



► Just Transition Policy Brief

October 2022

Green works to support a just transition

Key messages

Green works already contribute to a just transition for all. But in order to maximize their significant potential to contribute to climate change adaptation and mitigation, this briefing calls for:

- Finance and policy support to stimulate increased investment in sustainable and resilient infrastructure and the development of markets for goods and services relevant for green works (such as “grey-green” infrastructure, new or local farming technologies and nature-based solutions) in various sectors and reallocation of investments and subsidies from sectors that damage the environment.
- Policy coherence and institutional collaboration to support green works as part of a just transition, particularly through public investments in adaptation and their integration into public employment programmes and social protection measures.
- Increased capacity within government institutions, employers’ and workers’ organizations, communities and enterprises to advocate for and implement green works using social dialogue and participatory processes.
- Skills and knowledge development amongst workers and enterprises to implement green works activities, especially those that involve nature-based solutions.
- Raised awareness on the benefits of green works and nature-based solutions to boost uptake, supported by stronger evidence on related employment benefits.





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Background

The ILO *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All*, adopted by representatives of governments, employers' and workers' organizations in 2015, provide a policy framework and an operational tool to address environmental change in a way that advances social justice and promotes decent work creation.¹ This policy brief is part of a series of briefs that seek to deepen the technical and policy understanding of the application of the Just Transition Guidelines. They are mutually reinforcing and together form a body of policy guidance on the Just Transition Guidelines.

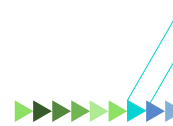
The just transition briefs are intended for use by policymakers and practitioners at all levels to provide practical information and guidance, fostering a common understanding of what is meant by a just transition in specific topic areas and providing recommendations for implementation by countries, international institutions and other actors in academia and civil society. The briefs seek, in particular, to provide guidance on just transition to ILO constituents, including workers' organizations,

employers' organizations, and governments and relevant line ministries.

The briefs cover the following thematic areas: macro-economic and growth policies; industrial and sectoral policies; active labour market policies; enterprise policies; skills development; green works; occupational safety and health; social protection; rights; social dialogue and tripartism; collective bargaining; labour migration and human mobility; indigenous peoples; gender and labour; youth employment; persons with disabilities; persons with HIV/AIDS; and financing a just transition.

This policy brief is intended to present the linkages between just transition and green works, providing stakeholders with information and recommendations for implementation. The broad implementation of just transition across all policy areas and cross-cutting thematic topics requires careful consideration of the guidance provided in the ILO Just Transition Guidelines, taking into account the needs, priorities and circumstances of each country.

1 ILO, *Guidelines for a Just Transition Towards Sustainable Economies and Societies for All*, 2015.



1. Introduction

The urgency of climate action and the need for a comprehensive transition to environmentally sustainable economies and societies for all are increasingly palpable. Daily headlines from around the world evidence the increasingly devastating impacts of climate change on economies, livelihoods and the environment. Other environmental challenges such as biodiversity loss, desertification and air and water pollution compound these challenges and further undermine the goal of environmentally sustainable economies.

Addressing climate change requires mitigation (avoiding and reducing atmospheric greenhouse gasses) and adaptation (adjusting to the impacts of climate change). Two important transitions are needed as part of this: mitigation requires a transition to net-zero carbon emissions and adaptation requires a transition to resilience.²

The transitions needed to shift economies to net-zero pathways are well recognized. Resilience, however, requires various transitions. Because much adaptation is local, generalization about the nature of these transitions is difficult. Addressing other environmental challenges also requires transitioning to more sustainable production systems. This too is difficult, and many solutions are similar to climate-related interventions. The following transitions are needed:

- ▶ Transitions between sectors, away from sectors which are no longer viable or sustainable.
- ▶ Transitions within sectors to address risk and improve resilience, for example to more sustainable and productive systems in the agriculture sector.
- ▶ Providing income support to workers during periods of transition, for example following disaster-induced migration.
- ▶ Providing workers and enterprises with the skills required to make and benefit from the transition.
- ▶ Enhancing social inclusion, non-discrimination and equality through social dialogue, local resource-based (LRB) approaches and by targeting poor and vulnerable communities.

It is essential that these transitions are just, with mechanisms in place to ensure that negative impacts

on affected groups – especially those who are most vulnerable – are minimized and that these groups are supported and involved in decision-making to make a transition to a more sustainable economy. This is why the ILO has been calling for a just transition (see box 1) and text on a just transition was included in the Paris Agreement³ and Glasgow Climate Pact.⁴

Green works (see box 2) can build resilience in different ways. Climate-proofing public infrastructure and community assets are a critical element of adaptation and will enable workers and enterprises to continue their activities in areas impacted by climate change. Protecting, sustainably managing and restoring natural and modified ecosystems provide important opportunities to enhance resilience and adapt to climate change in sectors more reliant on nature such as agriculture, forestry, fisheries, water and (eco)tourism. Such nature-based solutions (NbS) also stem biodiversity loss and provide a range of broader benefits including mitigation through carbon sequestration.⁵

▶ Box 1: What is a just transition?

The ILO adopted the *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All* in 2015. These guidelines enable governments, workers and employers around the globe to leverage the process of structural change towards a greener, carbon-neutral economy, create decent jobs at a large scale and promote social protection. They are a policy framework and a practical tool to help countries at all levels of development manage the transition to carbon-neutral economies. They can also help them achieve their nationally determined contributions (NDCs) and the 2030 Sustainable Development Goals (SDGs). The framework promotes mechanisms for social dialogue among governments, workers and employers' organizations throughout policy making processes at all levels.

2 The ILO defines resilience as “the ability of a system, community or society exposed to hazards to resist, absorb, accommodate, adapt to, transform and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions through risk management.” ILO, *R205: Employment and Decent Work for Peace and Resilience Recommendation*, 2017.

3 UNFCCC, *Paris Agreement*, 2015.

4 UNFCCC, *Glasgow Climate Act*, 2021.

5 IUCN defines NbS as “actions to protect, sustainably manage and restore natural and modified ecosystems in ways that address societal challenges effectively and adaptively, to provide both human well-being and biodiversity benefits” (E. Cohen-Shacham et al., eds. *Nature-based Solutions to Address Global Societal Challenges*, IUCN, 2016; IUCN, *Global Standard for Nature-based Solutions*, 2020.)

▶ Box 2: What are green works?

Promoted and implemented under the ILO's Employment-Intensive Investment Programme (EIIP), green works refer to the employment-intensive development, restoration and maintenance of public infrastructure, community assets, natural areas and landscapes to contribute to environmental goals such as adaptation to climate change and natural disasters, environmental rehabilitation, ecosystem restoration and nature conservation. Common examples of green works include soil and water conservation, afforestation and reforestation, improving climate resilience of roads, irrigation and flood protection.

Source: ILO, *Green Works: Creating Decent Jobs through Investments: Promoting Forest Restoration, Irrigation, Soil and Water Conservation, and Flood Protection*, 2020.



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2. How green works contribute to a just transition

Investments in green works make strong contributions to six of the policy areas detailed in the Just Transition Guidelines.

Macroeconomic and growth policies

The Just Transition Guidelines emphasize the importance of investing public funds in greening the economy, including “to rehabilitate and conserve natural resources and to prioritize resilience”. They state that governments, in consultation with social partners, should “consider adopting action plans with stable targets on social and environmental challenges”, and “use public procurement to incentivize a shift to environmentally sustainable goods and services”.

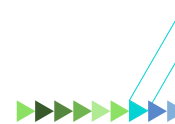
Green works build resilience by investing in public infrastructure, assets and natural areas, while also optimizing employment outcomes. Green works help address the negative impacts of climate change, such as water scarcity, desertification and biodiversity loss, and the consequent devastating economic impacts these environmental challenges bring on sectors like agriculture, forestry, fisheries and (eco)

tourism. They essentially require public investment in reforestation, forest protection, slope protection, soil and water conservation, flood control, rural transport enhancement, the construction of dikes, sluices and footbridges and the lining of rivers and creeks.

The guidelines also emphasize the importance of public investments “with the lowest possible environmental impacts”. Green works use local resource-based approaches (see box 3), which includes prioritizing local materials. This reduces the carbon footprint of construction because of shorter transportation distances.

Industrial and sectoral policies

The Just Transition Guidelines stress the need for setting “goals for the continuous improvement in the social, economic and environmental sustainability of the sectors”. Green works contribute to sustainability most particularly in sectors that depend on ecosystem services and in which productivity relies directly on the health of the environment. Globally these sectors provide some 1.2 billion jobs or 40 per cent of total world employment – particularly in



agriculture, fisheries and forestry.⁶ Water resources management and tourism are also important sectors. Construction, which is particularly impacted by heat stress, is key to implementing many green works measures.⁷ Table 1 provides examples of

where green works can and do build resilience and contribute to the just transition in different sectors. Green works also support the ILO's Decent Work agenda by promoting policies that support better quality jobs in these sectors.⁸

► **Table 1: Green works in different sectors**

Sectors	Generic examples of green works activities	Specific examples of green works activities	Policy shifts needed to support a just transition
Agriculture	Labour-intensive soil and water conservation measures to improve agricultural productivity include mulching, vegetated contour bunds, vegetative windbreaks, agroecological methods, hillside reforestation and agroforestry and associated nursery management. These measures can increase soil water retention and slow run-off and can thus complement or replace engineered canals and irrigation structures to provide water for crops.	Sloping agricultural land technologies were implemented in various locations in the Philippines in 2013. These labour-intensive technologies involve contour farming with alleys of food crops like corn, cacao and beans grown in between rows of nitrogen-fixing legumes or trees. The approach preserves topsoil, minimizes erosion, increases agricultural productivity, diversifies farmer income sources, improves farmer health and increases resilience to climate change impacts and landslides. When applied with organic farming techniques, soil structure, integrity and fertility is further improved. ⁹	Support for farmers to transition to more sustainable farming practices. Investments in irrigation infrastructure and systems. Public investment in landscape and watershed restoration.
Fisheries	Sustainable aquatic resources management, conservation and sustainable use of marine resources.	ILO collaborated with the Bureau of Fisheries and Aquatic Resources in the Philippines to provide technical training on seaweed farming following Super Typhoon Haiyan in 2013. The ILO also rehabilitated eight hectares of mangrove forests destroyed by the typhoon in the Barangays of Suba and Sulangan. These mangroves provided a natural barrier against sea-level rise, strong winds and waves, and provided co-benefits related to fisheries, biodiversity, water purification and tourism. ¹⁰	Investment in coastal protection and breeding areas. Wetland and estuary restoration. Policies supporting social dialogue for consensus on more sustainable fishing practices and catch limits.

6 ILO, *World Employment and Social Outlook 2018: Greening with Jobs*, 2018.

7 ILO, *Working on a Warmer Planet: The Impact of Heat Stress on Labour Productivity and Decent Work*, 2019.

8 ILO's Decent Work Agenda has four pillars: employment creation, social protection, rights at work and social dialogue.

9 ILO, *Typhoon Bopha: Sloping Agricultural Land Technology a Post-calamity Intervention on Sustainable Farming in Cateel and Boston, Davao Oriental*, 2014.

10 ILO, *Sustainable Livelihood and Recovery for Super Typhoon Haiyan-affected Communities*, 2015.

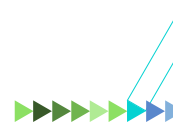
Water supply and management	Labour-intensive nature-based catchment management approaches including hillside reforestation and wetland, floodplain and grassland restoration, can reduce water run-off, increase water filtration rates and recharge groundwater supplies, with effects on downstream water availability and flood risks. They also improve downstream water quality for domestic and agricultural use and reduce siltation in rivers and reservoirs.	Following Super Typhoon Haiyan in 2013, the ILO de-silted irrigation canals supplying water to over 2000 hectares of agricultural land in the Province of Leyte, the Philippines. Planting banana trees and <i>madre de cacao</i> along the canal banks helped prevent flooding and soil erosion, and improved soil fertility because <i>madre de cacao</i> enriched soil.	Investment in ecosystem restoration to enhance the quality and quantity of water resources. Investments in climate proofing related water infrastructure.
Forestry management	Sustainable forest management practices include long rotation forestry with long harvesting cycles, reforestation of cleared or degraded land and reduced impact logging. Afforestation, silviculture, tree nursery management and community-based fire prevention all provide employment opportunities. Work includes establishing nurseries, planting saplings, guarding the forest and forest firefighting.	The 2016 EIIP project “Job creation for Syrian refugees and Jordanian host communities through green works in agriculture and forestry,” showed the benefits of labour-intensive approaches, with almost twice the area planted in half the time using EIIP and Decent Work approaches when compared to other reforestation approaches. Project activities generated some 30,000 workdays benefiting 800 people. ¹¹	Land use and ownership policies and frameworks to enable stewardship and restoration of forests. Frameworks to enable sustainable use of forest products. Investment in reforestation, including through public private partnerships.
Transport	Vegetation planting or “bio-engineering” uses sturdy grasses, shrubs or trees above and below roads to stabilise slopes and reduce erosion, allow for natural drainage and groundwater recharge and reduce road damage from water runoff, landslides and undercutting. ¹² “Grey-green” options or “building with nature” includes combining gabions with vegetation, near bridges and where roads pass waterways, and to stabilize and strengthen side drains and culverts. ¹³ Roadside bioswales reduce water flow rates and erosion following heavy rainfall or snowmelt, increase groundwater recharge and filter out contaminants and pollutants.	EIIP has supported the Roads for Development Program in Timor-Leste since 2012. Grass planting and turfing, often in combination with concrete swale drains or stone masonry drainage structures, protects road shoulders and slopes, strengthening the resilience of new road infrastructure to erosion and landslides. ¹⁴	Policies to minimize the environmental impact of road construction and rehabilitation, for example by incorporating bio-engineering and other technologies.

11 ILO, *Green Works: Creating Decent Jobs through Investments: Promoting Forest Restoration, Irrigation, Soil and Water Conservation, and Flood Protection*, 2020.

12 ILO, *Local Investments for Climate Change Adaptation: Green Jobs through Green Works*, 2011.

13 Conservation International, *Practical Guide to Implementing Green-Gray Infrastructure*, 2019; UNEP, *International Good Practice Principles for Sustainable Infrastructure*, 2021.

14 ILO, *Green Works: Creating Decent Jobs through Investments*.



Construction	Green roofs or walls, bioswales and permeable pavements help address the urban heat island effect and complement stormwater infrastructure. “Grey-green” infrastructure protects coasts.	Employment-intensive green works to protect a new dike in the Dhanusha district of Nepal used both gabions and vegetation to stop the Kamala River flooding. ¹⁵	Skills development among construction workers to use greener technologies. Incorporation of green technologies into engineering and building standards and codes.
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Enterprise policies

The Just Transition Guidelines emphasize that governments should “provide financial incentives (grants, low-interest loans and tax incentives) for businesses adopting environmentally sound practices”, and “provide targeted business information and advice on green business practices [and] eco-innovation”. Targeted programmes to formalize and increase awareness of environmental policies are also needed.

Micro-, small- and medium-sized enterprises (MSMEs) are key engines of job creation and important partners for developing locally relevant effective adaptation solutions in both rural and urban areas.¹⁶ For some of these enterprises, green works offer effective solutions. For example, engineering enterprises may develop hybrid “grey-green” infrastructure, contractors might adapt housing through installing green roofs, and manufacturers of agricultural equipment may scale up existing local farming technologies or develop new irrigation technologies. MSMEs may be contracted to do urban greening, maintain infrastructure and monitor the health of nature. At the same time, it is acknowledged that having smaller enterprises adopt new and more sustainable solutions can pose important challenges, as most focus their efforts on survival, for instance, on short-term profitability, ensuring their day-to-day operations, maintaining revenue and paying salaries. This makes it more difficult for them to make the investments, such as skills, equipment or mastering new technologies to enable them to offer more sustainable solutions.

Skills development

The Just Transition Guidelines state that governments should “provide training opportunities for up- and reskilling (including for workers affected by the transition) and initial learning in green business practices and environmentally friendly technology and innovation”. This includes reviewing and developing skills development policies.

Various approaches promoted by EIIP in conjunction with green works build skills. Community contracting and LRB approaches (see box 3) enhance community resilience by utilizing and building the capacity and skills of local communities and institutions. In Niger, for example, an ILO programme tackling desertification supports local farmers who have developed soil and water conservation practices to ensure productivity in the face of climate change.¹⁷ Construction workers received skill development training on green infrastructure works under an ILO project constructing green community assets (such as water cisterns) for Jordanian communities in 2016.¹⁸ EIIP routinely conducts contractor identification, registration and contract management, which helps address capacity gaps for implementation.¹⁹ The ILO Regional Office for Asia and the Pacific has developed a training course to enhance the capacities of local public and private sector actors to develop and implement green works that promote employment in the context of adaptation and disaster risk reduction.

15 ILO, “Local Investments for Climate Change Adaptation: Green Jobs through Green Works”, unpublished paper, 2013.

16 ILO, *The Employment Impact of Climate Change Adaptation*. Input Document for the G20 Climate Sustainability Working Group, 2018.

17 S. Ganda Seydou, *Monographie des pratiques et infrastructures résilientes pour la maîtrise d'eau au Niger. Rapport Définitif*. ILO Country Office for Côte d'Ivoire, Benin, Burkina Faso, Mali, Niger and Togo, 2020.

18 ILO, *Local Resource-Based Approaches in Water Works*, 2019.

19 ILO, *Employment-Intensive Investment Programme (EIIP): Creating Jobs through Public Investment*, 2018.

► Box 3: Local resource-based approaches and community contracting

The EIIP often promotes and uses local resource-based approaches (LRB) when developing and maintaining community infrastructure and implementing green works. LRB approaches aim to optimize the use of local resources throughout the project cycle, generate incomes that circulate in the local economy and build local ownership and capacity to maintain assets. Local resources include human resources, local enterprises, local materials (construction materials and tools) procured through local suppliers and local knowledge and technologies.

LRB approaches also encourage the participation of women, youth, people with disabilities, indigenous and tribal people in the planning, implementation, monitoring and evaluation of interventions. Labour intensities can increase by up to 35 per cent when applying LRB approaches, so employment benefits are clear. Community resilience increases due to these employment benefits and the infrastructure itself, which supports local livelihoods.

Source: ILO, *Green Works: Creating Decent Jobs through Investments: Promoting Forest Restoration, Irrigation, Soil and Water Conservation, and Flood Protection*, 2020.

Social protection

The Just Transition Guidelines prioritize “employment guarantee schemes and public works that also enhance resilience to climate change, rehabilitate natural resources and create new productive and sustainable assets”. They can also enhance income security. Green works provide a wide range of public goods, making them ideal candidates for implementation using these programmes.²⁰ This is already common practice. Some of the largest public employment programmes globally – in India, Ethiopia, South Africa (see box 4) and Rwanda – incorporate various green activities. These include afforestation and reforestation, improved soil and water management measures, wetland restoration and invasive vegetation removal, all of which also promote climate resilience.²¹ Some 23 out of 36 public employment programmes in Africa include mitigation or adaptation activities.²² Such programmes already support more than 100 million people in low and middle-income countries.²³ They can also target the rural poor and others most vulnerable to climate change.²⁴



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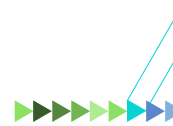
20 Maikel Lieuw-Kie-Song and Vanessa Pérez-Cirera, eds., *Nature Hires: How Nature-based Solutions Can Power a Green Jobs Recovery*, a joint ILO-WWF publication, 2020.

21 ILO, *Global Employment Policy Review 2020: Employment Policies for Inclusive Structural Transformation*, 2020.

22 ILO, *World Employment and Social Outlook 2018: Greening with Jobs*, 2018.

23 ILO, *Employment-Intensive Investment Programme (EIIP)*.

24 ILO, *World Employment and Social Outlook 2018*.



► **Box 4: South Africa's Expanded Public Works Programme: Invasive species removal**

South Africa's Expanded Public Works Programme (EPWP) operates in four sectors: infrastructure, environment and culture, social and non-state actors. The EPWP aims to provide five million decent work opportunities in its current fifth phase (2019–2024), nearly one million of which will be in the environment sector. A major vehicle for achieving these goals is through the sector's Working for Water Programme.

Invasive species are often “thirstier” than the indigenous species they replace. In South Africa they have caused the loss of 1.4 trillion litres of water – 4 per cent of the nation's water supplies – per year. The Working for Water Programme provides short-term contracts to local people to remove invasive species from key water catchments to improve local water supplies. This is very labour-intensive work. So far, over one million hectares have been cleared of invasive species, providing 50 million cubic metres of water a year, and supporting more than 20,000 jobs. The Programme targets the most vulnerable by seeking to employ 60 per cent women, 20 per cent youth and 5 per cent persons with disabilities.

Sources: South Africa National Department of Public Works, *EPWP 1V Business Plan 2019/20-2023/24*, 2019; Maikel Lieuw-Kie-Song and Vanessa Pérez-Cirera, eds., *Nature Hires: How Nature-based Solutions Can Power a Green Jobs Recovery*; ILO, *The Employment Impact of Climate Change Adaptation*.

Social dialogue and tripartism

Social dialogue, which promotes consensus building and democratic involvement among key stakeholders in the world of work, is supported by the ILO in all its work areas.²⁵ Green works are no exception here. Emphasizing the fundamental importance of strong social consensus, the Just Transition Guidelines state that “Governments should actively promote and engage in social dialogue, at all stages from policy design to implementation and evaluation and at all levels”. The social partners, through social dialogue, should “play an active role in the formulation, implementation and monitoring of national sustainable development policies, articulating the pivotal role of employers' and workers' organizations in bringing about social,

economic and environmental sustainability with decent work and social inclusion”.

In the context of adapting to climate change, the active engagement and empowerment of local communities throughout all stages of any intervention is central for success.²⁶ EIIP recognizes this, stating that “obtaining the support of the local community is key to ensuring sustainable outcomes from green works” and “that local knowledge and technologies can be the basis of solutions in combating desertification in the dryland areas ... [in] ... many of the least developed countries (LDCs) where unemployment and underdevelopment rates are high”.²⁷ Social dialogue between Governments and workers' and employers' organizations is important in this respect. Application of LRB approaches during green works implementation is another way of facilitating participation.

3. Opportunities for green works to support a just transition

Green works provide important opportunities to contribute to a just transition, increase climate change resilience, especially for the most vulnerable, and ensure decent work. They can do this by supporting workforce transitions between and

within sectors, providing income support to workers during periods of transition, providing workers and enterprises with the skills required for a transition, and enhancing social inclusion, non-discrimination and equality.

25 ILO, “Social Dialogue”, n.d.

26 Hannah Reid, ed., *Community-Based Adaptation: Mainstreaming into National and Local Planning*, Oxford: Routledge, 2016; Hannah Reid et al., *Is Ecosystem-based Adaptation Effective? Perceptions and Lessons Learned from 13 Project Sites*, IIED, 2019.

27 ILO, *Green Works: Creating Decent Jobs through Investments*.

Supporting workforce transitions between sectors

Climate change impacts and diminished investment in carbon-intensive sectors could lead to job losses. Net gains in employment following a transition to a green economy are possible, however, but depend on the right policies and on the capability of the institutions implementing them.²⁸ Green works can help by supporting workforce transitions from certain sectors and absorbing workers who are negatively impacted by the transition, providing them with work and income. For example, workers previously dependent on firewood and charcoal production and sale could find employment opportunities in sustainable landscape management work, and workers in unsustainable fishing enterprises could shift to more sustainable coastal and marine management work.

Supporting transitions within sectors and key policy areas

Climate change exacerbates the stresses on jobs – particularly in natural resource-dependent sectors. Between 2000 and 2015, 23 million working-life years were lost annually at the global level because of environment-related disaster caused or exacerbated by human activity.²⁹ Green works can improve the resilience of vulnerable sectors, and thus reduce job and productivity losses, by facilitating the introduction of new practices.

Around 80 per cent of nature-dependent jobs are found in the agricultural sector and in many developing countries agriculture remains the main source of employment and income.³⁰ A shift to more sustainable and productive practices in this sector, such as agroforestry or conservation or regenerative agriculture, can therefore lead to large-scale increases in income and resilience.

This in the face of growing demand for food demanding agricultural intensification. Agricultural intensification has, until now, had a negative effect on the quality of many essential resources such as soil, water, land, biodiversity and ecosystem services, resulting in declining yield and factor productivity growth rates. Agriculture is responsible for about 30 per cent of the total greenhouse gas emissions of carbon dioxide, nitrous oxide and methane, while being directly affected by the consequences of a changing climate. Thus, production intensification must embrace the need for productive and remunerative agriculture that conserves and enhances the natural resource base and environment and which positively contributes to the delivery of environmental services. Intensification should enhance biodiversity in crop production systems both above and below the ground in order to improve ecosystem services for better productivity and a healthier environment. Green works, in particular through improving quality and availability of soil and water, can play an important role in this process.

Many governments are prioritizing greener approaches under their climate change responses. For example, a recent assessment of NDCs under the UNFCCC showed that 66 per cent of all Paris Agreement signatories aim to work with ecosystems as part of their mitigation and adaptation planning.³¹ Green works and NbS can help communities adapt to climate change, in part because job retention and job creation is central to building community resilience, particularly if they are decent jobs.³² Green works in sectors related to irrigation, water and land resource management, flood control, drainage and water conservation, and rural transport improvement and maintenance all have adaptation benefits.³³ NbS can also potentially provide around 37 per cent of the mitigation needed by 2030 to stabilize warming to below 2°C.³⁴ ILO's "Rebuilding the Forests" project in

28 ILO, *GAIN Training Guidebook. How to Measure and Model Social and Employment Outcomes of Climate and Sustainable Development Policies*, 2017.

29 ILO, *World Employment and Social Outlook 2018*. The estimates consider casualties, people affected and damages resulting from meteorological (storms, fog, extreme temperature), hydrological (floods, landslides, wave action), climatological (drought, glacial lake outburst, wildfires), biological (insect infestation) and certain technological (industrial or miscellaneous accidents) hazards. Estimates do not include casualties, people affected or damages resulting from geophysical (earthquake, mass movement, volcanic activity), biological (viral, bacterial, parasitic, fungal or prion disease epidemics, animal accidents) or certain technological (transport accidents) hazards.

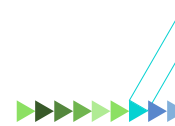
30 ILO, *World Employment and Social Outlook 2018*.

31 Nathalie Seddon et al., "Global Recognition of the Importance of Nature-Based Solutions to Climate Change Impacts", *Global Sustainability* 3, e15, (2020): 1–12.

32 Hannah Reid et al., "Jobs" in *State and Trends in Adaptation Report 2021: How Adaptation Can Make Africa Safer, Greener and more Prosperous in a Warming World*, Global Center on Adaptation (2021): 212–231.

33 ILO, *Employment-Intensive Investment Programme (EIIP)*.

34 Bronson Griscom et al., "Natural Climate Solutions", *PNAS* 114 (2017): 11645–11650.



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Mali, for example, preserved forest resources and eliminated illegal land clearance, thus sequestering carbon. Labour contracts between the forestry department and local villagers “returned the forest to the poor”, thus strengthening local livelihoods and adaptive capacity.³⁵ ILO has also provided technical assistance to Guyana, Saint Lucia and Dominica to support climate change adaptation and build resilience. Programme actions improved the adaptive capacity of constituents to use new or adapted tools, contributed to disaster preparedness and increased national awareness and capacities to mainstream decent work into recovery.³⁶

Green works that address disaster recovery and risk reduction can also contribute to a just transition. For example, watershed management, urban green space, and riparian, floodplain and wetland restoration can reduce flood risks. Reforestation and forest conservation or restoration can reduce water run-off and landslide or avalanche risks. Peatland restoration can reduce fire and flood risks. Mangrove, seagrass or coral reef restoration and conservation can protect coastal assets and communities. Following Hurricane Jeanne in 2004, for example, the EIIP worked with the Government of

Haiti on a programme to create jobs while protecting the environment. Activities included afforestation and tree nurseries, gully erosion control measures such as check dam and weir construction, contours for slope protection, reinforcing bridges and river training. Initiated as a rapid recovery intervention, approaches later integrated long-term disaster risk reduction into works planning.³⁷

Providing income support to workers during periods of transition

Green works can support workers during periods of transition between and within sectors, as well as those in the process of internal or external migration. For example, a more resilient agricultural sector can provide complementary income for those in transition.

Public employment programmes offer huge potential for supporting vulnerable workers and populations in various stage of transition. Flagship programmes like the Mahatma Gandhi National Rural Employment Guarantee Scheme in India, the EPWP in South Africa, and Ethiopia’s Productive Safety Net Programme annually support millions of

35 ILO, “Local Investments for Climate Change Adaptation”.

36 ILO, “Caribbean Resilience Project”, n.d.

37 ILO, “Local Investments for Climate Change Adaptation”; ILO, *Employment-Intensive Investment Programme*.



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people by mobilizing them to do paid work on natural resource management activities.³⁸ Such programmes can be central to protecting vulnerable workers who are impacted by climate change, while building the resilience of their environment through investments in green works. They can also be integrated into or aligned with social protection measures to provide more comprehensive protection. Such programmes can also target internally displaced persons, (climate) refugees or returning migrants, providing them with income support while they resettle and supporting their integration. Integrating green works into planned COVID-19 stimulus and social and economic policies and related recovery packages also provides an important opportunity for supporting workers during periods of transition.³⁹

The range of public goods provided by NbS make them good candidates for public investment opportunities.⁴⁰ Some have higher job creation potential than others. Table 2 shows employment returns and labour inputs from various activities that are central to NbS.⁴¹ Reforestation, ecosystem or watershed rehabilitation and restoration, management of invasive species and the use of agroecological approaches in food production are particularly job-intensive, providing high levels of employment per hectare.⁴² Perhaps surprisingly, even “re-wilding” can create jobs.⁴³ One study showed that re-wilding 5 per cent of England could create nearly 20,000 jobs in rural communities and increase employment by 50 per cent compared with intensive farming.⁴⁴

38 Jean Payen and Maikel Lieuw-Kie-Song, *Desk Review Study on Employment Impact Assessment (EmpIA): Potential of Natural Resource Management (NRM) Investments on Employment Creation*, STRENGTHEN Publication Series, Working Paper No. 24, 2020.

39 Lieuw-Kie-Song and Pérez-Cirera, eds., *Nature Hires*.

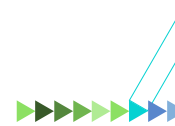
40 Lieuw-Kie-Song and Pérez-Cirera, eds., *Nature Hires*.

41 Employment returns refer to the number of jobs (FTE) which can be generated per million US\$ invested in the activity. Labour inputs refer to the days of labour input required per ha of land for the different activities. Labour inputs are expressed labour days and can be converted into FTE by dividing by the number of working days per year.

42 Lieuw-Kie-Song and Pérez-Cirera, eds., *Nature Hires*.

43 Re-wilding is the large-scale restoration of ecosystems to the point at which nature is allowed to take care of itself. See Rewilding Britain, “Defining Rewilding”, n.d.

44 Patrick Greenfield, “Rewilding 5% of England Could Create 20,000 Rural Jobs”, *The Guardian*, 12 August 2021.



► **Table 2: Employment returns and labour input of nature-based solutions, primarily in developing countries**

Activities integral to NbS implementation	Employment returns: Total direct job (FTE/US\$ million)	Labour inputs: FTE/hectare
Afforestation, reforestation, and desertification control	275 to 625	0.40 to 1.1
Watershed improvement	166 to 500	1 to 3
Indigenous forest management	200 to 400	0.25 to 0.5
Agroforestry including conversion of land	500 to 750	0.25 to 0.375
Fire management	200 to 250	0.1 to 0.125
Creation and management of urban green spaces	24 to 250	1 to 5
Removal and management of invasive alien species		0.05 to 0.14 FTE/ha for clearing of heavily infested areas. 0.002 to 0.014 for lightly infested areas
Management and conservation of protected areas and buffer zones		0.004 to 0.0002
Forest conservation	285 to 428	0.10 to 0.15
Coastal habitat protection	17	
Vegetation planting to protect roads (including nursery work and plant maintenance)		1 to 2 (based on 250 to 500 workdays per hectare)

Sources: Lieuw-Kie-Song and Pérez-Cirera, eds., *Nature Hires*; ILO, "Local Investments for Climate Change Adaptation"; Payen and Lieuw-Kie-Song, *Desk Review Study on Employment Impact Assessment (EmpIA)*.

Providing workers and enterprises with the skills required for a transition

Green works can provide workers and enterprises with the skills required to make, and benefit from, transitions between and within sectors. Examples include skills relating to soil and water conservation measures or seaweed farming in the agricultural and fisheries sectors, coastal ecosystem management and hydrology to ensure the right mangrove species are planted in the right place for coastal protection, or skills relating to "grey-green" infrastructure – in urban and rural areas – in the transport and

infrastructure sector. This includes developing the skills of climate migrants to help them find work.

Enhancing social inclusion, non-discrimination and equality

The Just Transition Guidelines stress that "Policies and programmes need to take into account the strong gender dimension of many environmental challenges and opportunities." The importance of supporting youth employment, indigenous peoples, persons with disabilities, persons with HIV/AIDS and migrant workers is also emphasized.

The impacts of climate change on jobs are not felt equally. Women, migrants, youth, indigenous and tribal peoples, poor people and people with disabilities tend to have less access to resources for adaptation, including land, credit, agricultural inputs, institutional or technical support, social insurance and training. They also live and work in more vulnerable locations.⁴⁵ Although the poor and vulnerable will suffer most from climate change, they are least responsible for causing the problem. Green works can help address this inequality. EIIP acknowledge that “environmental degradation and climate change will severely and disproportionately affect the poor in developing countries”, and as such, targets poor communities through many of its green works activities.⁴⁶ South Africa’s Working for Water Programme (see box 4), for example, specifically targets women, youth and persons with disabilities. Prioritisation of social dialogue and the LRB approaches applied by EIIP in conjunction with Green Works also facilitates social inclusion.

Poor and vulnerable people in developing countries are particularly reliant on natural resources for subsistence, livelihoods, health and resilience. Some 50 to 65 per cent of the world’s land is held by indigenous peoples and other communities.⁴⁷ Green works that address environmental degradation and sustainable natural resources management can benefit these groups. Green works and NbS

provide a multitude of societal benefits in addition to boosting employment. Any single green works initiative typically addresses many of the SDGs and contributes to various global agreements, such as the UNFCCC, Convention on Biological Diversity (CBD), Sendai Framework for Disaster Risk Reduction, UN Declaration on the Rights of Indigenous Peoples, and initiatives under the UN Decade on Ecosystem Restoration. This especially benefits the poor and vulnerable.

Benefits from green works are not limited to rural areas. In urban areas, tree cover, parks, wetlands and green infrastructure such as green roofs or walls, bioswales and permeable pavements help address the urban heat island effect and complement stormwater infrastructure by reducing surface runoff and increasing soil infiltration. Integrated watershed management and forest restoration surrounding urban areas regulate and improve the quality and sustainable delivery of urban water supplies. Reefs, wetlands and mangroves defend coastal cities against rising sea levels, storms and erosion. Green works can help the urban poor, who are often migrants and particularly vulnerable to flood risks, in part because they often live in risky low-lying coastal areas or floodplains. The urban poor also have less access to drainage infrastructure and secure clean water supplies, and they are less able to control the temperatures of where they live and work.

4. Challenges for a just transition through green works

The policies needed to support green works are often lacking. National governments often tend to prioritize sectors which can deliver high economic growth in the short-term but have large environmental externalities which are not considered. Government subsidies and forces that drive unsustainable practices in the farming and industrial sectors can also undermine the wider use of green works.

The policy coherence and institutional collaboration needed to support green works as part of a just transition also often falls short. Collaboration between different ministries and agencies, as well as between governments and employers’ and workers’ organizations, with support from

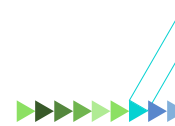
international organizations, is needed to develop coherent enabling policies. For example, watershed restoration to manage water supplies and reduce flood risks typically requires collaboration between multiple sectors and stakeholders, sometimes across national borders. But governments tend to be structured according to sector, which can hinder collaboration.

Limited funding for green works at local and national levels constrains implementation even when supportive policies exist. While donor, bilateral and multilateral funding can support green works in select locations, government budgetary allocations are needed for impact at scale.

45 Hannah Reid, *Climate Change and Human Development*, London and New York: Zed Books, 2014; ILO, *The Employment Impact of Climate Change Adaptation*, input document for the G20 Climate Sustainability Working Group, 2018.

46 ILO, *Green Works: Creating Decent Jobs through Investments*.

47 World Resources Institute, “By the Numbers: Indigenous and Community Land Rights”, 20 March 2017.



Progress is also inhibited by limited government capacity to create and enforce legislation, regulations and labour standards (see box 5) relevant to green works and the environment, institutionalize social dialogue and participatory processes, and integrate

green works into national sectoral and climate change policy and planning processes. Low local and national government capacity to support NbS to climate change adaptation is known to inhibit the success of these approaches.⁴⁸

► **Box 5: Labour standards**

Various existing international labour standards and documents provide a robust framework for addressing challenges in the world of work associated with green works:

- CO94 - Labour Clauses (Public Contracts) Convention, 1949: Ensures labour protection in Green Works contracts.
- C122 - Employment Policy Convention, 1964: Enhances employment policies contributing to full employment.
- C168 - Employment Promotion and Protection against Unemployment Convention, 1988: Targets the unemployed.
- R202 - Social Protection Floors Recommendation, 2012: Enhances income security for vulnerable people.
- R205 - Employment and Decent Work for Peace and Resilience Recommendation, 2017: Enhances disaster resilience.
- C169 - Indigenous and Tribal Peoples Convention, 1989: upholds principles related to equality and reaching vulnerable groups and supports the rights and freedoms of indigenous and tribal peoples, including land and natural resources rights.
- [Conclusions concerning the promotion of sustainable enterprises following the Internal Labour Conference in 2007.](#)

Key stakeholders may also lack the skills needed to implement green works. For example, projects addressing road construction and maintenance in countries like Nepal have tended to adopt engineered solutions to manage erosion. This could have been different if planners and engineers had the skills and incentives to consider and cost “grey-green” approaches, or watershed management and forest restoration to reduce water run-off and subsequent road damage.⁴⁹

Limited awareness of the benefits of green works and NbS amongst key stakeholders inhibits implementation. There is a need to better interpret existing evidence and improve its accessibility – particularly for policymakers – and to increase relevant environmental knowledge in national curriculums, higher education and training courses.

Employment impact assessment is a key focus for EIIP, and the ILO has developed tools and methods to assess the employment impacts of a just transition.⁵⁰ Despite this, improvements in employment data related to green works are needed to inform policy choices. Assessments of the employment and socio-economic impacts of environmental policies are also needed. Data on the job intensity of forest restoration or watershed management is hard to find. Similarly, it is difficult to quantify the broader economic benefits to society (for example health, education or food security benefits) that green works can provide. The absence of this data is a major hurdle to integrating soil and water conservation and natural resources management activities into public works schemes.⁵¹

48 Reid et al., *Is Ecosystem-based Adaptation Effective?*.

49 Secretariat of the Convention on Biological Diversity, *Voluntary Guidelines for the Design and Effective Implementation of Ecosystem-based Approaches to Climate Change Adaptation and Disaster Risk Reduction and Supplementary Information*, CBD Technical Series No. 93, 2019.

50 ILO, *Employment-Intensive Investment Programme (EIIP)*.

51 Payen and Lieuw-Kie-Song, *Desk Review Study on Employment Impact Assessment (EmpIA)*.



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5. Key stakeholders for green works as part of a just transition

Various stakeholders need to be involved to ensure that green works will contribute to a just transition:

- ▶ **Local communities in rural and urban areas**, including those in informal settlements and citizens exposed to climate change related risks and disasters. Green works are based on the principle that communities should be integral to the planning and implementation of activities as well as beneficiaries through being offered paid decent work in implementation.
- ▶ **Enterprises and cooperatives**, such as construction sector employer organizations and firms; engineering firms specializing in canals, irrigation structures and erosion control; hydrology and water management enterprises; urban greening and landscape organizations; eco-tourism enterprises; ecologists and environmental specialist firms; businesses selling agricultural equipment and resources, and; forest management and silviculture enterprises.
- ▶ **National governments**, particularly ministries responsible for sectors such as water, agriculture, transport, housing and infrastructure, industry and environment, and also ministries of economic planning and finance.
- ▶ **Local government** and those responsible for local level planning and adaptation, urban development and implementation of infrastructure.
- ▶ Research, academic and labour-based **training institutions** that teach engineering and environmental and civil works and contribute to technology development.
- ▶ **Trade unions** in sectors such as agriculture, fisheries, industry, and construction.

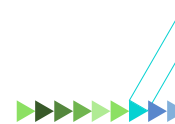
6. Conclusions and Recommendations

Green works provide an opportunity to address climate change and facilitate a just transition towards environmentally sustainable economies and societies for all. Green works activities that protect, sustainably manage and restore natural and modified ecosystems hold particular promise because of the employment opportunities that they

can provide, and their ability to deliver a multitude of societal benefits and benefit the most vulnerable. To make this a reality:

Governments should:

- ▶ Invest in and establish incentives, mandates and regulations to stimulate demand for and



development of markets for goods and services in sectors that are relevant for green works.

- ▶ Reallocate investments and subsidies from activities that damage the environment towards more sustainable activities including green works.
- ▶ Integrate green works into adaptation policies for rural and urban development, as well as agriculture, forests, fisheries, water regulation, tourism, construction and transport policies to support a just transition for the workers and enterprises in these sectors.
- ▶ Integrate green works and NbS into NDCs and national adaptation plans (NAPs).
- ▶ Alter existing and develop new public employment and public works programmes to incorporate green works.
- ▶ Create a conducive policy and operational environment to allow for more private sector investment in sustainable infrastructure and green works. This includes public-private partnerships, as well as mechanisms and incentives to allow small and medium-sized enterprises to make such investments.
- ▶ Promote and adopt skills development policies and programmes in sectors such as agriculture, forestry, fisheries, construction, urban planning, manufacturing and transport. For example, skills relating to “grey-green” infrastructure and NbS are needed in the construction, water management and infrastructure sectors, and agricultural extension workers need training in soil and water conservation measures.

Governments and social partners should:

- ▶ Use social dialogue and participation to ensure local communities can shape, participate in and benefit from planned activities. Special efforts are needed to reach the most vulnerable who are often excluded from formal decision-making processes.
- ▶ Adopt a wider understanding of what resilient infrastructure looks like to include “grey-green” options, “building with nature” and NbS.
- ▶ Promote cooperation and knowledge sharing on green works, at international, national, industry and enterprise levels, through South-South collaboration, at the local level between local communities and local authorities, and between employers, trade unions and research and training institutions.

International and research organizations should:

- ▶ Provide technical support and training for policymakers and implementers to build skills related to green works and NbS, and to integrate such approaches into public employment programmes and other government policies and plans. Disadvantaged and vulnerable groups will require specific targeting to benefit from training.

Conduct research to improve evidence on the employment effects of natural resource management policies and investments.

Share knowledge and best practices regarding the opportunities provided by green works and how best to implement them.

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Contact details

International Labour Organization
Route des Morillons 4
CH-1211 Geneva 22
Switzerland

Employment-Intensive Investment Programme
eiip@ilo.org
Green Jobs Programme
greenjobs@ilo.org