



The net zero generation

Why the world needs to upskill young people to enable the net zero transition



In March 2020, PwC launched a three-year strategic, global collaboration with UNICEF in support of Generation Unlimited (GenU), which aims to help upskill millions of young people around the world. The collaboration brings together public, private and civil society stakeholders to develop programmes and innovations that support young people on their path to productive futures and engaged citizenship, and to conduct research on the global skills challenge. In addition, PwC and UNICEF, in support of GenU, are collaborating in India and South Africa to develop, expand and fund education and skills programmes for young people.

<https://pwc.to/UWY-2020>

New world. New skills. is PwC's global programme to help millions of people around the world improve their understanding, skills and knowledge for the digital world.

There is an urgent need for organisations, governments, educators and citizens to come together to address this growing problem. We are convening discussions and working with a broad group of stakeholders to help find solutions that work in each country. We're helping organisations in the public and private sectors anticipate the skills they will need in the future and work together on comprehensive solutions.

We are committing to upskilling as a firm—training our people, investing in technologies and supporting clients, communities and other stakeholders across our territories.

www.pwc.com/upskilling

UNICEF works in the world's toughest places to reach the most disadvantaged children and adolescents—and to protect the rights of every child, everywhere. Across more than 190 countries and territories, we do whatever it takes to help children survive, thrive and fulfill their potential, from early childhood through adolescence.

And we never give up.

unicef | for every child

www.unicef.org

Launched by the UN Secretary-General in 2018, **Generation Unlimited** is a Public-Private-Youth Partnership on a mission to skill and connect the world's 1.8 billion young people ages 10-24 to opportunities for employment, entrepreneurship and social impact. Anchored in UNICEF, the partnership brings together global organizations and leaders including heads of state, CEOs, United Nations leaders, and civil society champions with young people to co-create and deliver innovative solutions on a global scale.

www.generationunlimited.org



1 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

Foreword

The evidence is clear: To secure a sustainable future for our planet and all its people, the world must reach net zero – cutting greenhouse gases as close to zero as possible.

The net zero transition will transform our economies and our societies – and impact virtually every aspect of our lives. The question we face is how we will ensure that the green transition is a just transition – including by serving those who are least responsible for climate change but most vulnerable to its impact.

As this report clearly shows, young people must be part of the solution.

But the world's 1.2 billion young people between the ages of 15 and 24 are at risk of not having the green skills they need to participate in the employment and entrepreneurial marketplace – a risk that is particularly acute for young women in low-income countries.

We need urgent action to close these gaps by upskilling all young people – but especially those most impacted by climate crises – to take their place in the green economy. We need their perspectives, their ideas, and their energy. And we need their leadership as innovators, employees, entrepreneurs, and social change agents.

This report makes the case for why governments and businesses must work in partnership to prioritise and invest in green skills for youth – collaborating to harness young people's vast reserves of talent and innovation. These investments will yield a triple dividend: contributing to net zero, reducing inequality, and addressing the youth unemployment crisis.

The road to net zero can either catalyse a fairer future for the world's youth – or leave them even farther behind. We have a narrow window of opportunity to act – and we call on our partners in governments and the private sector to join a global effort to ensure that the green transition is a truly just transition – powered by young people to protect our planet and provide equal opportunity for all.



Bob Moritz

Co-Chair, Generation Unlimited Global Leadership Council
PwC Global Chair



Catherine Russell

Co-Chair, Generation Unlimited Global Leadership Council
UNICEF Executive Director



1. Introduction

To meet the Paris climate goals, the world needs to decarbonise 11 times faster than the global average achieved since 2000.¹ Climate advocates rightly focus their energy on building political will and accelerating national and corporate commitments and plans. But another element requires more urgent attention: skilling, reskilling, and/or upskilling the workforce—especially its younger members—is vital if the effort to reach net zero² is to succeed.

Careful attention to skills development is vital to the net zero transition for two reasons.

First, a transition of this magnitude requires a transformation of how people work and in what kinds of jobs. It will increase demand for certain jobs (e.g., in construction, to help build new infrastructure), change the nature of other jobs (e.g., servicing electric vehicles differs from servicing gas-powered cars), create new jobs (e.g., more sustainability experts) and eliminate existing jobs (e.g., in coal mining). Managing this change requires skilling, reskilling and upskilling at scale, or the world will face severe bottlenecks that impede decarbonisation and climate resilience.

Second, as the transition progresses, it needs to continually earn support to maintain its momentum. A tangible economic upside will encourage individuals and the whole of society to continue to support the transition to net zero. Because economic transformation always produces losers as well as winners, those with a fear of losing out can become barriers to progress. For such a massive change to garner popular support and build momentum, people need to see real economic benefits from the many millions of job opportunities it will create. That means ensuring workers have the skills needed to thrive in a net zero economy.

At the heart of both these issues are young people, those classified here as 15-24 years old.³ They provide both a talent pool that can help meet the labour demands of the transition and are essential stakeholders in building support for government and corporate action. And many can—and are—leading action themselves. They want green jobs, and green jobs need to be created for them.

In this report, we use the ILO's definition of green jobs: 'decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency.'⁴

Many young people are already driving change by creating green jobs for themselves, particularly through entrepreneurship and advocacy. Around the world, young people are some of the most active voices on climate change, and they are doing what they can to create and participate in the economic change that is coming. Yet so much more needs to be done for the vast majority of today's young people.

This report—building on work from many others, including the ILO, the Organisation for Economic Co-operation and Development (OECD) and other United Nations (UN) organisations—offers a way forward. Specifically, we set out to address this question: **how can upskilling enable young people to equitably access the employment opportunities created by the green transition?**

Young people are not bystanders when public policy or business decisions are made that affect their future; they are, and need to be, active participants in the delivery of outcomes, and this report includes examples of some young people who are already having a positive impact on the environment.

However, since the world's youth are disproportionately located in lower-income countries and in regions that are particularly vulnerable to climate change—i.e., the global south—this report focuses mostly on them.⁵ Despite lacking perfect demographic information—for instance, data exists on age, gender and region, but little of it pinpoints how these factors intersect at regional or global levels—we analyse the elements and try to paint an integrated picture of the challenge ahead and, more importantly, identify what can be done about it.



3 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

The young people out front in the net zero transition

Motobrix – imaGen Ventures global winner

The founders of Motobrix wanted to engage and empower unemployed young people to create clean, affordable energy in their community in Kenya. Using raw materials from households and schools, they led a group of young people making briquettes from combustible waste materials in their community, which they moulded into shapes convenient for burning. Compared with conventional fuel, these briquettes provide a cheaper alternative for families and schools to use for cooking. Participants earn extra income from this effort, Kenya's streets are cleaner, and the community is less dependent on fossil fuels.⁶

Photo courtesy of Motobrix



Ako Fresh – Young Global Changers award winner⁷

To address the issue of food waste occurring throughout the supply chain, and corresponding CO₂ emissions, Ako Fresh is a solar-powered cold storage technology available to farmers and traders that extends the shelf life of perishables from five days to 21 days. This organisation focuses on reducing greenhouse gas emissions, conserving environmental resources, alleviating poverty and boosting the local economy and creating employment opportunities for women and youth.⁸

Photo courtesy of Global Solutions Initiative and © Rolf Schulten



2. Today's youth skills crisis

According to a recent poll, 71% of young people want to be actively involved in the green transition.⁹ However, they often lack the skill sets to do so. This is a problem not just for young people, but also for the delivery of a net zero economy. No economic transformation can proceed without a supply of skilled labour to do new kinds of work. Without sufficient attention to skills, companies will not be able to deliver new products and services or change the way they operate, and the whole transition will be slowed.

In many parts of the world, these skills remain undeveloped simply because young people lack such basic resources like internet access. Often there is no cultural tradition of formalised training for jobs. Seldom, if ever, is there a national skilling programme that brings together key players that should be involved, such as governments, corporations and non-governmental organisations (NGOs).

The frustration of young people who lack the ability to participate in the green economic transition reflects the inequality of opportunity they face. Young people, especially young women, are unable to gain the skills they need to actively participate in the labour force. According to the ILO, 'the proportion of young people worldwide not in employment, education or training (NEET) is currently at its highest level since 2005'.¹⁰ Additionally, 61% of upper-secondary school-aged youth are out of school in low-income countries, compared to just 8% in high-income countries.¹¹ UN figures show that women account for more than two-thirds of the young people who are NEET.¹²

If current trends continue, analysis from the World Skills Clock¹³ suggests that more than 60% of the youth population, or 830 million, will lack the basic skills that will be required in 2030. Meanwhile, the UN warned that the total number of unemployed young people worldwide could reach 73 million in 2022, six million above pre-pandemic levels in 2019.¹⁴ The Covid-19 pandemic has deepened a learning and skills crisis that already existed.

Young people are fully aware that skills are a major gating factor, as a recent poll found.¹⁵ The top barrier they cited was lack of education (27%), marginally ahead of limited job availability (25%). This corresponds to their experience in the labour market. Globally, the youth unemployment rate is approximately triple the level for adults.¹⁶ There is a marked gender divide in unemployment: 27% of young women are employed compared to 40% of young men.¹⁷ This level of unemployment leaves millions of young people unable to fulfil their potential and creates tension in society.

The lack of skills and jobs globally for young people blocks economic progress, and thus the successful transition to a net zero economy. But the young working poor are often trapped by the kind of work they do find—untraditional, insecure jobs in the informal economy, often working long hours and for low wages. Only 23% of youth employment is in the formal sector.¹⁸ Before the pandemic, some 55 million existed in a situation characterised as extreme working poverty.¹⁹ Moreover, with under-employment a consistent feature of the informal economy, the underemployed cannot commit to full-time training, else they forfeit what money they have coming in.

The lack of skills and lack of jobs is a challenge for any economic progress, so it is no surprise that it is a major barrier to a successful net zero transition.



5 The net zero generation

Why the world needs to upskill young people to enable the net zero transition



27% of young people see a lack of education as a key barrier to finding work.¹⁵



Globally, only around 34% of young people are employed.¹⁶



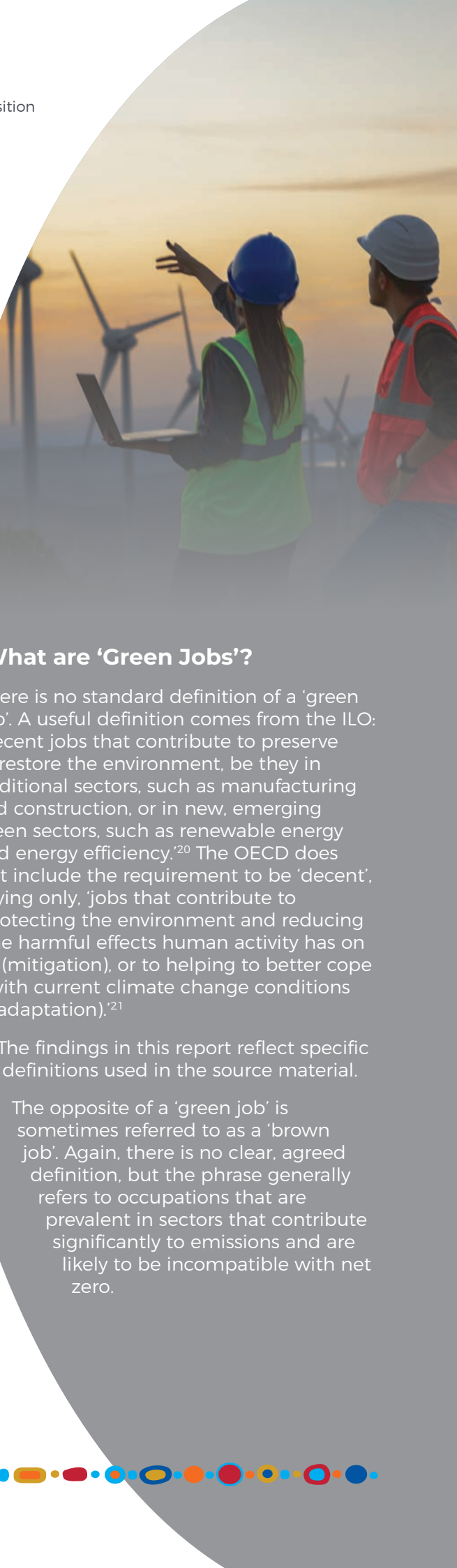
The gender divide in unemployment: 27% of young women are employed compared to 40% of young men.¹⁷

What are 'Green Jobs'?

There is no standard definition of a 'green job'. A useful definition comes from the ILO: 'decent jobs that contribute to preserve or restore the environment, be they in traditional sectors, such as manufacturing and construction, or in new, emerging green sectors, such as renewable energy and energy efficiency.'²⁰ The OECD does not include the requirement to be 'decent', saying only, 'jobs that contribute to protecting the environment and reducing the harmful effects human activity has on it (mitigation), or to helping to better cope with current climate change conditions (adaptation)'.²¹

The findings in this report reflect specific definitions used in the source material.

The opposite of a 'green job' is sometimes referred to as a 'brown job'. Again, there is no clear, agreed definition, but the phrase generally refers to occupations that are prevalent in sectors that contribute significantly to emissions and are likely to be incompatible with net zero.



3. Achieving net zero depends on upskilling

THE TRANSITION TO A GREEN(ER) ECONOMY REQUIRES NEW SKILLS. SKILLS NEEDED FOR THE NEWLY EMERGING JOBS AND SKILLS NEEDED FOR THE ADJUSTED EXISTING JOBS. WITHOUT A SUITABLY TRAINED WORKFORCE THE TRANSITION WILL BE IMPOSSIBLE.

THE INTERNATIONAL LABOUR ORGANISATION²²



The climate crisis and the skills crisis are twin challenges that have become inextricably bound. The world can deliver the skills needed for the net zero transition and maintain public support for deep-seated change if it tackles these twin challenges together.

THE GLOBAL SKILLS CRISIS IS A RISK TO PROSPERITY AND HOPES OF THIS GENERATION OF YOUNG PEOPLE. IT IS ALSO A THREAT TO THE WORLD'S ABILITY TO DELIVER NET ZERO.



7 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

3.1. Net zero requires a focus on upskilling

Skills shortages are already a major stumbling block on the path to net zero. For example, analysis by LinkedIn finds that green job postings grew 8% a year over the last five years, while green talent only grew around 6% annually over the same period.²³ Employers regularly flag skills gaps as a challenge to delivering low-carbon infrastructure, and the challenge will only get steeper, particularly in rapidly transitioning industries such as agriculture or clothing.

This matters for delivering net zero. Global carbon abatement depends on improving science, technology, engineering, and math (STEM) skills. An analysis by Vivid Economics²⁴ finds that almost 20% of global carbon abatement depends on filling gaps in such fundamental skills. According to the modelling, the remaining 80% of abatement can be achieved with existing basic skills, but more specific, applied skills are needed. For example, plumbers with the skills to install gas boilers domestically—e.g., they can deal with customers and understand domestic heating systems—also likely have the fundamental skills to install heat pumps. However, they may need to learn new applied skills such as how to work with specific products and deliver high-quality installations.

Skills provision leads to job creation. According to a PwC UK analysis²⁵, the multiplier for green jobs is 2.4—meaning that for every green job created, another 1.4 new jobs can be attributed to that green job, with a higher multiplier for the energy, utilities and manufacturing sectors. Analysis by Jaeger et al. (cited by the ILO) found some green investments can have significantly higher multiples; for example, ecosystem restoration achieves a multiplier of 3.7.²⁶



Defining 'green skills'

There is no agreed upon definition of green skills. However the literature makes some common distinctions. A key distinction is made between:

- technical or applied skills that are specific to particular activities (e.g., the ability for engineers to install air-source heat pumps or for farmers to implement different types of fertiliser or irrigation systems), and
- core or fundamental skills that are generally highly transferable (e.g., teamwork, resilience or networking)

These skill sets operate at different levels. For example, the ILO cites teamwork as a 'core' skill needed across the labour force, while 'analytical thinking...to interpret and understand the need for change and the measures required' is considered 'core' only for medium- to high-skilled occupations.²⁷

Skills acquisition is often different in practice for these two categories, with technical/applied skills more likely to require some form of formal training and lead to some form of accreditation.



8 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

Targeting the right skills is key for job creation. In 2018, the ILO predicted a net increase of 18 million jobs globally by 2030, simply as a result of shifts in the production and use of energy.²⁸ More recently, the International Energy Agency (IEA) estimated that over 30 million new jobs could be created in clean energy, efficiency and low-emissions technologies by 2030, far outnumbering the expected losses of 5 million fossil fuel production jobs.²⁹ According to the ILO *Global Employment Trends for Youth 2022* report, a green transition will create 8.4 million jobs for young people by 2030.³⁰ Meta-analysis of the impact of various circular economy³¹ scenarios anticipates that ambitious action would deliver a positive impact of around 1.6% on employment by 2030, while a less ambitious transition would deliver a negligible impact on employment.³²

Relative to the nearly 3.5 billion jobs in the world,³³ these job creation numbers are modest, but that does not make them insignificant. Most importantly, they are vital to tackling climate change. A failure to tackle climate change would put at risk the 40% of all jobs that are sustained by industries heavily dependent on a healthy climate and ecosystem.³⁴

It is important to note that the net change in jobs can mask significant job creation and job destruction. The ILO cites modelling of a circular economy scenario that sees 7 million net jobs being created, via the elimination of 71 million jobs and creation of 78 million.³⁵ While this is indeed a huge transformation, it need not lead to the severe economic dislocation of past industrial revolutions, provided workers are able to find new roles. As the ILO notes, 'There is a set of core and technical skills that are potentially transferable, within occupations, from declining to growing industries; but retraining will be needed to enable workers to acquire new skills for use in the latter.'³⁶

3.2. Upskilling can help build momentum for net zero

Although around two-thirds of people surveyed in April 2022 were concerned about the current impact of climate change on their country,³⁷ climate was only mid-table when it came to a list of issues they have worried about in the last two to three weeks.³⁸ In the context of high inflation, a challenging economic environment and a lack of opportunity for young people, support for climate action cannot be taken for granted. As the economic opportunities of net zero are realised and people benefit from the transition, support is likely to solidify.

Momentum for a green transition can be built by actively linking short-term economic self-interest to the long-term benefits of avoiding the worst of climate change. To build public support for the green transition, upskilling is essential to make the opportunities of net zero accessible. If young people see net zero as a ticket out of unemployment and under-employment, they are more likely to advocate for net zero.



9 The net zero generation

Why the world needs to upskill young people to enable the net zero transition



4. Net zero should provide opportunities for young people, but will it?

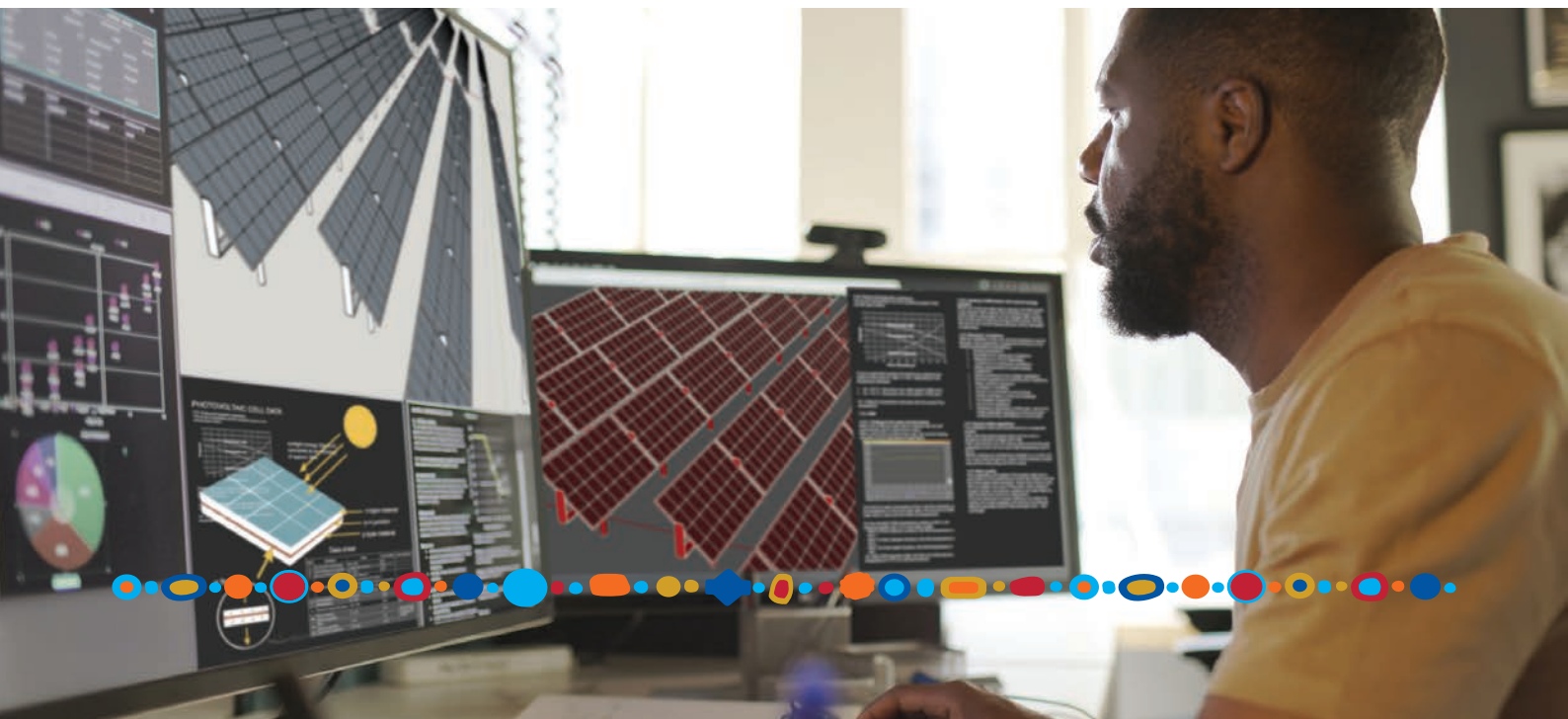
Upskilling young people so that they can perform the jobs needed to deliver net zero and to thrive in the green economy should benefit all of society, as well as the environment. However, it may not play out that way if current trends persist, considering a significant risk exists that upskilling and job creation will exacerbate, rather than close, divides.

Young people—particularly young women in the global south—are as exposed to the threats of a green transition as they are now to climate change. It is possible that the net zero transition could exacerbate inequities already embedded in society and the economy. To manage this risk, it is important to understand the risk.

4.1. Young people, particularly those in less-developed countries, could miss out on the economic and employment opportunities created by the net zero transition

The net zero transition is a source of hope in many regions where youth unemployment is highest. A U-Report poll of 115,000 young people in Africa and Europe found that 71% want to play an active role in the green transition.³⁹

Without concerted action to facilitate their ability to participate, those hopes may be dashed. The survey identified several challenges holding young people back: the lack of capital and resources to fund environmentally friendly ideas (47%), the lack of knowledge and skills (30%), and not enough green jobs available in the community (15%).⁴⁰



11 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

An ILO study⁴¹ shows how these challenges can be manifested in practice. The report (citing work by the Agence Française de Développement) uses energy access as an example:



With more than 60% of the African population living in rural areas, increasing access to energy means relying on a dynamic tissue of small and medium-sized enterprises that are able to bring technical and social innovation, to offer products and services and to rely on economic models adapted to African rural markets. Yet, young entrepreneurs are confronted with various obstacles to create and sustain their business, like a lack of technical skills, a lack of networks, and constraints in accessing financing. Integrated green entrepreneurship programmes that build on the lessons learnt from experiences in other sectors are necessary to help remove these obstacles. Support for such projects would have significantly positive impacts on young people and women in particular.

Young people in high income countries, too, are at risk of missing out in the green economy. In the UK, evidence suggests green jobs are more likely to attract workers from other established sectors of the economy rather than those entering the workforce for the first time.⁴²

One solution to bring young people into the green transition is to skill them for entrepreneurship. A variety of initiatives are doing just that.

Nurturing entrepreneurship

imaGen Ventures – In partnership with USAID, UNDP, UNICEF, Plan International and the World Organisation of the Scout Movement, this initiative has provided entrepreneurial skill-building opportunities to over 15 million young people since 2018, with a more recent focus on green entrepreneurship. The initiative works to nurture entrepreneurial skills and mindsets through informal education structures, support systems and youth engagement infrastructure, and supports youth-led ventures with grants, seed funding and mentorship opportunities.⁴³

Photo courtesy of © UNICEF



12 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

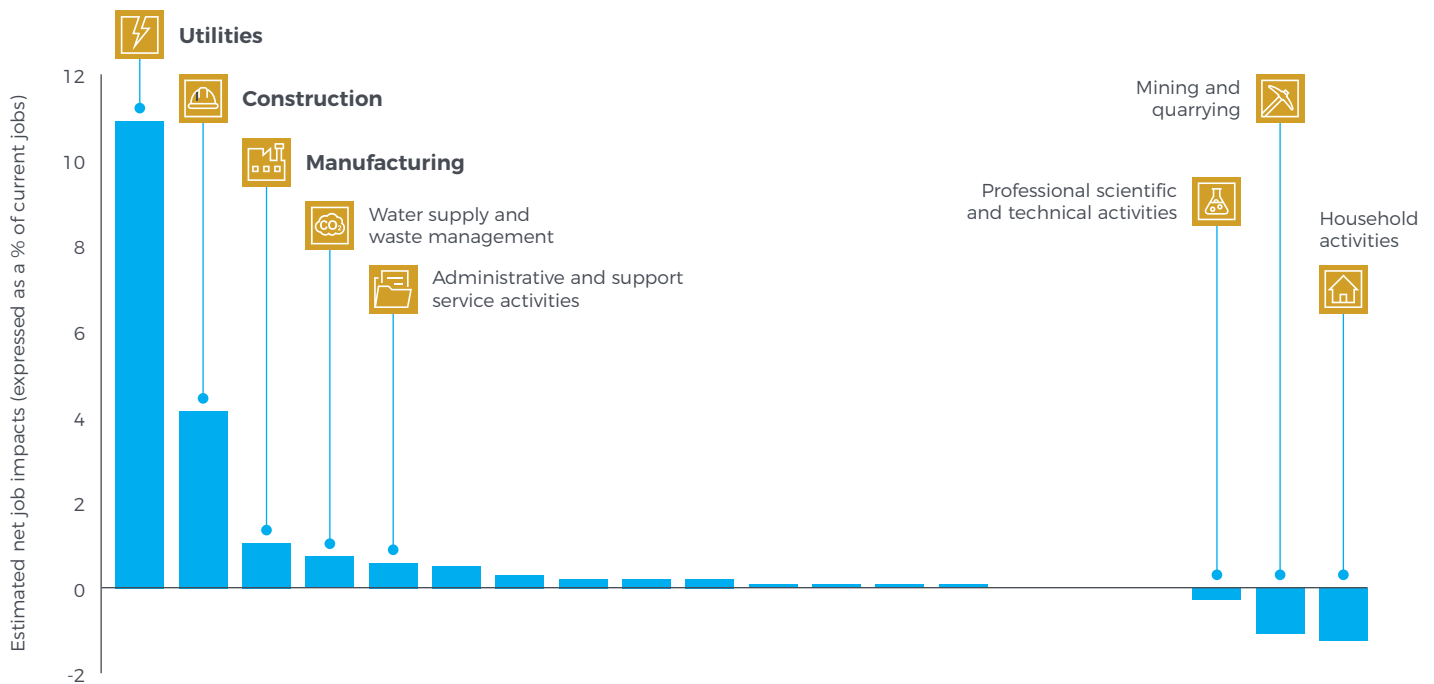
4.2. Young women in climate-vulnerable areas are especially at risk of lost livelihoods and increased inequality

The economic impact of climate change on women is well-documented. Women are more likely to live in poverty and less able to withstand the economic shocks of climate change. The UN Environment Programme estimates that 80% of the people already displaced by climate change are women and girls.⁴⁴ They are also more likely to be employed in climate-vulnerable sectors. In low-income countries, over 60% of women's employment is in agriculture,⁴⁵ a sector that is likely to be highly disrupted by climate change.

The risk is that the solution to climate change could also make gender inequality worse, in both the global north and south.

This is partly because of the expected sectoral impact of the transition. Within the OECD, for example, PwC analysis⁴⁶ showed that job growth is expected in sectors that have been predominantly male preserves, such as utilities, construction, and manufacturing. Relatively little impact is foreseen elsewhere, though some sectors are expected to see net job reductions. If nothing is done to increase women's representation in these green growth sectors, it is inevitable that the employment gap between men and women across the OECD will widen further.

Estimated net job impacts at 2030 across the OECD by sector, as a result of the energy sector's transition to net zero (expressed as a % of current number of jobs)



Source: PwC analysis of ILO data. p. 33.⁴⁷



13 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

In the global south, the gender picture is also highly challenging. For example, women are particularly exposed to changes in agriculture, because according to the World Bank,⁴⁸ in low-income and lower-middle-income countries, women are disproportionately likely to be employed in agriculture. In low-income countries, this sector accounts for three out of five jobs for women, while in lower-middle-income countries it is two out of five. Because the agriculture sector currently contributes around a quarter of global emissions,⁴⁹ it is likely to see a particularly significant change. This will require approaches to reskilling and alternative job creation that can be delivered at scale and at pace in a rural context, while also addressing the existing barriers for women participating in other economic sectors.

The ILO analysis that identified a net increase of 18 million jobs as a result of the energy transition by 2030 found that the net increase in jobs for men was 14 million, while for women it was 4 million.⁵⁰

4.3. Those who already lack skills will fall further behind

PwC analysis shows that the global labour market is polarising between those with in-demand skills and those without. A survey of 52,000 workers worldwide found that those with skills considered to be scarce are more likely to feel listened to by their manager, feel sufficiently confident to ask for pay raises and promotions, and feel satisfied with their job.⁵¹ In contrast, workers with lower skill levels not only lag in these attributes, they are also less likely to have a plan to advance their career and are less engaged in learning new skills. The gap is therefore widening between those with relevant and valued skills and those without.

A similar pattern appears to be emerging in the transition to green skills. Research by LinkedIn finds a general rise in the level of green skills, but workers with university education are acquiring



green skills faster than those workers without. The proportion of people with bachelor's degrees and above who have green skills grew at an average of 11% a year between 2015 and 2021, compared to 9% for other workers.⁵² This reflects, in part, the fact that employers are often more willing to invest in training employees whose skills are already at a relatively advanced level.

Climate change could exacerbate this divide. For example, the Education Commission notes in its report, *Rewiring Education for People and Planet*, of 33 countries where children are extremely vulnerable to climate change, 25 are in Africa, a continent where 87% of children live in learning poverty.⁵³ As climate change leads to more extreme weather events and heat stress, schools will not be exempt from storms and flooding and the economic effects of climate change on families and communities may further impact children's access to education. Lower-income countries are not only more exposed to risks, they are at a greater disadvantage when it comes to building future human capital that can combat these risks.



5. Recommendations

This report's analysis shows that achieving net zero depends on young people being equipped with the necessary skills to leverage climate commitments and access decent and green jobs. We can envision a future characterised by a triple dividend, where purposeful action helps mitigate the climate crisis, addresses the youth skills crisis and drives economic growth. Governments, businesses and young people must design actions that overcome, rather than reinforce, the challenges inherent in the existing economic system.

Business must embrace such a vision as a common cause. Companies grappling with how they respond to the growing demand for climate mitigation and adaptation must consider skills if they are going to be able to deliver the change their shareholders and stakeholders require.

Of the tasks ahead for industry, young people and governments, we want to draw attention to five:

- Advocate for upskilling as essential to net zero and incorporate skills development in governments' nationally determined contributions (NDCs)
- Recognise the importance of a broad range of green skills that includes both core and technical capabilities
- Establish a skills system that enables young people to acquire relevant green skills and certifies their skills
- Put women and youth at the centre of a just transition to a net zero world
- Catalyse green entrepreneurship driven by youth

5.1. Advocate for upskilling as essential to net zero and incorporate skills development in governments' nationally determined contributions (NDCs)

Despite a growing recognition by government and industry that green skills and retraining are vital to the success of net zero, much work remains to be done. The ILO in 2019 found that fewer than 40% of countries' NDCs⁵⁴ include plans for skilling and reskilling.⁵⁵ A plan for net zero that does not include upskilling the workforce is not a plan built for success.

A similar challenge faces companies which are increasingly confronted by a lack of relevant talent but are unclear how to respond.

The first step to addressing the skills challenge is to recognise it exists.



Governments should incorporate upskilling into NDCs and develop skills training strategies, particularly targeting the industry sectors at the forefront of delivering net zero (e.g., energy, construction, transport, agriculture).



Companies should factor upskilling into their net zero planning, both for their own operations and for Scope 3 emissions, those caused indirectly, up and down their supply chain. This will require action in sectors and geographies different to those a company focuses on for their own operations. Workers should be supported to acquire relevant skills (see Section 5.3).



15 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

Green Jobs for Youth Pact

In coordination with the ILO, the UN Environment Programme and UNICEF, Generation Unlimited is focused on enabling the creation of one million jobs for young people, particularly women, while supporting 10,000 young entrepreneurs to establish and/or grow sustainable green businesses.⁵⁶ Entities can join the pact in one of four categories.

- For young leaders: partners in advocacy and youth entrepreneurship
- For employers / private sector / entrepreneurs: new commitments on jobs or skills
- For educators: new or adapted training and engagement
- For governments: collaboration on the design of the programme at a national level

Photo courtesy of © UNICEF



5.2. Recognise the importance of a broad range of green skills that includes both core and technical capabilities

If young people are to adapt to the burgeoning green economy, lead the green transformation and combat the barriers they face in finding green jobs, they need a breadth of green skills.



Skills for green jobs: skills aimed at fulfilling the requirements of green jobs and supporting the transition to a low-carbon economy



Green life-skills: cross-cutting skills that contribute to greener ways of thinking, being and doing



Skills for a green transition: adaptive skills aimed at transforming social and economic structures that affect populations inequitably

Accomplishing these require governments to work directly with businesses and other economic actors to:

- embed green skills education in all relevant sections of national development plans and other sector strategies, with consideration for locally contextualised teacher training and action-oriented programming (such as student-led climate action projects) to better enable students to translate their green education to behaviour change and action⁵⁷
- embrace multisectoral financing approaches and tailor financing strategies to differentiated needs and contexts
- develop delivery-focused implementation approaches and harness, build on, and integrate existing platforms for collaboration, including on-the-job training
- support employment services to facilitate the transitions in the labour market, with focus on cultivating climate-literate employee bases that can drive the climate agenda within organisations⁵⁸



5.3. Establish a skills system that enables young people to acquire relevant green skills and certifies their skills

In times of economic transition, people are likely to move more frequently between jobs, industries and geographies. The current skills system is not set up to facilitate such movement, because of two significant gaps.⁵⁹

- First, it is hard to know what skills are needed. The system for identifying future needs is patchy, and those taxonomies that do exist often cannot be used by subject matter experts or be translated across industries and geographies.
- Second, it is hard for employers to know what skills a person has, because clear standards and certification processes are lacking, particularly across borders.⁶⁰



PwC and Generation Unlimited developed a practical road map to help young people understand what skills employers want, how to acquire those skills and secure the certifications to prove it. The roadmap is designed to be particularly helpful for fast

changing skills areas, where individuals and organisations cannot be certain about their future skills needs. It is well suited to a challenge like green skills where it has the potential to help individuals find work they want, organisations to fill their skills gaps and to accelerate the world's response to climate change.

This roadmap includes:

- **Creating a national skills-mapping system**, including a national skills taxonomy with commonly defined skills and competency measures, a skills map that outlines job categories and their requisite skills, and a skilling tracker to identify educational and training requirements and how they can be acquired. For example, Singapore's SkillsFuture programme encourages lifelong learning and skills development by providing opportunities for all Singaporean learners to identify the appropriate skills for their chosen profession and access the resources needed to master those skills.⁶¹



Establishing national skills development programmes by pairing corporate training programmes with government-led policy frameworks to achieve more efficient scale at a lower cost and with higher-quality resources. Yuwaah (Generation Unlimited India) and PwC are developing a 'platform of platforms' which will aggregate existing platforms providing digital upskilling opportunities to help connect youth with options for training, career guidance and, ultimately, jobs. The partnership aims to transform education, skilling and employment for 300m young people in India by 2030.⁶²



Creating a national digital skills verification trust to centrally track credentials based on national skills-mapping frameworks and enabling youth to optimally use national skills development programmes. For example, the Youth Agency Marketplace (Yoma) is a digital ecosystem platform developed by Generation Unlimited and partners where youth can engage in social impact initiatives linked to skilling and economic opportunities. For example, see Generation Unlimited's Yoma below.



Developing skills forums to improve information-sharing among key stakeholders so that goals and expectations are cohesively adapted.⁶³ For example, Bangladesh's National Intelligence for Skills, Education, Employment & Entrepreneurship (NISE3) gathers government stakeholders, skills service providers, industry associations, industry leaders and others to share information, best practices and data related to upskilling and reskilling. The platform facilitates job searching by providing, among other things, access to career counseling and guidance and information on entrepreneurship, training and apprenticeship opportunities.⁶⁴

Countries can begin this process in sectors where job mobility and new skill acquisition are likely to be particularly high, e.g., energy.





Generation Unlimited's Yoma (youth [Yo] marketplace [ma])

This digital marketplace is conceptualised, managed, and continues to be enhanced, by youth. The marketplace enables young participants to engage in social impact initiatives and gain access to learning and economic opportunities. The digital platform allows youth to engage in opportunities to improve their skills, build their profiles, and achieve life goals and/or careers through employment or entrepreneurship. Organisations can also get in touch with youth to provide their support and services and tap their potential.

To incentivise youth and their personal growth, their involvement and acquired skills are recorded on a verifiable digital CV and they receive digital tokens to spend in the Yoma marketplace to purchase services and goods.⁶⁵

One pathway includes Green Yoma, which focuses on opportunities for youth to participate in and grow the green economy through climate-related tasks and learnings. These projects might involve supporting or maintaining reforestation efforts, participating in river clean-ups, collecting water samples and more.⁶⁶

Photo courtesy of © UNICEF

5.4. Put women and youth at the centre of a just transition to a net zero world

As this report makes clear, approaches that ignore existing disparities in terms of age, gender, geography, ethnicity and other factors are likely to replicate or exacerbate disparities.

Approaches that ignore these elements of identity are also less likely to be efficient. For example, investments supporting women's and girls' access to education not only increase economic opportunity, they also have positive impacts on health, and those effects persist with future generations⁶⁷—for example, a child whose mother can read is twice as likely to attend school.⁶⁸ Women with more advanced skills are better able to play leadership roles in organisations and strengthen their voice in society.

It is therefore vital that policymakers, businesses, youth-led organisations, educators and others consider the broader societal impacts of potential actions and put in place specific plans to boost participation from groups that would otherwise not find opportunities accessible. As well as addressing wider societal issues, there is also a need for specific programmes designed to address the issues highlighted above, for example:

- addressing gender balance in industries such as construction, which are expected to grow as a result of the net zero transition
- providing targeted support to industries that, today, disproportionately employ women, such as agriculture

Elements for action should include the following three items.



Leadership. Ensuring women are well represented at leadership levels and able to both make decisions and act as role models.



Investment. Mainstreaming gender considerations into major initiatives or public policy measures and developing targeted interventions.



Reporting. Disaggregate data to identify effects on women, youth, and the less skilled. For example, inequality audits to pinpoint areas that need focus; publishing data to enable stakeholders to form accurate opinions and exert pressure.



18 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

5.5. Catalyse green entrepreneurship driven by youth

Entrepreneurialism is a defining characteristic of this generation of young people and will help drive economic growth and innovation. Skills interventions should match that energy and prioritise the development of young people's entrepreneurial skills and mindsets.

More effective, skilled green entrepreneurs can develop new ventures that will concurrently create new jobs, drive economic growth and contribute to planetary sustainability.

Stakeholders should work together to support youth start-ups, small and medium-sized enterprises in creating new green ventures

and greening their existing businesses, with an emphasis on energy efficiency, labelling and standards, water efficiency, eco-innovation and sustainable trade.

If governments and stakeholders can shape the policy environment and start-up support ecosystem (incubation, seed funding, networking, mentoring, etc.) to enable green youth-entrepreneurship in those sectors that will have the greatest impact on the green transition (i.e. energy, agriculture, waste management), they can simultaneously catalyse the creation of dignified livelihoods for young people in the green economy while also driving the transition to a net zero world.



Young Global Changers

Part of the Global Solutions Initiative, this programme identifies and connects global youth to form a network of changemakers who are developing and implementing ideas that bring about positive change. It strives to empower young changemakers to become a distinguishable voice on the most pressing global issues – not only to make their demands heard but also to present their own approaches to finding “global solutions” for a better future.⁶⁹

Left to right: Ole Spies (Global Solutions Initiative (GSI)), Muazu Alhaji Modu (Spotlight Nigeria), Alba Fornis (Climatize), Brianna Kerr (Kua), Musawwir Muhtar (Octopus Indonesia), Dennis J. Snower (GSI), Mathias Charles Yabe (AkoFresh), Tania Rosas (Origin Learning Funds & O-lab App), Etienne Salborn (Social Innovation Academy (SINA)), Abir Ibrahim (World Economic Forum). Photo courtesy of Global Solutions Initiative and © Rolf Schulten



6. Conclusion

Net zero is a defining challenge for the global economy. The world must make rapid progress every year between now and 2050 to achieve it and avoid the worst effects of climate change. That will mean a fundamental rewiring of the economy, which can be delivered only if we also rewire global systems for helping people—especially the world’s young people—acquire the skills the green economy demands.

Many young people are already taking the lead, creating new businesses and joining existing ones with green initiatives in mind. But we are a long way from tapping their full potential. Doing so will be transformative—both for the planet and for generations to come.



Acknowledgments:

The community of solvers who contributed to this research:

Generation Unlimited’s Kevin Frey, Urmila Sarkar, Nadi Albino, Anupama Saikia, Hana Sahatqija and Manuela Radelsboeck

PwC’s Carol Stubbings, Colm Kelly, Bhushan Sethi, Barry Ross, Bethan Grillo, James Morris, Christie Maliyackel, David Faggard and Tim Walker

We would also like to thank the following for contributions and comments:

- Mette Grangaard Lund, International Labour Organization
- Sohna Ngum, Global Green Growth Institute
- Ingrid Carlson, PwC



20 The net zero generation

Why the world needs to upskill young people to enable the net zero transition

Endnotes

1. PwC, Net Zero Economy Index 2022, <https://www.pwc.co.uk/services/sustainability-climate-change/insights/net-zero-economy-index.html>.
2. The United Nations Framework Convention on Climate Change defines 'net zero' as 'when anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period.' The Science Based Targets Initiative defines 'corporate net zero' as 'reducing scope 1, 2, and 3 emissions to zero or to a residual level that is consistent with reaching net-zero emissions at the global or sector level in eligible 1.5°C-aligned pathways [and] neutralising any residual emissions at the net-zero target year and any GHG emissions released into the atmosphere thereafter.'
3. This is the definition used by the UN Programme on Youth, <https://social.un.org/youthyear/docs/UNPY-2022-presentation.pdf>.
4. International Labour Organization, Green Jobs, <https://libguides.ilo.org/green-jobs-en>.
5. UNICEF, The climate crisis is a child rights crisis, <https://www.unicef.org/media/105376/file/UNICEF-climate-crisis-child-rights-crisis.pdf>.
6. Generation Unlimited, 'Youth in Kenya transforming informal urban settlements', 2021, <https://www.generationunlimited.org/stories/youth-kenya-transforming-informal-urban-settlements>.
7. Young Global Changers Recoupling Awards 2022, <https://www.global-solutions-initiative.org/young-global-changers/awards/>.
8. AkoFresh, <https://www.akofresh.org/>.
9. African Union, 'Your Voice, Your Future' Report, 2021, <https://au.int/es/node/39868>.
10. ILO, 'COVID-19 and the Sustainable Development Goals: Reversing Progress Towards Decent Work for All', 2022, <https://ilostat.ilo.org/covid-19-and-the-sustainable-development-goals-reversing-progress-towards-decent-work-for-all/>.
11. UNESCO, 'New Methodology Shows That 258 Million Children, Adolescents and Youth Are Out of School', Fact Sheet no. 56, 2019, <http://uis.unesco.org/sites/default/files/documents/new-methodology-shows-258-million-children-adolescents-and-youth-are-out-school.pdf>.
12. ILO/SIDA Partnership on Employment, 'Young People Not in Employment, Education, or Training', https://sustainabledevelopment.un.org/content/documents/26634NEET_Sida_brief.pdf.
13. World Skills Clock, <https://skillsclock.io/>.
14. UN, 'Young workers have been hit hardest by COVID fallout, says UN labour agency', <https://news.un.org/en/story/2022/08/1124432>.
15. African Union, 'Your Voice, Your Future' Report, 2021, https://au.int/sites/default/files/documents/39868-doc-yourvoiceyourfuture_-_turning_challenges_into_solutions.pdf.
16. UNICEF, Youth Unemployment: The Facts, <https://gdc.unicef.org/resource/youth-unemployment-facts>.
17. ILO, Recovery in youth employment is still lagging, says ILO, https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_853078/lang--en/index.htm..
18. ILO, Global Employment Trends for Youth 2022, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_853321.pdf, p. 28.
19. ILO, Global Employment Trends for Youth 2022, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_853321.pdf, p. 76.
20. ILO, What is a green job? https://www.ilo.org/global/topics/green-jobs/news/WCMS_220248/lang--en/index.htm.
21. OECD, Green jobs and skills: the local labour market implications of addressing climate change, Feb. 2010, working document, <https://www.oecd.org/cfe/leed/44683169.pdf>.
22. ILO, 'Frequently asked questions on green jobs', https://www.ilo.org/global/topics/green-jobs/WCMS_214247_EN/lang--en/index.htm.
23. LinkedIn/Economic Graph, Global Green Skills Report 2022, <https://economicgraph.linkedin.com/content/dam/me/economicgraph/en-us/global-green-skills-report/global-green-skills-report-pdf/li-green-economy-report-2022-annex.pdf>, p. 8.
24. VividEconomics, Report prepared for HSBC Centre for Sustainable Finance, <https://www.sustainablefinance.hsbc.com/-/media/gbm/sustainable/attachments/green-skills.pdf>.
25. PwC, 'Green Jobs Barometer', 2021, <https://www.pwc.co.uk/who-we-are/purpose/green-jobs-barometer.pdf>.
26. ILO, Global Employment Trends for Youth 2022, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_853321.pdf.
27. ILO, Global Employment Trends for Youth 2022, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_853321.pdf.
28. ILO, Green jobs and green futures for youth, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_790107.pdf.
29. IEA, 2021, The importance of focusing on jobs and fairness in clean energy transitions, <https://www.iea.org/commentaries/the-importance-of-focusing-on-jobs-and-fairness-in-clean-energy-transitions>.
30. ILO, Global Employment Trends for Youth 2022, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_853321.pdf, p. 72.
31. There is no single definition of 'circular economy', but the concept relates to modes of production that are designed to minimise waste and pollution and extend the life of products and materials.
32. Journal of Cleaner Production, 'Macroeconomic, social and environmental impacts of a circular economy up to 2050: A meta-analysis of prospective studies', 2021, https://www.sciencedirect.com/science/article/pii/S0959652620334661?deliveryName=FCP_18_DM102099.
33. World Bank, 'Labor Force, total' (chart), <https://data.worldbank.org/indicator/SL.TLF.TOTL.IN>.
34. ILO, Future of Work Research Paper Series, 'The future of work in a changing natural environment: Climate change, degradation and sustainability', https://www.ilo.org/wcmsp5/groups/public/---dgreports/---cabinet/documents/publication/wcms_644145.pdf.
35. ILO, Skills for a greener future: a global view, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_732214.pdf.
36. Ibid.
37. Ipsos Global Advisor, 'Earth Day 2022: Public Opinion on Climate Change', 2022, <https://www.ipsos.com/sites/default/files/ct/news/documents/2022-04/ipsos-earth-day-2022-global-advisor-survey-report.pdf>.
38. Ibid.
39. African Union, Your Voice, Your Future report, 2021, <https://au.int/es/node/39868>. Note: the poll is not demographically representative.
40. Ibid.
41. ILO, Advancing Green Human Capital: A Framework for Policy Analysis and Guidance, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_607491.pdf.
42. The Economy 2030 Inquiry, net zero jobs: The impact of the transition to net zero on the UK labour market, June 2022, <https://economy2030.resolutionfoundation.org/wp-content/uploads/2022/06/Net-zero-jobs.pdf>, p. 8.
43. GenU, imaGen Ventures, <https://www.generationunlimited.org/imagen>.
44. United Nations Office of the High Commissioner for Human Rights, Climate change exacerbates violence against women and girls, July 2022, <https://www.ohchr.org/en/stories/2022/07/climate-change-exacerbates-violence-against-women-and-girls>.
45. World Bank, 'Employment in Agriculture, Female' <https://data.worldbank.org/indicator/SL.AGR.EMPL.FE.ZS?locations=XM>.
46. PwC, Women in Work 2022, <https://www.pwc.co.uk/economic-services/WIWI/pwc-women-in-work-index-2022.pdf>, p. 35.
47. Ibid.
48. World Bank, 'World Development Indicators: Employment by sector' (table), <http://wdi.worldbank.org/table/2.3>.
49. The Intergovernmental Panel on Climate Change (IPCC), <https://www.ipcc.ch/srcc1/chapter/summary-for-policymakers/A.3>.
50. ILO, Skills for a Greener Future: A Global View, 2019, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_732214.pdf, p. 131.
51. PwC, 'PwC's Global Workforce Hopes and Fears Survey 2022', <https://www.pwc.com/gx/en/issues/workforce/hopes-and-fears-2022.html>.
52. World Economic Forum, 'Upskill for green jobs of the future', March 2022, <https://www.weforum.org/agenda/2022/03/green-skills-for-future-jobs/>.
53. Dubai Cares and Education Commission, Rewiring Education for People and Planet, 2022, <https://educationcommission.org/wp-content/uploads/2022/09/Rewiring-Education-for-People-and-Planet.pdf>.
54. Nationally determined contributions, the plans that states register setting out their climate plans.
55. ILO, Skills for a Greener Future: A Global View, 2019, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_732214.pdf, p. 21.
56. ILO et al., Green Jobs for Youth Pact, <https://www.climateactionforjobs.org/youth/>.
57. Ehlers et al., Education for Climate Action: Why education is critical for climate progress, <https://educationcommission.org/wp-content/uploads/2022/04/Education-for-Climate-Action.pdf>.
58. Ibid.
59. UNICEF, PwC and Generation Unlimited, Reaching YES, 2021, <https://www.generationunlimited.org/media/5201/file/UNICEF-PwC-GenU-reaching-yes-thought-leadership.pdf>.
60. A third gap, the ability to access appropriate training, is covered elsewhere in this report.
61. A Singaporean Government Agency Website, <https://www.skillsfuture.gov.sg/>.
62. GenU, <https://www.generationunlimited.org/stories/pwc-unicef-yuwaah-upskill-300-million-youth-india>.
63. UNICEF, PwC and Generation Unlimited, Reaching YES, 2021, <https://www.generationunlimited.org/media/5201/file/UNICEF-PwC-GenU-reaching-yes-thought-leadership.pdf>.
64. Bangladesh's National Intelligence for Skills, Education, Employment & Entrepreneurship (NISE3), <https://nise.gov.bd/>.
65. GenU, Yoma, 2020, <https://www.generationunlimited.org/yoma>.
66. EarthState, A Youth Marketplace for the Green Economy, 2021, <https://earthstate.ixoworld/yoma/>.
67. OECD, 'Investing in Women and Girls', 2010, <https://www.oecd.org/dac/gender-development/45704694.pdf>.
68. UK Government, 'G7 to boost girls' education and women's employment in recovery from COVID-19 pandemic', May 2021, <https://www.gov.uk/government/news/g7-to-boost-girls-education-and-womens-employment-in-recovery-from-covid-19-pandemic>.
69. Global Solutions Initiative, Young Global Changers, <https://www.global-solutions-initiative.org/young-global-changers/>.





Published November 2022

[pwc.com/NetZeroGeneration](https://www.pwc.com/NetZeroGeneration)

At PwC, our purpose is to build trust in society and solve important problems. We're a network of firms in 152 countries with nearly 328,000 people who are committed to delivering quality in assurance, advisory and tax services. Find out more and tell us what matters to you by visiting us at www.pwc.com.

© 2022 PwC. All rights reserved. PwC refers to the PwC network and/or one or more of its member firms, each of which is a separate legal entity. Please see www.pwc.com/structure for further details. This content is for general information purposes only, and should not be used as a substitute for consultation with professional advisors.