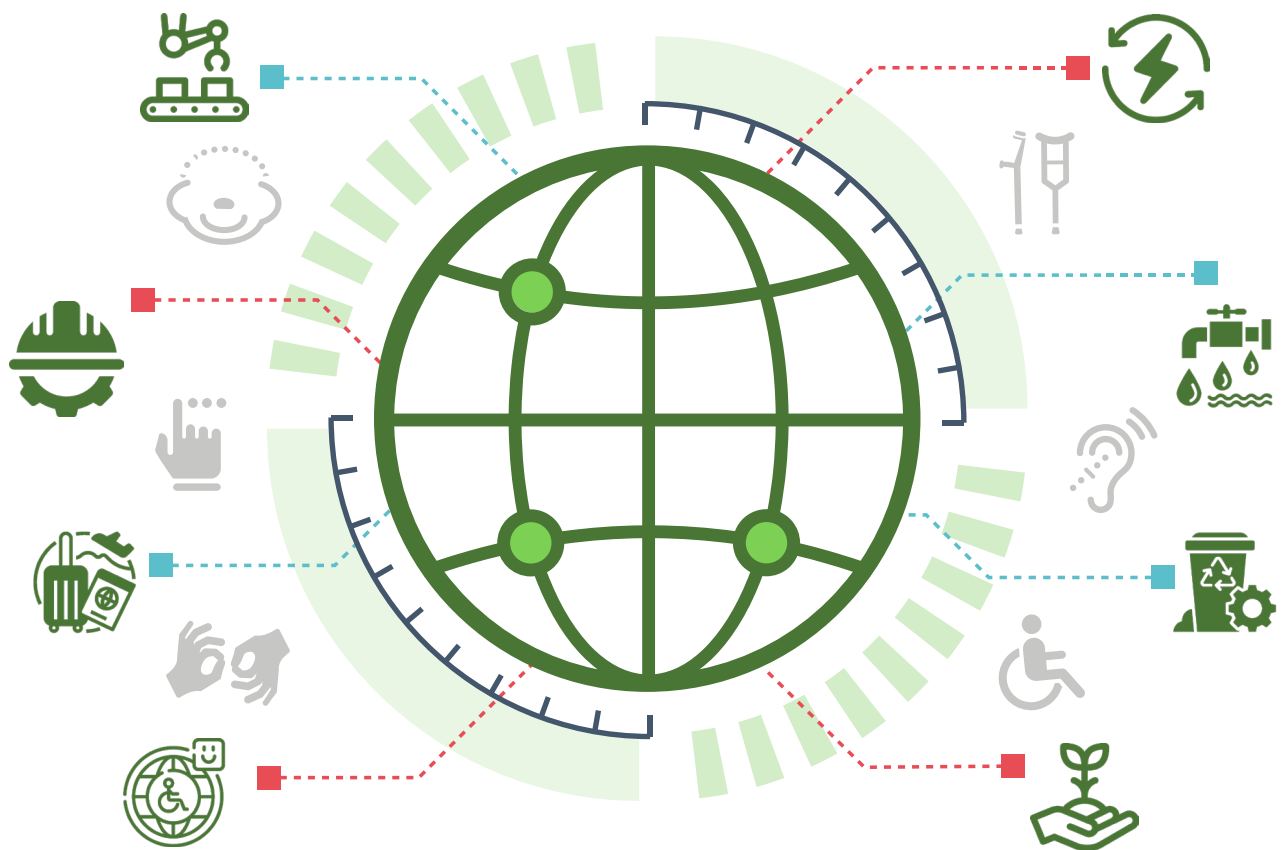


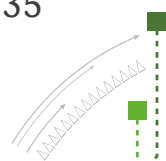
Making the green transition inclusive for persons with disabilities

A joint publication by Fundación ONCE and the ILO Global Business and Disability Network, developed within the framework of Disability Hub Europe, a project led by Fundación ONCE and co-funded by the European Social Fund



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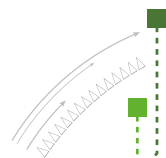
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With the collaboration of:



Foreword

Climate change is not just an environmental crisis but also a social and economic challenge, forcing us to transform our modes of production and consumption and change the way we work, live, eat, and travel. This transformation will impact the world of work, where jobs will be created, but also eliminated and transformed, generating opportunities as well as challenges for the involved parties, particularly for groups at risk of exclusion, such as people with disabilities.

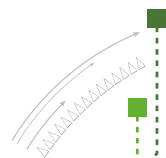
The present publication builds on two previous documents of the Future of Work series published by the Disability Hub Europe initiative, co-funded by the European Social Fund (ESF). The first one, [‘Making the future of work inclusive for people with disabilities’](#), attempted to connect different strands of a globally emerging discussion by looking at key trends of the future of work from a disability perspective. The second one, [‘An inclusive digital economy for people with disabilities’](#), focused on the impact of increasing digitalization in the workplace on this group of population, identifying actions needed to include persons with disabilities in the ongoing digital transformation.

Taking into account the changes that the world of work will undergo in the context of the “green transition”, *Fundación ONCE and the ILO Global Business Disability Network*, decided to take a third step, analyzing challenges and opportunities for persons with disabilities related to this specific area of transformation, and recommending essential steps for various stakeholders to follow to ensure that the transition does not leave anyone behind.

The report explores many of the expected employment trends that will accompany the necessary transition to an economy and society aligned with the various planetary environmental thresholds that safeguard our collective wellbeing. This is done by analyzing the changes that the ecological transition will entail for some key sectors and the opportunities that each sector can offer for the inclusion of people with disabilities in the world of work. The publication takes a global perspective, with a particular emphasis on Europe, where *Disability Hub Europe* has focused the majority of its efforts, based on funding from the ESF.

Inspired by the principles of the UN Convention on the Rights of Persons with Disabilities, the “leave no one behind” statement by the 2030 Agenda for Sustainable Development, and previous ILO discussions in the area of green jobs, this report aims at making a global call to apply disability lens to the green transition and make sure upcoming opportunities also benefit persons with disabilities.

By means of this report we intend to initiate a necessary and overdue debate around a disability-inclusive green transition, with a multi-stakeholder focus, underlying that if specific action is not taken, transition to a net zero economy will not automatically generate inclusion, or could even increase exclusion risks for already disadvantaged groups of populations such as persons with disabilities.



The ideas reflected in this publication will be undoubtedly enriched with further necessary research to provide more robust data about the shape and size of the green economy, including regional specificities, as well as employment outcomes for different groups, such as persons with disabilities.

In addition, future advancements will also require a more technical review of specific green jobs, a task that went beyond the scope of this document, in terms of detailed functions, skills and requirements, in order to facilitate the necessary training, skills upgrades and accommodations needed to make persons with disabilities active participants in the greening of the economy.

Considering the previous observations, in the following pages we hope to facilitate a fruitful debate, encouraging all involved stakeholders to act swiftly and decisively for a greener future that needs everyone included.

Sukti Dasgupta

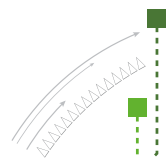
Director of the Conditions of
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Executive Summary

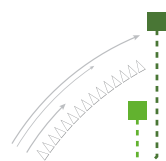
Climate change is already causing extreme weather events and long-term impacts, making global action crucial. Against this backdrop, a green transition is underway, ushering in a major global effort to reduce our collective environmental impact. This shift will transform the job landscape, creating new opportunities but also challenges. Historically marginalized groups, like persons with disabilities, are disproportionately affected by climate change and often excluded from green economy initiatives. In this sense, incorporating sustainability and inclusion into the global value chain is not only an ethical and social responsibility but also a strategy for enhancing long-term competitiveness, fostering innovation and building up resilience in an ever-evolving global market.

This publication aims to provide insights into the impact of climate change and the profound changes to the economic and social systems that are occurring in response to it on the world of work, with a special focus on several key economic sectors. It identifies challenges and opportunities in the green transition, particularly for the inclusion of persons with disabilities, and offers recommendations for stakeholders to promote an inclusive transition that leaves no one behind.

Persons with disabilities face unique challenges in the context of climate change – both in terms of how they are directly impacted as well as the obstacle faced in taking advantage of emerging labour market opportunities - and are often overlooked in the development and implementation of climate policies and adaptation efforts. To achieve a just transition, it is necessary that empowerment and training in emerging green job niches are inclusive to the needs of disadvantaged groups, that social dialogue with underrepresented groups is central in all policymaking processes, and that inclusion and accessibility are incorporated in the greening process and social protection systems.

The ecological transition will bring about important and profound shifts in the world of work which will see the creation of numerous jobs in new emerging green sectors, while at the same time ushering in the elimination of many other jobs in especially contaminating sectors. Furthermore, some jobs will be substituted as a consequence of necessary industrial transformations, while other jobs will be transformed and redefined as the skill profiles and working methods change to become more environmentally friendly and energy efficient.

In an effort to review some of these changes as well as their effect on the labour market prospects of persons with disabilities, the document analyzes nine key economic sectors that will be particularly affected by the ecological transition, including: Energy, Transport, Construction and Real Estate Activities (Buildings), Manufacturing, Agriculture, Farming and Fishing Water Supply and Management, Waste Management, Forestry, and Tourism.



The main conclusions of this sectoral analysis include the following:

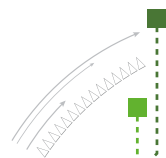
- The transition to a climate-neutral economy offers a broad range of job opportunities across the various analyzed sectors, offering ample opportunities for inclusion for individuals with disabilities with different skills sets and qualifications. Also, the transition can help reduce job polarization from digitalization, creating jobs in the middle of wage and skill distributions.
- Opportunities exist in activities like landscaping, waste management, recycling, pollution management, and "eco-industries," offering employment options for people with disabilities, often in roles that do not require high qualifications. With the appropriate qualifications, people with disabilities will also be able to benefit from the new emerging jobs in the green transition, such as energy auditors or supervisory and management positions.
- Accessibility, workplace adaptation, support, accommodations, and tailored training are essential to ensure people with disabilities can take advantage of these opportunities.
- The unique skills and problem-solving abilities of people with disabilities can bring valuable perspectives to sustainability and innovation in eco-related roles. However, education and training are critical for successful migration to green jobs and sectors, and upskilling and professionalization can enhance their involvement, diversity, and opportunities within enterprises.
- Tailored inclusion strategies must consider the unique characteristics and specific challenges present in each sector, allowing people with disabilities to take advantage of opportunities at all levels of employment.

To address the challenges mentioned and break down barriers, the involvement of key stakeholders is essential to ensure a green transition that is inclusive for everyone.

Some of the main actions by stakeholders that have been identified are as follows:

Public authorities

- Ensure accessibility, participation, and inclusion are considered and integrated into policies addressing climate change as well as those that focus on incentivizing the creation of quality green jobs.
- Actively promote employment opportunities for persons with disabilities in the green economy through direct subsidies as well as financial and tax incentives.



- Work towards the removal of physical and systemic barriers for people with disabilities within the context of the green transition.

Corporate sector operating in the green transition

- Develop and support inclusive training, upskilling and retraining programs for acquiring job skills that are increasingly in demand as companies seek to minimize their environmental impact.
- Ensure accessible and adapted work places and job positions in the green economy.
- Collaborate with other key stakeholders such as public authorities and disability NGOs to promote disability inclusion in the green transition.

Trade Unions

- Promote disability inclusion issues and tailored training opportunities in their efforts to ensure a just transition that includes strengthened labour rights.

Training institutions

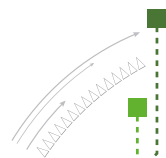
- Include just and green transition, job relocation and disability inclusion by sector in their training plans.
- Foster collaboration with governments and private sector institutions offering disability-inclusive training for emerging job niches and in-demand skills that are expected to grow during the just and green transition.

Disability NGOs

- Advocate for including persons with disabilities in the green transition debates.
- Create capacity-building initiatives targeted to ensure participation in the green transition.
- Collaborate with training institutions and climate advocates to ensure that the needs of people with disabilities are considered in the development and implementation of projects, initiatives and programs promoting the green economy.

The report has been prepared by analyzing key sources that detail the expected workforce and employment trends that will accompany the transition to a low carbon economy.

It has been enhanced by consultations with key experts, who are mentioned in the acknowledgements section of this document.



0. Context, objective and methodology

Climate change is a stark reality. Its immediate consequences include extreme weather events and long-lasting impacts, such as changing weather patterns and an increased incidence and intensity of natural disasters. These effects are already visible and expected to intensify unless immediate and significant collective action is taken on a global level. In this sense, a global consensus has emerged to limit the negative effects of climate change in the form of the Paris Agreement, a legally binding international treaty to limit global warming to well below 2 degrees Celsius and to pursue efforts to limit the temperature increase to 1.5 degrees Celsius above pre-industrial levels¹.

As we move to implement these largescale mitigation and adaptation efforts, it is vital to underscore that climate change is not only an environmental crisis – it presents a series of economic and social challenges that compel us to transform our modes of production and consumption as well as alter the way we work, live, eat and travel.

Under this scenario, the economic and social transformations needed to respond to and adapt to a warming planet will bring about a striking revolution in the world of work as we transition to a net zero and regenerative economy. As a result of this dramatic shift, jobs will be created, destroyed and transformed as we adapt workforce needs to the new socioeconomic paradigm as well as respond to the emerging challenges and opportunities that will necessarily accompany the so-called green transition.

However, historically excluded communities, including persons with disabilities, are often also disproportionately impacted by the direct physical effects of climate change as well as by the transitional effects caused by measures to address climate change. Additionally, underrepresented populations are regularly not fully considered or neglected in the design and implementation of initiatives to help people take advantage of emerging opportunities in the rapidly changing workforce landscape that is being configured as we transition to a low carbon and climate resilient economy^{2,3}.

In the absence of well-designed and inclusive policies, programs and initiatives, climate change mitigation and adaptation measures can exclude at-risk populations, as well as place a higher burden on those such as persons with disabilities to adapt to and fully integrate into the new social, economic and workforce systems being formed during this green transition.

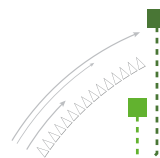
In this sense, the Intergovernmental Panel on Climate Change (IPCC) has stressed the need for climate solutions that take into account principles of procedural and distributive justice in order to ensure more effective development outcomes⁴. These concerns become paramount

1. [Paris Agreement](#), 2015.

2. [Disability Inclusion](#). World Bank, 2023.

3. [Analytical study on the promotion and protection of the rights of persons with disabilities in the context of climate change. Report of the Office of the United Nations High Commissioner for Human Rights. A/HRC/44/30](#). OHCHR, 2020.

4. [IPCC](#), 2022.



in ensuring that persons with disabilities are afforded sufficient opportunities in the new world of work that is being formed as we transition away from a carbon intensive economy.

Objective

The objective of this publication, developed in the framework of a continuing collaborative relationship between the Fundación ONCE and ILO's Global Business and Disability Network as part of the Disability Hub Europe initiative, is to *outline and briefly describe the effects that climate change will have on the world of work, generally as well as in key economic sectors, in order to identify and highlight the challenges and opportunities that exist in the context of the green transition for a meaningful inclusion of persons with disabilities. Finally, it highlights recommendations for concrete actions from a range of stakeholders that will help promote, enable and facilitate an inclusive green transition that leaves no one behind.*

The present paper builds on two previous documents of the Future of Work series published by the Disability Hub Europe initiative. The first one, [‘Making the future of work inclusive for people with disabilities’](#), attempted to connect different strands of a globally emerging discussion by looking at key trends of the future of work from a disability perspective. The second one, [‘An inclusive digital economy for people with disabilities’](#), focused on the impact of increasing digitalization in the workplace on people with disabilities and the identification of actions needed for a disability-inclusive digital transformation. Now, we face a third installment of the series focusing on the “green transition”.

Climate change and its mitigation has been a priority for quite a while in the international and European agendas. In addition to the Paris Agreement⁵, adopted by 192 countries in December 2015, the United Nations set an ambitious action plan through the 2030 Agenda⁶ and the Sustainable Development Goals (hereinafter SDG), referring to climate change on a cross-cutting approach.

Europe, in turn, has been spearheading climate efforts through instruments such as the EU Green Deal approved in 2020⁷, which includes a set of proposals to make the EU's climate, energy, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030. The Green Deal has been evolving in a wide range of initiatives, including the area of Sustainable Finance with the “Green Taxonomy”⁸ as an example.

The inclusion of vulnerable groups is present in the 2030 Agenda through the concept of “leaving no one behind” in the achievement of the SDG. Furthermore the ILO has focused more specifically on the need to tailor transition plans, programs and initiatives to ensure a just transition of the world of work, through documents such as the Guidelines for a just transition towards environmentally sustainable economies and societies for all⁹.

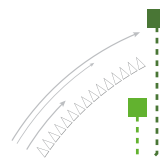
5. [Paris Agreement](#). United Nations, 2015.

6. [2030 Agenda for Sustainable Development](#). United Nations, 2015.

7. [European Green Deal](#). European Union, 2020.

8. [European taxonomy for sustainable activities](#). European Union, 2020.

9. [Guidelines for a just transition towards environmentally sustainable economies for all](#). ILO, 2016.



In addition, the UN Convention on the Rights of Persons with Disabilities¹⁰ clarifies and qualifies how all categories of rights apply to persons with disabilities and identifies areas where adaptations have to be made for persons with disabilities to effectively exercise their rights in domains where their rights have been violated. This similar rights-based framework can be applied more specifically to the context of the transition in the world of work and has provided useful guidance during the writing of this publication.

Methodological approach

This report is based on an extensive review of academic and grey literature, including government, corporate and think tank documents dealing with the expected workforce and employment trends that will accompany the transition to a low carbon economy and has been prepared by compiling and analyzing key sources referenced throughout the publication.

Regarding the selection of specific sectors to focus the discussion, section 3.2 explains the criteria applied.

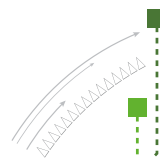
Finally, adding to the leading contributors from ILO and Fundación ONCE with the collaboration of ECODES and KPMG, the final version of the document has benefitted enormously from the revision, review and input from a group of experts composed of multilateral organizations, institutions, academia, civil society, representative organizations of persons with disabilities and companies. The experts that participated in this review process are listed in the acknowledgement section of the paper.

It is important to note that the document is not intended to be a definitive or exhaustive categorization, description and quantification of green jobs nor a technical occupational review analyzing specific jobs functions and the skills and abilities required to perform these jobs, as such an in-depth analysis is beyond the scope of the present report. Rather it is intended to identify and highlight broad trends in the green transition that will impact major sectors of the economy and briefly discuss potential opportunities that may arise for persons with disabilities within these emerging job niches.

Furthermore, the document analyzes the transitions underway based on commitments being made at the country and enterprise levels to reduce greenhouse gas emissions in line with achieving current climate goals outlined in the Paris Agreement. As such, it does not delve into an exploration of the sufficiency of these measures to combat the most harmful impacts of climate change, leaving an analysis of more structural changes that may be needed to achieve stabilization of the global climate system as a call to future research.

A future avenue for research includes a greater exploration and understanding of the potential limits of the ecological transformation underway based on commitments to limit future warming to 1.5° compared to pre-industrial levels. Additionally, it is worth investigating to what

10. [UN Convention on the Rights of Persons with Disabilities](#). UN, 2008.



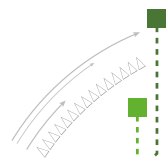
extent avoiding the worst consequences of climate change may require other, more profound, structural and disruptive changes to the current economic and social systems.

Most of all, the document is meant to serve as a call to action. This way, it includes specific policy recommendations aimed at key stakeholder groups to ensure that the rights of persons with disabilities are considered in the design and implementation of key workforce and employment programs and initiatives to facilitate entry into these emerging green niches.

Structure

The document is organized as follows:

- Chapter 1 includes a general description of the current situation of persons with disabilities in the world of work, highlighting key performance gaps limiting the full inclusion of this key collective in the workforce and other social areas;
- Chapter 2 discusses the risks and opportunities arising from the changes underway as economic and social systems transition to a net zero scenario;
- Chapter 3 discusses significant transformations in key economic sectors and identifies opportunities and challenges for ensuring persons with disabilities are not left behind, considering nine selected economic sectors: Energy, Transport, Manufacturing, Water Supply and Management, Waste Management, Agriculture, Forestry, Construction and Real Estate Activities (Buildings) and Tourism.
- Chapter 4 features policy recommendations for concrete actions to be taken by several important stakeholder groups.



1. Current work and welfare situation of persons with disabilities

Over 1.3 billion people worldwide – or approximately 16% of the population – and 100 million people in the EU live with some kind of disability today. Globally, most of them are of working age. The global figure is expected to roughly double to 2 billion by 2050¹¹. Despite this significant and growing prevalence, persons with disabilities remain a disadvantaged group in terms of labour market outcomes, facing numerous difficulties, barriers and discrimination leading to meaningful disparities in comparison to the general population.

Important gaps in the knowledge and data available remain regarding the workforce participation of persons with disabilities, and these gaps pose critical challenges for companies, policymakers as well as for workers with disabilities that seek to address the current barriers to full inclusion in the labour market. A key gap is that global reliable and comparable statistics on disabled workforce representation, and the employee experience of people with disabilities remain stubbornly hard to obtain¹².

Despite recent progress in promoting the inclusion and accessibility in the workplace, people with disabilities continue to be underrepresented in the labour market and face challenges regarding employment, earnings, job retention, and career advancement. In addition, available data confirms that persons with disabilities face considerable barriers in terms of access to not only employment, but also healthcare, inclusive education, recreational activities, as well as in terms of meaningful participation in political life. As an example, in the European Union they have a higher risk of poverty or social exclusion (29%) than persons without disabilities (19%) and face frequent instances of intolerance in their daily lives^{13 14}. The Covid-19 pandemic and its economic and social consequences have amplified these inequalities.

Globally, persons with disabilities' average unemployment rate stands at 7.6 per cent, compared with 6.0 per cent for persons without disabilities¹⁵. In relation to this, it is important to mention that unemployment statistics typically miss persons with disabilities, who are many times registered as "inactive" and thus not job seekers. In the European Union, only half of persons with disabilities are employed compared to 3 in 4 persons without disabilities¹⁶. In this sense, persons with disabilities are more likely to experience the negative impacts related to limited resource availability, while also being among the earliest and most negatively affected by the transformation of the economy to meet environmental targets¹⁷. Across eight geographical regions, the employment -to-population ratio (EPR) for

11. [Disability and Health. World Health Organization \(WHO\)](#), 2023.

12. [ESG and Disability Data. A call for inclusive reporting](#). TheValuable500, 2022.

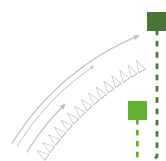
13. [People with disability at higher risk of poverty and social exclusion](#). Eurostat, 2020.

14. [EU disability strategy 2021-2030](#). European Commission, 2020.

15. [ILOSTAT Database](#). ILO, 2022.

16. [Employment, Social Affairs & Inclusion](#). European Commission, 2023.

17. [Disability, human rights, and climate justice. Human Rights Quarterly](#). Stein, P. J., & Stein, M. A., 2022.



persons with disabilities aged 15 years and older is 36 per cent on average, whereas the EPR for persons without disabilities is 60 percent¹⁸. This is attributed to various factors, including barriers in education and employment, a lack of accessible infrastructure, unique healthcare needs that become challenging to address during resource shortages, as well as enduring discrimination and social stigma that limit their opportunities for adaptation^{19,20}.

Moreover, certain population sub-groups face additional obstacles in the job market and are especially challenged, meaning that individuals with disabilities from these groups encounter dual barriers²¹. This is the case, for example, for women and young people. For instance, the employment rates of women with disabilities are significantly lower than men with disabilities and this gap is broadly consistent with the employment gap between women and men without disabilities. This suggests that they face a double disadvantage in the labour market on account of both their sex and their disability status²².

Additionally, the global employment to population ratio is lower for younger groups, and this applies also for young people with disabilities. Thus, the employment ratio for the 15-24 age group without disabilities is 34.6% compared to 62.6% for those over the age of 25. For young people with disabilities, the employment ratio is 24.5% against 27.8% for older groups²³.

Digital inaccessibility exacerbates these challenges, as inaccessible technologies and online platforms can hinder their ability to perform tasks, collaborate, and communicate effectively in the workplace, further limiting their career advancement opportunities.

These poorer promotion prospects in the world of work are due to a range of factors. Discrimination and biases can play a significant role, as employers may hold misconceptions about the capabilities of individuals with disabilities, leading to underestimation of their potential. Additionally, accommodations are not always readily available or are seen as burdensome by employers. Due to these disadvantaged positions in terms of labour market participation, persons with disabilities have historically faced deep challenges to contribute equitably in the world of work, which is not only a violation of their fundamental rights, but also represents a significant loss for our societies and economies. In terms of decent employment, even when persons with disabilities are employed, they have to face obstacles such as poor promotion prospects and bad working conditions²⁴.

Also, they are more likely to perform menial, part-time jobs with a lower salary, and often in the informal economy. Generally, this does not happen by choice but as a consequence of the lack of opportunities in the formal economy and an absence of other means of livelihood and sustenance.

18. [Disability and Development Report: Realizing the Sustainable Development Goals by, for and with persons with disabilities](#)(New York). United Nations Department of Economic and Social Affairs. 2018.

19. [Poverty and disability in low- and middle-income countries](#): A systematic review. Banks L.M., Kuper, H., & Polack, S., 2017.

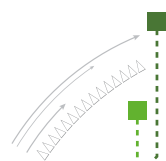
20. [Frequently Asked Questions on Human Rights and Climate Change. Fact Sheet No. 38. OHCHR](#), 2021.

21. [The Disability Data Report. Disability Data Initiative. Fordham Research Consortium on Disability: New York. Mitra, S., & Yap, J.](#), 2021.

22. ILOSTAT Database. ILO, 2022.

23. [Employment and persons with disabilities](#). ILOSTAT, 2023.

24. [Persons with disabilities in a just transition to a low-carbon economy](#). ILO, 2019.



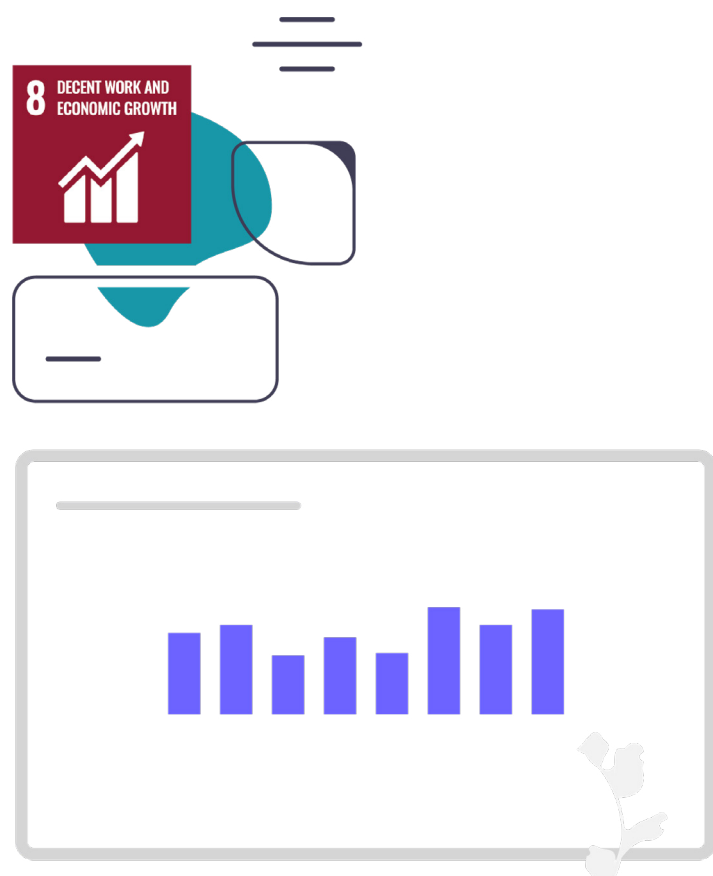
Persons with disabilities also face a lack of social protection. For instance, persons with disabilities often experience shorter careers, reduced income, and the capacity to engage in only part-time employment in many instances. Consequently, social insurance systems reliant on income levels or duration of employment years inherently exhibit a predisposition to place persons with disabilities at a systemic disadvantage. Substantial regional variation is reported; while coverage in Eastern Europe appears to be almost universal, regional estimates for Asia and the Pacific show an effective coverage rate of only 9.4 per cent²⁵.

Moreover, the recent Covid-19 pandemic worsened the workforce and financial situation of persons with disabilities. An analysis of several countries' post-pandemic surveys on the issue, confirms that a significant portion of persons with disabilities were forced to stop working due to public health lockdowns and many lost their jobs as a result or had their working hours reduced. Even in countries in which available data suggested that persons with disabilities had been less impacted by the pandemic, other aspects were revealed such as reduced employment of persons with disabilities in sectors of the economy which had been hardest hit by the health crises (i.e. tourism, catering, transport, etc), increased closure of small and medium-sized enterprises, where the majority of persons with disabilities are employed, and digital inaccessibility that inhibits telework²⁶.

Considering the situation described, the explicit reference to persons with disabilities in the **SDG 8** on decent work and economic growth is aimed at promoting sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all. Target 8.5 states that by 2030, the goal is to achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and to ensure equal pay for work of equal value.

Furthermore, throughout the 2030 Agenda, persons with disabilities are explicitly mentioned in 7 targets and 11 indicators of the SDGs²⁷, in the areas related to education, growth and employment, inequality, and universal accessibility.

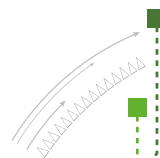
Below, data on additional SDG and the situation of persons with disabilities can be found.



25. [World Social Protection Report to achieve Sustainable Development Goals 2017-2019](#). ILO, 2017.

26. [European Human Rights Report. The Right to Work: The employment situation of persons with disabilities in Europe](#). European Disability Forum, 2023.

27. [UN Flagship Report on Disability and Sustainable Development Goals](#). United Nations, 2018.



Achieving the SDGs: Challenges Facing Persons with Disabilities regarding SDGs 1, 4, 5 and 7



SDG 1. No poverty. End poverty in all its forms everywhere

- In 2022, globally, 64% of children with one or more functional difficulties experience a moderate degree of multidimensional poverty, compared with 57 % of children without such difficulties²⁸.
- In 2022, in the United States of America nearly 50% of adults with disabilities were living in or near poverty levels, compared to 28% of those without disabilities²⁹.
- In 2019, 41% of persons in the EU with a disability could not meet unexpected financial expenses³⁰.
- In 2019, 68% of the EU population with an activity limitation would have been at risk of poverty without social benefits, allowances or pensions³¹.
- In 2022, persons with disabilities in the EU were 50% more likely to be at risk of poverty and social exclusion³².



SDG 5. Gender equality. Achieve gender equality and empower all women and girls

- In 2021, 15% women vs 17% men with disabilities in the EU graduated from tertiary education³³.
- In 2021, 20% women vs 29% men with disabilities in the EU were in full-time employment³⁴.
- In 2022, In Europe and Northern America, the employment rate of women with disabilities was 13.4%, and for women without disabilities was 49.7%, against 17.8% for men with disabilities and 60.7% for men without disabilities³⁵.
- In 2019, girls and young women with disabilities globally experienced up to 10 times more violence than those without disabilities³⁶.

28. [Fact Sheet: Children with disabilities](#). UNICEF, 2022.

29. [Global report on health equity for persons with disabilities](#). World Health Organization, 2022.

30. [Disability in the EU: facts and figures - Consilium \(europa.eu\)](#). European Council, 2022.

31. [Disability statistics - financial situation - Statistics Explained \(europa.eu\)](#). Eurostat, 2019.

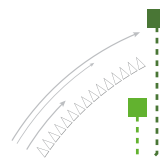
32. [People with disability at higher risk of poverty and social exclusion](#). Eurostat, 2020.

33. [Gender Equality Index 2021](#). EIGE, 2021.

34. [Eurostat, Women and gender equality](#). EDF, 2021.

35. ILOSTAT database. ILO, 2022.

36. [Violence Against Women and Girls with Disabilities, Latin America and the Caribbean](#). Gender and Diversity Division, Inter-American Development Bank. Ozemela, L., Ortiz, D., and Urban, 2019.





SDG 4. Quality education. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

- In 2022, globally, persons with disabilities were twice as likely as those without to have a less than basic educational level, and half as likely to have an advance level of education³⁷.
- In 2021, 48% of children aged 7 to 14 years worldwide with one or more difficulties read books compared to 58% of children without functional difficulties³⁸.
- In 2020, 68% of countries worldwide had the definition of inclusive education in their public policies, leaving the rest of schools and children without a national framework³⁹.
- In 2021, 18,7% of persons with disabilities (16- 64 years) in Spain have received tertiary education against 38,1% of persons without disabilities⁴⁰.



SDG 7. Affordable and clean energy. Ensure access to affordable, reliable, sustainable and modern energy for all

- In 2021, 33% of households in the EU with people with disabilities are in the lowest income quantile. Low incomes translate into low energy use⁴¹.
- In 2021, household of people with disabilities in the EU earn and consume 10% less energy than other households⁴².
- In 2021, 24% of households with people with disabilities are at risk of energy poverty in the EU⁴³.

Figure 1: An overview of the socio-economic situation of people with disabilities within the framework of the 2030 Agenda and the SDGs.

Source: Disability Hub Europe.

37. ILOSTAT database. ILO, 2022.

38. [Seen, Counted, Included: Using data to shed light on the well-being of children with disabilities](#). UNICEF, 2022.

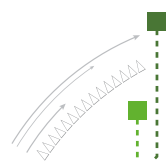
39. [Inclusion and education](#). UNESCO, 2020.

40. [Persons with disabilities aged 16 to 64 years by level of training](#). ODISMET, 2021.

41. [Characterizing the energy use of disabled people in the European Union towards inclusion in the energy transition](#). Ivanova, D. and Middlemiss, L., 2021.

42. Op. cit.

43. [The European Semester](#). The European Union, 2021.



2. Just and green transition: labour market risks and opportunities arising from the changes underway

The current and future state of work is being altered by the global climate crisis. With temperatures increasing across the globe, unpredictable rainfall and severe weather events causing damage to infrastructure and various economic sectors, unemployment rates are rising, people are being displaced, and safe working conditions are becoming scarce^{44 45}.

Against this backdrop, a green transition is underway, ushering in a major global effort to reduce our collective environmental impact, by among other actions, shifting away from reliance on fossil fuels and towards renewable energy sources, promoting green tax and monetary policies, reducing the use of plastic materials, fostering a circular economy, and protecting biodiversity and ecologically sensitive natural habitats.

This transition to a low-carbon and regenerative economy will bring about significant changes to the economic, labour market, and social structures. It requires coordinated efforts and strategic planning at the local, national, and international levels to ensure economic and social disruptions are minimized. Furthermore, it is necessary to ensure that new opportunities that emerge are shared widely and inclusively. In this vein, when the ILO published its Guidelines for a Just Transition in 2015, it defined a just transition as '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'.

While this transition is vitally important, it can also be a source of exclusion and hardship for people with disabilities. In order to ensure that the green transition is inclusive for this group of population, it is important to recognize the unique challenges they face and to develop strategies, mechanisms and support structures to address them. The negative impacts of climate change are amplified for persons with disabilities, who already face significant barriers to employment^{46 47}. For example, people with mobility limitations and health problems tend to suffer thermal stress, which could prove dangerous or even impossible for those that perform manual work⁴⁸.

Furthermore, extreme weather events can involve multiple negative effects for people with disabilities⁴⁹, such as accidents, loss of accessibility (for example the destruction of wheelchair ramps, elevators, or even extensive damage to infrastructure, that can take years or decades to repair) or serious damages to their auxiliary devices⁵⁰, all affecting in

44. [World employment and social outlook 2018: Greening with jobs](#). ILO, 2018.

45. [Working on a Warmer Planet: The Effect of Heat Stress on Productivity and Decent Work](#). ILO, 2019.

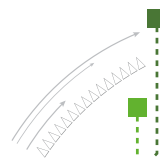
46. [Human Rights Council 2020 rights of persons with disabilities in context of climate change](#). United Nations, 2020.

47. [Linking Climate and Inequality](#). International Monetary Fund, 2021.

48. [Working on a Warmer Planet: The Effect of Heat Stress on Productivity and Decent Work](#). ILO, 2019.

49. Canada: Disastrous Impact of Extreme Heat. Failure to protect Older People, People With Disabilities in British Columbia. Human Rights Watch, 2021.

50. [Persons with disabilities in a Just Transition to a Low-carbon economy](#). ILO, 2019.



various ways their work participation rates. Extreme weather events have also been shown to increase the incidence and prevalence of disability. Some recent studies by Human Rights Watch have focused on the negative effects of heat waves on persons with disabilities paying attention to countries such as Spain, with very concerning conclusions⁵¹.

Although it goes beyond the focus of this paper, it is important also to consider other relevant sides of the just transition issue such as the fact that, since persons with disabilities experience higher unemployment and poverty rates, as consumers, they often depend on contaminating energies and have limited financial resources to transition to cleaner ones⁵². This is because clean energies are often more expensive at the outset due to the initial infrastructure costs, the expense of energy storage, the lack of supportive policies and government subsidies, and the absence of economies of scale. Also, on occasion, measures implemented to address climate change within the framework of the ecological transition can inadvertently create additional obstacles for persons with disabilities when their needs are not adequately taken into account during the development of strategies and policies. For instance, the construction of bicycle lanes to promote environmentally friendly transportation could create physical barriers for persons with disabilities⁵³.

At a global level, although more than a third of countries now reference a just transition in their enhanced National Determined Contributions⁵⁴, persons with disabilities are often not mentioned or included more generally in National Climate Policies alongside other vulnerable groups and thus not given special consideration⁵⁵. Similarly, only 35 of 192 State Parties to the Paris Agreement currently refer to people with disabilities in some way in their climate adaptation policies⁵⁶. Even in affirmative cases, reference to persons with disabilities is minor, failing to specify in detail how inclusion will be incorporated and implemented in financed projects.

At the European level, while inclusion of persons with disabilities is specifically mentioned in the European fund's common provisions' regulation⁵⁷ (Regulation (EU) 2021/1060), in its articles 8, 9 and 73, the current picture of the Territorial Just Transition Plans (TJTP) in regards to issues of inclusion is far from encouraging. In addition, organizations representing persons with disabilities have generally failed to be included in a meaningful way in the elaboration of these Plans.

51. [Extreme Heat Signals Need for Inclusive Climate Action; Spain: Inadequate Response to Heatwaves](#), bott by Human Rights Watch, 2023.

52. [EU disability strategy 2021-2030](#). European Commission, 2020.

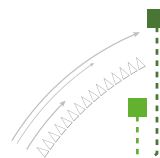
53. [Paper on inclusion of persons with disabilities in climate action](#). IDA, 2021.

54. [How Just Transition can help deliver the Paris Agreement](#). UNDP, 2022.

55. [Disability Rights in National Climate Policies. Status Report](#). DICARP, IDA and McGill Center for Human Rights and Legal Pluralism, 2022.

56. [Status on disability inclusion in climate commitments and policies \(2022\)](#). International Disability Alliance, 2022.

57. Regulation (EU) 2021/1060 of the European Parliament and of the Council of 24 June 2021 laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, the Just Transition Fund and the European Maritime, Fisheries and Aquaculture Fund and financial rules for those and for the Asylum, Migration and Integration Fund, the Internal Security Fund and the Instrument for Financial Support for Border Management and Visa Policy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R1060>.



These figures suggest that additional work needs to be done in the realm of policy design and implementation to ensure that significant investments in the green economy will create meaningful job opportunities for persons with disabilities, rather than compound existing labour market inequalities or create novel inequities particular to the climate transition.

A just transition must contribute to the aim of decent work for all, social inclusion and poverty eradication⁵⁸ as well as ensure social protection for all underrepresented populations. Ensuring a just transition requires that persons with disabilities and their specific needs are appropriately integrated into the processes that will bring about important workforce transformations as we move away from fossil fuel powered growth. Indeed, this green transition cannot be considered 'just' if it continues to neglect the persistent marginalization of persons with disabilities in the world of work or exacerbates the already disproportionate effects of climate change on them.

Therefore, incorporating the needs of persons with disabilities is a vital component of a just transition. Simultaneously, enabling persons with disabilities to take charge of their workforce outcomes during a just transition is crucial for maximizing its social justice impacts as well as improving its ambition and reinforcing its positive climate action⁵⁹.

In order to accomplish this, a green and just transition must incorporate social dialogue with all relevant actors and stakeholder groups, especially the historically excluded communities⁶⁰. As such, people with disabilities should be included in the planning and decision-making process of the green transition. This means that their voices and experiences should be considered and valued, and that they should be actively engaged in the development and implementation of policies and programs related to the transition.

Perhaps the most important opportunity that will accompany the green transition is ensuring that the newly created job niches are inclusive to all while safeguarding that the inevitable job losses in contaminating sectors do not unduly impact vulnerable populations, including persons with disabilities. There is evidence that shows the suitability of persons with disabilities for occupying new jobs created as a result of the green transition⁶¹.

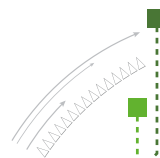
In this sense, Social Economy organizations play a pivotal role as exemplars, illustrating how a green and equitable transition can coexist and thrive. They generate employment opportunities, promote wealth creation, and ensure equitable access. Additionally, they stand out for their commitment to inclusivity. By actively employing individuals with disabilities, they exemplify diversity and equality principles. Many of these organizations have a long-standing history of engagement in decarbonization and the circular economy, making them well-positioned to provide valuable insights on harmonizing environmental sustainability with social fairness.

58. [Guidelines for a just transition towards environmentally sustainable economies and societies for all](#). ILO, 2015.

59. [Policy brief: Persons with disabilities in a just transition to a low-carbon economy](#), ILO, 2019.

60. [SDG Note on Green Jobs](#), ILO, 2017.

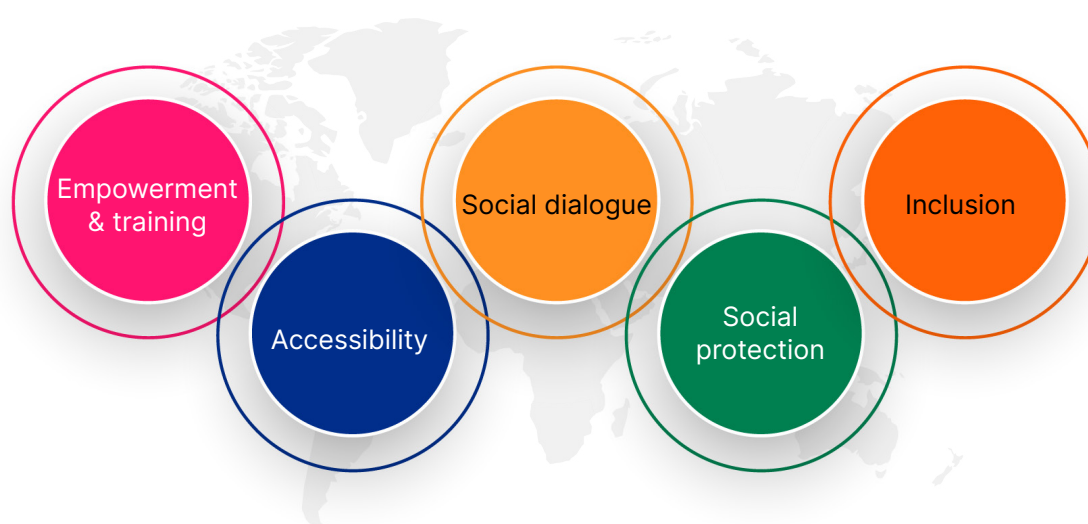
61. [The green economy and job creation: inclusion of people with disabilities in the USA](#). Susanne Bruyere and David Fliberto, 2013.



An additional key aspect of inclusivity is ensuring that the economic and social structures that emerge from the green transition are accessible to everyone. This comprises making sure green buildings, transportation systems, and other infrastructure are designed with accessibility in mind. It also means ensuring that green products and services are accessible both in terms of cost and usability for people with disabilities.

In addition, to achieve a Just Transition, it is essential to have appropriate and robust social protection systems in place⁶². These systems can facilitate changes in the labor market and prevent the rise of informal employment⁶³. The design of adaptive social protection should be disability inclusive, linking the roles and tools of social protection with approaches on mitigating shocks from climate change for persons with disabilities^{64 65}.

Key aspects for a Just & Green Transition



Source: Disability Hub Europe

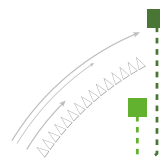
In view of the above, if the principles of a fair transition are properly applied, meaning that empowerment and training in job creation are inclusive to the needs of disadvantaged groups, that social dialogue with underrepresented groups is central in all policymaking processes, and that inclusion and accessibility are incorporated in the greening process and social protection systems, then the labour market will move toward greater inclusivity and empowerment for individuals with disabilities.

62. [World Social Protection Report 2017-19: Universal social protection to achieve the Sustainable Development Goals](#).

63. [Policy brief: Social protection for a just transition](#). ILO, 2023.

64. [Promoting Disability Inclusive Climate Change Action](#). Global Action on Disability Network.

65. [Disability Inclusive Climate Action COP26: Advocacy Paper Towards COP26: Enhancing Disability Inclusion in Climate Action](#), International Disability Alliance, 2021.



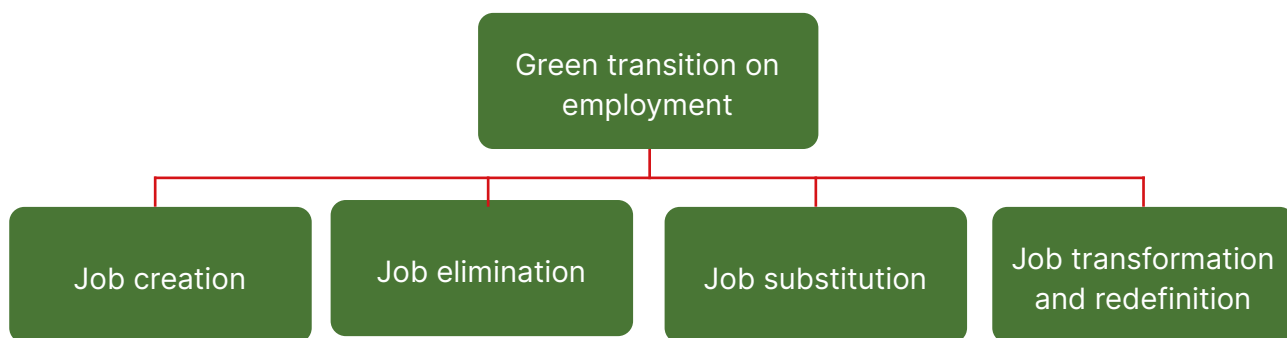
3. Harnessing the green transition for inclusion: outlining possibilities for ensuring persons with disabilities are not left behind

3.1. Significant transformations in key economic sectors and new opportunities

The greening of the economy will require a major industrial transformation, which will have profound impacts on the global employment landscape. As mentioned in previous pages, to achieve the ambitious and necessary climate goals set out in the Paris Agreement, the global economy will need to shift away from fossil fuels and towards renewable energy sources such as wind, solar and hydro power, adopt widespread use of energy-efficient technologies, and undergo radical changes in established patterns of mobility, consumption and production.

As such, the green transition will create jobs in new emerging green sectors such as renewable energies, energy retrofitting and low-carbon R&D, while other jobs will be eliminated in contaminating sectors caused by the reduction or elimination of high emission processing methods, resources or materials. Also, some jobs will be substituted as a consequence of necessary industrial transformations. Finally, jobs will be transformed and redefined as the skill profiles and working methods change to become more environmentally friendly and energy efficient. Estimates suggest that overall, a combined shift to low-carbon and circular economies may result in the creation of some 100 million jobs by 2030⁶⁶.

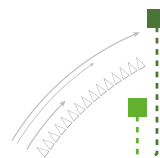
Impact of the Green Transition on the World of Work:



Source: Disability Hub Europe

In this sense, the inclusion of persons with disabilities is fundamental for ensuring no one is left behind as we embark on this largescale green transformation of the global economic and social structures. This will happen if every economic sector removes barriers and ensures opportunities for persons with disabilities, in line with the Convention on the Rights of Persons with Disabilities.

66. [Achieving just transition towards environmentally sustainable economies and societies for all](#). ILO, 2023.



The transition to a low-carbon economy is likely to have both positive and negative impacts on the labour market. The creation of new jobs in the renewable energy and energy efficiency industries is likely to offset job losses in the fossil fuel sector, leading to net employment gains. A recent report by the International Renewable Energy Agency (IRENA) finds that the employment in renewable energy reached 12.7 million in 2021 and estimates that this will grow to approximately 38 million jobs globally by 2030, while the number of jobs in the energy sector could rise to 139 million jobs in a similar time horizon under an ambitious energy transition scenario⁶⁷.

Likewise, according to a report by the ILO, a transition to a circular economy will create 6 million net jobs by 2030 as we move away from the extract-manufacture-use-discard model and embrace a production and consumption model that favors the recycling, reuse, remanufacture and rental and longer durability of goods⁶⁸. This movement towards a closed loop and regenerative economic model will entail a necessary reallocation of jobs from extractive and polluting industries.

In Europe, while the majority of employment in the European Union is not in carbon-intensive sectors, job sectors and categories crucial for the transition to a net-zero economy have experienced rapid growth in recent years. For example, over 70% of the workforce is employed in sectors responsible for less than 10% of all CO₂ emissions. In contrast, sectors like electricity production, transport, manufacturing, agriculture, and mining collectively contribute to approximately 90% of all CO₂ emissions in the EU, yet they account for less than 25% of total employment⁶⁹.

It is essential to note that many of these sectors have carbon emissions embedded in their value chains, emphasizing the need for decarbonization plans across all sectors, even those with lower direct emissions. This is crucial to align with the net-zero targets outlined in the Paris Agreement. In this regard, while the retail sector has relatively low emissions, the products sold in stores and the global logistics networks that support retail commerce can produce significant greenhouse gas emissions.

Governmental and corporate strategies and actions intended to lower the emissions intensity of the economy and mitigate the worst impact of climate change are already having an effect as employment in green jobs is increasing for all categories, but most strongly in occupations requiring new green skills and retraining in response to new activities and technologies⁷⁰.

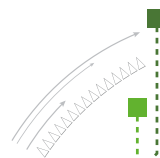
Given this, people employed in non-green jobs may need transition support, which applies even more for persons with disabilities, as they require individual and tailored training in many cases to integrate and adapt to new jobs. Despite this important growth in the green economy, reliable statistics on the integration of persons with disabilities in these emerging

67. [Renewable Energy and Jobs Annual Review](#). IRENA, 2022.

68. [Greening with Jobs: World Employment Social Outlook](#). ILO, 2018.

69. [The Possible Implications of the Green Transition for the Labour Market](#). European Commission, 2022.

70. [World Employment and Social Outlook 2018: Greening with jobs](#). ILO, 2018.



niche areas are hard to come by due to the absence of data and disaggregated information, specifically on the labour market participation. These important data gaps complicate determining the size and sectoral contours of green employment for persons with disabilities, hindering the growth and deployment of appropriate workforce development and training strategies. This hindrance prevents them from benefiting from the numerous employment opportunities available in the ongoing green transition.

Simultaneously, the just and green transition should encompass strategies to ensure that persons with disabilities have access to higher education opportunities and specialized educational choices. In these specialized options, tailored to a just green transition, persons with disabilities should be empowered to select their educational path and level freely. This will enable persons with disabilities to occupy high level positions, where they can contribute to inclusive design, as well as advanced technical positions where they have the necessary expertise to ensure that technical details in the implementation of the just green transition are disability inclusive.

Measures to address the skills challenge can help to harness the employment potential of the green economy for the benefit of all skill levels. Initially high-skilled labour may benefit more than lower skilled labour but as the green economy develops, many traditionally lower-skilled sectors will see increased demand too, notably waste management and sectors related to the circular economy, making it possible to harness the employment potential of the green economy in a way that could benefit all skill levels in society⁷¹.

3.2. Approaching specific sectors

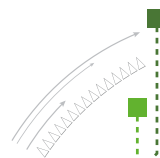
In order to frame the analysis featured in this paper -and the content reflected in the following pages- specific sectors and economic activities that can be categorized as green were selected, understood as those that substantially contribute to meeting the climate goals outlined in the Paris Agreement. This exercise included both economic activities that contribute to mitigating the negative effects of climate change as well as those that facilitate adapting to climate and other related effects of climate change which pose substantial risks to business operations.

The definition of green jobs is neither a simple nor straightforward endeavour and is the source of a lively and ongoing debate over what sectors and types of jobs qualify as green. Thus, the determination of the “greenness” of an economic activity requires a nuanced approach that includes an analysis of different shades of green.

To aid and guide this analysis, the European Union “Green Taxonomy”⁷² was employed as a first filter to identify economic sectors that may contribute substantially to the mitigation and adaptation to climate change, as well as protecting biodiversity, marine and freshwater

71. [ESDE 2019: Towards a greener future: employment and social impacts of climate change policies](#). European Commission, 2019.

72. [EU Taxonomy for sustainable activities](#). EU, 2023.



ecosystems, reducing pollution, and promoting the circular economy. This preliminary list was completed with sectors identified by existing International Labour Organization (ILO) research in order to avoid gaps that may arise between these two analytical frameworks. As such, the paper has employed a classification scheme for green activities that unifies these two relevant authoritative sources. We have not included in the present analysis the digital sector, despite its important relevance in the green transformation, as we conducted a monographic analysis of it in the previous report of the Future of Work series. As a complement to this current analysis, the document, [‘An inclusive digital economy for people with disabilities’](#) focuses on the impact of increasing digitalization in the workplace on people with disabilities and the identification of actions needed to include persons with disabilities in the ongoing digital transformation.

The following sectors were finally identified for further analysis based on their significant current contribution to global greenhouse gas emissions, as well as their capacity to implement substantial emissions reduction trajectories in the coming decades, generate significant opportunities for job creation for persons with disabilities and their potential relevance as transformative examples as we move towards a net zero economy:

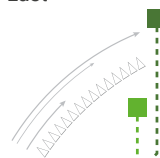
- Energy
- Transport
- Construction and Real Estate Activities (Buildings)
- Manufacturing
- Agriculture, Farming and Fishing
- Water Supply and Management
- Waste Management
- Forestry
- Tourism

The sectoral analysis that follows includes references to the relevance of the sector in the context of the green transition, as well as key transformations that will shape the future development of the sector. It also provides some examples of specific occupations with varying levels of skill/training levels and opportunities and risks for persons with disabilities.



The energy sector is a critical component of the green transition, underpinning growth of our global industrial and manufacturing base and powering our commercial and residential infrastructure. However, as currently configured, the energy sector is responsible for a significant portion of global greenhouse gas emissions, making it a major driver of climate change. According to the most recent statistics available, energy use was responsible for slightly over 73% of global carbon emissions in 2021⁷³.

73. [Emissions by sector - Our World in Data](#) – this figure includes total emissions generated by energy use in industry (24.2%), in buildings (17.5%), in transport (16.2%), fugitive emissions from energy production (5.8%) as well as unallocated fuel combustion (7.8%). Last consultation: 2023.



To address climate change and transition to a more sustainable future, it is essential to shift away from fossil fuel-based energy systems and towards cleaner, renewable energy sources. By transitioning to renewable energy sources such as solar, wind, hydro, and geothermal power, we can significantly reduce greenhouse gas emissions from the energy sector. These sources of energy are sustainable and have lower emissions compared to traditional fossil fuels.

Another important transformation will be the increased use of energy storage technologies, such as batteries and hydrogen fuel cells, to better integrate renewable energy sources into the grid and ensure a reliable supply of power.

There will also be a need for smart grid infrastructure to manage the integration of distributed and intermittent renewable energy sources into the grid. Additionally, energy efficiency and demand management will be key components of the transition, as they can help reduce the overall amount of energy needed, and thus the number of renewable energy sources required to meet demand.

In addition to reducing emissions, the green transition in the energy sector can also lead to job creation and economic growth. As countries invest in renewable energy infrastructure and technology, new job opportunities are created in manufacturing, construction, and installation of renewable energy systems. This shift can also lead to energy independence and security, reducing reliance on imported fossil fuels.

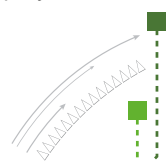
The energy sector will be demanding new profiles and skills in the years to come. Demand for manual workers and technicians in this sector will remain dominant⁷⁴, but manual workers in the sector are highly trained, qualified and skilled. Studies show that by 2025, the most required skills in the sector will be those related to problem resolution, self-management, leadership and interpersonal skills, as well as technology use and development⁷⁵. Furthermore, the energy sector will continue to generate demand for low-and medium-skilled roles with 75% of employees being manual workers and technicians⁷⁶.

There is a wide variety of job profiles in the emerging green energy sector, including solar panel installers, wind turbine technicians, energy auditors and energy efficiency specialists. Many of the jobs in the energy sector are manual, but the profiles of the jobs in the energy sector are varied. Moreover, many of these new jobs created in the energy sector can be accessible to people with disabilities who may not be well-equipped for heavy physical labor. For instance, as we move towards a decentralized, distributed electricity generation model and smart grid, community solar companies will need staff to engage with local communities to sign-up new customers as well as other back-office staff in administration, sales and client relations. In addition, required skill levels for jobs in the green energy sector

74. [Renewable Capacity Statistics](#). International Renewable Energy Agency (IRENA), 2020.

75. [Empleos que demandará el sector energético: nuevas oportunidades sostenibles](#). María Teresa Costa-Campi, Elisenda Jové-Llopis y Álvaro Choi de Mendizábal. Chair of Energy Sustainability, Naturgy Foundation, 2022.

76. [The future of job is green](#). European Commission's Joint Research Centre (JRC), 2021.



vary enormously, with some requiring limited education, like entry-level solar panel installers while others required advanced degrees, such as smart grid engineers.

Lastly, opportunities will also emerge for professionals in social impact studies and/or mediation process management in the event that social conflicts arise around project development, especially in rural areas. These roles will require high levels of qualification.



Transportation and mobility

The transport sector has important environmental effects, especially due to the emission of pollutant gases into the atmosphere, noise pollution and territorial occupation. In addition, transportation is one of the largest contributors to global carbon emissions, accounting for around 23% of total energy-related CO₂ emissions in 2020 according to the International Energy Agency (IEA)⁷⁷.

To achieve a sustainable and low-carbon future, it is essential to reduce the carbon footprint of the mobility sector. This requires a shift towards cleaner and more efficient modes of transportation, such as electric vehicles (EVs), public transportation, cycling, and walking. The deployment of clean energy sources such as renewable energy to power transportation is also crucial.

The European Union has been establishing the legal framework for the regulation of the emissions in the mobility industry. That is reflected in the increasingly restrictive policies that have forced the mobility sector to make significant changes in vehicle design. Those regulations and the foreseeable exhaustion of oil reserves are driving the change to a more environmentally friendly market⁷⁸. These legal and regulatory changes are expected to have profound impacts on the employment landscape in the transportation and ancillary sectors. For instance, according to recent ILO estimates, over 2 million jobs will be created by 2030 in the manufacture of the electrical machinery required for the production of electric vehicles and the generation of electricity from renewables⁷⁹.

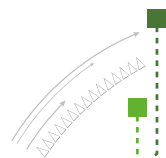
Greening the mobility sector also involves rethinking the way people travel and how goods are transported. This includes promoting shared mobility services such as ride-sharing and carpooling, as well as encouraging the use of sustainable transportation modes for short distances such as bicycles, e-bikes, and e-scooters.

The green transition of the mobility sector presents opportunities for persons with disabilities to participate in the transformation of global transportation systems compatible with a net-zero future. First, as users, through the creation of more accessible and inclusive

77. [Global Energy Review: CO₂ Emissions in 2020](#). IEA, 2020.

78. [Transport and environment report. Digitalisation in the mobility system: challenges and opportunities](#). European Environment Agency, 2022.

79. [World Employment and Social Outlook 2018: Greening with jobs](#). ILO, 2018.



transportation systems such as low-floor buses, accessible trains and the provision of accessible charging infrastructure for electric vehicles. Second, being part of the design of transportation systems. The remaking and retrofitting of the global transportation infrastructure offers multiple employment opportunities for people with disabilities along a vast continuum of skills, educational, training and experience profiles, that cater to a wide array of employee profiles. For example, design and engineering green mobility solutions or research and development require a high level of training and can be developed by persons with disabilities with the necessary educational and training level. Also, manufacturing and assembly or maintenance and repair can both be employment niches for persons with disabilities with lower qualification, using their unique problem-solving skills to diagnose and repair issues with green vehicles.



Construction and Real Estate Activities (Buildings)

The construction and buildings sector generates a substantial environmental footprint, and, as currently configured, is a major driver of global climate change. Globally, the sector was responsible for around 14% of greenhouse gas emissions during 2021⁸⁰.

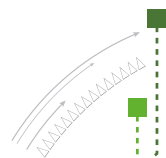
In addition, energy inefficiency in the current stock of buildings also generates a high social cost. The prevalence of energy poverty and its underlying causes have escalated significantly. The International Energy Agency (IEA) estimates that around 2 billion people worldwide experience energy poverty. Data from the EU Energy Poverty Observatory indicate that the estimated number of energy-poor citizens in the European Union varies between 50 and 125 million people. These situations are often more prevalent and acute among underprivileged groups, including people with disabilities, exacerbating existing disparities in terms of economic and social exclusion.

At a global level, as a result of the pandemic and the energy crisis, 75 million people have lost the ability to pay for extended electricity services and 100 million for clean cooking solutions. In emerging market and developing economies, the poorest households consume nine-times less energy than the wealthiest, but spend a far higher proportion of their income on energy⁸¹. In Europe, the social, environmental and economic benefits associated with improving the energy efficiency of obsolete building stock are estimated to be around €291 billion per year.

In the necessary transition to a low carbon economy that the sector must undergo, jobs will be created around renovation of the thermal enclosure of buildings, optimization of the production processes, recuperation, valorization and control of building installations and edification of nearly zero-energy buildings. According to a 2019 European Commission

80. [Global Status Report for Buildings and constructions](#). UNEP, 2022.

81. [World Energy Outlook](#). IEA, 2022.



study, the construction sector holds the highest proportion of employment in green jobs⁸². Similarly, recent estimates by the ILO suggest that the sector may add an additional 6.5 million jobs by 2030 under an aggressive decarbonization trajectory⁸³.

Similarly, sustainability in the building sector is directly related to ensuring universal accessibility, which is defined as the character of a product, process, service, information or environment that, with equity and inclusiveness in mind, enables any person to perform activities independently and achieve equivalent results⁸⁴.

According to the US Green Building Council, the primary objective of Green Building codes is to markedly diminish or eliminate the adverse effects of buildings on the environment and those within them. Sustainable construction aligns with the principles of the United Nations Convention on the Rights of Persons with Disabilities, as outlined in Article 9, which underscores the significance of accessibility to improve quality of life and guarantee the exercise of fundamental human rights and freedoms for everyone. In this context, many energy retrofit projects include the installation of elevators or their modernization by incorporating efficient technology and management systems. Universal accessibility serves as a central pillar and bridge, not only for environmental goals but also for the fulfillment of the Sustainable Development Goals (SDGs)⁸⁵.

The green transition in the construction and real estate sectors will require new skills and training profiles throughout the entire production chain, such as architects, engineers, energy auditors, production of sustainable construction elements, developers and inspectors.

Green jobs in the construction sector can also be classified into different skill levels, depending on the complexity of the tasks involved and the level of expertise required. For example, entry-level jobs include landscape maintenance workers taking care of the outdoor spaces. Skilled jobs include energy auditors for conducting energy audits of buildings to identify areas where energy efficiency can be improved, solar panel installers, and green building technicians. In addition, sustainable design architects, LEED certification specialists and renewable energy engineers would be examples of professional-level green job categories that are expected to experience robust growth as we transition to a net zero economy.

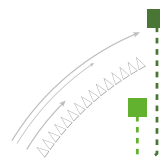
Emerging green job opportunities in the construction and buildings sector can be tailored to offer inclusive opportunities for persons with disabilities. Also, professionals of the universal accessibility sectors (often persons with disabilities themselves) can highly contribute to

82. [Employment and Social Development in Europe 2019. Chapter 5: Towards a greener future: employment and social impacts of climate change policies](#). European Commission, 2019.

83. [Greening with Jobs: World Employment Social Outlook 2018](#). International Labour Organization.

84. Definition developed in 2011 by: Groupe DÉFI Accessibilité (GDA) – Research report for Montreal’s associative environments – Universal accessibility and contributory designs (version 5.3), LANGEVIN, ROCQUE, CHALGHOUMI and GHORAYEB, Université de Montréal.

85. [Universal Accessibility as a Standard in Human Rights and Sustainable Development](#). United Nations Secretary General on Disability and Accessibility, 2019.



achieve a more comprehensive sustainable transformation of the built environment, making it inclusive as well.



Manufacturing

Due to the significant impact of the manufacturing sector in terms of emission of greenhouse gases that cause climate change, it is also called upon to undergo a profound transformation in order to meet the emissions reduction trajectory aligned with the Paris Agreement. Direct emissions of greenhouse gases from industrial processes, primarily cement and chemicals production, account for slightly over 5% of total global emissions while energy use in industry accounts for an additional 24.2% of greenhouse gases emitted into the atmosphere⁸⁶. Energy and materials efficiency in the sector is of paramount importance given its critical role in the production of products, equipment, goods and components that are essential for the transition to a more sustainable future. The manufacturing sector also has a significant impact on the environment through its use of natural resources, waste generation, and effects on biodiversity.

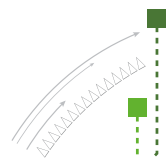
To achieve the green transition, the manufacturing sector needs to shift towards more sustainable and environmentally friendly practices. This shift can be achieved by reducing energy consumption and waste, using renewable energy sources, and adopting circular economy principles such as reuse, repair, and recycling.

Manufacturing companies can also play a crucial role in developing and producing sustainable products and technologies, such as electric vehicles, renewable energy systems, and energy-efficient appliances. By doing so, they can help reduce the carbon footprint of the products they manufacture and promote the adoption of sustainable practices and technologies.

It is expected that the manufacturing sector experience increases in employment as we transition to a low carbon economy. As companies invest in sustainable practices and technologies, new job opportunities are created in research and development, production, and installation of sustainable products and systems⁸⁷. These new job profiles, which include various required educational and training levels, include such positions such as energy-efficiency engineers, clean energy technicians, carbon capture and storage technicians, and circular economy consultants, all offering various levels of opportunities also for workers with disabilities.

86. [Emissions by sector - Our World in Data](#) Last consultation: 2023.

87. [A Green Deal Industrial Plan for the Net-Zero Age](#). European Commission, 2023.





Agriculture, Farming and Fishing

The current agri-food system is a major contributor to climate change and has negative effects on the planet's biodiversity. A recent report published by the Food and Agricultural Organization (FAO) finds that 31 % of human-caused GHG emissions, originate from the world's agri-food systems⁸⁸. Of the 16.5 billion tons of GHG emissions from global total agri-food systems in 2019, 7.2 billion tons came from within the farm gate, 3.5 billion from land use change, and 5.8 billion from supply-chain processes, according to this new analysis.

Promoting sustainability in agriculture will have profound and lasting effects on rural economies, especially those in developing countries that will see a significant decrease in jobs in industrial, intensive agriculture and a shift towards organic, conservation and regenerative farming practices. While a granular quantification of total net job changes in the sector is a complicated endeavor, what is clear is that a transition to a more sustainable food production model offers an opportunity to not only improve the quality of employment, but also make the sector more inclusive for disadvantaged populations, including persons with disabilities. For the agriculture sector, the green transition represents not just an opportunity to create new jobs, but also a chance to enhance the health of agricultural workers as well as consumers and facilitate the transition to a more sustainable agri-food system.

Although the impacts of climate change on agriculture, farming and fishing will be significant, there is scarcely any data or information about the impacts on employment in these sectors. In any case, possible job losses will be partially offset with growing opportunities in sustainable and regenerative agriculture. Also, jobs for Agricultural professionals, especially Agricultural Equipment Operators, are expected to see an increase of 30%⁸⁹. Furthermore, energy crops⁹⁰ will play an important role in the development of biomass as a renewable and sustainable resource. Energy crops are an opportunity for primary sector recovery, and their development comes with the development of the industry of biomass transformation into fuel⁹¹.

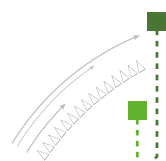
The green transition of the agricultural sector will feature an aggressive emission reduction plan. A central part of this plan will be the widespread adoption of organic fertilization practices. The gradual adoption of sustainable agricultural practices that reduce emissions and increase carbon sequestration, such as agroforestry, conservation agriculture, and agroecology, will significantly alter the training and skills profile that will be needed among workers in the sector.

88. [Pre- and post-production processes increasingly dominate greenhouse gas emissions from agri-food systems](#). FAO, 2022.

89. [The Future of Jobs report](#). World Economic Forum, 2023.

90. Energy crops are low-cost, low-maintenance and fast-growing plant crops grown solely for renewable bioenergy production (not for food) or raw materials for obtaining other combustible substances. The crops are processed into solid, liquid or gaseous fuels, such as pellets, bioethanol or biogas.

91. [Reaping what we sow](#). Nicoletta Batini, International Monetary Fund, 2017.



Both extensive farming and small-scale fishing represent employment niches that can be nurtured and supported by adequate economic development, land use, and workforce policies and regulations. This support includes initiatives like carbon pricing, subsidies for sustainable agricultural practices, and worker training and upskilling programs. For instance, sustainable fishing holds the potential to bring new opportunities to rural communities facing serious unemployment challenges.

The green transition is expected to create jobs through the promotion of sustainable farming practices such as agroforestry or organic farming. Additionally, it involves the development of renewable energies in the sector, such as solar, wind, and bioenergy. This development will create new job opportunities in areas such as installation, maintenance, and operation of renewable energy systems. Furthermore, it supports ecosystem services like pollination, pest control, and water regulation, and includes investment in research and development.

As the sector evolves, new job opportunities will arise in positions such as sustainable agricultural technicians, precision agriculture engineers, regenerative farming consultants, and carbon sequestration experts. These positions encompass a diverse range of skill sets, educational requirements, and physical demands. However, with the necessary accommodations and support services, as well as the availability of adapted training opportunities, they can cater to the employment needs of persons with disabilities.

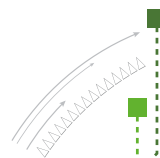


Water Supply and Management

Climate change will also have a substantial impact on water resources, due not only to the increase in global temperatures that will accompany climate change, but also triggered by the increased irregularities in rainfall patterns which will see increases in both drought events as well as extreme flooding. This elevated unpredictability and extreme volatility of precipitation patterns can compromise potable water supply systems, which will pose considerable risks to not only the health and wellbeing of human settlements but also cause potentially serious disruptions to other sectors, such as industry or agriculture, that rely on a steady supply of water.

In this context, increased water demand as a result of increasing temperatures, changes in supply systems, variations of stream flows or risks of salinization of aquifers are problems to solve, but also opportunities for job creation in various areas: improvement of existing management practices to make them more efficient, development of measures to adapt management systems to climate change, design and building of infrastructure for water storage, development of new technologies for desalination and reutilization of residual waters and others⁹².

92. [The employment impact of climate change adaptation – Input Document for the G20 Climate Sustainability Working Group. ILO, 2018.](#)



For individuals with disabilities, employment within this sector typically revolves around "traditional green jobs, such as small-scale and temporary jobs for cleaning specific water resources. Those initiatives are usually led by water management enterprises, but often do not provide long-term steady jobs for participants.

Green jobs in this sector feature different training requirements, from low qualifications (primary studies or even without studies) for jobs such as treatment plant operators, to management positions which require a high educational and training level as well as specialist technicians, such as water efficiency engineers, water conservation specialists and experts in sustainable and regenerative agricultural practices. This sector is a potential niche of employment for persons with disabilities.

As the sector evolves, new job opportunities will arise, such as water efficiency engineers, renewable energy technicians, water conservation specialists, and sustainable agricultural managers. However, the high educational and training requirements of many of these emerging positions that will be created in the sector limits its potential as a fertile source of jobs, although some options are available with the proper job support, accommodations and adjustments⁹³.



Waste Management

The waste management sector is one of the fields that offers the most opportunities to create new jobs in its path towards sustainability, which includes eco-design and reuse, separate collection and recycling, although the starting point must be prevention of waste generation. According to the most recent data, waste accounts for 3.2% of global emissions of greenhouse gases⁹⁴. Literature shows that applying waste hierarchy offers new job opportunities and improvements, compared to, for example, waste incineration or landfilling.

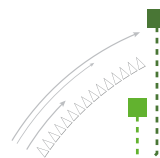
The design of circular productive processes which stress the reuse and recycling of materials is expected to be a major driver of economic growth and employment opportunities in the near and midterm, as they require less training or upskilling of the workforce⁹⁵. As the sector evolves, new job opportunities with more elevated training and requirements will also increase steadily, including waste reduction engineers, composting technicians, recycling managers, and clean transportation logistics specialists.

The sector offers a high number of job positions due to the wide variety of operations required to properly manage waste. For example, laborer, driver or machine operator are characterized by their lower level of qualification. On the other hand, supervisor

93. [Toward an equitable blue-green economy: Skills in water and green jobs](#). The Data Center. Amy Teller and Robert Habans, 2022.

94. [Emissions by sector - Our World in Data Last consultation](#): July 2023.

95. [Shaping skill and lifelong learning for the future of work](#). ILO, 2021.



or director job positions (depot manager, plastics recycling sales manager, waste and recycling operations account manager, financial director, paper and plastic recycling quality inspector...) require highly qualified personnel. Furthermore, this sector is characterized by being labor-intensive, mainly in operator and driver positions.

In general, it can be concluded that this sector is a potential employment niche for people with disabilities, offering suitable job positions, from high-skilled positions (such as urban waste collection manager, composting plant or waste treatment plant director) to low-skilled positions (such as ecopark operator, composting plant operator and machine operator, and landfill operator).

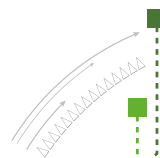


The forestry sector has significant relevance in the context of the green transition as forests play a crucial role in removing carbon dioxide from the atmosphere and storing it in trees and soil. This makes forests a critical part of efforts to mitigate climate change⁹⁶. Also, wood biomass can be used as a renewable energy source, replacing fossil fuels and reducing greenhouse gas emissions.

Sustainable forest management practices, such as reforestation and sustainable harvesting will create new jobs and improve forest resilience to fires and new threats such as rural depopulation. Furthermore, ensuring the sustainable use and management of natural resources, such as timber, paper and medicinal plants is critical for maintaining the health of the forest ecosystem. As the sector evolves, new job opportunities will arise, such as sustainable forestry technicians, reforestation experts, forest fire management specialists, and carbon offset project managers.

Overall, forestry is generally perceived as a highly specialized sector. The role of a forestry worker is the only position that requires relatively low qualifications, but it still demands a considerable level of physical strength, manual dexterity, and proficiency in operating specialized machinery. Many other job categories in the sector require a professional or university degree but can be tailored to the needs of persons with disabilities with appropriate accommodation services as well as tailored and supported educational and training services. As such, the forestry sector can be an employment niche for persons with disabilities, from forestry worker or sustainable forest management, performing tasks related to field work, to foreman or director positions.

96. [New EU Forest Strategy for 2030](#). European Commission, 2021.





Tourism

Tourism is a transversal sector with a high impact in other economic sectors (transportation, commerce, providers of other sectors) and it is very labour intensive. Its spatial and temporal concentration often implies high pressures in communities and ecosystems. As the quality of touristic destinations often depend on their natural and cultural environment, competitiveness in the tourism sector is increasingly related to sustainability factors. Although the rise of rural tourism is positive for the development of rural areas, it must be accompanied by plans and policies to ensure that tourists take special care of land, culture and the environment.

Developing sustainable and responsible tourism strategies is an opportunity for job creation. To achieve this, it is necessary to limit concentration in traditional travel destinations and to generate new opportunities for territories with tourism resources which have not yet been capitalized. This will contribute to avoiding depopulation and to improving life conditions of citizens in those places.

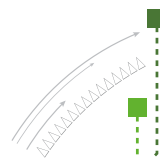
Some job opportunities in the green transition of tourism with various skill levels that may prove to be fertile niches for persons with disabilities include sustainable tourism consultants to help businesses implement sustainable practices and create environmentally friendly products and services; eco-tour guides; environmental education specialists to educate visitors about the importance of sustainability and environmental conservation; green hospitality managers; renewable energy experts; accessible tourism specialists to ensure that tourism business and destinations are accessible to all visitors; waste management specialists to help tourism businesses minimize their environmental footprint and conservation biologists to research and protect biodiversity, monitor ecosystems and manage natural resources.

3.3. Summary and shared findings across sectors

As it has been outlined in the previous sections of this document, the coming low-carbon economy will bring about significant and profound changes to the labour market, creating multiple job opportunities in emerging sectors and professions while bringing about important job losses in the economic sectors that bear the brunt of responsibility for climate change, including extractive industries and energy generation from fossil fuels.

Although such a development will in all likelihood generate a scenario of substantial net positive job creation⁹⁷, important job shifting and reallocation will occur, a situation that will necessitate significant global collective action in terms of training and retraining, upskilling and job and geographical mobility assistance to ensure that no one is left behind during this green transition.

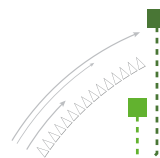
97. [Greening with Jobs: World Employment Social Outlook 2018](#). ILO, 2018.



In addition, a regulatory, adaptative and assistive framework must be created to ensure that disadvantaged populations, including persons with disabilities, are able to take full advantage of opportunities created during this economic and societal transformation and reconfiguration and avoid entrenching or even deepening historic inequities that have marked the current employment market.

In conclusion, presented below are several shared insights that emerge from the previous sectoral analysis:

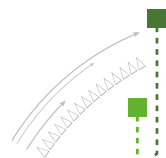
- The transition to a climate-neutral economy is creating a wide range of job opportunities in all sectors, from technical and operational roles to management and specialized positions. This provides a spectrum of options for individuals with disabilities, encompassing various skill levels and qualifications.
- Growing job opportunities in the green transition, which can be found along the entire wage and skill distributions continuum, may also help to mitigate the job polarization that is evident in other major economy-wide transformations, such as digitalization, which is heavily skewed towards jobs in the higher end in terms of education, skills and qualifications.
- Job opportunities continue to emerge especially in sectors such as landscaping, waste management, recycling and pollution management, “traditional green sectors”, in which persons with disabilities were already included to a large degree. Similarly, “eco-industries” are also an employment niche for persons with disabilities, and include solid waste management, and water management. Many jobs in these “eco-industries” do not require high qualifications, and contribute substantially to the recovery of rural areas.
- Accessibility and workplace adaptation are crucial to ensure that people with disabilities can take advantage of emerging job opportunities in the green economy. This includes the provision of support, accommodations, and specific training services to meet individual needs.
- The diversity of skills and abilities among people with disabilities can be an asset in the sectors that will feature prominently in the ecological transition. Their unique perspectives and problem-solving skills can bring a new dimension to sustainability and innovation in these sectors. For instance, their problem-solving ability and adaptability to different challenges are valuable in roles related to energy efficiency and waste management.



- Despite the general opportunities, each sector has its own unique characteristics and challenges regarding employment inclusion. Understanding the specific dynamics of each sector and adapting strategies accordingly is crucial. Also, inclusion should encompass all levels of employment, from entry-level positions to senior management roles. This means that people with disabilities should have the opportunity to contribute to all aspects of the ecological transition.
- Education and training are essential to ensure successful inclusion as well as job migration towards green sectors. The transition will require significant reskilling, upskilling and may involve significant labour relocation. To the extent that increased professionalization is fostered among persons with disabilities, they will have greater possibilities to access emerging opportunities and enterprises will have a greater ability to include them in their workforce and to successfully match skills profiles with the different job opening available. This will additionally contribute to diversifying their teams.

To ensure that persons with disabilities can tap into these employment opportunities available in the highlighted sectors and avoid being left behind, workforce and educational systems must work in coordination. They should provide various services required for success, including job search and matching, skills training, job mentoring, and accommodation assistance. By considering the needs and talents of persons with disabilities, these emerging green jobs can provide meaningful employment opportunities, promote diversity and inclusivity in the workforce, and foster a more equitable and sustainable green economy.

Regarding the last point and in the context of the green transition, it is especially necessary to take into account that workforce participation is highly dependent on previous levels of education. Historically, persons with disabilities have been left behind in terms of educational offerings. Therefore, it is crucial to address underlying educational disparities to ensure inclusivity in the green transition.



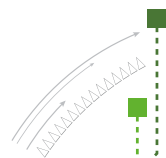
4. A road map for ensuring the green transition is inclusive for persons with disabilities

Ensuring that the coming green transition is inclusive for persons with disabilities will require the concerted efforts and actions of multiple stakeholder groups. Governments play a crucial role in developing and implementing policies that promote accessibility and employment opportunities in green sectors. The corporate sector can implement disability inclusive employment policies, ensure accessibility, provide training and awareness programs to employees, develop non-discrimination policies, and promote diversity in decision-making. Trade unions and workers' representative organizations can advocate for disability inclusion through collective bargaining agreements, training, and awareness-raising among their members, employers and employer's organizations. Educational and training institutions can contribute by providing accessible education and training programs, collaborating with employers and disability organizations, and offering lifelong learning opportunities. And disability organizations can advocate for disability-inclusive policies, raise awareness about challenges faced by persons with disabilities, and collaborate with other stakeholders to promote disability inclusion in the green workforce.

By working together, these stakeholders can ensure that the green and low carbon transition is inclusive, leaving no one behind. It is vital for the success of these efforts to ensure the active participation of persons with disabilities in all aspects of the development and implementation of these measures. Otherwise, they risk missing out on the opportunities created by the green and digital revolutions and facing additional barriers to inclusion.

Special care should be taken to ensure that the gender perspective is adequately taken into account in all efforts to include persons with disabilities in these emerging job niches, as green jobs have traditionally skewed towards males, posing an additional challenge for women with disabilities and entrenching and worsening current distributional workforce inequities. Similarly, a cross-cutting inclusion of the youth perspective is necessary in the implementation of these measures so that young people with disabilities do not face a double barrier to accessing these new job opportunities.

Hereafter, the text offers recommendations for each key stakeholder group, emphasizing specific actions that can be pursued, both individually and in collaboration with other key stakeholder groups. The goal is to promote and drive an inclusive green transition that enables the full participation of persons with disabilities and prevents the recurrence, consolidation, or exacerbation of labor market, social, and economic disparities that currently have adverse effects on their lives and encroach upon their fundamental and human rights.





Public authorities

- Implement ILO’s Just Transition Guidelines⁹⁸ together with the United Nations Convention on the Rights of Persons with Disabilities⁹⁹ as a guiding framework for inclusion.
- Formulate national plans for a just transition, creating decent green jobs, in line with the ILO “Climate Action for Jobs”¹⁰⁰ initiative presented by the UN Secretary-General at the 2019 Climate Summit.
- Ensure the inclusion of persons with disabilities in Nationally Determined Contributions (NDCs), National Adaptation Plans and in other just transition strategies and plans, such as the activities framed in the Action for Climate Empowerment Initiative¹⁰¹, including through consultation and engagement with Organizations of Persons with Disabilities (DPOs) and networks¹⁰².
- Ensure that national policies for a just and green transition are inclusive, accessible, and provide social protection, continuous training, and social dialogue for persons with disabilities.
- Guarantee that climate change policy measures are formulated in a manner that does not undermine equal opportunities for individuals with disabilities.
- Ensure that emergency, just transition and climate change-related information and policies are fully accessible to persons with disabilities through various formats such as Braille, sign language or digital platforms.
- Consider reforms of social protection systems in order to ensure that the specific needs of persons with disabilities are properly addressed. The design of adaptive social protection must be disability inclusive, linking the roles and tools of social protection with approaches on mitigating shocks from climate change for persons with disabilities
- Develop inclusive consultation processes, targeted outreach, and promote the inclusion of organizations of persons with disabilities in the processes of strategy development, ensuring that they have the technical capacity to do so.
- Facilitate the effective participation of persons with disabilities through their representative organizations at all levels of just transition policy and program design,

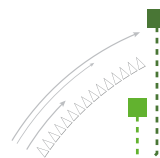
98. [Guidelines for a just transition towards environmentally sustainable economies and societies for all](#). ILO, 2015.

99. [United Nations Convention on the Rights of Persons with Disabilities](#). UN, 2006.

100. [Climate Action for Jobs initiative](#). ILO, 2019.

101. [Action For Climate Empowerment](#). UNFCCC.

102. [Persons with disabilities in a just transition to low carbon economy](#). ILO 2019.



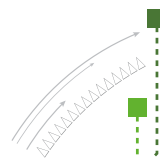
planning, implementation, monitoring, and evaluation across all policy areas mentioned in the Just Transition Guidelines¹⁰³, including accessible social dialogue¹⁰⁴.

- Allocate funds for capacity building targeted to organizations representing persons with disabilities in subject areas such as policy development and program design in the context of the green transition to ensure that the disability perspective is taken into consideration in climate change and transition planning on a national and regional level.
- Foster public-sector investment and public-private partnerships in support of greening the economy in an inclusive way for persons with disabilities.
- Invest in training and education programs that provide persons with disabilities with the necessary skills and knowledge to participate in the green economy. This can include vocational training, capacity-building, apprenticeships, and on-the-job training programs.
- Review legal and policy frameworks to ensure that green jobs and green contracts promote disability inclusion, e.g. by adding a requirement of employing a locally determined percentage of persons with disabilities¹⁰⁵.
- Promote employment opportunities for persons with disabilities in the green economy. This can include working with employers to create inclusive hiring practices and promoting entrepreneurship and self-employment opportunities for persons with disabilities through direct subsidies as well as financial and tax incentives. Special consideration, in this regard, should be given to persons with disabilities who face dual employment barriers such as women, youth, or migrants and refugees with disabilities.
- Encourage entrepreneurship in green sectors among persons with disabilities and foster economic growth and inclusion by supporting disabled entrepreneurs in developing sustainable solutions. In some areas this may involve important legislative actions within banking policies to address potential barriers to inclusion.
- Prioritize accessibility in the process of rebuilding after disasters or as part of climate adaptation and mitigation initiatives. This includes a focus on enhancing physical infrastructure within buildings, urban areas, and transportation systems. The quality of physical infrastructure has an immediate impact on individuals' access to education and employment, particularly for persons with disabilities. Therefore, it directly influences their social inclusion and financial stability.
- Collect disability-disaggregated data on labour markets, including new and emerging green sectors, so that the actions mentioned above are measurable and tracked.

103. [Guidelines for a just transition towards environmentally sustainable economies and societies for all](#). ILO, 2015.

104. ["Nothing about us without us" Realizing disability rights through a just transition towards environmentally sustainable economies and societies](#). ILO, 2022.

105. [Persons with disabilities in a just transition to low carbon economy](#). ILO, 2019.





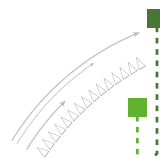
Corporate Sector

- Develop and support apprenticeships, on-the-job training programs, and vocational initiatives that are inclusive of persons with disabilities, and are focused on responding to the skills and qualifications that will be in demand during the green transition¹⁰⁶.
- Align corporate sustainability policies, programs, and initiatives within the framework of the green transition to be disability-inclusive. This can include implementing the ten principles of the ILO Global Business and Disability Network Charter designed to create equal opportunities at the workplace for persons with disabilities.
- Take into account recommendations in Sustainability reporting for companies related to persons with disabilities such as the ones developed by GRI, or the contents related to disability in the European Sustainability Reporting Standards¹⁰⁷¹⁰⁸.
- Ensure that workplaces in the emerging green sectors and jobs provide accessible infrastructure and technology for individuals with disabilities and implement strategies to make work more adaptable, such as enabling remote work or flexible working hours.
- Incorporate individuals with disabilities into the companies' talent acquisition strategy for the green transition, recognizing the significance of fostering a diverse workforce that mirrors the broader society it serves. Recognize in these strategies the valuable contributions that professionals in the universal accessibility sector, many of whom may have disabilities themselves, can make in achieving a more holistic and sustainable transformation of the built environment, transport, and products and services in general, ensuring its inclusivity.
- Adapt to the extent possible job positions in the green economy to the particular needs of persons with disabilities, taking into account that in some cases assistance, supervision, and previous training will be needed before being onboarded.
- Foster collaboration with disability organizations, community groups, disability advocates and experts to ensure that the needs and perspectives of persons with disabilities are taken into account in green transition programs and initiatives.
- Ensure that workers with disabilities in sectors set to see important job reductions within the green transition, such as those in high emitting industries, are supported, including through retraining programs and assistance with finding new employment.

106. ["Nothing about us without us" Realizing disability rights through a just transition towards environmentally sustainable economies and societies](#). ILO, 2022

107. [Corporate Sustainability Reporting Directive \(CSRD\)](#). European Commission, 2022. Note specifically the social standards.

108. [Disability in Sustainability Reporting. Updated Guide](#). Disability Hub Europe Initiative. Global Reporting International, Fundación ONCE and KPMG.

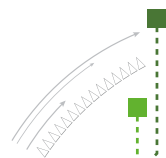


- Work collaboratively on a sectoral basis as well as cross-sectorally, through Employer and Business Membership Organizations (EBMOs), to provide support in the establishment of strategies, programs, and initiatives to foster the inclusion of persons with disabilities in emerging green job niches. Special support should be provided to SMEs to ensure that they continue to play be an important employment source for persons with disabilities.



Trade Unions and Workers' Representative Organizations

- Consider disability inclusion issues when advocating for a just transition, ensuring that policies and strategies developed are equitable and accessible for persons with disabilities. This may involve advocating for the removal of barriers and the promotion of equal opportunities regarding green jobs.
- Advocate for the integration of disability-inclusive policies within collective bargaining agreements, especially in those sectors expected to experience the greatest transformations as we mitigate and adapt to climate change. These policies should encompass reasonable accommodations, training and accessibility requirements to ensure that persons with disabilities have equal access to emerging green sector job opportunities.
- Advocate for the need for environmentally friendly workplace accommodations, including accessible transportation options, eco-friendly workspaces, and sustainability measures that take into account the specific needs of workers with disabilities.
- Enhance awareness and education among trade union members and the broader community about the potential of green jobs and opportunities in a low-carbon economy for disadvantaged groups, including persons with disabilities.
- Strengthen partnerships and collaborations between the workers' movement and disability advocacy organizations to jointly promote the inclusion of persons with disabilities in the changing world of work.
- Collaborate with employers to establish training and educational programs. These programs should be designed to upskill and reskill workers, including those with disabilities, to meet the demands of climate-neutral industries. Trade unions can also negotiate for accessible training materials and facilities to accommodate the diverse needs of their members.





Training institutions

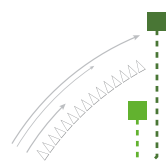
- Ensure that training programs and courses in emerging environmental fields are designed to be inclusive and accessible to individuals with disabilities. This can involve providing accessible learning materials, online content, and physical facilities, as well as offering diverse learning formats to accommodate different learning styles.
- Embed training on the just and green transition specific to different sectors into educational programs, including targeted actions providing individuals with disabilities the necessary skills and knowledge to thrive in emerging job opportunities.
- Integrate reskilling and labour relocation strategies into training plans to foster inclusive career transitions to green sectors, recognizing the significance of preparing individuals with disabilities for these transformations.
- Cultivate partnerships with governments and the private sector to provide training on the just and green transition, emphasizing the need to include persons with disabilities in all initiatives.



Disability NGOs

- Engage in climate change and just transition discussions at the global, regional and national levels in coordination and collaboration with other stakeholders. Disability inclusion must be addressed within the work of mainstream climate action organizations, and ad hoc organizations should be established with a focus on a just transition for individuals with disabilities.
- Prioritize work on climate change, raise awareness among members and advocate to actively engage in climate action at all levels, amplifying just transition messages in collaboration with government, employers' and workers' organizations.
- Establish connections and alliances with other climate actors and advocates, such as indigenous and tribal peoples, women and youth to enhance inclusivity and accessibility of climate action at different social and geographic locations¹⁰⁹.
- Build strategic alliances with educational and training institutions to facilitate the dissemination of current and relevant information to members regarding the concepts of the just and green transition. This collaborative effort should aim to offer insights into new employment prospects emerging in the wake of these transitions, ensuring that members of disability organizations are well-prepared to seize these opportunities.

109. [Persons with disabilities in a just transition to low carbon economy](#). ILO, 2019



- Develop awareness and capacity-building initiatives (including training and local/national discussion forums) to ensure their members participate in the broader climate action movements and play an essential role in the green transition.

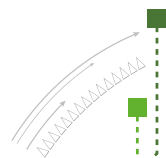


Areas for Further Research

The process conducted during the development of this report has identified several areas where further research is warranted to continue expanding practical knowledge and policy-oriented recommendations about the inclusion of persons with disabilities in the green transition that is underway. Such areas include the following:

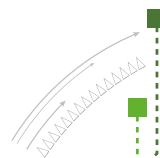
- Work on improving the availability of valid and rigorous data and statistics at both the country, regional and organizational level about new employment opportunities and niches emerging as a result of the green transition, as well as the number and profile of persons with disabilities working in the green economy.
- A deeper dive into the specific skills, knowledge, training and competencies that are required for emerging jobs in the green economy, as well as accommodations that can be made within these to facilitate the integration of personas with disabilities.
- A more comprehensive exploration of key characteristics and elements that distinguish the green economy from those of the rest of the economy, and what specific opportunities and challenges arise from these differences.
- We need to delve deeper into the potential boundaries of the ongoing ecological transformation, driven by commitments to restrict future temperature increase to 1.5° compared to pre-industrial levels. Additionally, we should assess to what extent mitigating the most severe consequences of climate change might necessitate further, more fundamental, and potentially disruptive alterations to our existing economic and social systems. This debate must take into account the impact on the employment of people with disabilities.

The present report has served, we believe, to initiate a much needed and overdue debate about the urgency to consider the needs and unique circumstances of vulnerable populations, most notably persons with disabilities, in the design, planning, and implementation of initiatives to harness the workforce opportunities that are emerging in response to climate change. As a call to action, it has highlighted important recommendations that key stakeholder groups can take to avoid past mistakes in workforce planning that have led to severe and entrenched labor market disparities for persons with disabilities. As this debate advances and matures, we anticipate that this initial research based on a sectoral perspective will drive further and deeper exploration of the confluence of disability and climate change and fill in some of the information gaps that currently exist to allow for a data driven action plan that ensures that no one is left behind as the global economy transitions to a climate neutral future.

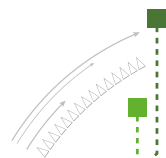


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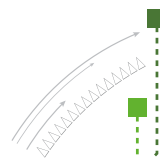
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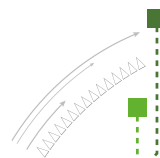
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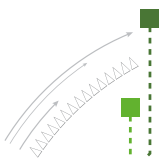
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Acknowledgements

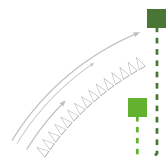
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About the leading organizations of the publication



The main goal of Fundación ONCE for the Cooperation and Social Inclusion of Persons with disabilities (Fundación ONCE) is to promote the quality of life of persons with disabilities and their families, particularly focusing on the areas of training, employment and the universal accessibility of environments, products and services. Based in Spain and founded by ONCE (the Spanish National Organisation of the Blind), Fundación ONCE has extensive experience in the labour inclusion of persons with disabilities, and has collaborated across borders with private companies, governments at all levels and other organisations from civil society, making the disability dimension in this field much more visible.

Website: <https://www.fundaciononce.es/es>



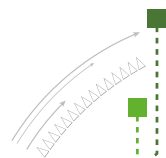
The ILO Global Business and Disability Network aims to create a global workforce culture that is respectful and welcoming of people with disabilities. Our goal is to make sure that employment policies and practices in companies of all types are inclusive of people with disabilities around the world. We also work to increase awareness about the positive relationship between disability inclusion and business success.


Website: <https://www.businessanddisability.org/>



Disability Hub Europe is a unique, Europe-wide, multi-stakeholder initiative, co-funded by the European Social Fund, and focused on the potential of inclusive business and the binomial Disability & Sustainability, providing involved organizations an opportunity to stand out and reinforce their sustainability leadership linked to people with disabilities, which currently number more than 100 million at the European level.

Website: <https://disabilityhub.eu/>





“This document is a contribution to the 2030 Agenda and the Sustainable Development Goals, particularly to Goal 8 “Decent work and Economic Growth” and to the specific target 8.5 “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value”. Furthermore, it also contributes to SDG 13 “Climate action”, and to the specific target 13.2 by urging the inclusion of climate change measures in national policies, strategies, and plans from a perspective of a just transition”.