

Finding common ground for a just energy transition

Labour and employer perspectives



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About the Coalition

The IRENA Coalition for Action brings together leading renewable energy players from around the world with the common goal of advancing the uptake of renewable energy. The Coalition facilitates global dialogue between the public and private sectors to develop actions to increase the share of renewables in the global energy mix and accelerate the energy transition.

About this paper

This brief was developed jointly by members of the Coalition's Working Group on Sustainable Energy Jobs. It builds on exchanges and discussions among labour unions and employers that took place during a series of webinars on a just transition. This paper is also informed by perspectives from more than a dozen trade unions covering Asia-Pacific, Africa, Europe, the Middle East, and the Americas that were interviewed under the Chatham House rule.

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Abbreviations

BOGA	Beyond Gas and Oil Alliance
DFI	development finance institution
DRE	decentralised renewable energy
GWEC	Global Wind Energy Council
GWNET	Global Women's Network for the Energy Transition
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
ITUC	International Trade Union Confederation
kV	kilovolt
kWp	kilowatt peak
NABTU	North America's Building Trades Unions
NOWA	National Offshore Wind Agreement
PPA	power purchase agreement
SDG	Sustainable Development Goal
SEJP	Sustainable Energy Jobs Platform
UN	United Nations
UNICEF	United Nations Children's Emergency Fund
VET	vocational education and training



Executive summary



A rapid transition to a renewable energy system is imperative if the world is to avoid the worst impacts of climate change; but a just transition – where no one is left behind – is critical to meet justice and equity demands and ensure broad social acceptance of the profound changes the energy transition entails.

In the shift towards a renewables-based energy system, governments, businesses, labour unions and workers themselves all have key roles to play not only in accelerating the energy transition, but also in shaping how it will unfold. Success will be predicated on approaching the transition in an inclusive and participatory way, meaning that it is important to give voice to all participants. To that end, this brief presents labour union and employer perspectives on a just transition, and offers recommendations for achieving their aims across different geographies, circumstances and starting points.

Holistic policy frameworks tailored to local conditions must be put in place, as the challenges are interconnected and each country requires different approaches over varied time frames. More jobs will be created than lost; however, proactive efforts and enabling policies are needed to address potential labour market misalignments and distributional impacts, and to protect and reskill workers who lose their jobs. In addition, given different regional experiences, there is no one-size-fits-all solution. A just transition requires different approaches for regions with a high dependency on fossil fuels as compared with those in a low energy access setting. Economic diversification is key, building on existing infrastructure, skills and local strengths. At the same time, social equity imperatives must be addressed. Energy is an essential service, so it will be vital to ensure that energy is affordable to all, and to low-income households in particular. In countries where energy access is lacking, a just transition must be pursued while simultaneously ensuring modern energy services for all.

If the transition is to gain the full support of the labour movement, the focus must be on quality not just quantity. Governments are faced with the challenge of creating the conditions to generate decent jobs in a low-carbon economy while simultaneously protecting workers – along with their families and the communities that depend on them – as fossil fuel-based industries are phased out. Social dialogue should play a greater role in shaping energy transition labour policy. This requires the meaningful engagement of workers and local communities, as well as the utmost respect for fundamental human and labour rights across value chains. Also, targeted measures are needed for informal workers.

In order to build a workforce for the future green economy, training and education must be adapted to meet anticipated needs and efforts must be oriented towards ensuring greater workforce diversity and inclusion. To maintain the momentum of the transition and minimise disruption, it is important to identify the skills that will be needed and adjust education and training programmes to meet these evolving demands. Beyond preparing the current workforce for the transition, opportunities must be created for the increased participation of women, ethnic minorities and youth, reflecting the composition of our societies and broadening the talent pool. The transition offers opportunities for all, regardless of background, experience or education - which may range from STEM (science, technology, engineering and mathematics) to generic skill sets. If governments, industry, educational institutions and trade unions collaborate in this context, the outcomes are more likely to be successful.

Adequate finance - including through increased international co-operation to direct international financial flows of public funds - is essential to achieving a just transition. Beyond investments in energy transition-related technologies and policies, funding should flow into: training and education to build capacity and ensure the availability of skills to meet future needs; support for the development of local industries; and delivering the required infrastructure. Proactive planning is required so that finance is allocated to deliver the results most beneficial to society, including to achieve a decisive shift away from investment in fossil fuels towards a just transition to renewables that improves socio-economic outcomes. IRENA modelling results reflect broad international co-operation to raise gross domestic product (GDP), employment and welfare in numerous countries - especially in developing and emerging economies highly dependent on fossil fuels. With the right measures in place, the energy transition presents an unprecedented opportunity to render our energy systems more sustainable, equitable and inclusive.

Introduction



Governments, businesses, academia and civil society groups now make routine references to “leaving no one behind” and similar phrases that emphasise the importance of just and equitable outcomes to profound societal changes such as the energy transition. That such references have become part of the established vocabulary is encouraging; it signals a growing acceptance that the energy transition must go far beyond issues of technology and cost and make socio-economic dimensions a core consideration. However, even though the concept of a just transition is gaining traction in climate policies and discussions, it remains to be seen how its tenets are implemented in practice.

Recent events, from the COVID pandemic to the current energy crisis, as well as perennial concerns about communities trapped in poverty in the absence of reliable and affordable energy, underscore the close interlinkages between energy, societies and economies. There is a clear need to tackle climate change hand in hand with justice and equity considerations.

The international consensus is that we need an energy transition that is just – greening the economy in a fair and inclusive way, providing decent work and leaving no one behind, as defined in the Just Transition Guidelines of the International Labour Organization (ILO). However, a multitude of approaches exists to translate this in practice. Implementation is region-specific and entails many dimensions, such as financing, access and socio-economic considerations.

The term “just transition” originated within the trade union movement more than 50 years ago, and is recognised in the Paris Agreement: *“Taking into account the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities...”*. Yet even today workers are largely excluded from processes that have far-reaching consequences for their livelihoods.

All three pillars of the labour market – workers, including those represented by trade unions; businesses; and governments – play a critical role in efforts to ensure that the transition to a renewable energy future is in practice just, equitable and inclusive. Many trade unions in the energy sector and related industries support a climate-safe energy transition (“no jobs on a dead planet” is a frequently heard union slogan); but workers are also understandably concerned about the details of how the transition will unfold. Meanwhile, employers driving the energy transition are calling for a level playing field and consistent long-term policies to enable the creation of the green economy, bridge skills gaps and make a just transition a core consideration.

IRENA’s modelling finds that more new jobs will be created than lost by the energy transition. Yet such macro-level findings do not necessarily mean that all affected communities and workers will experience a smooth transition, given disruptive trends and various types of misalignment (temporal, spatial, sectoral and educational) in labour markets along the way. In other words, jobs gained will not necessarily exceed jobs lost in any specific community.

Whilst the number of jobs created is important, their quality is also critical for a just transition. This includes decent pay and retirement benefits, occupational health and safety, overall workplace practices and job security. Jobs in renewables do not necessarily pay as well as those in conventional energy, particularly in the mining and utility sectors where labour representation is higher and collective bargaining arrangements are more established. Also, detailed data are lacking; much better information is needed to inform decision making.

The energy transition will have broad impacts on society, energy use and income inequality are inextricably linked. Energy subsidy reform and carbon pricing policies such as taxation will be needed to shift away from fossil fuels – which today account for 80% of the global energy supply – and bring about net-zero emissions by 2050 (IRENA, 2022a). The energy transition’s costs and benefits must be shared equitably, avoiding regressive policies that could result in higher prices for low-income households that spend a larger share of their income on energy and related basic goods, such as food, housing and transport. The gender perspective is also relevant as low-income households have a higher proportion of women. The current energy crisis has seen countries experience increased social deprivation and inequality, and face social unrest and conflict. Social equity considerations in energy transition policies are key to gaining public support and avoiding delays and opposition to energy transition measures (ILO, 2015).

While there are good examples of just transition policies being implemented by governments today, they remain too few and far between. Increased social dialogue – between governments, the private sector and trade unions – is imperative as energy, industrial and climate policy and public investment strategies are being shaped.

Between 2020 and 2022, IRENA consulted with trade unions and energy sector employers to understand their concerns and inform the Agency’s work on a just transition. A key conclusion drawn from this dialogue is that all voices must be heard, especially those of workers and communities on the front line of the transition who will be most affected. The objective of this brief is to capture insights from these discussions on how the energy transition can unfold in a just manner for workers and communities. The first chapter takes a broad view of the energy transition’s impacts on the world of work and how policy frameworks should be adapted to anticipate these new realities. The second chapter dissects the essential components of quality jobs in a low-carbon future. The third chapter examines the green skills and education, training and reskilling efforts needed to build the workforce powering the energy transition. Finally, the fourth chapter focuses on finance flows aligned with a just transition imperative. These just transition elements and enablers are illustrated with real-world examples of governments, companies and people turning principles into practice.

Section 1

An energy transition
that works for people
and the planet



The energy transition from fossil fuel-based sources to low-carbon technologies will require unprecedented restructuring of our economies. Industrialised countries became wealthy in an era of cheap and abundant energy consisting largely of fossil fuels. Virtually every facet of their economies depended (and still does) in some way on fossil fuels, which account for 80% of today’s global energy supply (IRENA, 2023a). The oil shocks of the 1970s catalysed concerns about the risks of depending on fossil fuels, but it was not until the threat of climate change moved up the political agenda in the early 1990s that calls for a renewable energy transition were made in earnest.

At that time there was little confidence in the feasibility of a renewable energy future. In the past decade, however, the scale and speed at which renewables have become mainstream have taken many by surprise. The addition of new capacity has regularly surpassed the most optimistic projections. Now, with the climate imperative becoming increasingly urgent and the cost of renewable technologies falling, there is no excuse for delaying the phase-out of fossil fuels.

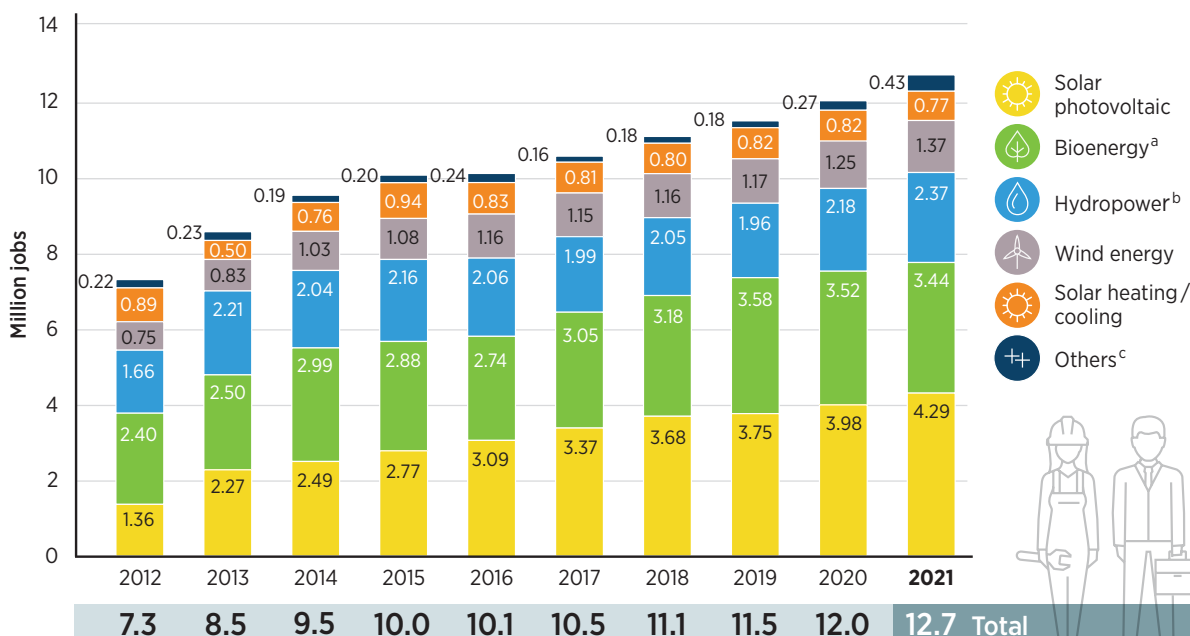
1.1 IMPLICATIONS OF THE TRANSITION FOR THE WORLD OF WORK

IRENA has carried out extensive studies on a range of different aspects of the renewable energy transition, and as previously noted, one of its most important findings is that a renewables-based economy will yield more jobs than are lost by phasing out of fossil fuels.

A low-carbon economy will create new jobs in renewables, energy efficiency, the circular economy and related sectors as fossil fuels are phased out – yielding a net increase in the number of energy sector jobs overall.

The number of people employed in the renewable energy sector has steadily grown over the past decade since IRENA began monitoring employment trends: from 7.3 million in 2012, to 12.7 million in 2021 – even accounting for the economic disruptions resulting from the pandemic (Figure 1) (IRENA and ILO, 2022).

Figure 1 Evolution of global renewable energy employment by technology 2012-2021



Source: (IRENA and ILO, 2022).

To put this in context, approximately 65 million people are employed in the energy sector worldwide; 8 million people work in oil supply, over 6 million in coal supply, and nearly 4 million in gas supply (IEA, 2022). At present, these jobs are distributed unevenly across the world. A small number of countries, albeit representing large proportions of the world’s population and economy (China, Brazil, India, the United States and the European Union) dominate the job market for renewable energy. China alone accounts for 42% of the global labour market (IRENA and ILO, 2022)

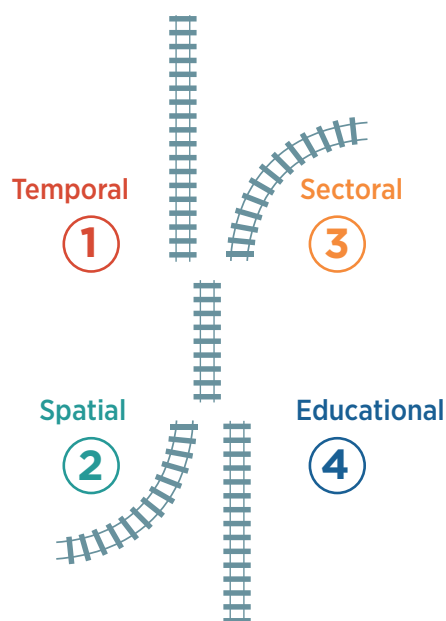
According to the IRENA *World Energy Transitions Outlook* (IRENA, 2022a), a 1.5°C-aligned energy transition could create close to 85 million additional energy transition-related jobs by 2030, providing opportunities for people with a range of skills and educational levels, assuming the necessary large-scale investments are undertaken and the right policy frameworks are put in place, as detailed in section 4.

1.2 AVOIDING MISALIGNMENTS BETWEEN JOBS LOST AND JOBS GAINED

Despite the net gain of jobs in the renewable energy transition, there could be significant temporal, spatial, sectoral and educational misalignments (Figure 2). The phase-out of coal alone could lead to the loss of 12 million fossil fuel jobs, a shift that poses challenges for affected workers, communities, business operating those assets and investors counting on the returns (IRENA, 2020a). In the shorter term, challenges in coal regions that currently employ large numbers of workers will be especially significant as it is unlikely that the jobs in coal will be directly replaced with jobs in renewable energy. Education and training programmes can certainly help, but need to be paired with consistent, smooth planning to avoid boom and bust cycles, increasing access to finance and training, adequate industrial policy making and stronger social protection schemes.

Figure 2 Job misalignments

- ① **Temporal.** The creation of new jobs does not necessarily take place on the same time scale as the loss of employment.
- ② **Spatial.** New jobs are not necessarily being created in the same locations - communities, regions or countries - where losses occur.
- ③ **Sectoral.** Job gains and losses may affect different sectors of the economy, given different supply-chain structures and diverging sets of inputs between rising and declining industries.
- ④ **Educational.** The skills associated with vanishing jobs do not always match those required by emerging jobs.



Source: (IRENA, 2020b).

Avoiding widespread misalignments will require governments to adopt policy and regulatory frameworks attuned to the transition. Economic diversification will be key, building on existing infrastructure, skills and local strengths. Policies will need to be aimed at upskilling and retraining the existing workforce, and equipping workers (current and future, including young women and men) with the skills to meet future demands, among other measures (IRENA, 2022a).

1.3 A JUST TRANSITION FOR WORKERS AND COMMUNITIES

ILO Just Transition Guidelines (see Box 1) were negotiated at a Tripartite Meeting of Experts and then approved by the Tripartite constituencies in 2013, including the 186 ILO member States. They were incorporated into later UN agreements and are reflected in the Paris Agreement and subsequent UNFCCC decisions. According to these guidelines, a just transition means greening the economy in a way that is as fair and inclusive as possible to everyone concerned, creating decent work opportunities and leaving no one behind (ILO, 2015).

Given different regional circumstances, perceptions and interests, there is no ‘one size fits all’ approach to implementing the guidelines (and, as discussed in Section 4, this can be a barrier to finance). Most critical for many is the concept of inclusivity - especially of workers and communities on the frontlines of the transition, who should be involved early and throughout the process. Broadly, a just transition requires that benefits be shared widely and equitably and that the burdens of adjustment be minimised both during the transition process and in the final result.

In 2019, IRENA, ILO and several international partners launched the Sustainable Energy Jobs Platform (SEJP) to help accelerate progress towards a just transition. The SEJP eventually became a working group under the IRENA Coalition for Action. In 2020 more than a dozen trade unions covering Asia-Pacific, Africa, Europe, the Middle East and the Americas were interviewed (under the Chatham House rule) to better understand and integrate the labour perspective into the platform’s strategy.

In 2022 the IRENA Coalition for Action hosted three webinars: the first explored just transition issues from a trade union perspective; the second from an employer’s perspective; whilst the third brought both groups together to discuss collective challenges and solutions.

In addition, in 2021 IRENA established the Collaborative Framework on Just and Inclusive Energy Transition. The framework aims to bring countries and other relevant stakeholders together to identify priority areas and concrete actions and foster international collaboration to understand how to promote and support a just and inclusive energy transition. Co-chaired currently by the United States and South Africa, the group has focused on exploring the various aspects of equity and inclusion in the energy transition. Harnessing the synergies between the Coalition for Action and the Collaborative Framework, the co-facilitators provided inputs to the exchanges during webinars. This section reflects the findings of these collaborations and consultations.



BOX 1 ILO JUST TRANSITION GUIDELINES

In 2015 a Tripartite Meeting of Experts gathered under the auspices of the ILO and adopted a set of non-binding guidelines to assist governments and social partners in the formulation, implementation and monitoring of just transition policy frameworks.

The document sets out a vision founded on the four pillars of the Decent Work Agenda: social dialogue, social protection, rights at work and employment. It has come to serve as the central reference for anyone working on the transition to environmentally sustainable economies and societies. The guidelines are:

- (a) *"Strong social consensus on the goal and pathways to sustainability is fundamental. Social dialogue has to be an integral part of the institutional framework for policy making and implementation at all levels. Adequate, informed and ongoing consultation should take place with all relevant stakeholders.*
- (b) *Policies must respect, promote and realise fundamental principles and rights at work.*
- (c) *Policies and programmes need to take into account the strong gender dimension of many environmental challenges and opportunities. Specific gender policies should be considered in order to promote equitable outcomes.*
- (d) *Coherent policies across the economic, environmental, social, education/training and labour portfolios need to provide an enabling environment for enterprises, workers, investors and consumers to embrace and drive the transition towards environmentally sustainable and inclusive economies and societies.*
- (e) *These coherent policies also need to provide a just transition framework for all to promote the creation of more decent jobs, including as appropriate: anticipating impacts on employment, adequate and sustainable social protection for job losses and displacement, skills development and social dialogue, including the effective exercise of the right to organise and bargain collectively.*
- (f) *There is no 'one size fits all'. Policies and programmes need to be designed in line with the specific conditions of countries, including their stage of development, economic sectors, and types and sizes of enterprises.*
- (g) *In implementing sustainable development strategies, it is important to foster international co-operation among countries. In this context, we recall the outcome document of the United Nations Conference on Sustainable Development (Rio+20), including Section VI on means of implementation."*

Source: (ILO, 2015).

Labour perspectives

"The transition will require completely different jobs. From an environmental perspective, the transition will be beneficial for everyone. But where will the new jobs be created? Not in the energy sector. A wind farm doesn't need workers. It needs builders, chemical factory workers, mechanical engineers to make motors. Once the installation is complete there are no workers. One person is in charge of maintenance, another person is sitting in front of a computer monitoring everything. The same is true with solar. There are mineral materials such as lithium and cobalt. Chemical liquids. So what happens to all of these people in the extraction industries, who work on oil and gas platforms, who work in the refineries? This is why we need a just transition." (Trade union interviewee, 2020).

As the world of work is profoundly modified by the energy transition, new challenges and opportunities will continue to emerge. The challenge lies in ensuring that the transition is delivering decent jobs for workers moving out of fossil fuel industries, with different tasks in the mining sector and in utilities.

According to the International Trade Unions Confederation (ITUC):

“For energy sector workers in most oil and gas producing countries, there is no social dialogue about Just Transition, climate targets and the future. Some employers and governments have created their own versions of “just transition” that do not involve workers and their representatives. Most have not involved unions in developing decarbonisation plans or in plans for Just Transition.” (ITUC, LO Norway, IndustriAll, 2022)

Another issue arises with regard to the need to avoid precarious employment in renewable energy industries, where job quality and occupational health and safety vary tremendously between sectors and regions. At the same time, there are opportunities to address historical injustices and include and empower marginalised groups.

Some of the most important findings from the consultations are summarised here:

- **Stronger consensus.** More effort is required to build a stronger consensus with, and within, the labour movement that better aligns the climate agenda and the interests of workers. While many trade unions in energy and other industries support this vision (“no jobs on a dead planet” is a frequently heard union slogan), it is not a foregone conclusion that all do. Many workers cling to the fossil fuel industry – for job and financial security, especially in the absence of comprehensive strategies to ensure decent, well-paying alternative jobs and a solid safety net.
- **Social dialogue** (discussed further below). This is the key to ensuring labour interests are heard and addressed. As noted in the ILO Just Transition Guidelines: *“Social dialogue has to be an integral part of the institutional framework for policy-making and implementation at all levels. Adequate, informed, and ongoing consultation should take place with all relevant stakeholders.”* Unfortunately, this is still the exception rather than the rule. Solutions built on common ground as part of transparent, inclusive processes will be far more legitimate and durable, and therefore far more likely to succeed.
- **Local value creation.** As the energy transition entails improving energy efficiency and moving to more decentralised renewable energy systems, in many cases there will be new opportunities for local job creation and a more equitable sharing of benefits. Home insulation and small-scale installations of residential solar, for example, are multi-billion dollar industries, carried out largely by local contractors. While the total number of jobs will increase over the course of the energy transition, there are concerns that, with the exception of large projects, they are more likely to be non-union, lower-paid, contract-based and less secure. However, the tendency towards greater temporary work is observed across various sectors globally (ILO, 2022a). In other words, the quality of jobs is considered as important as the quantity - it is not enough to have a job, it needs to be a decent job in terms of wages, job security, social protection, and health and safety. Workers in all sectors, formal and informal, should be entitled to quality jobs.
- **Tailored strategies.** There is no ‘one size fits all’ just transition strategy; country-by-country action strategies will be needed, with each country requiring a different approach and time frame depending on the nature of its energy sector and other factors. Strategies need to be based on good information around the impacts of decommissioning fossil fuels and the implications for the loss of employment and income, and must align with international agreements. This is a complex process that requires time and planning. That said, much can be learned from existing best practices, and several examples were provided during the consultation that could serve as models for other countries, including Germany, Spain, Australia and Nigeria. Spain was referenced frequently and is highlighted here, as described in Box 2 (Instituto para la transición justa, 2022).
- **International labour standards.** It is important that international labour standards are upheld as new industries emerge. They have been established by governments, employers and workers to set out basic principles and rights at work. These principles cover freedom of association and the

effective recognition of the right to collective bargaining; the elimination of all forms of forced or compulsory labour; the effective abolition of child labour; and the elimination of discrimination in respect of employment and occupation (ILO, 2023a). Governments have a responsibility to establish enabling measures, while employers hold special responsibility for their practical implementation. Binding plans are required across value chains, including for example grievance procedures and preventing human rights abuses or modern forms of slavery.

- **Occupational health and safety within international labour standards** are also important concerns and are not adequately addressed in many countries. There are genuine health concerns in some emerging areas, for example mining in remote places or recycling materials that have toxic components. Standards and regulations need to be complemented with inspections and checks.

“Moving from the linear economy to the circular economy is having a big impact on workers. For example, collecting waste and taking it to the landfill is not the same as recycling – special skills are required, and we need to look at health and safety issues. These are not being adequately addressed in many countries. Circular economy policies focus on a new way of production, but there is nothing in it regarding access to the right skills, or that the jobs be performed in a safe working environment. For example, when recycling e-waste, workers need to be sure that when they open computers or other devices they won’t be exposed to harmful, toxic substances. The same is true for bio waste – bacteria and pathogens can accumulate.” (Trade union interviewee, 2020)

- **Funding.** Finally, adequate funding for implementing just transition strategies was seen as a precondition for success. This is addressed in more detail in Section 4.

BOX 2 SPAIN DEVELOPS JUST TRANSITION AGREEMENTS FOR AFFECTED REGIONS

The renewable energy transition in Spain is well underway following decisions to close coal mines and coal-fired thermal power plants in 2018. In October of that year the Framework Agreement for a Just Transition for Coal Mining and the Sustainable Development of Mining Regions (2019-2027) was signed by the government, trade unions and mining companies, guaranteeing immediate support measures for mineworkers and economic support for mining areas.

In 2019 the government launched a Just Transition Strategy with an Urgent Action Plan to address the impacts of the closures.

In 2020 an Agreement for a Just Energy Transition for Thermal Power Plant Closures was reached between plant owners, trade unions and the government, which provided for the relocation of workers and/or support in finding alternative employment in the affected areas. Alternative employment is being found through renewable energy projects as well as other activities.

To address the socio-economic impacts of the affected areas, the Spanish Just Transition Institute launched a series of Just Transition Agreements to guarantee the commitment and co-ordination of national, regional and local public administrations.

A wide array of measures is being deployed to implement these commitments and practice, ranging from support for impacted workers (social assistance and job banks, for example) to promoting business development in a diversified, sustainable economy. Moreover, an Environmental Restoration Plan was put in place for areas degraded by coal mining, with the aim of promoting local socio-economic development.

At every step of the way, stakeholder consultation and participation has been a priority.

Employer perspectives

“A just transition is about changing the fossil fuels-based model and technological revolution is enabling this change. It is also about making it possible for these opportunities for the green economy to develop and materialise. Only by working with others along the value chain can we generate these opportunities. Industrial development, building value chains, suppliers, social dialogue and working hand-in-hand with the community – all are needed to make our plans possible, otherwise we won’t have that green economy. We really see a gap in skills needed so we need to focus on reskilling, skilling youth, making the energy sector more attractive and lowering barriers. We have a risk that marginalised communities will become even less represented, so we need to focus on them as well.” (Employer representative, 2022)

The IRENA consultation involved a series of technical webinars with employers of different sizes, across diverse geographies and renewable technologies. While unanimously supportive of a just transition, employers emphasised the need for governments to create a level playing field. Despite countries’ commitments to increase renewables’ share, the industry faces multiple challenges, such as supply chain issues, cost increases, and economic and political uncertainties. To avoid a race to the bottom, governments must set conditions and create incentives for businesses to act in accordance with just transition principles and for green economy opportunities to develop. Employers highlighted the following priorities:

- **Regulations, standards, due diligence requirements and auction criteria** can be revisited to reflect just transition principles. For instance, if in granting contracts decisions are based solely on cost criteria, environmental or social concerns may be overlooked by businesses.
- **Strong, consistent and long-term renewable energy policies** are needed to allow the development of a market in which small and large companies alike can invest. A predictable and stable environment is essential for encouraging investment in renewable energy and associated power networks, driving the wider green economy and creating sustainable long-term jobs.
- **Developing a skilled workforce** is a priority for employers, as described in more detail in Section 3. This entails public and private partnerships anticipating skill needs and providing the necessary training. Education plays a key role, especially at an early age, to build awareness, skills and motivation.
- **A commitment to diversity** is essential, as further expanded on in Section 3. To bridge the skill gaps and achieve full support for the energy transition, more inclusive policies are needed to attract and retain people from diverse backgrounds. Industry needs to strengthen its communication to address gender biases and misconceptions that highly specialised skillsets are required. A broad range of skills are needed, providing opportunities for people with different level of qualifications. Hence, there is huge potential for technical and vocational training and apprenticeships that result in employment.
- **Local knowledge** is invaluable for successful operation on the ground. Employers recognised that employing individuals from local communities provides access to better understanding of social norms, political realities and social-environmental interactions. Countries and territories have specific contexts and require tailored approaches that must be informed by local communities. This improves the viability and sustainability of the project by creating local value through jobs and other benefits, and increasing social support.

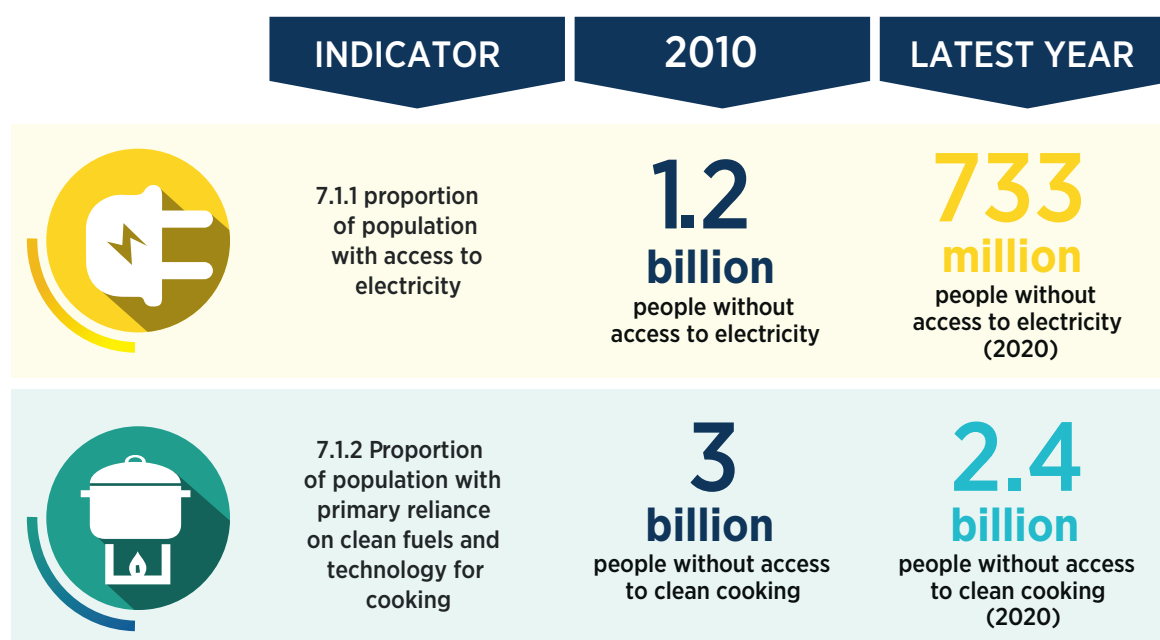
Energy access context

Much of the conversation around just transition centres on workers in industrialised countries who will be negatively impacted by the phase-out of coal. Less attention has been given to the oil and gas workers in both producing and consuming countries. Even more neglected is the charcoal and wood fuel sector, which is the primary energy and emission source in Africa and southeast Asia, employing millions of non-organised informal workers. For example, ILO research in Nigeria finds that 25 million households are engaged in the charcoal and wood fuel sector, which provides 70% of primary energy and is the largest source of emissions and deforestation (UNDP and ILO, 2021). This compares to some 70 000 workers in mostly offshore oil and gas; but there is an equally important need for justice for communities that have limited or no access to modern energy services. This is a key focus of Sustainable Development Goal (SDG) 7; Figure 3 shows significant, if inadequate, progress since 2010. Access to reliable, affordable and sufficient energy has historically been a key enabler of countries' industrialisation goals and will continue to be so for many emerging economies looking to mechanise farms, build local industries and create jobs in pursuit of socio-economic development objectives (IRENA, 2022a).

It also matters how energy access is achieved. Different options will have major justice and labour implications for labour intensity, centralised or decentralised development, ownership and the sharing of benefits and costs.

Decentralised renewable energy (DRE) solutions, such as stand-alone systems and mini-grids, are playing an important role in bridging the energy access deficit. In 2021 over 179 million people gained access to electricity through such solutions (IRENA, 2022b).

Figure 3 Global progress towards universal energy access



Source: (IEA, *et al.*, 2022).

The versatility of this approach allows solutions to be tailored to community energy needs, tap into locally available renewable resources, and develop domestic supply chains that create employment opportunities. This is particularly important for sub-Saharan Africa, where roughly half of the population has no access to modern energy services. The DRE sector is already a major source of employment, with an estimated 374 000 jobs across Africa and 80 000 in India (Power for All, 2022). As a measure of comparison, in Kenya DRE jobs greatly outnumber those of the utility-scale power sector and in Nigeria the figure is fast approaching that of the oil and gas sector.

While DRE solutions offer an immense opportunity to bridge the access deficit, steps need to be taken to maximise their socio-economic benefits, particularly for local communities. The solutions deployed will have implications for labour, ownership structures and the distribution of costs and benefits. For instance, strengthening community engagement and ownership, local skills and value chain development, entrepreneurship support and access to financing can play a crucial role in ensuring not only that access reaches the last household, farm, enterprise and clinic, but also that the solutions are sustainable in the long term.

In addition, the distinction should be made between direct jobs created by DRE and indirect/induced jobs. Providing power results in higher productivity and economic output in rural and remote areas that are usually economically disadvantaged in comparison to urban areas in developing countries. This will unleash huge job creation opportunities in those locations.

As one interviewee noted in the IRENA consultation process:

“Energy is decisive for social and economic development and the energy transition has implications for various issues, like fighting energy poverty, ensuring access to energy and a stable energy supply, potential for industrialisation and technological transition, etc. Another important aspect, from a trade union perspective, is energy democracy. In many countries in sub-Saharan Africa the energy sector is still controlled by private companies or semi-private companies that do not have an interest in a just energy transition. Therefore, it’s important for unions to form alliances with other progressive actors in order to ensure that energy is a public good driven by public interests.”

Given that lack of access to electricity and clean cooking (renewable or otherwise) affects hundreds of millions of people in Africa, Asia and elsewhere, a deeper understanding is needed of how the energy transition will affect employment prospects in these largely rural communities. This requires a broad assessment not only of jobs lost or created (e.g. in charcoal value chains), but also the socio-economic opportunities afforded those communities gaining energy access for the first time.

The close link between energy access, livelihoods and community services (e.g. healthcare and education) should also not be underestimated. Traditional approaches to energy access have involved a largely techno-economic approach, not fully accounting for community needs and aspirations. Beyond efforts to simply deploy technologies, a systemic approach is necessary that positions the diversity of people’s livelihoods and aspirations at the centre of energy access efforts and delivers tailored energy solutions, financing, capacity and skills, market access and policy support to realise the full benefits of energy access (IRENA and SELCO Foundation, 2022). Investing in such an ecosystem is likely to deliver strong long-term socio-economic dividends by cutting across multiple SDGs.

Social equity

The impact of the energy transition on social inequality is complex and will depend on various factors such as policy design, local circumstances and the selected technologies. As energy is a vital input in fertiliser production, food processing, transport, cooking and heating, energy cost changes will affect the price of food and other basic needs. Food, transport and housing account for a large share of low-income household expenditure, but much less in the case of high-income households. Low-income households are therefore impacted disproportionately when energy prices increase. This could result in millions becoming impoverished and there may be further increases in unequal access to employment opportunities, as well as gender, income and wage inequality. Political instability, opposition to climate policies, social unrest and conflict could arise; this could undermine the feasibility of climate action.

A just energy transition must recognise and address income and energy inequality simultaneously (ILO, 2015). The Intergovernmental Panel on Climate Change (IPCC) and World Inequality Lab estimate that within and across countries, the richest 10% of households are responsible for 50% of global greenhouse gas emissions while the bottom half contribute just 10%. This difference not only mirrors the stark inequality in income and energy in the world, but is also a reminder that climate change is caused by the income-rich, in developed, emerging, and developing countries alike. In addition, the half of the world population that owns 2% of total personal wealth is exposed to 75% of relative income losses due to climate change. The top 10% owns 76% of total personal wealth and may incur 3% of relative income losses (World Inequality Lab, 2023). Hence, a just transition also requires measures for adaptation and the alleviation of loss and damage to rectify these injustices.

Among successful policies are "progressive carbon pricing schemes in which revenues are reinvested in social protection systems that ensure income security, for example through cash transfers as part of the implementation of energy price and subsidy reform" (ILO, 2015).

The World Inequality Lab indicates that a transformation of national and international tax regimes is required to increase tax progressivity and ensure that actions to meet climate and environmental crises are equitably shared. As the next section describes, policy frameworks must thoroughly assess the social and equity dimensions to ensure that low-income households are not disadvantaged, but instead benefit from the energy transition (IRENA, 2022a).

Holistic policy frameworks

In re-organising energy systems there is an opportunity to correct multiple problems simultaneously, provided comprehensive holistic policies and approaches are in place (Figure 4). The starting point for any policy framework needs to be an unambiguous target date for phasing out fossil fuels.

BOX 3 THE BEYOND OIL AND GAS ALLIANCE

The Beyond Oil and Gas Alliance (BOGA) is an international alliance of governments and stakeholders working to facilitate the managed phase-out of oil and gas production. Launched at COP26 in Glasgow, core members include Denmark and Costa Rica (co-chairs), France, Greenland, Ireland, Québec, Sweden and Wales. California, New Zealand and Portugal are associate members, while Italy, Finland and Luxembourg are Friends of BOGA.

The alliance aims to elevate the issue of phasing out oil and gas production at international climate forums, mobilise action and commitments, and create an international community of practice on this issue.

Such targets have not been forthcoming, but progress is being made. One outcome of the Glasgow climate negotiations in 2021 urged developed countries to phase down unabated coal by 2030, with other countries following suit by 2040. Although a similar effort calling for the phase-out of all fossil fuels failed to achieve the necessary support in Sharm el-Sheikh in 2022, initiatives such as the Beyond Oil and Gas Alliance (see Box 3) and the net-zero CO₂ emission targets adopted by many governments suggest it may only be a matter of time before explicit commitments to phase out oil and gas become the norm (BOGA, 2022).

Quite apart from the imperative to rapidly reduce CO₂ emissions, accelerating climate change impacts will test the resilience of existing energy infrastructure. Due consideration will need to be given to increasing resilience, and the decentralised nature of renewables confers significant advantages in this regard.

The fact remains, however, that many economies are dependent on the fossil fuel production and exports. Institutional arrangements, sectoral structures and investment patterns often reinforce this dependency. It is also challenging to reverse the inertia of the fossil fuel-based energy system due to the decades of investment and sunk costs. In some countries, existing supply chain structures are incompatible with renewable energy development. This relates to macroeconomic conditions such as commodity dependence, technological dependence, trade dependence and the reality of workforce imbalances. Again, the challenges and opportunities of phasing out fossil fuels will differ across regions.

There is general agreement that the benefits of the energy transition will outweigh potential negative repercussions, first and foremost because *not* effectively addressing the climate crisis will have extreme negative consequences. Additional environmental benefits (e.g. air and water quality) and the potential to create new jobs are also undeniable. However, active policies and plans are needed to realise these benefits. A just transition is unlikely to be delivered by market forces alone; political interventions, co-ordination, planning and monitoring are required.

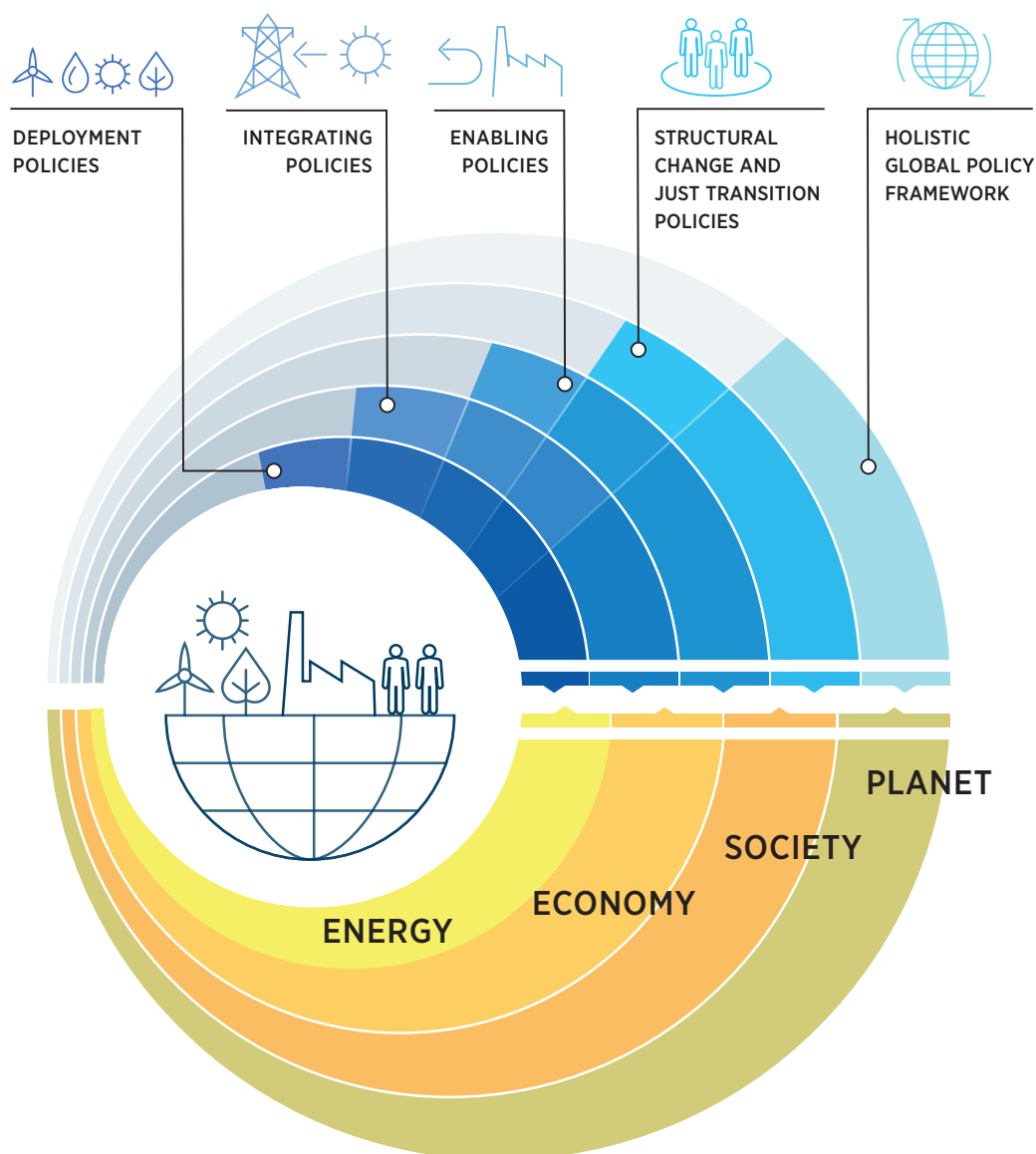
Governments must create long-term plans to anticipate and mitigate misalignments (temporal, spatial, sectoral and educational misalignments, as well as structural circumstances). The energy transition requires long-term policy frameworks across a range of areas including deployment instruments, enabling policies such as national and regional commitments, policies for integrating renewables into the energy system along with structural and just transition policies. The latter can include measures to adapt socio-economic structures to the energy transition, labour market policies and social protection (e.g. training and retraining), and industrial and trade policies.

To secure the buy-in of governments and wider society to the just transition agenda, the socio-economic potential associated with the energy transition must be better understood and accounted, and the risk of inaction highlighted. A transition to renewable energy sources will stimulate various new industries in the renewables value chain, as well as in energy applications that are driven by access to green and competitive energy or new green economy-based activities (e.g. electrolyzers for green hydrogen production). The success of adjustment programmes will depend on a country's ability to align these processes.

Each country and region faces a unique set of circumstances and capabilities, which need to be taken into account as policy frameworks are developed, along with the different perspectives of stakeholders. Stakeholders at all levels should be engaged – from socio-economic councils, skills councils, climate action bodies and other relevant institutions.



Figure 4 Holistic policy frameworks



Source: (IRENA, 2022a).

It is important to consider how broader communities are affected by the transition, including secondary impacts on indirect jobs, education, and healthcare. Countries and regions will need robust industrial policies after carefully assessing who is affected and how costs and benefits are to be shared. This will require measuring and understanding the numbers of affected workers, including those who are employed in the informal sectors, and possible opportunities. Green technology transfer is also critical.

In the short term, local plans are needed for regions reliant on coal (as the first fossil fuel likely to be phased out) where the effects of the fading industry will be felt most acutely. Industry policy should build on existing skills and territorial advantages and go beyond the energy sector with concrete plans to diversify the economy and develop local opportunities. Investments in mine remediation will generate jobs and create a healthy and attractive environment for the local community. There might be opportunities to use existing infrastructure to develop renewable energy projects or capitalise on transferable skills to support new and emerging industries (e.g. solar and hydrogen). However, in other cases, economic diversification will be needed, involving other sectors in the planning process. Again, these plans should be developed in consultation with all the actors involved.

1.4 NEW DEVELOPMENT MODELS COMPATIBLE WITH CLIMATE, ECOLOGICAL AND SOCIAL SUSTAINABILITY

Eschewing fossil fuels is essential, but is it enough? It is questionable whether the dominant economic model of growth, deregulation, linear resource use and trends towards privatisation are optimal for achieving climate objectives and a just energy transition. Relying too heavily on market mechanisms to drive the transition may not deliver the results we need in the time frame we have left for limiting global temperature rise to 1.5°C. Some activities essential for a climate-safe world – for example nature-based solutions – do not have value in the market and need to be supported through other means. The same holds true for the creation of a social safety net for workers during the transition. Most economic systems are hybrid, and most countries have mechanisms for dealing with elements that do not neatly fit market dynamics. Solutions exist but require scaling up and further development in areas that were previously not considered.

This leads to the broader discussion on energy democracy. A shift away from centralised fossil fuel-based systems could be transformative, facilitating broader participation and more equitable sharing of benefits with the right conditions in place.

In addition, countries and communities have differentiated responsibilities and capacity to act, as well as varying circumstances and starting points. As a result, equity considerations between and within countries, as well as between the global North and South, are central to just transition approaches.

Countries at different stages of development face different challenges. Industrialised regions with high carbon footprints need to reimagine the world of work within planetary boundaries. Options include a reduction in consumption, increased energy efficiency and circularity. Regions with low energy access, on the other hand, require higher consumption of energy and materials to improve living conditions for their communities.

The energy transition can be pivotal for modern economic development. Developing and emerging economies have the opportunity to leapfrog the traditional fossil fuel development trajectory and move directly onto a renewable energy pathway. However, this presents considerable challenges, as a significant amount of investment and infrastructure is required, which countries might lack. In addition to having access to green technologies, an enabling environment must also be created. If support is available and appropriate policy frameworks are implemented, this pathway has benefits for social and economic development: increasing access to energy for those who do not currently have it; improving livelihoods by ensuring a more stable energy supply; enabling industrialisation and technological transition; and offering potential benefits for employment, health and women's empowerment. New jobs can be created in renewable industries such as wind, solar and green hydrogen, and associated sectors such as transport, energy efficiency and infrastructure.

Some have suggested that a global public goods approach is needed (United Nations, 2023). In the case of the energy transition, for example, intellectual property rights could be modified to remove barriers to renewable energy technology transfer.

Section 2

Creating decent jobs



“Decent work sums up the aspirations of people in their working lives. It involves opportunities for work that is productive and delivers a fair income, security in the workplace and social protection for families, better prospects for personal development and social integration, freedom for people to express their concerns, organise and participate in the decisions that affect their lives, and equality of opportunity and treatment for all women and men.” (ILO, 2023b)

This section focuses on elements that constitute a decent job and how to uphold these standards in the evolving energy sector as the energy transition unfolds.

As discussed previously, new jobs must be decent jobs if the transition is to gain the full support of the labour movement. The importance of this topic was recognised in the 2015 negotiations of the 2030 SDGs. SDF 8 is to *“promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”*, and the concept is included in the targets of many other SDGs (UN, 2015).

The distinction should be made between the largely formal energy sector in the global North, and the global South where a large proportion of workers are in informal or precarious employment (ILO, 2019a). A just transition in the latter includes formalising working arrangements to protect the livelihoods of those in fossil fuel industries that are set to decline and ensure decent jobs in emerging energy transition-related jobs. As some industries gain importance, they will also face growing demands for upholding labour standards and safety, for example in the mining of critical materials needed for renewables and storage technologies. Precarious and informal employment is an immense global issue already, and efforts should be made to support the most vulnerable workers who are in no position to bargain for better conditions on their own.

In the global North, the conventional fossil fuels-based energy sector has been heavily focused on mining and the utility sector. As this centralised energy system shifts to a more DRE-based system, the risks of lower labour standards in a potentially less unionised workforce need to be comprehensively addressed. A significant portion of the renewable energy industry is found in sectors such as solar rooftop installation, that may provide jobs that are temporary and less secure. There is a reasonable desire amongst workers that the transition should provide comparable jobs in terms of quality and salary for those affected by closures (IndustriAll, 2022).

In addition, given the spatial misalignments, increasing labour migration will be one of the consequences of the energy transition. While this presents opportunities for people to improve their livelihoods, it must be acknowledged that migrant workers, especially those who are undocumented, will more likely be subjected to exploitation and insecure working conditions. These risks must be properly addressed, including the use of gender-responsive solutions, as migrant women face different challenges and vulnerabilities (UN Women, 2020).



2.1 ENSURING DECENT JOBS MEANS THAT ALL VOICES MUST BE HEARD: SOCIAL DIALOGUE AND PARTICIPATION

As was repeatedly emphasised during the consultation, underpinning just and inclusive energy transitions is social dialogue, where workers represented by labour unions can communicate their needs and engage in collective bargaining. Social dialogue is critical to enable broader consensus and buy-in. Employers, workers, communities and historically marginalised people must all have a seat at the table when discussing the transition, and be involved in decisions affecting their livelihoods, including relocation, training, and safety nets (such as benefits for early retirement). Equity and broad stakeholder participation are enablers of broader consensus, which in turn facilitate deeper and faster mitigation (IPCC, 2022a).

Social dialogue can be trilateral, involving governments, employers and workers, or bilateral between labour and management. Social dialogue encompasses all formal and informal practices of negotiation, consultation and information exchange on issues related to economic and social policy. The Ørsted case study (Box 4) is an example of such collaboration (Ørsted, 2022).

BOX 4 ØRSTED AND NABTU PARTNERSHIP

Ørsted - an international renewable energy company leading in offshore wind power - and North America's Building Trades Unions (NABTU) established a partnership with the ambition of creating a framework designed to facilitate the transition of US union construction workers into the offshore wind industry. As a result of the partnership, Ørsted and NABTU announced a Project Labor Agreement - the National Offshore Wind Agreement (NOWA) - to construct Ørsted's offshore wind farms with an American union workforce.

A first-of-its-kind in the United States, the NOWA sets the industry standard from the outset and raises the bar for working conditions and equity, injects hundreds of millions of dollars of middle-class wages into the American economy, creates apprenticeship and career opportunities for communities most impacted by environmental injustice, and ensures projects will be built with the safest and best-trained workers in America. The NOWA covers all of Ørsted's contractors and subcontractors that will perform offshore wind farm construction from Maine to Florida (offshoreWIND.biz, 2022).



There is a critical need for enabling policies and conditions that facilitate labour-inclusive planning processes. This entails long-term partnerships between governments, industries and labour unions; and local, regional and international social dialogue procedures to guide the transition process. Enabling conditions include:

Clear processes that set out how the social dialogue outcomes will be incorporated into decision making at all stages, leading to binding agreements that are enforceable.

Establishing ownership of the process - workers must be involved in decision making about their livelihoods and be given opportunities to make informed choices. Decision makers should avoid making assumptions about what workers' individual needs might be, as this can generate discontent and social disruption.

Transparency - questions concerning the type and location of jobs, or other relevant factors such as local economic stimulation, must be open for debate and consideration through transparent social dialogue platforms.

In regions where effective social dialogue has taken place, and within companies that have collective bargaining, the transition has been much smoother - which is in the best interests of all involved.

Additionally, it is important to involve local communities to enhance social acceptance and support for the transition, as well as to ensure the benefits are shared locally. Communities can also provide valuable insights into their needs, priorities and concerns, which can inform projects and initiatives that reflect the unique characteristics and challenges of each community (Box 5 illustrates Acciona's approach).

BOX 5 ACCIONA'S SOCIAL INITIATIVES

ACCIONA Energía is a global energy company operating exclusively in renewable technologies for more than 30 years. It prioritises social initiatives that create local value and are identified through social dialogue and participation. As part of its Social Impact Management model, the company organises community round-table discussions to listen to the needs and priorities of the communities where it operates and, on this basis, a customised social action plan is drawn up. The purpose of these discussions is to provide information on the project being developed by Acciona, to open communication channels and, above all, to reach a consensus on the social investment initiatives to implement. The events are usually attended by local social and cultural associations, social centres and some landowners and nearby residents.

For instance, in 2022 at its photovoltaic plant in Bolarque (Cuenca, Spain), residents decided to carry out a project to revitalise the local olive oil co-operative, which was in difficulty. A social enterprise with expertise in rural areas, Agrovidar, was hired by ACCIONA Energía to provide a diagnosis, develop a strategy and business plan, and implement improvement measures. As part of the study, Agrovidar surveyed all members of the co-operative and people from the municipality to assess perceptions of the co-operative. The resultant measures, collectively agreed with the farmers, include theoretical and practical training sessions aimed at improving olive oil production and a communication plan to improve branding. An impact measurement study is being carried out and a significant impact on profitability and the employment generated by the co-operative has already been observed.

2.2 WORKING WITH DIGNITY AND FAIRNESS: FUNDAMENTAL HUMAN AND LABOUR RIGHTS

Every individual deserves a workplace that respects fundamental human and labour rights. ILO international labour standards set out basic principles and rights at work (ILO, 2019b). UN Guiding Principles on Business and Human Rights establish the responsibility of business to respect internationally recognised human rights (United Nations, 2011). In general, decent work should provide equal opportunities, opportunities for personal development, fair income, job security and safe working conditions. Workers should feel safe to organise themselves and express their concerns. Employers are ultimately responsible for implementing these principles.

As the world transitions away from fossil fuels, structural adjustments need to be carefully managed to ensure income security and fair treatment of affected workers in the most vulnerable sectors and regions. ILO defines employment security as "the protection of workers against fluctuations in earned income as a result of job loss" (ILO, 2023c).

The ideal promoted by ILO is universal social protection as a human right. It is important to have a financial security system in place for those who are losing their jobs and unable to find new ones, such as unemployment benefits, pensions and early retirement plans.

At present, however, social protection policies and capacity vary widely across countries. More than 4 billion people - around half of the world's population - lack any social protection (ILO, 2021). It is the responsibility of governments to create enabling policies and conditions to rectify this problem. The challenges of contract workers and those in the informal sector require particular attention, as they are likely to be in a more vulnerable position than company workers. Businesses, in collaboration with labour representatives, can actively develop internal policies supporting well-being and dignity at work, as illustrated in Box 6 (ENEL, 2022).

Respecting human rights, of course, extends beyond labour. In developing renewable energy projects, companies must take care to respect the rights of landholders, indigenous peoples and other stakeholders. Prior informed consultation and consent should be at the centre of planning processes.



BOX 6 ENEL “STATUTO DELLA PERSONA”

The Enel Group operates in more than 30 countries, bringing energy to millions of people. Renewable energy accounts for an increasing share of its total capacity and currently stands at two-thirds.

In 2022, Enel signed the *Statuto della Persona* together with trade unions in Italy, namely FILCTEM, FLAEI and UILTEC. This initiative focuses on three areas, namely: “well-being, participation and productivity, in order to promote the protection of dignity at work, inclusiveness, the measurement of productivity taking into account the human factor, work-life balance and flexibility, as well as the construction and safeguarding of a prejudice-free environment” (Syndex, 2023).

It also envisages knowledge and continuous learning based on a “life-long learning” model. Employees will have access to training, professional refresher courses and apprenticeships. There will be an element of female empowerment to encourage the selection of scientific disciplines (science, technology, engineering, and mathematics, STEM).

Another aspect is safety culture and behaviour. This will include “the *ex-ante* and *ex-post* analysis of accident risks, the identification of the most innovative technologies for accident prevention, the empowerment of workers and the strengthening of the safety culture, including through the involvement of the supplier network” (Enel, 2022).



Section 3

Building the workforce of the future



“Workforce development remains an essential component of the energy transition that should be addressed in the context of a broad policy framework comprising industrial policies, education and skills training, labour market policies, enterprise development, diversity and inclusion strategies, regional revitalisation and social protection measures, based on social dialogue.” (IRENA and ILO, 2022)

The energy transition will transform the world economy, creating millions of new renewable energy- and transition-related jobs (e.g. in green hydrogen, digitalisation) while also calling for the mainstreaming of green skills and competences within existing occupations.

Education and workforce training must be prioritised, not only to reskill the current workforce and build the pipeline of future energy workers, but also to empower the public and ensure that workers in all sectors can flourish in a net-zero economy. As described in the first chapter, the jobs lost in fossil fuel sectors will not necessarily be replaced by jobs in the renewable energy sector – opportunities will be created in energy efficiency, site remediation or entirely new fields, building on local strengths or responding to local demands. The energy transition, combined with other trends such as digitalisation, automation and the movement toward a circular economy, will bring profound changes to the skills and occupations that will be in high demand in the coming years. A renewables-based energy system will bear little resemblance to the current system based on fossil fuels.

To maintain the momentum of the transition and minimise disruption, it is important to identify the skills that will be needed: technical, managerial, digital and so forth. There is currently a mismatch between the skills needed for a green economy and the availability of skilled workers to meet that demand. Improving alignment requires long-term planning that anticipates changes in the energy landscape, and in the process identifies existing skills within the energy workforce as compared to the skills most likely to be needed in future.

If governments, industry, educational institutions and trade unions collaborate in this planning, the outcomes are more likely to be successful. Initiatives that facilitate this co-ordination can contribute to skill-matching efforts for better social outcomes.

3.1 SKILLS, EDUCATION, AND TRAINING

IRENA projects that by 2030 there will be around 85 million energy-related jobs, requiring extensive skilling and workforce development (IRENA, 2022a). Addressing skills shortages must go beyond the power sector by also building both the technical and soft skills vital to the energy transition in areas such as heating and cooling; green hydrogen production technology and infrastructure; electric vehicle manufacture and infrastructure; digitalisation; energy storage; innovation; and entrepreneurship. It must also address skills specific to both utility-scale and decentralised solutions.

Having a higher education degree is not a precondition for working in the new energy economy; there will be opportunities at all levels of education and practical skills. There is a particular demand for individuals with higher-level training in the STEM fields, but also those with generic skillsets and fewer formal skills such as in construction. For existing energy workers, training, vocational and educational programmes (including on-the-job training and apprenticeships) and other professional development can be offered in a relatively short period of time. For future workers, there is a need to create tailored programmes as well as to transform existing courses and disciplines by mainstreaming and integrating the required skills. In the case of occupations requiring regulated professional licensure, such as skilled trades persons and professional engineers, there is likely to be the opportunity to bring licensing requirements in line with emerging skilling priorities.

Educational institutions should work in close collaboration with governments, industries and trade unions to ensure that curricula and certification programmes are in line with the requirements of the changing economy. Specific recommendations include:

- Wherever possible, capture and capitalise on the preferences and transferable skills of workers currently employed in fossil fuels. Where companies are diversifying into renewables, they should prioritise in-house training for their workers. Data-driven approaches are needed for a good understanding of requirements at the local and regional levels.
- Young people, women and minorities represent a critical talent pool. Skills and education should equip them to respond to future needs. This is covered in more detail in the following section.
- Training programmes should not be dictated from the top, but adapted to local circumstances and coupled with investment. Workers should be presented with meaningful choices and adequate conditions to complete the training in terms of timing, location, accessibility and funding. Training should lead to viable employment opportunities.
- The specific realities and demands for skills, education and training of small and medium-sized enterprises (SMEs), as well as micro and informal enterprises, will be different from those of large enterprises and need to be taken into account in planning exercises.
- Training for communities is essential to maintain the continuity of community renewable energy projects after the implementation period. This is necessary to avoid the return to the use of kerosene and other dirty sources of energy.
- Employers in particular have an important role to play in skills delivery and many already engage in training for current and potential workers. Building public-private partnerships for skill delivery can contribute to enhanced skills standards, learning quality and access to specialist equipment, as well as innovative financing for skilling.
- As technologies and systems advance, newer skills will be needed, for which continuous vocational and professional development programmes may have to be designed, developed and delivered.
- Transitioning from fossil fuel-based systems will require learning and unlearning practices, as well as addressing resistance to change.
- The teaching of climate change and basic energy knowledge at school level should be supported as it will have long-term effects on the future labour force and its diversity.
- As discussed in Section 4, social support and financial compensation should be available for those in a transition period or able to take early retirement.

Developing joint strategies and roadmaps, as in the case study presented in Box 7, can help ensure the success of these efforts (IndustriAll, 2021).



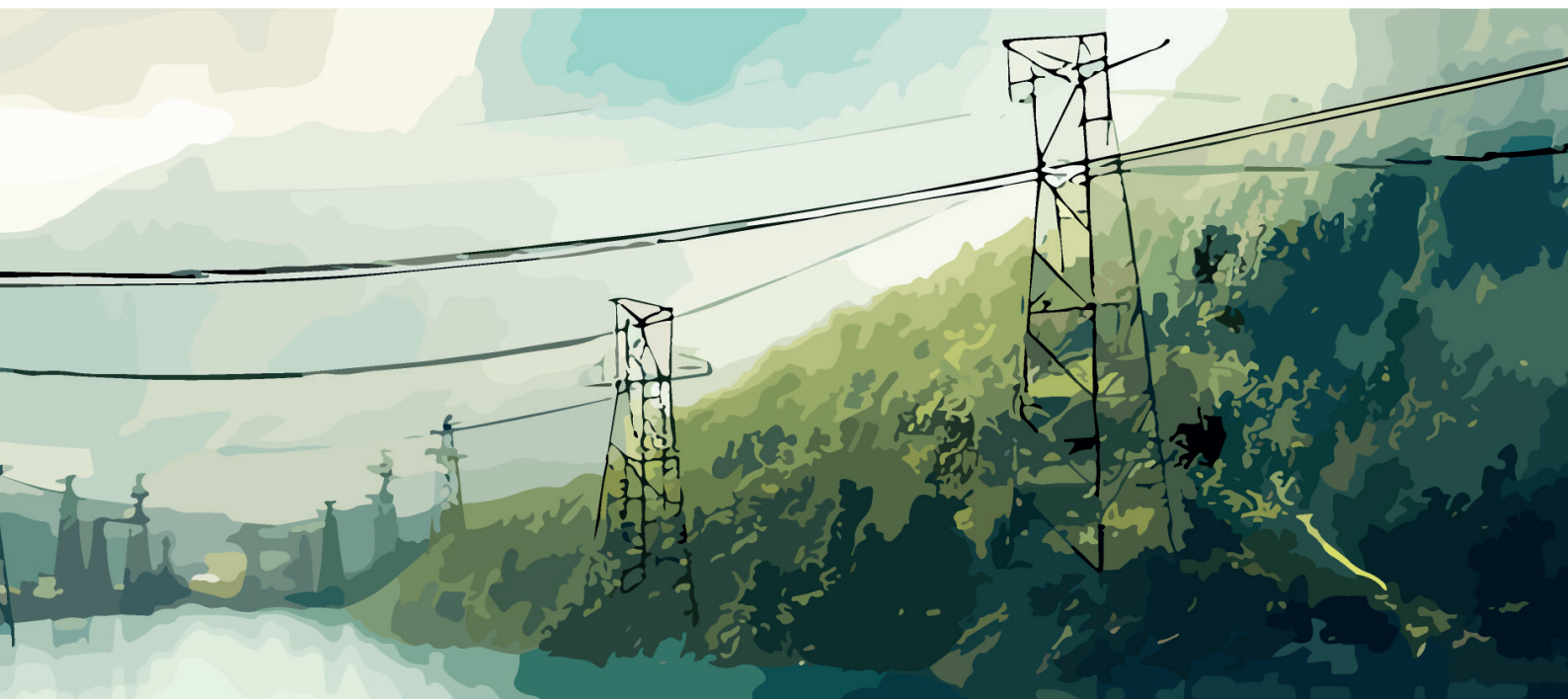
BOX 7 SKILLS2POWER – BUILDING SKILLS INTELLIGENCE IN THE ELECTRICITY SECTOR

The four-year project to “Strengthen the role of national social partners and VET (vocational education and training) providers to build skills intelligence in the electricity sector” – also known as the Skills2Power project – came to a successful close in 2021 (IndustriAll, EPSU, Eurelectric, 2021). Its purpose was to develop concrete joint strategies for skilling, upskilling and reskilling workers in the electricity sector in France, Italy, Spain, Hungary and Sweden. It was co-ordinated by the European social partners for the electricity sector – the European Public Service Union (EPSU), IndustriAll European Trade Union and Eurelectric – and the Spin360 consultancy, which served as a technical partner.

National capacity-building workshops supported the development of national roadmaps for education and skills in the electricity sector. Throughout the project, a number of key themes emerged, summarised in the following recommendations that national stakeholders can follow:

1. *Encourage continuous and comprehensive dialogue among the various stakeholders to strengthen skills intelligence, anticipate trends in labour market and skill needs, and facilitate the planning of the corresponding VET supply.*
2. *Address a varied and fragmented training offer by setting up a unified interface, platform or database where all sectoral courses are mapped out and listed. This should also integrate complementary information deriving from the industry itself (skills, competencies, professions etc.).*
3. *Gain a co-ordinated understanding from companies of the type of skills and competencies they are looking for. Here, the role of a co-ordinating authority at the strategic or sectoral level is key.*
4. *Tackle the financial burden by creating a repository of available regional, national and European funds. Here, the role of the government is important in proposing a plan for skills development and financing for the sector.*
5. *Attract a new skilled workforce and learn from best practices in other sectors. Learn and co-ordinate with other industries as well as reflecting on strategies to make the sector more attractive by improving tools, human resource strategies and synergies between companies and training providers.*
6. *Consider the regional and national coverage of these actions, as some countries follow a more nationwide strategy, whereas others prefer more autonomy at the regional level.*

(IndustriAll, 2021)



3.2 WORKFORCE DIVERSITY

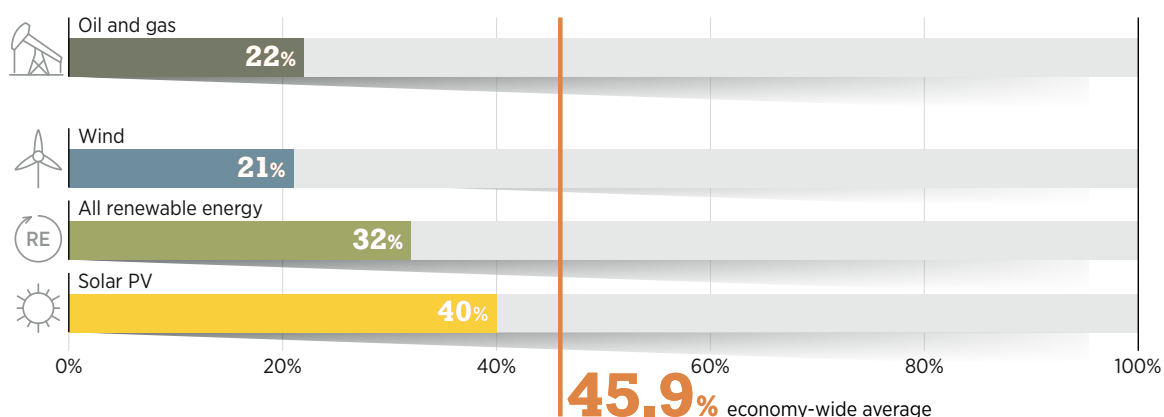
Opportunities should be accessible to all regardless of educational level, socio-economic background, ethnicity and gender. The benefits of a more diverse and inclusive workforce in the energy sector are manifold. It is well documented that companies with policies aimed at promoting diversity perform better and have access to a broader talent pool (McKinsey & Company, 2020). A diverse workforce representative of its community is also better placed to meet the needs of all community members, contributing to fairer societies. This is of particular importance in the energy sector, given that it provides an essential service.

Early exposure to energy-related career pathways will play an important role in building a diverse talent pipeline. Efforts to create an inclusive workforce must extend beyond the workplace itself and leverage opportunities to engage diverse students still in education and training.

Gender

Women are currently underrepresented in the energy sector, and most acutely when it comes to STEM positions and senior management jobs. Their participation is higher in the renewable energy sector – accounting for one-third of all renewable energy jobs) compared with 22% in the oil and gas industry, as shown in Figure 5 (comparable data are not available for the coal sector, but it is doubtful the percentage of women would be higher) (IRENA, 2022c).

Figure 5 Women’s share in the energy workforce



Source: (IRENA, 2022c).

More positively, the DRE sector has created substantial job opportunities for women, often mirroring their share in the overall labour force (Power for All, 2022). DRE enables the participation of less educated women in rural areas. However, as the sector transitions to more advanced systems, there is a risk that these women might be left out. In addition, women continue to be underrepresented in labour unions, both in membership and leadership positions (ILO, EU, UN Women, ITUC, 2020).

With targeted policy initiatives – including at the company level – the share of women employed in renewable energy jobs could dramatically increase. Women, unfortunately, face both conscious and unconscious biases that can result in barriers to entry and progress up the career ladder. In order to fully engage women, governments and companies need to be aware of the challenges women face and make adjustments that cater to their needs. They must protect women’s rights and guarantee them equal job opportunities and wages commensurate with the equivalent work done by men. Box 8 illustrates an innovative initiative to empower the female workforce (GWEC, 2023).

BOX 8 WOMEN IN WIND - GLOBAL LEADERSHIP PROGRAMME
AND EMPOWERING THE FEMALE WORKFORCE

The Global Wind Energy Council (GWEC) and Global Women's Network for the Energy Transition (GWNET) launched the Women in Wind Global Leadership Programme in 2019 with a mission to advance the role of women as agents of change in the global energy transition, in line with SDGs 5 and 7, and to contribute to a more just, innovative and prosperous society. Women in Wind serves as a multidimensional programme including mentorship, learning and development, webinars, a study tour and an online storytelling campaign. The programme is designed to accelerate the careers of women in wind power, support their pathway to senior leadership and foster a global network of knowledge-sharing, inclusion and empowerment (IRENA, 2020c).

The value provided in this programme allows women to address the barriers and constraints that they face in the workforce through guided mentorship. This can be extremely powerful in enabling women to pursue careers with as equitable chances as those of their counterparts. Women in Wind represents the voice of women in the wind sector at international for a such as the UNFCCC and IRENA.



A commitment to gender mainstreaming is one of the most effective ways that governments can support and promote gender equality. Governments, together with social partners, should "promote equality of opportunity and treatment for women by ending gender-biased practices" and eliminating violence and harassment in the world of work, among other measures. They should also foster equal and inclusive employment policies and "equal treatment in recruitment, promotion and training" in the industry (ILO, 2022b). In addition, gender-disaggregated data should be collected and statistics and research disseminated to guide a just transition.

Businesses and other organisations can:

- Establish better workplace practices.
- Adopt policies and regulations to increase transparency (for instance, improved hiring practices could include salaries on job advertisements).
- Ensure gender-blind promotions.
- Enforce equal pay (eliminating the pay gap).

Workplaces can also offer parental leave beyond the minimum required by national law, for example, or facilitate flexible arrangements, including hybrid work, telecommuting, remote work, condensed work weeks, flexitime, part-time work, shift work and job sharing. This is particularly appropriate for workers with caring responsibilities and during childbearing years. Networks and systems to support training and mentorship can be an effective tool to ensure women grow their skills and gain new perspectives on their life and career opportunities, including in STEM fields.

Electrician and installation skills are expected to be the most in demand in the DRE sector. There is a need for targeted skills development programmes that recognise these future needs in the energy sector, as well as interventions to ensure women have equitable access to training and those jobs. Box 9 provides a good example of how this can be implemented in practice (Iberdrola, 2022a).

Fundamentally, it will be necessary to change the mindset surrounding gender-stereotyped roles both in the workplace (e.g. technical jobs are for men) and beyond (e.g. women are in charge of caring duties). Women are already active and taking leadership positions in the field and their example could be showcased to promote more opportunities for women. Misperceptions in this regard should be addressed at a very early age, well before the time when students begin thinking about their professional futures.



BOX 9 SCHOOL OF ELECTRICIANS FOR WOMEN

Iberdrola is a world-leading power utility, committed to promoting the presence of women in careers related to STEM. The company believes that, through training, over time women will occupy positions of leadership which, until now, have been occupied mainly by men.

For example, in 2019 its Brazilian subsidiary Neoenergia established a School of Electricians uniquely for women, with the aim of encouraging female entry into this field and given their low enrolment in the original mixed school.

Initially, the company anticipated that the major challenge would be recruiting women who were interested in training for a career as electricians, historically a male-dominated sector. So, the company looked for the right channels with state and national reach to help advertise the programme, working with community organisations to attract and retain interested candidates (e.g. by collaborating with celebrity influencers, non-profit partnerships in local communities and famous musicians). A partnership with the state government helps women obtain a driving licence, thereby removing a potential barrier. In addition, information sessions were organised for women already working for the company to share their experiences.

Training programme courses were set up in conjunction with FAT/SP (Foundation for Technology Support São Paulo) and SENAI (National Service of Industrial Training), one of the biggest networks for professional training in Latin America. The courses are available in São Paulo (SP), Bahia (BA), Pernambuco (PE), Rio Grande do Norte (RN) and Distrito Federal (DF). This approach helped to provide the instruction and curriculum needed to ensure that women felt engaged and included. The company also started a mentoring programme with volunteer employees to maintain student engagement with the company.

Having increased the number of women in the power sector through the School of Electricians, there was a need to reassure male employees that the women were not competing with them. Leadership from the CEO was critical, and he emphasised his belief that the programme would lead to an overall positive cultural shift for the company.

Given that those in the field operate at heights and lift heavy objects, the company has also defined specific internal regulations to ensure suitable working conditions are provided during pregnancy and for those returning after maternity leave.

The courses, which are free and take around seven months, prepare women to gain employment within energy distribution companies (at Neoenergia and other companies). They include basic training for electrical power distribution network electricians. Upon completion of the course, students are able to work on the electrical power system in de-energised structures of up to 13.9 kV. In distribution networks in the northeast and in Brasília, the scope includes maintenance and commercial services, with a workload of 480 hours. In São Paulo, in addition to maintenance and commercial services, students also learn a construction module with a total workload of 774 hours. Training on regulatory standards is provided in all schools (basic NR10, NR10-SEP and NR-35).

With support systems in place to recruit and retain women, the company plans to have mixed classes in the next cohort at the School of Electricians. This will ensure the classroom environment replicates the actual working environment for employees of both genders.

In 2022, given the importance of the School of Electricians for women's inclusion in the workforce, the Board approved two environmental, social and governance objectives to be achieved by 2030 - for women to account for 35% of graduates from the course and 12% of professional electricians at Neoenergia. Since 2019 more than 18 000 women have applied to join and 3 300 women have attended the information sessions. As of December 2022, a total of 637 women had been certified, 60% of whom had already joined Iberdrola's workforce, whilst a further 182 were in the process of being certified. The programme has been recognised by UN WeEmpower as an example of good practice.

Youth

Equipping young people with skills for a climate-safe future will be essential to drive the energy transition. If we want to build a thriving renewable-energy economy, early education should create awareness and motivation, with time the necessary skills taught during later years. At present there is a considerable mismatch between courses being taught and what is needed in practice on the ground. The training and jobs will have to be made attractive to draw young people's attention and for them to join the renewable energy workforce.

The Energy Transition Skills Project, developed by Student Energy in partnership with Ørsted, looked into what is most important for young people across the world when pursuing a job. When ranking their top three priorities, 44.5% of respondents chose purpose of work, 44.4% chose salary and compensation, and 42.3% chose opportunities for growth. Respondents named lack of awareness of existing job opportunities, lack of available entry-level positions, and lack of access to skills training as their key barriers. The majority believed that skills training programmes, internships and work-learn opportunities would help them to pursue the career of their choice. The majority of respondents thought that a STEM background was a precondition for working in the energy transition. This misconception should be addressed, as diverse backgrounds and a wide variety of skill sets will be required in green economy (Student Energy, 2023).

Educators in particular have an important role to play in reaching young people. They can instil the knowledge, values and skills in young people to drive the energy transition. The Energy Transition Education Network was established with the objective of preparing educators to accomplish this undertaking, as described in Box 10 (IRENA, 2022d).



BOX 10 THE ENERGY TRANSITION EDUCATION NETWORK

The IRENA-led Energy Transition Education Network, a new multi-stakeholder partnership, works to build the capacity of teachers, lecturers and trainers to deliver effective renewable-energy learning to their students.

The United Nations Educational, Scientific and Cultural Organization (UNESCO), Teach for All, the United Nations International Children's Emergency Fund (UNICEF), the Institute of Electrical and Electronics Engineers and the Higher Education and Sustainability Initiative are among the founding partners. The network will provide educators with the tools, capacity and innovative practices to enable them to integrate renewable energy into their teaching practices (IWW, 2022).

Green skills training and education should be accessible, affordable and attractive, with a clear career pathway. It is critical to identify what jobs will be needed so that targeted training that is connected to job opportunities can be provided. Both formal and non-formal education and training activities will be needed. Box 11 describes a good practice example of reaching vulnerable youth (Iberdrola, 2022b).

BOX 11 IBERDROLA AND UNICEF ALLIANCE

In 2022 Iberdrola and UNICEF launched an innovative international alliance to empower, train and increase the employability of young people in vulnerable situations in Spain, Brazil and Somalia. The alliance promotes training and employment of young people in vulnerable situations in sectors of the future, such as the new green economy and the energy transition.

With this alliance, Iberdrola drives the "Generation Unlimited global initiative, launched by the United Nations General Assembly in 2018 and led by UNICEF, which seeks to connect millions of young people around the world with opportunities for training, empowerment, employment and social entrepreneurship" (Iberdrola, 2022b).

In Spain, Iberdrola supports Generation Unlimited Spain, a three-year multi-stakeholder partnership led by UNICEF Spain, formed by the private and public sectors, civil society entities, academia and youth representatives. This alliance aims to improve policies towards more inclusive employment, job creation and innovation in the public and private sectors.

Iberdrola provides knowledge, experience, innovation, and financial and human resources. It undertakes the design and strengthening of the training programmes, aligning them with the actual needs of the green sector, involving companies and actors along its value chain, and incorporating changes in corporate policies for more inclusive employment. Social entities, experienced in the vulnerability context, accompany the training of young people to provide them with the necessary capabilities and resources.

The initiative has started in the solar energy sector with training and internships in the installation and maintenance of photovoltaic panels. It has enabled companies to discover talented, committed and enthusiastic young people to join their teams, helping to address the skills gap within the growing market. In 2022 training courses were established in collaboration with seven social entities, resulting in the participation of 62 young people who are currently in the hiring process with various companies in Spain.

Early training opportunities can act as a catalyst, enabling young leaders to make changes in their communities (Box 12). Building young people's capabilities is essential not only to bridge the skill gaps for the energy transition, but also to enable them to participate in, and advocate for, the energy transition.

BOX 12 GOOD PRACTICES FOR YOUTH INCLUSION, TRAINING AND QUALITY JOBS - SPOTLIGHT ON ESTHER WANZA

Esther Wanza experienced irregular access to power and related challenges during her childhood, driving her to pursue an undergraduate course in renewable energy.

After graduation she discovered she had not gained the skills needed for a career in energy. In response, she continued to expand her knowledge through online learning and by participating in initiatives such as the SDG 7 Youth Constituency, Youth Sustainable Energy Hub, IRENA Student Leaders Programme, Micro Grid Academy and Africa Fellowship for Young Energy Leaders among others.

These have not only built her technical ability to implement projects focused on accelerating energy access, but have also helped her to contribute to the energy transition agenda. Esther co-founded Raynow Energy, which installed a 3 kWp solar photovoltaic system in Juja Farm Health Centre and was further selected to perform energy need assessments in four additional health centres in off-grid areas of Kenya under the Renew-ABLE Against Covid Initiative by the Res4Africa Foundation. In 2020 the energy start-up received the MicroGrid Young Talent of the Year Award.

Besides these accomplishments, she has also participated in different mentorship programmes including the People Centre Accelerator programme by GWNET and SEforALL and the Techwomen Fellowship, which enabled her to perform her role as an Energy Business Mentor at Energy 4 Impact. She supported over 300 women by offering business and technical advice and helping them to develop businesses in the clean cooking and off-grid solar value chains.

Although power is becoming more accessible, the impact is much less significant in areas that are affected by climate inaction due to a lack of knowledge and skills around how to utilise locally available resources to combat climate change. Providing free, globally accessible energy education resources, skills development and capacity building programmes, and fostering a global community of youth can go a long way in not only achieving a just energy transition, but also ensuring intergenerational diversity of the workforce. This requires collaboration between governments, academia and the private sector through the provision of placement opportunities in various offices for graduates and scholarships and mentoring for students. Esther envisions a future in the energy sector where, equipped with the right skills, young people can play a critical role in responding to climate change.



Ethnic minority and indigenous communities

Climate change disproportionately affects the poorest. The concept of environmental and climate justice calls for fair allocation of burdens and benefits, representation in decision making and consideration of diverse cultures and perspectives (IPCC, 2022b). Workers in poorer communities – often ethnic minorities and indigenous people – tend to do the most dangerous work in the fossil fuel industries and they and their communities suffer the greatest health consequences as a result, as illustrated in Box 13 (UN, 2021).

BOX 13: PETROCHEMICAL PLANTS IN LOUISIANA, UNITED STATES: "CANCER ALLEY" LOUISIANA

The area in the southern state of Louisiana along the lower Mississippi River referred to as "Plantation Country" with enslaved Africans forced to work is now known as Cancer Alley. It is an industrial powerhouse with almost 150 oil refineries, plastics plants, and chemical facilities.

These industries led to water and air pollution with detrimental effects on the mostly African American residents such as cancer, respiratory diseases, and other health problems.

This illustrates the existing environmental racism threatening a number of human rights, notably the right to equality and non-discrimination, the right to life, the right to health, right to an adequate standard of living and cultural rights.

While sustainable energy would alleviate many health and environmental problems, fossil fuel industries are presently the lifeblood of many poorer communities. The energy transition must not disadvantage the workers in these industries – indeed they should share in the benefits and opportunities afforded by the transition. Policy and co-ordination are needed at the national level, while at the same time the value of local knowledge and participation must be respected. Their needs and concerns must be identified early on and they should be involved at the centre of action.

Given the land intensity of various renewable energy sectors, the perspectives of indigenous peoples must receive special attention, particularly where they have autonomous rights within national geographical boundaries. Their views are likely to differ one from another depending on local circumstances and socio-economic conditions, but must be fully respected in any discourse on just transition.

Unfortunately, research by the Stockholm Environment Institute shows that this is not always the case. For example:

"Indigenous Peoples in remote but minerally rich regions are not part of decision making regarding the desired renewable energy transition to address the deepening climate crisis yet suffer from the increasing demands of critical minerals essential for the transition to happen. An important concern for them are the impacts of ongoing mining and the sharing of the benefits derived from the extraction of mineral resources in their lands." (Stockholm Environment Institute, 2023)

Respect for the UN Guiding Principles on Business and Human Rights must be upheld at all stages of planning and project development.

Section 4

Mobilising finance for a just energy transition



“Adopting a just transition lens to assessing and addressing social and economic implications of the climate transition allows capital providers to effectively navigate the transition challenge, mitigate the inherent risks and benefits from emerging business opportunities” (ILO, 2022c)

“The scale of the challenge clearly requires doing things differently – a new financial architecture is needed to address this challenge. Alongside the finance commitments of developed country governments, which must be met and expanded, financial institutions and multinational corporations have an important role in closing the financing gap in developing countries. These should help to create effective incentives and stronger partnerships with governments, multilateral development banks (MDBs) and development finance institutions (DFIs) that will need to better use the resources and tools at their disposal. The investors at the forefront of unlocking this enormous clean investment opportunity will be positioned to help build new economies of prosperity and growth” (UN, 2022)

We are currently nowhere near the level of investment needed to transform our economies and societies to achieve the goals of the Paris Agreement and SDGs. According to IRENA and CPI’s latest edition of the *Global landscape for renewable energy finance* (IRENA and CPI, 2023), although global investment in energy transition-related technologies reached a record-high of USD 1.3 trillion in 2022, it remains at less than one-quarter of annual investment needed between 2023 and 2030 according to IRENA’s *World Energy Transitions Outlook 2023* (IRENA, 2023a). Global investment in renewable energy (at USD 0.5 trillion in 2022) is less than one-third of the average investment needed each year between 2023 and 2030 and investment in off-grid renewables (at USD 0.5 billion in 2021) is far short of the USD 15 billion needed annually (including mini-grids) between 2021 and 2030 (ESMAP *et al.*, 2022) to meet SDGs.

Moreover, clean energy investment is not inherently delivering a transition that is just. More than 85% of global renewable energy investment in 2022 served less than half of the world’s population, while the other half remains severely underserved. Tackling the climate crisis in an inclusive way and achieving the development agenda by 2030 require international co-operation, including the flow of public funds from the Global North to the Global South. But in 2020 financing from bilateral and multilateral banks constituted less than 3% of global renewable energy investment, and less than one-third of this was provided in the form of concessional loans or grants. For the remainder, financing was provided at market rates (either from public or private sources), meaning that in contexts with high investment risks – real or perceived – financing is provided at high rates. This means that the poorest people pay the most for (often basic) energy that is essential for socio-economic development (IRENA and CPI, 2023).

A just transition requires public funds and a holistic policy frameworks that address structural misalignments, inequality and institutional constraints (IRENA, 2022a). Public funds (domestic or international through collaboration) must flow through intermediaries such as governments, multilateral DFIs and bilateral DFIs (see Box 14), and global funds using a variety of instruments including:

- Government spending such as grants, rebates and subsidies, capacity building.
- Debt, including concessional financing and guarantees.
- Equity and direct ownership of assets (such as transmission lines or land to build projects).
- Fiscal policy and regulations including taxes and levies, exemptions, accelerated depreciation and regulations such as power purchase agreements (especially when the tariffs paid to producers – in addition to the cost of running the system – are lower than what is collected by consumers and the difference is paid through a government subsidy).

Public funds are therefore needed to fund policies that create an enabling environment to attract private investment, build infrastructure and provide capacity building, education and training (Figure 6). Just Energy Transition Partnerships are emerging as a financing co-operation mechanism supporting developing countries with high dependency on fossil fuels. However, some concerns are being raised regarding these models, for example, there is limited support for social and economic objectives. In the case of South Africa, the funding is mostly provided in the form of loans, with less than 4% as grants, and skills development has been allocated only 0.2% (The Presidency, Republic of South Africa, 2022).

To achieve sustainable development and shared prosperity, international collaboration must address structural misalignments that have caused distributional challenges, such as dependence on foreign currency and constraints on defining domestic development pathways. International collaboration can help countries to strengthen capacity in critical areas such as institutional development, economic structures, social cohesion, research and innovation to promote sustainable development and reduce inequity (IRENA, 2022a).

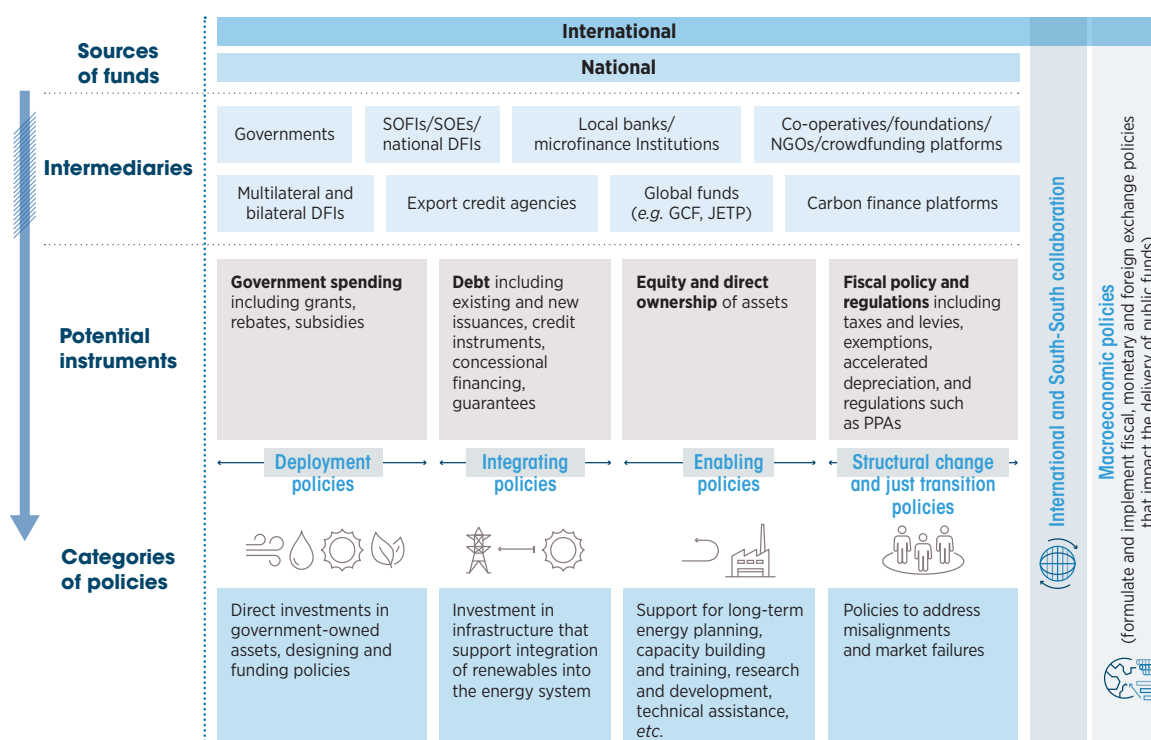
IRENA facilitates international collaboration beyond concessional climate funding through the Climate Investment Platform, and the Energy Transition Accelerator Financing (ETAF) Platform. These established avenues of climate finance are just one of many necessary elements to address interconnected global economic and social challenges. IRENA's socio-economic footprint assessments include an analysis of international climate collaboration financial flows. They are part of the basket of policies designed to support transition-related public investment and expenditure (IRENA, 2021, 2022a); (IRENA and AfDB, 2022). Under this approach, all countries contribute to international collaboration flows according to their climate equity capability and responsibility. Three pillars define the principal objectives:

- An enabled energy transition pillar to address potential misalignments.
- An international just transition pillar to promote a just and inclusive energy transition for fossil fuel-dependent economies.
- An international climate equity pillar to promote a fairer energy transition.

Such funds can improve the ability of fossil fuel-dependent and climate-vulnerable economies to undertake domestic social spending and decrease inequality, thus smoothing the needed energy transition adjustments. With a progressive policy basket (extensive international collaboration), many countries will benefit from this transition – in the form of increased GDP, employment and welfare, especially in developing and emerging economies highly dependent on fossil fuels – without any significant negative impacts on any country, (IRENA, 2022e, 2023c; IRENA and AfDB, 2022).

To support just and inclusive transitions, public investment needs to provide the necessary funding for industrial policy measures and regional revitalisation efforts; training, retraining and skill certification programmes; comprehensive labour market measures; and social protection programmes for those who lose their job in the energy transition. Public investment needs to guide and steer the transition, ensuring social acceptance and broad support.

It is important to note that funds and financial instruments should be used with caution so as to not concentrate the benefits among particular players in the industry, and instruments should be designed in a way that distributes the benefits in an equitable and fair way in an economy (IRENA and CPI, 2023).

Figure 6 Sources of funds, intermediaries, instruments and policies

Source: (IRENA and CPI, 2023).

The investment flows of today define which industries and jobs will emerge tomorrow. Investment needs to be aligned with training and education to build industries, infrastructure and skills that meet future needs. Proactive planning is required so that finance is allocated to deliver the results most beneficial to society: a decisive shift away from fossil fuels and a just transition to a renewables-based energy future. We need investment not only in renewable technologies, but also in education and training, research, infrastructure, environmental remediation and community transition (ILO, 2022b).

Governments together with social partners should:

"facilitate technology transfer, the sharing of good practices and promote just transition financing and other means to support sustainable development projects. This should be done through innovative partnerships and enhanced collaboration at the national and regional level as well as international cooperation, including triangular and South-South cooperation, both among countries that are developing their industry and among those that are transitioning to renewable energy sources" (ILO, 2022b)

In addition, some of the challenges delaying the alignment of private financial flows with just transition objectives include inconsistent definitions of socio-economic risks and impacts, the lack of standardisation of social metrics, and limited data on which to base investment decisions (ILO, 2022c). According to the IPCC, inequalities in access to finance as well as the physical impacts of climate change result in a worsening outlook for a global just transition (IPCC, 2022). Ensuring no one is left behind is not only an ethical imperative – tackling systemic risks of inequality is fundamental to gaining the public support essential for a speedy transition.

International collaboration should include the transfer of funds and knowledge exchange. This can also be facilitated by international organisations such as IRENA and the ILO who provide technical support on policy and finance instruments for a just transition. For example, IRENA manages The Energy Transition Accelerator Financing multi-stakeholder climate finance platform, which facilitates financing for renewable energy projects in developing countries with the objective of bolstering social and economic development.

BOX 14 THE ROLE OF MULTILATERAL BANKS IN THE JUST TRANSITION

Multilateral development banks (MDBs) provided USD 82 billion in climate finance in 2021, with USD 51 billion going to low- and middle-income countries. The level of collective funding for fossil and clean energy finance is less clear, but energy watchdog Oil Change International calculates that USD 4.6 billion in fossil fuel investment was made. The Energy Policy Tracker puts the figure at a minimum of USD 3.10 billion with USD 13.15 billion going to clean energy (Energy Policy Tracker, 2021). While clean energy receives most funding, the fact that there is any continued investment in fossil fuels at all undermines the goals of the Paris Agreement. Nonetheless there are encouraging signs that MDBs are moving in a positive direction. At COP27, MDBs issued a joint statement that sets out mainstreaming just transition efforts as one of the priorities. This means including just transition and social inclusion considerations in relevant policies, plans and projects, and working to advance inclusion and equality of opportunity for women and vulnerable groups (African Development Bank *et al.*, 2022).

Addressing inequality is a key condition for a successful energy transition. "The imperative of promoting social justice should underpin policies that protect poorer households and shift the burden to high-income earners who are responsible for most emissions. A progressive carbon price, akin to a progressive income tax, could address the underlying income and energy inequality" (ILO, 2023d). Carbon pricing, in practice, can lead to a regressive outcome, given that low-income households who spend a higher share of their incomes on energy are disproportionately impacted by the price increase (IRENA, 2022a). IRENA's analysis demonstrates that greater international co-operation and progressive policy and regulatory measures will generate greater socio-economic benefits from the energy transition. Revenues from carbon pricing could be used for energy bill rebates and energy efficiency upgrades for low-income households, as well as investment in social protection, skills development and economic diversification. For example, the Just Transition Fund envisages upskilling and reskilling workers, and diversifying local economies in the territories most impacted by the transition (European Commission, 2023).



Recommendations



The following is a list of the most important findings from IRENA's consultations over the past two years:

- 1. Stronger consensus is needed on a “net-zero” future:** As envisaged by the Paris Agreement, an energy transition is meant to create a low-emission, circular economy built on sustainable energy by the middle of the century. While many trade unions and businesses in energy and other industries support this vision, it is not a foregone conclusion that all do. Indeed, companies that stand to lose, apprehensive of the risks and with sunk costs, may cling to the fossil fuel industry. This also applies to some labour unions because the energy transition entails job uncertainty, or jobs in renewables may not necessarily pay as well as those in conventional energy. More effort is required to build a stronger consensus with and within the labour movement and private sector that better aligns the climate agenda and the interests of workers.
- 2. Holistic policy frameworks are required:** As specified in the Paris Agreement, provisions for a just transition need to be integrated into climate, energy, socio-economic and industrial policies. As a starting point, there needs to be a more consistent understanding and interpretation of expectations regarding the implementation of the ILO Just Transition Guidelines. Holistic policy should create the certainty needed by business to make long-term investments, by establishing ambitious targets and establishing the necessary incentives. Including these policies in the Nationally Determined Contributions (NDCs) submitted to the UNFCCC could help create a sense of international accountability for a just transition.
- 3. There must be a greater role for social dialogue in shaping energy transition labour policy:** More can and should be done to create enabling conditions for social dialogue and to include workers and labour unions in discussions related to national long-term decarbonisation strategies. While recognising the important role of the private sector in achieving a global energy transition, equal weight should be given to the perspectives of workers as energy, industrial and climate policy and public investment strategies are being shaped by governments. In regions where social dialogue has taken place, and within companies that have collective bargaining, the transition has been much smoother. Given that many regions and sectors are marked by low rates of unionisation, social dialogue can look very different depending on the local context. Solutions built on common ground as part of transparent, inclusive processes will be far more durable and are therefore far more likely to succeed.
- 4. There needs to be a greater focus on job quality, not just quantity:** Much of the research on jobs in the context of the renewable energy transition has been focused on the number of jobs being created. While important, just as important if not more so is the quality of those jobs. Are they providing a decent wage? Is there job security? Do workers receive social protection? Is relocation required? Are there health risks? Better data (which are ideally validated by trusted third parties) are needed to identify and answer these and other questions. In addition, greater data intelligence and more granular data are needed to inform government and private-sector decisions. The renewable energy sector must provide data-driven, realistic scenarios that aim high but do not overpromise.

5. **Absorption of lost jobs must factor in non-energy sectors:** Although it is highly likely that the energy transition will create more jobs in renewables, energy efficiency and associated infrastructure than will be lost in fossil fuels, spatial, temporal, sectoral and skills-related misalignments will need to be addressed, as in any deep structural economic transformation. Adjacent industries such as steel, construction, waste management and manufacturing should be included when planning for the energy transition and offering a viable, comparable alternative that looks across the diversity of country or regional economic activity. This would outline which jobs will be needed, where, and in what sectors, and consider what skills are required. At the same time, different segments of the energy sector will have different kinds of transitions. Current energy sector jobs vary greatly depending on end markets. For example, the skills required to produce transport fuels are different from those required for coal-fired power generation, which are different from those needed in the natural gas sector. As a result, how to transition those jobs will also vary.
6. **One size does not fit all – country-by-country action strategies are needed:** Not all transitions will be the same, with each country requiring different approaches and time frames depending on the nature of its energy sector and other factors. The existing energy profile of each country will influence the energy transition roadmap and job mobility. For example, each country will be unique in the available employment alternatives – whether within or outside the energy sector. What’s true for Spain will not necessarily be true for Poland, for example, and likewise from one region of the world to the next. As a result, action must be customised by country. Yet, while the need for sharing transferable lessons and information on job quality is well understood, there remains a general absence of sufficient data at the country level. We must also leverage existing best practices and lessons learnt. While recognising that there is no one-size-fits-all solution, there are valuable examples of countries that are more advanced in transitioning the fossil fuel labour force. Identifying the common elements of success stories and sharing them with other national governments would be useful, while also exploring “solidarity” support mechanisms whereby countries further along the transition help build capacity in countries that are just beginning.
7. **It’s about communities, not just energy workers:** When a coal mine or coal-fired power plant is closed, it has an impact not only on those directly employed, but on the entire community. Just transition solutions need to take a holistic community-based approach to employment and ensure that no one is left behind. This requires anticipating closures well in advance, doing regional economic analysis, and planning accordingly. The same holds true for economies and societies dependent on other conventional energy sources. Including communities as valued stakeholders in the energy transition will cover one important aspect of ensuring an inclusive energy transition.
8. **Business needs consistent, enabling policy frameworks and a level playing field:** More can be done to create a level playing field and build enabling frameworks for businesses to enact the just transition principles and to drive the economic opportunities for creating new green economy jobs. This entails government adopting consistent long-term policies for renewables and associated power networks, as well as robust regulatory frameworks and effective auction criteria, all of which should reflect just transition demands.
9. **Training can bridge the skills mismatch:** The skills needed for a future economy powered by renewable energy will vary from industry to industry, and even within the same industry the requisite skills may be very different (for example in the automotive industry). Sufficient financial support is required to ensure that reskilling and upskilling are prioritised to foster entrepreneurship and innovation, whilst strengthening resilience in enterprise, including micro,

small and medium-sized enterprises. Education systems and programmes - including schools and universities, and vocational and technical training, must be adapted to anticipated future jobs and skills demand. Adequate training must involve both public and private sector support and incentives. It should be noted, however, that for older workers this may be more complex and alternative solutions must be found to prevent loss of livelihoods.

10. **Informal work cannot exclude social protection:** Targeted protections are required for informal workers in fossil fuel industries, particularly prevalent in developing countries. While jobs in renewable energy tend to have higher degrees of formality, efforts are still needed to formalise informal work arrangements, especially in mining, the circular economy and biomass. Concerns about health and safety issues in these industries also need to be addressed. This will be more of an issue in some geographies than others. National policies need to be implemented to protect these workers.
11. **A deeper understanding of impacts in low energy access settings is required:** Given the hundreds of millions of people in Africa, Asia and elsewhere who still lack access to electricity and clean cooking (renewable or otherwise), a deeper understanding is needed of the energy transition and its employment impact on these largely rural communities, including not only direct jobs, but also socio-economic opportunities afforded to those communities gaining energy access for the first time.
12. **Efforts need to be oriented towards ensuring greater workforce diversity:** Diversity is key not only out of consideration for fairness and inclusion. It has been evidenced that it contributes to a more successful performance in the workplace. This concerns the inclusion of women, minorities, marginalised groups and youth. If these misalignments are not addressed, they will not only slow the energy transition, but also further exacerbate existing inequalities. A gender dimension should be included in all energy transition strategies. In addition, the overlapping characteristics of disadvantage (e.g. gender and disability) might result in new vulnerabilities significantly prejudicing certain social groups. Taking an intersectional approach would avoid creating prejudice against specific social groups.
13. **We are all in this together:** International co-operation, collaboration across institutions and cross-sector co-operation will all help smooth the energy transition. Knowledge sharing and learning from good practices is key. IRENA and ILO collaboration provides an example of generating and sharing knowledge and building new partnerships.
14. **A transition is impossible without adequate finance:** Significant funding is required to guarantee a just and inclusive energy transition. Investment - drawn from both private and public sources - needs to be aligned with training and education to build industries, infrastructure and skills for future needs. At present, insufficient funds are being allocated to address the myriad needs described in this brief. In times of economic insecurity, there is an unresolved tension between addressing immediate needs on the one hand, and funding for long-term climate mitigation ensuring decent work for all on the other. Redirecting fossil fuel subsidies would be an excellent starting place. National interests drive policy making, but international interests, with their bilateral and multilateral dynamics, are crucial. One of the lessons of the world's COVID-19 response is that many governments can mobilise tremendous financial resources in pursuit of the greater public good. International climate collaboration financial flows could support transition-related public investment and expenditure to boost domestic social spending and address inequality in fossil fuel-dependent economies, low-income countries pursuing sustainable development through the energy transition, and vulnerable countries facing climate change impacts.

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The background of the cover is a stylized, layered mountain range. The mountains are rendered in various shades of blue and yellow, creating a sense of depth and atmosphere. In the foreground, there is a lush green tree with a thick trunk and dense foliage, standing on a rocky outcrop. The overall composition is clean and modern, with a focus on natural elements and a clear, bold text layout.

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