



Submission by the International Labour Office

Work programme on just transition pathways referred to in the relevant paragraphs of decision 1/CMA.4 and CMA5

April 2025

The ILO welcomes the selection of the topic of the second dialogue of the Work Programme on Just Transition Pathways, namely “Approaches to enhancing adaptation and climate resilience in the context of just transitions”. It is in this context that the ILO is pleased to make its submission.

1. Introduction

1.1 Why a just transition matters for enhancing adaptation and climate resilience

A just transition has long been associated with mitigation efforts to address potential adverse impacts on decent work and social equity resulting from decarbonisation while leveraging employment and social opportunities. The relevance of a just transition in the context of adaptation is emerging but needs to be further articulated and unpacked. This paper contributes to that endeavour.

Climate change is increasingly taking its toll on economies and societies across the world, with developing countries facing the most severe impacts. Adapting to climate change is a critical complement to mitigation efforts. Adaptation to climate change is about managing risks that threaten human well-being, ecosystems and economies. It is about reducing vulnerability and fostering resilience. Climate change risks and vulnerabilities have a strong employment and livelihood dimension, making the world of work an area central to adaptation. The impacts of climate change do not affect everyone equally. They exacerbate existing forms of economic and social inequality, affecting certain regions, communities, economic sectors and groups more severely than others.

Adaptation itself represents a significant economic and social transformation. The required shifts—whether in infrastructure, land use, employment patterns, or public policy—can produce new risks and inequalities, leading to maladaptation, when not managed carefully. On the other hand, they can open opportunities for innovation, job creation, and empowerment.

A just transition offers a framework to tackle issues related to decent work, livelihoods, poverty eradication and social justice, in relation to both climate change and climate action, thus ensuring that adaptation is people-centred and contributes to sustainable development leaving no one behind. Advancing a just transition is critical to tackling climate and environmental change while advancing social justice, decent work and poverty eradication (ILO 2023c).

A just transition in the context of adaptation needs to be firmly grounded in country contexts and priorities, as it must respond to specific climate risks and vulnerabilities, the structure of economies and labour markets and institutional settings. At the same time, there are general elements of a just transition perspective that are relevant in different contexts, and which can help countries foster a just transition as they adapt to climate change. The paper draws upon ILO Just Transition Guidelines and the International Labour Conference (ILC) Resolution concerning



a Just Transition (ILO 2023c) and seeks to articulate them in relation to recognised key adaptation concerns and themes.

1.2 A just transition in adaptation

‘A just transition promotes environmentally sustainable economies in a way that is inclusive, by creating decent work opportunities, reducing inequality and by leaving no one behind.’ (ILO 2023c, 3). (It) entails maximizing the social and economic opportunities of climate and environmental action, including an enabling environment for sustainable enterprises, while minimizing and carefully managing challenges, based on effective social dialogue and respect for fundamental principles and rights at work, and includes stakeholder engagement.

Adapting to climate change involves a transformation and ‘systems transitions’ (IPCC 2023b, 7), which have repercussions across economies and societies. Ensuring that this transformation is fair and inclusive and delivers positive decent work and social outcomes requires the application of a just transition perspective to climate change adaptation.

In relation to adaptation, a just transition perspective involves the following elements, which pertain to (i) addressing the impacts of climate change, (ii) managing the risks and maximising opportunities of adaptation policies and (iii) ensuring inclusive participation in the adaptation cycle:

- Addressing the decent work and broad livelihood dimensions of climate vulnerabilities and strengthening resilience.
- Countering the effects of climate change on inequalities and vulnerabilities and implementing deliberate measures to foster inclusion.
- Tackling unintended adverse impacts of adaptation measures on decent work and livelihoods as well as the risks of new or exacerbated inequalities, thereby contributing to avoiding maladaptation.
- Harnessing adaptation as an opportunity to generate decent work and advance social equity and inclusion, thereby reinforcing its role in achieving sustainable development and social justice.
- Grounding adaptation and related policies and programmes in social dialogue between, or among, representatives of governments, employers and workers and in wider stakeholder engagement.

Advancing just transition in adaptation calls for attention to rights and to the role of sustainable enterprises, which support the above elements. It requires

- Acknowledging that policies must respect, promote and realize fundamental principles and rights at work.
- Supporting enterprise resilience and leveraging the role of sustainable enterprises in adaptation that advances decent work

A just transition in adaptation rests on policy instruments, finance and strong institutions. It relies on



- Integrated policy responses across climate, economic, employment and social domains and arrangements for policy coordination.
- Finance, technology, capacity building and international cooperation supportive of a just transition perspective in adaptation.

These just transition elements contribute not only to making adaptation more effective and equitable but also to leveraging it for broader developmental objectives. By placing people, decent work and livelihoods, and the reduction of poverty and inequality at the centre, a just transition turns adaptation into an opportunity for transformation rather than merely a response to risk. In this way the application of a just transition perspective and relevant policy instruments can help countries advance towards transformational adaptation.¹

A just transition perspective is relevant across sectors and themes such as agriculture and food systems, infrastructure and construction, ecosystems, health, tourism, manufacturing, energy, among others.

The paper is structured as follows. Section 2 and 3 explore a just transition perspective with a focus on addressing the adverse impacts of climate change and adaptation actions on decent and social equity and on leveraging opportunities. Section 4 highlights the importance of social dialogue and stakeholder engagement. Section 5 discusses the role of rights. Section 6 looks at the needs and potential contributions of enterprises in relation to adaptation. Section 7 presents different entry points for integrated policies supporting just transition in adaptation. Section 8 considers finance, capacities, technology and international cooperation. Section 9 provides illustrations of just transition considerations in selected themes and sectors for adaptation.

2. Addressing the Impacts of climate change with a just transition perspective

2.1 Addressing the decent work and broad livelihood dimensions of climate vulnerabilities and strengthening resilience

Climate risks directly threaten decent work and livelihoods across economies and particularly in climate-sensitive sectors such as agriculture, fisheries, tourism, construction, and forestry. In many countries, especially in developing and emerging economies, these sectors hold a large share of employment. Globally 1.2 billion jobs depend directly on ecosystems, many of which are threatened by climate change (IPCC 2023b, 12; ILO 2018b).

Climate change affects jobs and productivity. It is estimated that between 2000 and 2015, 23 million working-life years were lost annually due to environmentally related hazards caused or exacerbated by human activity (ILO 2018b, 23). Rising temperatures, water scarcity, and climate-related disasters reduce labour productivity and increase occupational risks. Globally 2.41 billion workers - 71 per cent of the working population – are exposed to excessive heat, resulting in at least 22.85 million injuries and 18,970 deaths annually. In addition to excessive heat, workers are

¹ Transformational adaptation entails fundamental changes in systems and society. It seeks to address the root causes of vulnerability, as well as long-standing inequities. It requires more than technological change by considering social and economic factors (UNFCCC 2024).



exposed to a combination of climate-related hazards, such as extreme weather events and UV radiation (ILO 2024a).

Climate change impacts displace livelihoods, cause loss of incomes and undermine livelihood assets (IPCC 2023a, 1205–6). Climate change has been found to be a threat multiplier for child labour through multiple and context specific causal mechanisms, often in relation to impacts on agriculture (ILO 2023a). Lack of access to decent work can be a major driver of climate-induced displacement, or of unsafe and irregular migration driven by climate impacts.

In many developing countries work in the informal economy is predominant and presents low levels of labour and social protection, critically contributing to vulnerability and limited adaptive capacities, and perpetuating or worsening poverty.

Micro, small and medium-sized enterprises (MSMEs) provide the bulk of employment in most countries. They often face barriers to adapting to climate change due to limited access to climate-related information, technology, finance, technical support, and to a policy environment that lack attention to the needs of MSMEs.

Identifying and addressing employment and livelihood vulnerabilities is instrumental to building resilience and requires intentional efforts in adaptation measures². These include the extension and strengthening of social protection systems, skill development to support adaptive capacities and the shift to alternative employment, job-rich economic diversification to strengthen resilience, support for MSMEs in enhancing their abilities to adapt and their contributions to economic diversification, strengthening labour protection through formalisation, fundamental principles and rights at work, occupational health and safety measures.

Decent work and livelihoods are a key dimension of risk and vulnerability in their own right, but they also have interlinkages with climate change impacts in other adaptation themes and sectors: ‘Individual livelihoods have been affected through changes in agricultural productivity, impacts on human health and food security, destruction of homes and infrastructure, loss of property and income, with adverse effects on gender and social equity’ (IPCC 2023b, 11, para B1.6), and they contribute to economic damages, including through labour productivity losses. In addition to dedicated and targeted measures on decent work and livelihoods, there is therefore the need for attention to decent work and livelihood across other focus areas including in agriculture and food systems, infrastructure and human settlements, ecosystem-based adaptation (EbA).

2.2. Countering the effects of climate change on inequalities and vulnerabilities and implementing measures to foster inclusion

Vulnerability is one of the main drivers for climate risk and socio-economic factors determine how severely people are impacted by climate change (IPCC 2023a). Climate vulnerability is driven by: (a) sensitivity to being negatively impacted; and (b) a lack of capacity to cope and adapt. At the same time, coping and adaptive capacity is influenced by limited resources, social and

² This is reflected by the inclusion of a dedicated thematic target on ‘substantially reducing the adverse impacts of climate change on poverty eradication and livelihoods, including through adaptive social protection mechanisms for all.’ under the UAE Framework for Climate Resilience to achieve the Global Goal on Adaptation (para 9f, Decision 2/CMA.5).



financial capital, knowledge and information. These tend to be lower for certain populations, for example people living in poverty, women, persons with disabilities, workers in the informal economy, migrants and indigenous populations (IPCC 2023a).

Women and men are often differently impacted by climate change due to socially attributed roles in societies that see women more engaged in care work than men and to their over-representation in climate sensitive sectors in many countries, such as agriculture. In addition, in many contexts, they often face constraints in their adaptive capacities, due to gaps in education and training, access to land, access to technology and finance (IPCC 2023a).

Indigenous people are often significantly reliant on the natural environment and ecosystem services for their livelihoods. 'Loss of ecosystems and their services has cascading and long-term impacts on people globally especially for indigenous peoples and local communities who are directly dependent on ecosystems to meet basic needs.' (IPCC 2023b, 12, para B2.1). Their high vulnerability is influenced by historical and ongoing patterns of inequity (IPCC 2023b, 12, para B2.4). They face barriers that limit their access to resources to adapt, including in terms of land rights, education and training, access to alternative employment.

Migrants and refugees often face discrimination resulting in them being three times more likely to be in situations of forced labour (ILO, IOM, and Walk Free 2022). They are disproportionately concentrated in informal work, thus having less protection and facing higher vulnerabilities. They are often also overrepresented in outdoor work, putting them at particular risk of heat stress. Despite these vulnerabilities migrants and refugees are often not covered by protections in climate change adaptation plans and measures.

For persons with disabilities climate change exacerbates challenges, including in the world of work. Extreme weather events can cause injury, loss of accessibility or damages to assistive devices, and these in turn affect access to employment and livelihoods. Changing climatic conditions, including through heat stress can also make work particularly hazardous for those with certain health conditions.

Young people are affected by climate change in specific ways. They often face high unemployment, and they are more likely to confront economic insecurity which makes them more vulnerable to climate change impacts. In addition, as they grow older, they will experience heightened climate change during their lifetimes.

Poverty and vulnerability to climate change are closely associated, and climate change already exacerbates poverty traps (IPCC 2023a). For instance, climate sensitive sectors such as agriculture present high poverty and informality rates, and those living in poverty have constrained access to education and training, health services and financial resources that support their ability to cope with and adapt to climate shocks and stressors, which in turn often plunge them deeper into poverty, resulting in a downward spiral.

Understanding and addressing differentiated climate impacts, with particular attention to groups in situations of disadvantage is essential, as they face particular barriers and constraints, which if not tackled widen inequalities and hamper poverty eradication. This calls for targeted measures addressing the realities of different groups and populations and promoting gender equality, as



well as labour and other human rights, including the rights of indigenous peoples as key instruments of non-discrimination and equal opportunities and social equity more generally.

It is also crucial to integrate equity concerns across adaptation responses, including those related to employment and livelihoods, agriculture and food systems, ecosystem-based adaption, infrastructure, and cultural heritage. Participation is vital: oftentimes groups in situations of vulnerability or disadvantage are not included in decision-making and policy design and implementation. Ensuring their participation is key, both to devise inclusive and equitable policies and programmes as well as to engage them as agents of change.

3. A Just transition perspective in managing the risks and maximising opportunities of adaptation policies

3.1. Tackling unintended adverse impacts of adaptation measures on decent work and livelihoods as well as the risks of new or exacerbated inequalities, contributing to avoiding maladaptation.

Adaptation measures themselves can result in job displacement, resource access loss, or increased inequality, if poorly implemented. For instance, large scale bioenergy or afforestation in areas that are naturally devoid of forest covers can create risks for local employment and livelihoods and undermine income and food security (IPCC 2023b, 19, para B5.4). Infrastructure projects, especially if inadequately designed, can adversely affect ecosystems and the jobs and livelihoods that depend on them. These concerns are highly relevant in the context of avoiding maladaptation and its implications for equity, since negative impacts disproportionately fall on marginalised groups (IPCC 2023b, 27, para C.4.3). Infrastructure and ecosystem-based adaptation can rely heavily on labour, and while this can be a crucial venue for employment creation and development, there are risks of gaps in terms of core labour rights.

Diversification for example may create livelihood opportunities that are not accessible to certain populations because of social roles, biases and discrimination, or because of limited access to enabling resources, such as skills, or land ownership.

In order to address potentially negative employment, decent work and social equity impacts from adaptation, robust social and environmental safeguards are needed, but also ‘multi-sectoral, multi actor inclusive planning’ (IPCC 2023b, 27, para C.4.3) and complementary measures including in the fields of labour and social policies with attention to equity considerations. A proactive approach to tackling decent work, livelihood risks and equity stemming from adaptation measures is key to avoiding maladaptation.

3.2. Harnessing adaptation as an opportunity to generate decent work and advance social equity and inclusion, thereby reinforcing its role in achieving sustainable development and social justice.

A just transition in the context of climate change adaptation also means planning adaptation policy in a way that maximises opportunities. Adaptation opens important avenues for employment generation, especially in creating a more resilient built environment and the use of nature-based solutions (NbS) for adaptation or eco-system-based adaptation (EbA). This is a function of both the large share of adaptation finance that will need to be channelled into these



types of investments as well as the high employment content and multipliers of these activities. For example, ecosystem restoration, urban greening, and infrastructure to enable climate-smart agriculture are often labour-intensive and well-suited to inclusive employment strategies (ILO, UNEP, and IUCN 2024).

Voluntary labour mobility taking place under conditions of fair recruitment and decent work can also be a means of promoting adaptation in communities of origin, enabling income diversification, investment in adaptation measures through remittances, and skill development and transfer (WIM Excom 2024).

From a social equity perspective, it is key to ensure that employment and economic opportunities arising from adaptation investments are accessible to all and inclusive of those that are marginalised and in situations of disadvantage, who are often not equally positioned to take advantage of them. This calls for attention to issues of affordability and access in terms of finance, technology, inputs and training.

To maximise decent work creation and promote social equity, important strategies include strengthening the links of investments with the local economy, including SMEs, supporting inclusive job-rich economic diversification, leveraging employment-intensive approaches in adaptation investments, including eco-system-based adaptation, and integrating an adaptation focus in public employment programmes. Paying attention to the quality of jobs, rights, equal opportunity and inclusion and skill development is instrumental in ensuring that jobs that are created provide a route out of poverty and foster social equity. Ensuring that jobs created through adaptation investments come with social protection benefits is important to enhance the resilience of workers.

4. Inclusive participation in adaptation

For adaptation to be people-centred, people must be at the centre of the design and implementation of adaptation policies and programmes. Socially inclusive outcomes are only possible through socially inclusive processes, and this should be considered across the adaptation cycle.³

4.1 Social dialogue

Social dialogue between and among representatives of governments, workers' and employers' organisations is vital to make adaptation solutions relevant to the needs of workers and enterprises who are at the forefront of climate impacts, and to mobilise them as agents of change. Social dialogue can help to better address the risks from climate change and from adaptation actions that workers and enterprises face and to devise responses that are effective and maximise positive economic and social outcomes with decent work. Social dialogue is to be leveraged in the context of the development and implementation of adaptation plans and other climate policies and as well as complementary social and economic strategies, including social protection, skill development, enterprise support, occupational health and safety, rights.

³ The four dimensions of the iterative adaptation cycle include: (a) impact, vulnerability and risk assessment, (b) adaptation planning, (c) implementation and (d) monitoring, evaluation and learning (see decision 3/CMA.4 (Para 10(a))).



4.2 Stakeholder engagement

Stakeholder engagement, including consultation with and participation of Indigenous Peoples, local communities, smallholder farmers, women, youth and people with disabilities, among others plays a key part in making adaptation reflective of the needs on the ground and in bringing in the concerns and perspectives of groups in situations of disadvantage or with specific vulnerabilities. It is central to bring in indigenous and local knowledge in adaptation responses and to design adaptation measures that are inclusive. Empowering workers, including own-account workers and small-scale producers in the informal economy to organize into Social and Solidarity Economy (SSE) entities provides enhanced voice and representation, and can increase their capacity to effectively engage in dialogue and contribute to their capacity to participate in decision-making processes, including on adaptation policies.

5. Rights

Human rights, including labour rights, and national regulations provide a key basis for a just transition perspective in adaptation. They are vital in addressing vulnerabilities in an equitable manner, to minimise risks from adaptation while leveraging opportunities for decent work and social inclusion. They also offer the grounds for participation through social dialogue and wider stakeholder engagement, including specific provisions on consultations with Indigenous Peoples.

Incorporating labour rights into climate adaptation policies and strategies guarantees that workers are safeguarded vis-à-vis the impacts of climate change, in terms of occupational health and safety issues as well as other aspects of deteriorating working conditions. They are also key to protecting workers during the shift towards more resilient practices and economies, while encouraging the creation of decent work in adaptation measures.

Fundamental principles and rights at work (FPRW) are an essential pillar of decent work. Respecting, promoting and realising FPRW is vital to secure decent work and social equity gains and minimising risks. ILO Conventions provide valuable legal provisions on social dialogue and participation – key for decision making on adaptation⁴, and the body of International Labour Standards provides useful guidance on numerous areas and sectors which are important for a just transition in adaptation.

6. Adaptation and sustainable enterprises

Climate change and related resource scarcity have significant implications for enterprises of all shapes and sizes across multiple sectors, with differentiated impacts on diverse types of enterprises, such as MSMEs, cooperatives and other SSE entities, or economic units operating in the informal economy. For example, while climate impacts can reduce the productivity and asset value of MSMEs, thereby disrupting their operations and financial performance (World Bank 2022), they often have limited capacities to adapt to protect both their businesses and their

⁴ Two of the ILO's fundamental conventions are cornerstones for participation in decision-making; Convention N°. 87, on Freedom of Association and the Right of Collective Bargaining (1948) and Convention N°. 98 on the Right to Organize and Collective Bargaining (1949). The right to organize is also a right included in the Universal Declaration of Human Rights (1948). Provisions for consultations by indigenous peoples are included in the Indigenous and Tribal Peoples Convention, 1989 (No. 169).



workers (UNFCCC, Climatekos, and UNFCCC/IGES 2023). In addition, amidst increasingly globalised supply chains, climate-induced events not only pose challenges for the local economy where key production or extraction sites might be disrupted but can also have implications across borders (IPCC 2023a). Climate – related risks, ranging from supply chain disruptions to infrastructure damage and shifts in consumer demand, can thus undermine business continuity and competitiveness, limit long-term growth and the ability of enterprises to create decent jobs. The risks posed by climate change to economic units in the informal economy are particularly severe, especially since the informal economy is often characterised by decent work deficits (ILO 2022a).

Adapting to climate change presents both challenges and opportunities for businesses, especially MSMEs, which are a major source of employment in most economies. For instance, some policies can present challenges, particularly for MSMEs, as they need to navigate evolving regulations or increased compliance requirements. Additionally, enterprises can face high upfront costs to adapt, require high investments for adequate insurance plans, or face trade-offs between addressing short term risks and making long-term business investments (ILO 2022b).

Nevertheless, adaptation can also provide opportunities for innovation, productivity gains and the development of new markets. For example, investing in climate-resilient infrastructure, and water-efficient technologies not only reduces vulnerability, but also increases resource efficiency and cost savings over time. Emerging adaptation sectors, such as climate advisory services, ecosystem-based solutions and climate-smart agriculture, offer new opportunities for entrepreneurship and decent job creation.

Creating policy frameworks and promoting an enabling environment that enhance enterprise resilience, mitigate climate-related risks, promote responsible business conduct and support long-term structural transformation can attract investment, promoting sustainable enterprises as engines of green, decent job creation and inclusive growth. Mobilising adaptation finance and improving its accessibility, particularly MSMEs as well as for cooperatives and other SSE entities, is essential to enable investment in climate resilience and innovation.

7. Integrated policy approaches

Integrated policy approaches are essential to deliver a just transition towards climate resilience. On the one hand, this involves orienting instruments and programmes in the economic and social domains to support climate change adaptation with a just transition perspective. On the other hand, it requires embedding just transition considerations and relevant policy measures in plans for climate adaptation. This calls for explicit attention to decent work and social equity impacts of climate change and adaptation actions as well as measures to address them, including through social protection, skills, occupational health and safety, rights, and as well as employment-intensive investments in adaptation.

7.1. Strengthening resilience through universal social protection and complementary measures

Social protection (or social security) refers to a set of policies and programmes, provided by governments, to protect people from income shortfalls, vulnerability, or poverty in the face of adverse situations such as job or income loss, illness, disability, old age or the impact of crises



These benefits are usually delivered in cash or in-kind and can take various forms, including social insurance, universal or categorical schemes, and social assistance.

Social protection plays a vital role in protecting workers from climate change impacts such as heat stress, income loss, and health risks. For example, unemployment protection or social assistance can provide income support after climate-related job disruptions or provide wage replacement during heatwaves, ensuring that workers do not have to choose between their health and earning an income. Sickness benefits, disability and survivor benefits, maternity protection, work injury protection and social health protection equally play important roles for addressing climate-related impacts on workers (ILO 2024c). Social protection can also promote productive investment and livelihood diversification, reducing reliance on climate-sensitive livelihoods (Bastagli et al. 2016; Asfaw and Davis 2018; Sengupta and Costella 2023). Income security raises workers adaptive capacities by relaxing financial constraints and allowing workers to invest in productive assets or alternative economic activities (FAO 2015; Begum et al. 2018). Social protection is most effective in supporting the adaptation of livelihoods when integrated with other policies—such as agricultural extension services, in-kind support (e.g., drought-resistant seeds), access to finance, skills development and training for sustainable livelihoods (Aleksandrova 2019; Costella et al. 2023; Tenzing 2020). Climate risk insurances are another complementary measure to support the resilience and adaptive capacity of workers, in particular own-account workers, and micro, small and medium-sized enterprises by providing a risk transfer solution for livelihood loss and financial impacts of disasters, crop failure or loss of property and its value. While many climate risk insurances are provided by private insurances, options exist to design public schemes and link them to the social protection system and principles, for example by subsidising premiums to ensure extension of insurance also to those who would otherwise not be able to afford the insurance (Sato and Mohamed 2022).

Beyond reducing the vulnerability of workers, social protection enhances the resilience of the most vulnerable groups in society, breaking the vicious cycle of poverty, vulnerability and climate change by ensuring they have access to a minimum level of income and access to health care (section 2.2). Regular predictable benefits, such as child benefits, old-age pensions, disability benefits and social assistance, increase savings, adaptive capacities and health outcomes of vulnerable groups (Bastagli et al. 2016). During climate-induced shocks, such benefits act as income floors, helping to maintain a basic standard of living, food security and access to health care, and preventing negative coping strategies, including climate-induced displacement (Silchenko and Murray 2023). These systems can also be scaled up during disasters such as droughts, storms or floods, including in contexts of loss and damage, for example by temporarily increasing benefit values (top-ups) or extending emergency income support to previously uncovered vulnerable groups. Universal social health protection is essential to ensure that the climate change impacts on health do not further exacerbate poverty and inequality due to rising out of pocket health care expenditure or due to deteriorating health and adaptive capacities for those who cannot pay.

Given its direct impact on reducing poverty, vulnerability and inequality, there is a strong correlation between low social protection coverage and high vulnerability to climate change among countries (ILO 2024c). Therefore, it is imperative to strengthen social protection systems



to achieve universal coverage, adequacy, comprehensiveness and sustainability in order to better prepare countries, workers, enterprises, vulnerable people and communities to respond to the adaptation challenges. A just transition requires a rights-based approach, in which all members of society are entitled to at least a minimum level of social security (a social protection floor).⁵ This contributes to the transformative changes required for adaptation efforts to succeed and is crucial to avoid maladaptation.

Social protection can provide compensation, income security and sustained access to health care to those displaced through adaptation measures, such as large-scale infrastructure investments (see section 2.3), preventing them from falling into poverty as a result. Ensuring that new jobs created through adaptation investments come with social security benefits is essential so that adaptation results in decent work and a more resilient workforce (see section 2.4).

7.2. Skills development for resilience

Investing in skills development and lifelong learning is essential to build the adaptive capacity of workers, especially those most vulnerable, enterprises, including MSMEs and communities, to the impacts of climate change. It not only contributes to NbS and infrastructure development and climate proofing but also to safeguard livelihoods, promote social equity and ensure decent work in the face of increasing climate risks.

Skills play a dual role, serving both as an enabler for effective implementation of adaptation measures and as a buffer against negative impact from climate change on employment and income security. While adaptation efforts respond to the direct effects of climate risks, they also drive structural transformations in key sectors. This requires preparing the workforce for shifts in sectors such as agriculture, construction, and health. These sectoral changes are reshaping the nature of workplace tasks, creating a need for new labour market entrants to acquire relevant skills, and for existing workers to undergo upskilling and reskilling. For example, nature-based agricultural practices, reforestation, sustainable land and water management, and the development of climate-resilient infrastructure all require specific skills that may not yet exist at scale.

Equipping the workforce with relevant skills for these transitions is critical to minimizing risks and maximizing the opportunities of climate action. It is therefore essential to identify and anticipate the skills needed for the implementation of adaptation activities, assess whether these skills are available locally, and, where gaps exist, invest in developing the pool of targeted skilled workforce for adaptation measures. At the global level, employment in nature-based solutions is currently concentrated in medium-skilled occupations, which account for 74 per cent of jobs, a trend projected to persist (ILO, UNEP, and IUCN 2024). At the same time, growing demand for higher-skilled roles is expected, driven by the increasing diversity and complexity of NbS activities (ILO, UNEP, and IUCN 2024, 49). This underscores the need for investment in education and training

⁵ The ILO has adopted numerous International Labour Standards on social security. Convention 102 provides minimum social security standards covering many areas relevant for adaptation (e.g., health protection; sickness benefits (earnings replacement); unemployment benefits; old-age pensions; employment injury benefits; family and child benefits; maternity benefits; disability benefits; survivors' benefits). Recommendation 202 provides guidance on establishing and maintaining social protection floors, while recommendation 205 provides guidance on social protection approaches for enhancing resilience to crises and disasters.



across all levels, with particular emphasis on responsive skills development systems through technical and vocational education and training (TVET), quality apprenticeships and community-based training.

Strengthening skills systems must go hand in hand with promoting inclusive access to quality education and training, complemented by relevant career guidance. This is particularly important for women, youth, migrant workers, refugees, and rural populations, who often face barriers to both employment and training opportunities. To maximize impact and ensure policy coherence, skills development strategies should be closely aligned with national adaptation plans, active labour market policies, and social protection measures.⁶

7.3. Promoting sustainable and resilient enterprises

A stable and healthy natural environment is vital for many enterprises to produce and deliver goods and services, whether it is their direct reliance on natural resources for raw inputs such as in agriculture and ecotourism, or indirect dependencies in sectors like food and beverage manufacturing or textiles (Saget et al. 2022). While enterprises and their workers face several risks from climate impacts, coherence between adaptation and enterprises policies holds the potential to unleash the development of sustainable enterprises that are more resilient, contribute to climate adaptation, economic growth and diversification, while creating decent job opportunities. On the one hand, this requires understanding the specific risks and challenges faced by enterprises of various types and sizes. On the other hand, public policies play a vital role in creating an enabling environment for the promotion of sustainable enterprises, with attention to entrepreneurs and workers from groups in situations of disadvantage. This includes, among others, incentivizing adaptation initiatives for enterprises, addressing regulatory and financial barriers, facilitating the upskilling and reskilling of workers, as well as promoting responsible business conduct.

Particular attention is needed to address the capacity, technical, and financial constraints faced by MSMEs in addressing climate risks, integrating adaptation measures into their business models, and protecting their workers. Public policies that promote the transition from the informal to the formal economy, thereby strengthening the ability of economic units in the informal economy, especially in developing countries, to cope with climate-related shocks. Particularly for workers and enterprises in the informal economy, it is equally important to address gaps in social protection and skills in the context of adaptation. Furthermore, promoting cooperatives and other SSE entities can not only support formalization efforts but also enhance community engagement and foster the development of enterprises aligned with sustainable practices and decent work creation. SSE entities can add value in promoting innovative, locally-based solutions for climate-related challenges, as their structure allows for more inclusive and participatory decision-making, the ability to keep prices affordable, reinvestment of any profits to the community, and access to some of the vital services and solutions, including for underserved populations (Katajamäki 2022).

⁶ ILO's instruments on vocational guidance and training provide useful instruments on skills development, including the Paid Educational Leave Convention, 1974 (No. 140), the Human Resources Development Convention, 1975 (No. 142), the Human Resources Development Recommendation, 2004 (No. 195), and the Quality Apprenticeships Recommendation, 2023 (No. 208).



While measures are needed to address risks to business assets, job losses, and direct impacts on workers, an enabling environment can also drive the growth of sustainable enterprises in emerging and new sectors, while enhancing productivity and supporting innovation.

Furthermore, the financial sector can also play an important role in enabling a just transition through the provision of capital and efficient risk-sharing mechanisms. For instance, access to finance by MSMEs for adaptation can enhance resilience, while insurance products, such as those regarding livelihoods restoration or business interruption, can protect workers and support enterprises in resuming operations soon after climate-related extreme weather events. Large enterprises can also support smaller enterprises, particularly MSMEs and their workers, along the supply chains in undertaking adaptation measures. In addition, by adopting responsible business practices and connecting their decent work and climate adaptation strategies enterprises can contribute to the realisation of decent work in the context of adaptation.⁷

7.4. Occupational Safety and Health (OSH) in a changing climate

Climate-change related risks are already compromising the safety, health, and livelihoods of workers worldwide. ILO statistics reveal that 2.41 billion workers—71 per cent of the global workforce—are exposed to excessive heat leading to more than 22.85 million work-related injuries and nearly 19,000 deaths every year. Countless others suffer from health impacts linked to climate risks, including cancers, cardiovascular diseases, respiratory illnesses, kidney dysfunction and mental health conditions. These impacts not only mark a personal loss but also represent a significant setback to economic resilience, productivity, and social progress. Workers who are sick, injured, or working in unsafe conditions cannot contribute to sustainable economies.

To respond effectively, health and safety considerations for the world's workers must lie at the heart of climate adaptation. Through an OSH lens, climate adaptation should focus around ensuring the fundamental right to a safe and healthy working environment in a hotter, more hazardous world. This involves adapting workplaces and workplace processes through practical, evidence-based actions. These may include setting safe temperature thresholds, improving workplace design and ventilation, modifying work hours, and ensuring access to water, rest, and early warning systems. It also requires strengthened national OSH systems, regulatory frameworks and institutional capacity to prepare and respond to emerging climate risks such as extreme heat, vector-borne diseases, poor air quality, or extreme weather events.

Resilient OSH management systems at both the national and workplace level are a key component of adaptation strategies and pillar for a just transition, with the need to embed OSH into every stage of climate and labour policy. Early and participatory risk assessments to

⁷ The Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy (MNE Declaration) and the United Nations Guiding Principles on Business and Human Rights provide guidance to enterprises which is applicable in the context of a just transition and adaptation.



anticipate and manage OSH risks proactively are key and social dialogue and integrated planning are critical to effective OSH responses.⁸

7.5 Adaptation planning and implementation

Embedding climate change adaptation considerations in social, employment and labour policy making is a key entry point to promote a just transition, but it is not sufficient. The other side of the coin, embedding just transition considerations in climate planning and implementation is necessary.

This calls for explicitly recognising and addressing decent work and equity dimensions of climate vulnerabilities, and for maximising decent work and equity opportunities in adaptation action while avoiding and minimising potential adverse impacts. It is important for such considerations to be addressed both as part of a livelihood pillar of adaptation but also across themes and sectors including agriculture and food systems, infrastructure, EbA, tourism, manufacturing among others.

Carrying out employment and social impact assessments and analysis mapping both decent work and equity impacts of climate change and climate action and enabling a sound understanding of the issues to tackle and their scale, thereby informing decision-making on different policy options and policy and programme design.

Social dialogue and stakeholder engagement are indispensable to make policies and programmes responsive to needs on the ground and to foster broad-based support. They need to be an integral part of all stages of the adaptation cycle, with sufficient time allocated to consultation processes.

Addressing a just transition in adaptation requires integrated approaches across policy domains. To such end, it is key to have climate plans integrate measures on social protection, skill policies, sustainable enterprises, occupational health and safety, rights and other economic and labour policies. These provide key entry point to mobilise a range of policy instruments and foster coherence.

7.6 Policy coordination for integrated policy making and implementation

Effective adaptation that meaningfully and durably contributes to sustainable development calls for systemic and integrated responses that go beyond ad hoc responses and cut across policy domains. Promoting a just transition in the context of adaptation requires alignment and linkages needed across the climate, economic, social and labour policy domains, and a whole-of-government approach with coordination and collaboration among ministries in charge of climate change, employment and labour, economy and planning, education and skills, social protection, infrastructure, health. Given the very localised nature of climate impacts and of the impacts of

⁸ International labour standards provide the legal and policy foundation necessary for effective OSH action. The Occupational Safety and Health Convention, 1981 (No. 155) and the Promotional Framework for OSH Convention, 2006 (No. 187) - two fundamental ILO Conventions - call for the development of national OSH policies, strategies, and systems that are adaptive, anticipatory, and inclusive - principles that are central to climate adaption within the world of work.



the adaptation measures themselves, policy coordination at the horizontal level needs to be complemented by vertical coordination, across different levels of government.

8. Finance, capacities, technology and international cooperation

8.1. Finance

Adaptation policies and plan need to be backed by financing, and financing needs for a just transition have to be explicitly factored in. A just transition require financing from a variety of sources and types, public and private, domestic and international. Integrating just transition goals in government budgeting is essential as is embedding just transition considerations in public investment programmes and adaptation projects for international climate financing.

While private sector financiers have started to grapple with a just transition, this has been largely associated with decarbonisation, and it is important for the focus on adaptation to be strengthened. The role of the financial sector is multi-fold: on the one hand their expectations, particularly those of investors, influence the behaviour of firms and shape the design of investment projects. On the other hand, for banks and insurers it also concerns the products and services they offer, which to contribute for a just transition would envisage, for example, products and services that are widely accessible, or even targeted at low-income households, small-holder farmers and MSMEs.

Despite some recent progress, according to the Adaptation Gap Report a very large adaptation finance gap still exists when comparing adaptation finance needs, which were estimated at US\$215–387 billion/year in 2023, against international public finance flows in 2022 (UNEP 2022).

Given the constraints and fiscal space limitations of many developing countries, the role of international public sector finance is key. Multilateral Development Banks and other IFIs, and climate funds are vital channels to make international finance available to developing countries. Acknowledging that social investments, such social protection and skills for adaptation, are investments for adaptation and therefore qualify as climate finance would be a key step towards mobilising resources for effective adaptation and a just transition.

8.2. Capacities

Just transition in adaptation requires capacities, at the individual level and at the level of institutions and systems. At the individual level, education and skills training are instrumental to help individuals' abilities to navigate climate change impacts, but they are also an enabler of effective adaptation of economies and societies. The role of indigenous and local knowledge needs to be fully recognised.

Integrated policy approaches that bring together employment social and climate concerns, require capacities at the institutional and systemic level to make such linkages, connect different policy domains, and collaborate across disciplines and mandates, with appropriate consideration to capacities of institutions at the local level. Capacities gaps that are present, especially in developing countries need to be addressed.

8.3 Technology



Technology is an essential aspect of adaptation and technology transfer for adaptation in developing countries needs to be stepped up. Technology is linked to a just transition in several ways. First, the adoption and upscale of technologies is closely dependent on relevant skills being available; second, access to technology is typically unequally distributed, and there is the risk that groups in situations of disadvantages are not able to benefit from technologies for adaptation as much as the rest of society, with the risks of widening adaptation gaps for certain populations and rising inequalities; thirdly, technology is not neutral in its employment and social impacts, which need to be anticipated and addressed.

8.4 International cooperation

Many of the countries most exposed are developing countries which contributed little to emissions while bearing the brunt of climate change impacts, with their vulnerabilities exacerbated by high incidences of poverty, constraints in adaptive capacities, and limited fiscal space. International cooperation plays a vital role in supporting a just transition in adaptation and needs to be scaled up. Enhanced attention to the people dimension of climate change adaptation is essential, as it is a greater emphasis on systemic solutions grounded in countries priorities.

9. Thematic and sectoral considerations

Adaptation has a strong sectoral dimension, and it is important to take a just transition perspective also when looking at sectoral approaches and measures. Decent work and social equity issues are present across the economies transitioning towards resilience but often involve sectoral specificities that need addressing. Some considerations for selected sectors and themes are provided below. It should be noted however that these are only illustrations. Just transition is relevant to all sectors affected by climate change: while not addressed here, sectors such as tourism, manufacturing, energy face far-reaching effects from climate change and also require a just transition in the context of adaptation.

9.1. Food Systems and Agriculture

The agriculture and food systems sector is both highly vulnerable to climate change and a critical domain for adaptation action and job creation. Rising temperatures, erratic rainfall, soil degradation, and biodiversity loss directly affect food production, with severe consequences for employment and food security, especially among smallholder farmers, rural workers and their families. Estimates put global employment in agriculture and food systems at over 1.2 billion while over 3.8 billion people live in households linked to agriculture and food system-based livelihoods (FAO 2023).

Nature-based agricultural practices such as agroforestry and regenerative farming not only protect food systems but also contribute to protecting employment. These practices can enhance resilience to climate shocks, boost yields, and increase income security. However, major barriers persist. Smallholder farmers, particularly women and youth, often face limited access to climate-resilient technologies, finance and training in sustainable land management, water-efficient techniques and nature-based agriculture practices, along with digital and entrepreneurial skills to access markets and innovate locally. Limited access to social protection,



land tenure insecurity, market exclusion, and weak infrastructure tend to further limit their adaptive capacities.

Addressing these gaps requires comprehensive support through public policies, including: inclusive and affordable access to climate-resilient inputs and technology; expanded and strengthened rural extension services; integrating relevant skills training into rural extension services, TVET programmes and community-based learning; social protection systems that cover agricultural workers and their families; cooperative models that enhance voice and bargaining power of small-holder farmers, in addition to supporting access markets and new technologies and encouraging sharing of knowledge on good agronomic practices (ILO, UNEP, and IUCN 2024; ILO 2023b).

Market system development approaches can be deployed to strengthen supporting functions and rules to enable value chain actors to access and adopt beneficial inputs, technologies and practices, including through public-private partnerships in the agricultural sector (Bird 2024). Public employment programmes focused on soil conservation, and rainwater harvesting infrastructure in farming landscapes can also provide direct adaptation benefits in the agriculture and food system sectors while generating jobs (ILO 2018a).⁹

9.2. Infrastructure and construction

The infrastructure sectors are central to climate adaptation. Well-designed social and economic infrastructure—such as resilient housing, flood defences, water systems, and climate-proof roads, ports and education and care infrastructure—not only protect lives and assets and enable continued economic activity, but its development also stimulates employment creation in the construction and related sectors.

Furthermore adapting buildings, including housing, using techniques such as retrofitting, passive cooling, energy-efficient design and the use of nature-based solutions can generate job opportunities while reducing vulnerability to climate impacts. However, these will rely heavily on skilled workforce. The demand for new technical skills ranging from sustainable building methods, use of climate resilient materials to digital construction technologies is rising rapidly. As such, skills development must be a core element of climate adaptation strategies in the sector. Public investment in technical and vocational education for green infrastructure and construction should be targeted especially at youth, displaced workers, and low-income communities (ILO, UNEP, and IUCN 2022).

At the same time, workers in the construction sector are particularly vulnerable to heat stress, as a large share of the work takes place outdoors. This will require a host of adaptation measures to ensure worker safety and ensure productivity, including changing working hours, increased rest periods, construction of shaded areas, spaces to allow for cooling down and moving certain activities indoor.

⁹ Standards and other tools to ensure decent work in the agriculture sector include: C129 Labour Inspection (Agriculture) Convention, 1969; C184 Safety and Health in Agriculture Convention, 2001 R192 Safety and Health in Agriculture Recommendation, 2001 Code of Practice; Code of Practice on: Occupational Safety and Health in Agriculture Guidelines; Policy guidelines for the promotion of decent work in the agri-food sector.



Investment in climate-resilient infrastructure can produce strong employment multipliers. For example, according to estimates for India and Brazil US\$1 million invested in construction generates up to 650 jobs in India and 160 in Brazil (ILO 2018a, 23). Potential to increase employment in the construction industry is particularly large in Africa where the share of total employment in the sector is far lower than in the rest of the world, reflecting the low levels of capital formation in the continent (GCA 2021).

Approaches to maximise the employment and social gains from investments in infrastructure and the building sector vary according to country context, but important potential measures include: optimizing the local content of building material inputs; structuring the infrastructure investment portfolio so as to ensure a balance between capital- and labour-intensive projects; planning for countercyclical public investments in the sector; facilitating the access of small and medium-sized enterprises to the sector, in particular to public sector contracts; improving working conditions as well as health and safety in SMES; investing in the necessary professional and vocational skills (ILO 2018a, 25).¹⁰

9.3. Nature-based Solutions and Ecosystem-Based Adaptation

Ecosystem-based adaptation (EbA) is an approach that uses biodiversity and ecosystem services to help people adapt to the adverse effects of climate change. It simultaneously delivers benefits for communities, the economy, and nature. EbA contributes to flood protection, improved water quality, and food security while creating long-term community assets. EbA interventions (which are part of Nature-Based Solutions) —such as mangrove restoration, reforestation, agro-forestry, wetland preservation, and urban green space development—are typically labour-intensive and provide employment, particularly in rural and Indigenous territories (ILO 2022c). NbS can also be implemented through Payment of Ecosystem Services (PES) schemes, which can be structured to be aligned with employment and social protection policies to contribute improving income and income security of communities involved in PES (Schwarzer, van Panhuys, and Diekmann 2016).

EbA initiatives can yield 7 to 40 jobs per US\$1 million invested, depending on the intervention and context (ILO, UNEP, and IUCN 2022). These jobs tend to can be inclusive of women and youth. NbS including EBA approaches demand a range of technical and core (soft) skills from the application of ecosystems and biodiversity knowledge, data analysis, ecological restoration techniques to collaboration with stakeholders, effective communication, project management and training of community members (ILO, UNEP, and IUCN 2024).

Embedding a just transition perspective in EbA and NbS more generally involves: the use of community-based models for developing Nbl that supports relevance and local ownership and contribute to avoiding maladaptation and its adverse impacts; employment-intensive approaches to help to maximize local job creation (which may be particularly relevant in low-income countries); measures to address occupational health and safety and rights; skills development both to meet emerging technical and core skills demand associated with EbA/NBS, but embedding skill development in NbS/EbA investments to build long-term capacity within communities.

¹⁰ The ILO Safety and Health in Construction Convention, 1988 (No. 167) and the Code of practice on safety and health in construction (2022) are valuable tools to ensure decent work in the construction sector.



9.4 Resilience against climate change related health impacts

Climate change is already directly and indirectly impacting the health of workers and the wider population with disproportionate impacts on vulnerable groups. Adverse extreme (weather) events have direct impacts on health (injuries, water-borne and infectious diseases, undernutrition, dehydration, heat stroke and disruption in chronic disease management and care). In addition, a changing climate gives rise to the spread of communicable diseases, vector-borne and water-borne diseases, and the emergence of new diseases and health security threats such as pandemics (Romanello et al. 2023).

These direct impacts can lead to productivity losses. According to the Lancet Countdown estimates based on ILO data on average wages, the impact of temperature rise on workers' earnings could range between 4 and 8 per cent of gross domestic product (GDP) in low human development countries (Romanello et al. 2021). It is estimated that by 2030, over 2 per cent of total working hours globally will be lost every year, either due to temperatures that are too high to allow human activity or because workers have to work at a slower pace (ILO 2019).

Highly climate-sensitive livelihoods, such as agriculture, show high rates of informality and thus low access to social protection. Without unemployment or sickness benefits, these lost working hours translate into income loss, with likely knock-on effects on the social determinants of health. Therefore, any actual damage to workers' health is likely to result in out-of-pocket payments as many workers in the informal economy are largely uncovered for social health protection and occupational health and safety measures (ILO 2024b, 7). Unaddressed climate-related health impacts also risk further increasing the care burden, leading to more time spent on unpaid care which tends to disproportionately fall on women, further exacerbating existing inequities.

A just transition perspective to enhancing adaptation in the health sector calls for attention to and investment in policies that address climate-related health impacts on workers through integrated social protection and occupational health and safety measures (see section 5.1 and 5.4). It also means recognising the importance of the social determinants of health and the fact, that climate-related health impacts disproportionately affect vulnerable groups which in turn, risks further eroding their adaptive capacities and resilience. Therefore, it is crucial to ensure universal health coverage and take urgent measures for the extension of social health protection coverage to all, in coordination with other benefits, throughout the life cycle, with a focus on the groups most impacted by climate change that are not yet covered (ILO 2024b).

High-quality, affordable, adequate and accessible healthcare is critical to climate change adaptation. Health workers are vital to health systems and attention needs to be given to the development of relevant skills but also working conditions and rights at work. Community health workers, and those performing unpaid care work, whose roles are often not recognised as work face low levels of protection and limited training opportunities, gaps that that need to be intentionally addressed (ILO 2024c).¹¹

¹¹ See ILO Resolution on Decent Work and the Care Economy, 2024.



10. Conclusion

A just transition in adaptation is essential for achieving climate resilience that is fair, inclusive, and development oriented. It puts people—especially workers and vulnerable communities—at the centre of climate responses. It ensures that adaptation does not exacerbate inequalities or erode livelihoods but becomes a driver of decent work, empowerment, social equity and development.

By aligning adaptation with social justice, just transition helps realise the transformative potential of climate action. It moves beyond managing threats to building a more resilient, inclusive, and sustainable future for all.



References

- Aleksandrova, Mariya. 2019. 'Social Protection as a Tool to Address Slow Onset Climate Events: Emerging Issues for Research and Policy'. Discussion Paper 16/2019. German Development Institute. <https://www.die-gdi.de/discussion-paper/article/social-protection-as-a-tool-to-address-slow-onset-climate-events-emerging-issues-for-research-and-policy/>.
- Asfaw, Solomon, and Benjamin Davis. 2018. 'Can Cash Transfer Programmes Promote Household Resilience? Cross-Country Evidence from Sub-Saharan Africa'. Edited by Leslie Lipper, Nancy McCarthy, David Zilberman, Solomon Asfaw, and Giacomo Branca. *Climate Smart Agriculture. Natural Resource Management and Policy* 52:227–50.
- Bastagli, Francesca, Jessica Hagen-Zanker, Luke Harman, Valentina Barca, Georgina Sturge, Tanja Schmidt, and Luca Pellerano. 2016. 'Cash Transfers: What Does the Evidence Say? A Rigorous Review of Programme Impact and of the Role of Design and Implementation Features'. Overseas Development Institute. <https://www.odi.org/sites/odi.org.uk/files/resource-documents/10749.pdf>.
- Begum, I. A., M. J. Alam, S. Akter, and R. K. Talukder. 2018. 'Impacts of Agricultural Rehabilitation Program in Bangladesh: A Propensity Score Matching Analysis'. <https://doi.org/10.22004/ag.econ.277428>.
- Bird, Jonathan. 2024. 'Market Systems Development for a Just Transition: What Does It Really Mean for Donors and Practitioners?' <https://www.ilo.org/sites/default/files/2024-06/MSD%20and%20JT%20-%20v1.1.pdf>.
- Costella, Cecilia, Maarten van Aalst, Yola Georgiadou, Rachel Slater, Rachel Reilly, Anna McCord, Rebecca Holmes, Jonathan Ammoun, and Valentina Barca. 2023. 'Can Social Protection Tackle Emerging Risks from Climate Change, and How? A Framework and a Critical Review'. *Climate Risk Management* 40 (January):100501. <https://doi.org/10.1016/j.crm.2023.100501>.
- FAO. 2015. 'The Broad Range of Impacts of the Zambia Child Grant Model'. Policy Brief. <https://openknowledge.fao.org/server/api/core/bitstreams/e1236e15-8d9a-4b64-8653-27f510854f0e/content>.
- . 2023. 'Estimating Global and Country-Level Employment in Agrifood Systems'. FAO. <https://doi.org/10.4060/cc4337en>.
- GCA. 2021. 'State and Trends in Adaptation Report 2021'. <https://gca.org/reports/sta21/>.
- ILO. 2018a. 'The Employment Impact of Climate Change Adaption. Input Document for the G20 Climate Sustainability Working Group'. https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_645572.pdf.
- . 2018b. 'World Employment and Social Outlook 2018: Greening with Jobs'. Geneva: International Labour Office. http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_628654.pdf.
- . 2019. 'Working on a Warmer Planet: The Impact of Heat Stress on Labour Productivity and Decent Work'. https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/---publ/documents/publication/wcms_711919.pdf.
- . 2022a. 'A Double Transition: Formalization and the Shift to Environmental Sustainability with Decent Work'.
- . 2022b. 'How MSMEs Can Contribute to and Benefit from a Just Transition'. <https://www.ilo.org/publications/how-msmes-can-contribute-and-benefit-just-transition>.
- . 2022c. 'Indigenous Peoples and a Just Transition for All'. Just Transition Policy Brief. Geneva. <https://www.ilo.org/publications/indigenous-peoples-and-just-transition-all>.



- . 2023a. 'Issue Paper on Child Labour and Climate Change'. https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---ipec/documents/publication/wcms_894326.pdf.
- . 2023b. 'Policy Guidelines for the Promotion of Decent Work in the Agri-Food Sector (Report)'. http://www.ilo.org/sector/Resources/codes-of-practice-and-guidelines/WCMS_873895/lang--en/index.htm.
- . 2023c. 'Resolution Concerning a Just Transition towards Environmentally Sustainable Economies and Societies for All'. 111th Session. <https://www.ilo.org/resource/ilc/111/resolution-concerning-just-transition-towards-environmentally-sustainable>.
- . 2024a. 'Heat at Work: Implications for Safety and Health. A Global Review of the Science, Policy and Practice'. <https://www.ilo.org/media/578371/download>.
- . 2024b. 'Social Health Protection for Climate Action'. Social Protection Spotlight.
- . 2024c. 'World Social Protection Report 2024-26: Universal Social Protection for Climate Action and a Just Transition'. <https://www.ilo.org/media/593496/download>.
- ILO, IOM, and Walk Free. 2022. 'Global Estimates of Modern Slavery: Forced Labour and Forced Marriage'. Geneva. https://www.ilo.org/wcmsp5/groups/public/@ed_norm/@ipec/documents/publication/wcms_854733.pdf.
- ILO, UNEP, and IUCN. 2022. 'Decent Work in Nature-Based Solutions 2022'. Report. http://www.ilo.org/global/topics/employment-intensive-investment/publications/WCMS_863035/lang--en/index.htm.
- . 2024. 'Decent Work in Nature-Based Solutions: Unlocking Jobs through Investment in Skills and Nature-Based Infrastructure'. https://www.ilo.org/sites/default/files/2024-12/Decent%20work%20NbS%202024_EN_0.pdf.
- IPCC. 2023a. *Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. 1st ed. Cambridge University Press. <https://doi.org/10.1017/9781009325844>.
- . 2023b. *Summary for Policy Makers: Climate Change 2022 – Impacts, Adaptation and Vulnerability: Working Group II Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. <https://doi.org/10.1017/9781009325844>.
- Katajamäki, Waltteri. 2022. 'Energy, Water and Waste Management Sectors and the Social and Solidarity Economy'. In *Encyclopedia of the Social and Solidarity Economy*. Edward Elgar Publishing Limited in partnership with United Nations Inter-Agency Task Force on Social and Solidarity Economy (UNTFSSSE).
- Romanello, Marina, Alice McGushin, Claudia Di Napoli, Paul Drummond, Nick Hughes, Louis Jamart, Harry Kennard, et al. 2021. 'The 2021 Report of the Lancet Countdown on Health and Climate Change: Code Red for a Healthy Future'. *The Lancet* 398 (10311): 1619–62. [https://doi.org/10.1016/S0140-6736\(21\)01787-6](https://doi.org/10.1016/S0140-6736(21)01787-6).
- Romanello, Marina, Claudia di Napoli, Carole Green, Harry Kennard, Pete Lampard, Daniel Scamman, Maria Walawender, et al. 2023. 'The 2023 Report of the Lancet Countdown on Health and Climate Change: The Imperative for a Health-Centred Response in a World Facing Irreversible Harms'. *The Lancet* 402 (10419): 2346–94. [https://doi.org/10.1016/S0140-6736\(23\)01859-7](https://doi.org/10.1016/S0140-6736(23)01859-7).
- Saget, Catherine, Tahmina Karimova, Trang Luu, Nicolas Maitre, and Sévane Ananian. 2022. 'Greening Enterprises: Transforming Processes and Workplaces'. <https://www.ilo.org/publications/major-publications/greening-enterprises-transforming-processes-and-workplaces>.



- Sato, Lucas, and Nourjelha Mohamed. 2022. 'The Role of Social Insurance Schemes in Addressing the Risks Faced by Agricultural Workers in the Middle East and North Africa'. https://www.ipcig.org/publication/31758?language_content_entity=en.
- Schwarzer, Helmut, Clara van Panhuys, and Katharina Diekmann. 2016. 'Protecting People and the Environment: Lessons Learnt from Brazil's Bolsa Verde, China, Costa Rica, Ecuador, Mexico, South Africa, and 56 Other Experiences'. ESS - Extension of Social Security Working Paper 54. ILO. <http://www.social-protection.org/gimi/gess/RessourcePDF.action?ressource.ressourceId=53645>.
- Sengupta, Sayanti, and Cecilia Costella. 2023. 'A Framework to Assess the Role of Social Cash Transfers in Building Adaptive Capacity for Climate Resilience'. *Journal of Integrative Environmental Sciences* 20 (1): 2218472. <https://doi.org/10.1080/1943815X.2023.2218472>.
- Tenzing, Janna D. 2020. 'Integrating Social Protection and Climate Change Adaptation: A Review'. *WIREs Climate Change* 11 (2): e626. <https://doi.org/10.1002/wcc.626>.
- UNEP. 2022. 'Adaptation Gap Report 2022'. UNEP - UN Environment Programme. 11 January 2022. <http://www.unep.org/resources/adaptation-gap-report-2022>.
- UNFCCC. 2024. 'Defining and Understanding Transformational Adaptation at Different Spatial Scales and Sectors, and Assessing Progress in Planning and Implementing Transformational Adaptation Approaches at the Global Level'. FCCC/TP/2024/8. https://unfccc.int/sites/default/files/resource/tp2024_08.pdf.
- UNFCCC, Climatekos, and UNFCCC/IGES. 2023. 'Mapping Study on Capacity-Building Needs of MSMEs to Engage in Climate Action in the Southeast Asia Region'. https://www.climatekos.com/_files/ugd/714aa3_2110cbde2b3149718ef5b80235f5bb4f.pdf.
- WIM Excom. 2024. 'Technical Guide on Integrating Human Mobility and Climate Change Linkages into Relevant National Climate Change Planning Processes'. UNFCCC. https://unfccc.int/sites/default/files/resource/WIM_ExCom_human-mobility_TFD_2024.pdf.
- World Bank. 2022. 'Guidelines for Integrating Climate Change Mitigation and Adaptation in Public Credit Guarantee Schemes for Small and Medium Enterprises'. <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/en/099512111082215393>.