives and is intended as a tool for teaching subjects such as renewable energies and targets to young people aged between 6 and 17. It operates as a free online platform for schools which makes use of new technologies and gamification, educational and fun content, which includes task cards, interactive games, experiment videos, escape rooms, and handicrafts.
58	SkillsTransition programme	Shell	2022 – 2035	UK	The Shell UK SkillsTransition programme is an initiative aimed at equipping individuals with the necessary skills to thrive in the evolving energy sector, focusing on sustainable technologies and green energy. Its three key components include the establishment of Energy Transition Skills Hubs, partnerships with charities and community organizations to provide training, and the SkillsTransition Fund that supports projects focused on energy transition skills development.

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59	Wind Europe	Wind Europe	Ongoing	International	Standardisation and development of vocational education and training (VET) in the offshore wind sector across the European Union.
60	My Energy Future	OPITO	Ongoing	International	Digital platform for young people to try and show them career pathways. Funding programmes like Robotics challenge, Hydrogen challenge, where different schools are brought together to compete. Other activities include theatre acts showing energy journey in the Aberdeen Science Centre. Also funding other initiatives and programmes for training the trainers.
61	Collaboration between universities and companies	University of Seville, Endesa	2007 – ongoing	ES	The signed agreement between the parties offers ways for support for master's and doctoral studies, scholarships and awards for outstanding students. The thematic lines of action focus on quality of service, energy efficiency and respect for the environment, the use of new technologies for the development of intelligent distribution networks and the promotion of sustainable energy systems.
62	Skills Validation Consortium	Joint sectoral training fund	2003 – ongoing	BEfr	Based on the agreement between the French Community, the Walloon Region and the French Community Commission, skills validation is conducted via a Skills Validation Consortium (CVDC) and validation centres managed by the five French-speaking public institutions for education and vocational training: Bruxelles Formation, FOREM, Adult Education, IFAPME and SFPME. Skills validation enables anyone over the age of 18 to have their professional skills in a trade recognised, free of charge, through practical test in a work situation. Successful candidates receive a Skills credential which allows them to boost their professional career, resume a career path or access regulated professions.
63	Energy Academy	edp	2017 - ongoing	PT	The Energy School is the EDP Foundation's programme to promote educational initiatives and is intended as a tool for teaching subjects such as renewable energies and targets to children and young people aged between 6 and 17. The program provides innovative learning tools that students and teachers can use in the classroom, delivers hands-on workshops in schools to explore renewable energy and the cities of the future, and offers immersive bootcamps for older students to develop leadership, teamwork, and problem-solving skills through design thinking. Additionally, university students are encouraged to create projects that support a fair energy transition in Portugal, receiving mentorship and coaching while tackling systemic sustainability challenges with both local and national perspectives.
64	Education for Digitilisation of Energy (EDDIE)	-	2020-2023	EU-level	Eddie was a four-year Erasmus+ funded project that aimed to support the matching of current and future skill demands needed for the digitilisation of the European Energy Sector through bringing together all stakeholders relevant to the energy value chain.

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65	Formula Student	Institution of Mechanical Engineers	1996 – ongoing	EU-level	Formula Student (FS) is Europe's most established educational engineering competition and celebrated its 25th anniversary in 2023, tasking teams to design, build and race a single-seater race car. The project usually forms part of a degree-level project and is viewed by the motorsport industry as the standard for engineering graduates to meet, transitioning them from university to the workplace. It is a kite-mark for real-world engineering experience, combining practical engineering experience with soft skills including business planning and project management.
66	Energy Teaching Module	CFE-CGC Trade Union	2026 - 2027	FR	A proposed future project for schoolers around 13/14 years old, teaching them about energy, with the aim to enable them to use energy tools.
67	Rooftop PV systems in schools	Electricity Authority of Cyprus	2022 - 2024	CY	The project includes the installation of PV systems at 405 public schools in Cyprus. Also included are water proofing and thermal insulation of the school wings where the PV systems were installed. The project covers all public schools that could host PV systems, and PV sizing was matched to each school's energy consumption. To carry out the project EAC undertook the sizing of the PV systems, site visits to establish the installation parameters, the drafting of detailed specifications, the preparation and execution of the tender procedures and the management of the project contracts.
68	Trainee program	Seko, Service och kommunikationsfacket	-	SE	The company Gotlands EnerginÃ¤t AB (Gotland's Energy Net AB) has a trainee program, accepting 5-6 young adults who just finished high school (gymnasiet) to get experience in the electricity sector. During one year, they are paid to learn about the sector and the company.
69	Åsbro Training Center	Seko, Service och kommunikationsfacket	1970 - ongoing	SE	Åsbro Kursgård (training center) is a cooperation project between the employers organization, trade union and the government to provide trainings and courses within the energy sector. Across 130 hectares, there are all types of installations ranging from 0.4 kV to 400 kV, including power lines, substations, and stations, a comprehensive cable network, and a complete hydropower simulator with associated control equipment. In addition, there are hilly tracks through forest and terrain for training and exercises with tracked vehicles and off-road vehicles. Its strenght is in the cooperation between the sectors, employers, schools and the government. It helps Sweden educate the work force of the future and to contribute to a just transition.
70	Job fairs	AELEC	2024 - 2025	ES	Endesa actively participates in various job fairs to attract young, specialised talent, especially in the STEM (Science, Technology, Engineering and Mathematics) field. For example, in 2025, Endesa was present at the Esiem job fair at the University of Seville's

No.	Best Practice Title (EN)	Lead organisation	Dates	MS	Brief description
					Higher Technical School, where it is looking for engineering and digital skills profiles. The company also took part in the University of Zaragoza's ExpoTalent 2025 Guidance and Employment Fair, reaffirming its commitment to attracting young talent. In addition, the company organises talks and workshops to inform attendees about the energy transition and professional development opportunities within the company.
71	Scholarship programme	AELEC	2024 - 2025	ES	Endesa's 'Flow Your Talent' scholarship programme is aimed at recent university graduates and offers more than 170 scholarships per year. These grants last 12 months and combine practical training in the company with academic training. The academic training includes a Master's Degree in Organisational Management, Key Skills and Data Analytics, taught by the Camilo José Cela University (UCJC) in an online format and fully funded by Endesa. This master's degree aims to improve the professional skills of interns, covering soft skills, communication, people management and change management. The programme seeks to provide a collaborative learning environment and prepare young people to face the challenges of the energy sector.
72	Illuminate your Talent	AELEC	2025 - ongoing	ES	Participation in the "4º ESO + Empresa" programme of the Community of Madrid with an initiative called Ilumina tu Futuro (Light up your Future). The aim is to bring young people closer to the business world, arouse their curiosity and help them develop key skills for their professional future. The experience was divided into 3 blocks with a total duration of 15 hours: Experts from our different business lines shared how Endesa works, showing the impact of our work. Beyond technical knowledge, we helped students begin to visualise their own future with more confidence. Through dynamics and practical activities, students internalised key concepts and developed skills such as teamwork, #communication and #creativity. Each student accompanied professionals in areas aligned with their interests for 3 hours. This immersion allowed them to discover new vocations and connect with work realities that they might not have imagined.
73	Explore your Future	AELEC	2025 - ongoing	ES	This project, in collaboration with the Business University Foundation, consists of a psycho-pedagogical guidance office aimed at the sons and daughters of Endesa employees, to facilitate a more conscious and autonomous academic decision-making process. This initiative reinforces Endesa's commitment to the welfare of its employees and their families.
74	School Edison	Edison	2019 - ongoing	IT	Scuola Edison program is a digital education platform for 3rd, 4th, and 5th-year high school students across Italy, which offers career orientation activities and brings

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					interactive workshops to schools. The programme aims to help youngsters explore their future paths and raise awareness about the conscious use of energy. It offers over 75 certified hours of career orientation activities and provides an opportunity for students to discover their talents by engaging with professionals who have chosen a career in energy. Students get the opportunity to conduct hands-on experiments, visit Edison's power plants, and engage with Orientatori Edison—trained company employees who explain energy careers, and bring Edison's values into the classroom. The platform delivers podcasts, videos, and interactive content.

Annex 8 – Midterm Workshop Summary

The workshop, hosted on the 1st October, 2025 in Brussels, gathered more than 20 European social partners in the electricity sector. The information provided further presents a recap/synthesis of the presentations and discussions held during the event. It will inform the final update of the project deliverable – Final Research Report, which includes the practical guidelines on three topics of interest: Just Transition (JT); Gender equality; Knowledge and Skills. The report is structured according to the workshop's agenda.

1. Presentation: Project Findings & Draft Policy Recommendations

Presentation by Beatričė Leiputė, Senior Researcher at Visionary Analytics.

The presentation summarised the project's interim findings, focusing on key challenges and practical guidelines for social partners in the EU electricity sector. It addressed all three core themes, identifying both structural issues and good practices across Member States. The presentation highlighted the need for coherent and inclusive frameworks to manage the just transition, stronger multi-level and stakeholder collaboration, and enhanced use of EU funding mechanisms, among others. Examples such as Spain's Endesa initiative, Sweden's Gotlands Elnät gender inclusion programme, and France's Forindustrie engagement model illustrated ways to promote equitable transitions, attract young people, and close skills gaps. More than 70 examples collected throughout the project are presented in the guidelines and its Annex. The presentation concluded with overarching recommendations and outlined the next steps towards finalising the research and preparing for the project's dissemination phase. The draft guidelines were shared with participants as part of the workshop's preparatory material.

2. Best practices from third-party participants: the project **Offshore Renewable Energies partnership in the Pact for Skills (FLORES)**.

Presentation by Lucía Fraga Lago, Training Area Coordinator at CETMAR (Spain).

The presentation on the FLORES project introduced it as part of a broader initiative to strengthen skills development in the offshore renewable energy (ORE) sector - a fast-growing subsector of the European electricity industry. Coordinated by the CETMAR Foundation, the project brings together **stakeholders from education, research, and industry to address** emerging workforce and innovation challenges in **maritime technologies.** The speaker outlined the sector's diversity, encompassing wind, wave, tidal, and current-based technologies at varying stages of maturity, and noted the expected growth from 80,000 jobs today to over 200,000 by 2030. This rapid expansion underscores the pressing need to align training systems with labour market needs and close existing skills gaps. The project brings together partners from Spain, Greece, Belgium, France, Italy, Portugal, the Netherlands, and the United Kingdom, working within regional clusters such as the Baltic, Atlantic, Mediterranean, North Sea, and Outermost Regions to coordinate pilot actions and adapt training offers to local contexts.

The presentation traced the project's origins to the MATES Blueprint, an Erasmus+ project launched in 2018 to create the first Maritime Technologies **Skills Strategy**. This strategy provided a foundation for future work by analysing skills intelligence, identifying mismatches, and formulating long-term actions and 32 strategic recommendations. Building on these results, the Pact for Skills - an EU initiative to unlock public and private investment in skills - expanded the partnership into a large-scale European cooperation framework. Within this context, FLORES became the first joint project to operationalise the Pact's ambitions, aiming to establish five Centres of Vocational Excellence (CoVEs) in Southern Europe to address training and innovation needs in offshore wind energy.

Key project activities were structured around four working groups**: Observatory, Skills, Careers, and Partnerships**. The Observatory analyses current and future skills needs, while the Skills group promotes innovative lifelong learning approaches, including repositories of training materials and helpdesk support for VET providers. The Careers group develops educational and promotional materials - such as multilingual career videos, card games, and ambassador interviews - to engage students and teachers, with notably high

feedback scores from educators. The Partnerships group works to foster durable regional cooperation, leading pilot actions in the Baltic, Atlantic, and Mediterranean regions and identifying barriers to long-term collaboration, such as limited contact points or recognition mechanisms.

The presentation concluded with a discussion on strengthening partnerships between education providers, industry, and regional actors in the offshore renewable energy sector, addressing the seven main barriers identified through FLORES pilot actions. These included weak communication channels, unclear institutional contact points, short-term collaboration models, and a lack of formal recognition or sustainability mechanisms. To overcome these challenges, the speaker proposed four interlinked recommendations: first, to establish and strengthen **clear contact points** between industry and education to improve coordination; second, to promote **specialisation in industry**–education communication so that stakeholders can better translate operational needs into training solutions; third, to develop **recognition and reward systems** that acknowledge and incentivise engagement, such as through certification or public visibility; and fourth, to **institutionalise recognition** within official frameworks to ensure long-term commitment and policy alignment.

The speaker highlighted a persistent mismatch between the types of recognition stakeholders value and those they currently receive, which limits participation - particularly among **SMEs**, who often lack resources to engage in training initiatives. Drawing on examples shared by participants, such as Hungary's sectoral skills councils, which bring together social partners and educators to regularly assess labour market needs, the presenter underscored the importance of actively involving SMEs in sectoral dialogue. Overall, the recommendations called for building a structured, transparent, and inclusive skills ecosystem that embeds durable cooperation, strengthens mutual recognition, and ensures the offshore renewable energy workforce is equipped for the sector's rapid growth and transformation

3. **Knowledge & Skills** (breakout discussions)

Thinking about your own role as a social partner, how **useful** and **practical** do you find these guidelines? What's **missing** in these guidelines? Why would addressing these areas be important?

- **Addressing demographic challenges and labour shortages:** The discussions emphasised that the electricity sector faces strong competition from other industries for young, skilled workers. The guidelines could recommend strategies to attract and retain talent, such as developing sector-wide recruitment campaigns, offering attractive remuneration and career progression schemes, and targeting underrepresented groups like young migrants. Participants argued that integrating these aspects would help mitigate demographic decline and strengthen the sector's ability to meet growing workforce demands.
- **Adopting a "flow" or age-sensitive approach to education and skills**: participants proposed incorporating a "flow" model into the guidelines—mapping out engagement and skill-building activities for different education levels / age groups. This would mean providing specific recommendations for early education, vocational training, and higher education, recognising that interest and awareness must be cultivated gradually. Currently, the guidelines do not emphasise it enough.
- **Reflecting changing work values and cultural expectations:** Participants underlined that the mindset of younger generations and women towards work has evolved. Work is increasingly viewed as one aspect of life, rather than its core, and flexibility, purpose, and social contribution often take precedence over stability. The guidelines could encourage companies to adapt their work cultures, promote inclusivity and work–life balance, and emphasise how careers in the electricity sector contribute to wider societal and environmental goals.
- **Broader communication and awareness-raising:** The group stressed that the guidelines should include a stronger focus on strategic communication and public engagement. Electricity is still widely perceived as a costly or hazardous sector rather than as an innovative and purpose-driven one. The guidelines could therefore include practical recommendations on awareness campaigns, partnerships with schools and media, and storytelling approaches that highlight the sector's role in the green transition. Participants

emphasised that this would help rebrand the industry, build public trust, and attract new generations motivated by sustainability and innovation.
- **Addressing remuneration and work conditions**: Finally, participants noted that issues such as salary competitiveness, job safety, and working conditions should be addressed in the guidelines, as these are the key factors influencing young people's career decisions. Including these aspects would provide a more holistic picture of what makes the sector an attractive and sustainable workplace.

Good practices shared
- **Italy**: Practices exist that involve the entire supply chain in Just Transition efforts, ensuring awareness and inclusion of subcontractors in training and safety initiatives.
- **Hungary**: A well-established dual training system integrates VET and higher education with company-based workshops. Students spend two days a week in companies and three in training institutions, receiving pay, benefits (e.g. SIM card, laptop), and early exposure to the labour market. The model successfully attracts youth to technical careers.
- **Hungary** (social dialogue initiative): Trade unions and employers plan to develop new sectoral social dialogue activities, including participation in open days and festivals funded by employer organisations to reach young people.
- **Spain** and **Portugal**: Reported diverse educational outreach initiatives starting from early childhood, with companies like Endesa and Enel co-designing higher education programmes to ensure graduates transition directly into the sector.
- **Turkey**: Colleagues reported already using the guidelines in practice by setting up new working groups following the three thematic areas, showing early adoption and applicability.
- **Norway**: Highlighted the role of employers' associations in promoting buy-in from top management and trade unions to integrate guidelines effectively.
- **Other**: Examples such as VW Group and SEAT establishing their own training schools were discussed as models that the energy sector could emulate to attract and retain skilled youth.

Other topic-specific suggestions
- **Promote direct engagement with students and schools:** Beyond bringing electricity sector representatives into schools, students should also be invited into companies to experience how they work ("the magic of electricity").

4. Just Transition (breakout discussions)

Thinking about your own role as a social partner, how **useful** and **practical** do you find these guidelines? What's **missing** in these guidelines? Why would addressing these areas be important?

- **Need for a clear and shared definition of Just Transition**: Participants emphasised that the guidelines should begin with a clear and agreed definition of what constitutes a "Just Transition." This would help distinguish between energy transition (technological and environmental changes) and just transition (its social and employment dimensions). Referring to existing definitions - such as those from the ILO and/or the joint sectoral statements (2017, 2021) - was seen as essential to avoid conceptual confusion.
- **Define and promote "quality jobs":** The guidelines should integrate a definition of job quality, encompassing decent remuneration, stable employment, safety standards, and collective bargaining rights. Participants emphasised that the creation of new green jobs must not lead to lower-quality or precarious employment, and that ensuring fair working conditions is a central part of Just Transition.
- **Clarify what is meant by "Just Transition Plans" (JTPs):** It was noted that while Just Transition affects all sectors, not all companies or regions have dedicated JTPs. The guidelines should clarify that JTPs are structured, funded plans developed collaboratively among governments, companies, and social partners to manage employment transitions at the national/regional and/or company level. This would help avoid inconsistent interpretations and highlight the need for comprehensive, locally funded and inclusive plans.
- **Address regulatory and governance fragmentation:** Participants observed that the regulatory environment varies widely across Member States (MS), creating unequal conditions for companies and

workers. In countries like Spain and Germany, Just Transition is supported by robust legal frameworks and social dialogue mechanisms, whereas other MS lack clear structures or coordination. The guidelines should therefore stress the importance of streamlined, locally adaptable governance frameworks and propose mechanisms for better coordination between EU, national, and regional levels.

- **Highlight the importance of anticipation and forward planning**: Anticipation was repeatedly identified as a missing and critical element. Participants argued that successful Just Transition depends not only on planning but also on anticipating future scenarios, skills needs, and local impacts well before plant closures occur. The guidelines should encourage governments, companies, and social partners to establish anticipation mechanisms, such as territorial impact studies, labour market foresight, and university–industry partnerships, to prepare workers and communities in advance.
- **Integrate social and psychological dimensions of transition:** The discussions highlighted that Just Transition is not only economic but also deeply social, affecting communities, families, and workers' well-being. The guidelines should therefore promote the integration of sociological and psychological expertise to support workers adapting to new roles, technologies, and workplaces, especially older workers who may experience isolation in more digital environments.
- **Address social dumping and inequalities:** Participants noted that new green industries, such as photovoltaics and offshore wind, sometimes generate uneven job quality and profit distribution, particularly in SME-dominated segments. The guidelines should therefore include measures to prevent social dumping, ensure fair competition, and uphold consistent labour standards across the value chain.
- **Acknowledge the changing character of "clean" jobs and worker experience:** Participants noted that the public image of Just Transition and "clean jobs" can be overly idealised, creating unrealistic expectations. The guidelines should encourage honest communication about the challenges of transition - acknowledging that green jobs are not always "clean" in a literal or easy sense and that transitions can involve disruption. Similarly, the new generation of jobs will have different characteristics, often involving greater interaction with AI or remote systems, which can leave older workers feeling isolated or disconnected. The guidelines should therefore recommend that social partners accompany and support workers through these cultural and technological adjustments, ensuring inclusivity and empathy in change management.

<u>Good practices shared</u>

- **Spain:** institutionalised social dialogue and JT observatory: Spain was mentioned as a strong example of structured coordination through a Just Transition Observatory and ongoing social dialogue tables with companies such as ENDESA and REPSOL. These mechanisms ensure continuous information exchange, planning, and collaboration between government, employers, and trade unions.
- **Spain (ENDESA):** anticipation and training: ENDESA's large-scale retraining of over a thousand workers ahead of plant closures was cited as a valuable initiative, though participants noted that without subsequent local job creation, such efforts risk leading to worker displacement. This case underscored the importance of linking training with realistic employment opportunities.
- **Italy:** employment preservation through company-level agreements: Italian participants referenced ENEL's employment-saving contract, which maintained jobs despite plant closures, as an example of proactive company-level social dialogue. However, they noted that a lack of government support can limit such efforts, suggesting that national frameworks are needed to ensure consistency and fairness.
- **Hungary**: collaborative governance structure for mine closures: Hungary's experience with coal mine closures was presented as a good practice in inclusive planning and community engagement. A steering committee—including government, trade unions, the Chamber of Commerce, education providers, and local mayors - has been coordinating the transition for affected workers and surrounding communities. Universities are conducting studies on alternative uses of resources and supporting requalification, demonstrating the value of early anticipation and cross-sectoral cooperation.

<u>Other topic-specific suggestions</u>

- **Diverging views on the need for an EU-level directive:** Participants agreed on the importance of ensuring a common European understanding of Just Transition but differed on whether this should take the form of a joint EU directive on JT or other mechanisms. There was broad consensus that a shared

European framework could help promote minimum standards across countries - particularly in those where social dialogue and policy support are weak - and could facilitate access to EU funds for transition activities. However, other participants argued that a binding directive would be unnecessary and potentially burdensome, given that employment (incl. training) competences rest primarily with Member States and regions. Instead, they favoured a flexible, supportive mechanism - for example, a "de minimis" or soft-law approach - that would encourage coordination, capacity-building, and good practice exchange without imposing uniform regulations. This reflected a shared understanding of the desired content and objectives of EU action (clarity, funding access, and consistency) but not of its legal format or enforcement mechanism.

5. **Gender Equality** (breakout discussions)

Thinking about your own role as a social partner, how **useful** and **practical** do you find these guidelines? What's **missing** in these guidelines? Why would addressing these areas be important?

- **Adopt a constructive and realistic communication approach:** Participants appreciated that the guidelines are exhaustive and cover key dimensions of gender equality, but felt that the current wording focuses too heavily on shortcomings. They recommended revising the language to adopt a more balanced and motivational tone, highlighting positive progress and achievements alongside remaining challenges. The guidelines should also encourage realistic and evidence-based communication, recognising that gender equality is a gradual process with uneven progress across contexts. Combining celebration of success with honest reflection on persistent barriers would help foster commitment, credibility, and sustained engagement from companies and social partners, positioning gender equality as a shared objective rather than a compliance requirement.
- **Address cultural backlash and slow progress**: Trade union representatives raised concerns that cultural regression and political backlash against diversity policies are slowing progress. They argued that the guidelines should explicitly call for more ambitious, measurable targets and faster implementation, using lessons from the Nordic countries where gender equality is more advanced. Participants stressed that current progress rates are insufficient to close the gap within a reasonable timeframe, and that companies must take a stronger stance in defending diversity and inclusion policies.
- **Clarify and update the definition of gender equality**: Several participants stressed that the guidelines should include a clear definition of what gender equality means in the context of the electricity sector. Equality should be framed not only as increased participation of women, but as ensuring that everyone - regardless of gender - has equal opportunities based on skills and competences. This approach would avoid a mechanical "50/50" interpretation and promote merit-based, inclusive equality, where both men and women are supported to participate and advance.
- **Promote shared responsibility rather than women-only measures**: The discussions underlined the need to move away from treating gender equality as an issue for women alone. Policies and collective agreements should engage men as equal participants - for example, by promoting shared parental leave, encouraging fathers to take family-related absences, and ensuring that part-time and flexible arrangements are open to both genders. Participants argued that such shared models help dismantle stereotypes and prevent the creation of "women's ghettos" within workplaces.
- **Integrate care responsibilities and family support into workplace policies**: participants highlighted that women's dual burden of professional and unpaid care work remains a major obstacle. The guidelines should therefore address care infrastructure, recommending measures such as company-supported childcare or eldercare services, flexible working arrangements, and psychological or financial support for caregivers. Including these aspects would acknowledge the real-life constraints faced by women and promote better work–life balance.
- **Strengthen the focus on recruitment, retention, and advancement**: Participants agreed that the guidelines should better distinguish between entry barriers (e.g. lack of female candidates, stereotypes) and progression barriers (e.g. limited promotion or leadership opportunities). They emphasised that recruitment policies should ensure transparent (e.g. asking women about family or reproductive plans during recruitment should be explicitly condemned and prevented through stronger HR policies and

monitoring.), inclusive processes - such as involving women in pre-selection panels - while retention strategies should include mentoring, training, and advancement opportunities.

- **Address salary transparency and negotiation dynamics**: Participants highlighted that salary practices often discourage women from applying for or negotiating higher-paid positions. The guidelines should promote pay transparency, clear salary ranges, and mentoring on negotiation skills, as well as highlight positive role models to counter self-selection biases.
- **Address hidden workplace barriers and gender-sensitive occupational safety**: Breakout discussions identified "hidden barriers" that limit women's participation, such as caregiving responsibilities preventing attendance at training or lack of gender-sensitive safety provisions (e.g. personal protective equipment designed for women). Participants proposed adding recommendations on occupational health and safety (including menstrual, reproductive health policies, personal protective equipment, workplace facilities) and ensuring that gender equality extends to outsourced suppliers, similar to sustainability requirements/assessments.

Good practices shared

- **Portugal** – company-driven diversity and awareness campaigns: Portuguese participants described company initiatives integrating gender and diversity at all organisational levels, supported by awareness campaigns to debunk stereotypes and promote inclusion. A notable collaboration involved INOVA and SUI with SONAE, a food company, to promote women to senior executive positions, showing the benefits of coordinated actions between businesses and partners.
- **Italy** – collective agreements and equality committees: Italian participants shared that equal opportunity committees exist in many companies, composed of employers and trade unions in equal numbers. While these mechanisms are somewhat outdated, they remain examples of structured cooperation. Some companies have extended parental leave for fathers by 30 days and introduced flexible part-time options, though these are still more often used by women. There was consensus that modernising such agreements to include men and ensure equality in practice would strengthen their impact.
- **Hungary** – gender balance and return-to-work practices: In Hungary, some companies (e.g., E.ON) maintain an unwritten rule of 50% female leadership, which has been internalised as a cultural norm. Companies also support mothers returning from maternity leave by organising informal gatherings with colleagues and children to ease reintegration. National policies, such as tax exemptions for mothers of three or more children, were mentioned, though opinions differed on whether such measures are equitable.
- **Italy** – caregiver support programmes: Italian companies have begun offering support initiatives for caregivers, including financial and psychological assistance. These programmes recognise the burden on women caring for elderly family members and help prevent burnout and withdrawal from the workforce.

Other topic-specific suggestions

- **Raise future ambition levels:** Participants agreed that the project should "raise the bar" by setting more ambitious objectives for future action, encouraging companies and social partners to move beyond minimum compliance and pursue measurable, long-term gender equality targets.
- **Joint advocacy and monitoring by social partners:** Several participants proposed that EPSU and Eurelectric jointly advocate for governments to strengthen women's STEM education pathways and establish joint monitoring committees to track progress on gender equality across the sector. Regular reporting on gender balance and good practices would enhance transparency and accountability.
- **Ensure better access to data:** Participants noted that gender statistics are often unavailable or unreliable in some countries (e.g. Turkey). They proposed that companies should be encouraged or required to collect and publish gender-disaggregated data to support evidence-based policymaking and cross-country comparability.

6. General suggestions

Suggestions regarding the guidelines and recommendations

- **Guidelines should focus more on joint actions** for both trade unions and employer organisations, not separating guidelines by employer organisations or trade unions (where possible).
- **Adopt a "flow" approach to structuring recommendations:** Apply a 'flow' logic to the guidelines by distinguishing actions needed at the EU level (e.g. policy frameworks, funding alignment, coordination) and those arising from bottom-up initiatives (e.g. regional, company, or education-level practices). This structure would help stakeholders - from EU institutions to local social partners - identify their respective roles and responsibilities more clearly.
- **Encourage a multi-stakeholder (not just multi-governance) approach:** Participants recommended shifting the current emphasis from governance structures to stakeholder participation, explicitly including trade unions, employers, training providers, local authorities, and universities. This would ensure that transitions are grounded in the realities of workers and communities, and that diverse perspectives shape the solutions. Consider renaming 'multi-governance' into 'multi-stakeholder' approach.
- **Ensure inclusion of subcontracted and agency workers across all guideline areas:** Subcontracted and agency-employed workers represent a large share of the electricity sector workforce—often up to one-third of operations—but are frequently excluded from training, reskilling, health and safety, and equality initiatives. The guidelines should explicitly require social partners, companies, and policy-makers to ensure these workers have equal access to training, Just Transition measures, and gender equality provisions, thereby avoiding a two-tier workforce and ensuring that the benefits of transition and inclusion extend across the entire value chain.

Suggestions regarding the project activities and/or dissemination

- **Strengthen dissemination and stakeholder cooperation:** While the guidelines are well developed, they require broader dissemination - especially among SMEs, subcontractors, and training providers - and closer cooperation between employers, trade unions, policy-makers, and education institutions. Joint workshops, sectoral events, and bilateral meetings could be used to improve visibility and promote co-creation of solutions.
- **Engage company leadership and decision-makers in dissemination events**: For future events, including the final conference, participants recommended inviting CEOs, CFOs, HR directors, and CSR managers to highlight the business value and long-term impact of investing in skills, inclusion, and Just Transition. Emphasising tangible returns (e.g. workforce resilience, reputation, and innovation) can help secure buy-in from company leadership.
- **Broaden outreach channels and leverage existing structures**: Dissemination should use existing institutional platforms such as European Works Councils, sectoral social dialogue committees, and national industry associations. Participation in external events (including paid conferences and education fairs) and cooperation with policy-makers, VET institutions, and universities were also recommended to reach wider audiences.
- **Foster cross-country peer learning and exchange:** The project should facilitate international peer-learning platforms or annual forums for social partners, employers, and training institutions to exchange good practices and address shared challenges. These could include interactive workshops, regional study visits, or online communities focused on themes such as gender equality, youth engagement, or skills anticipation.
- **Create permanent "communities of practice" as living dissemination tools**: Building on the successful focus groups held during this project, participants proposed formalising communities of practice on specific themes (e.g. gender equality, skills for youth, Just Transition). These groups -comprising representatives from companies, trade unions, educational institutions, and public authorities - would meet periodically to share lessons, update guidelines, and sustain collaboration beyond the project's lifespan.
- **Increase engagement of SMEs and social partners through social dialogue**: Social dialogue structures should be used more proactively to reach SMEs and subcontractors, who often lack capacity to engage in large EU initiatives. Actions could include developing simplified toolkits, promoting sectoral or regional joint committees, and using collective bargaining frameworks to embed gender equality, skills development, and Just Transition principles at company level.

Suggestions beyond the research study's timeline and/or scope

- **Anticipating future skills and workforce needs**: Participants agreed that the guidelines should better integrate forward-looking workforce planning to help social partners anticipate skill needs over the next decade or further. This includes analysing the impact of automation, digitalisation, and AI on job profiles, as well as identifying emerging skill areas. Updating the guidelines to include mechanisms for skills forecasting, scenario modelling, and mapping of future competence needs would help ensure that reskilling and upskilling efforts remain relevant and responsive to technological change. This forward planning is essential for aligning education and training systems with labour market realities.
- **Clearer focus on the full value chain**: Participants noted that the electricity sector is not sufficiently reflected in its entirety in the current guidelines. The sector's supply chain and supporting industries—including manufacturing, logistics, maintenance, and digital services—play a crucial role in achieving the energy transition but remain underrepresented. The guidelines should be broadened to recognise the diversity of roles and pathways within the electricity ecosystem and to showcase examples from across the value chain, not just from utilities and large operators. Including these perspectives would highlight the variety of career opportunities available and demonstrate how different types of jobs contribute to the sector's environmental and social objectives. This expansion would also make the sector more attractive to young people and help address misconceptions that it is limited to technical or engineering professions.
- **Integrate societal and community dimensions into the guidelines:** Participants stressed that the guidelines should better reflect the social impact of the energy transition, including issues such as energy poverty, local inequalities, and community resilience. Emphasising how the sector contributes to revitalising local economies, supporting new industries, and strengthening social cohesion would make it more socially responsible and appealing—particularly to younger generations motivated by social and environmental values.
- **Recognise intersectionality and diversity beyond gender**: Some participants suggested that the guidelines should take a broader diversity approach, including people with disabilities, migrants, and older workers. Companies in Portugal, for example, reported integrating diversity goals across all levels and running campaigns to challenge stereotypes about "manly" or male-dominated professions. Expanding the guidelines in this direction would align with modern equality frameworks and make them more inclusive.
- **Promote knowledge sharing and transparency:** It was observed that while there are many good practices, organisations are often reluctant to share failures. The guidelines could include recommendations for transparent exchange of lessons learned and encourage safe spaces for informal discussions among social partners to foster mutual learning and realistic reflection on challenges.