



International
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► Guidelines on Green Employment Diagnostics for a Just Transition

► **Guidelines on Green Employment Diagnostics for a Just Transition**

Updated edition
June 2025



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Foreword

Climate change is arguably the most pressing challenge the world is facing today with far-reaching effects on economies and labour markets, especially in developing countries. Climate change has substantial implications for the working conditions of those most exposed, such as agricultural and construction workers, and has the potential to precipitate the migration of workers in response to changing climatic conditions. At the same time, policy efforts to reorient the economy away from carbon-intensive production impacts labour markets through both job creation and destruction.

Understanding these complex interactions between the labour market and climate change and environmental sustainability measures requires the use of a range of data sources and methodologies to build an analysis that can serve policymakers and other stakeholders. To reach this goal, the International Labour Organization (ILO), in collaboration with Genesis Analytics, has co-developed these guidelines for undertaking green employment diagnostics at the country level, supporting the goal of just transitions. The guidelines, complemented by an overarching ILO framework for employment diagnostics, aim to enhance the understanding of the interplay between the environment, economy and employment, empowering ILO constituents to identify trends, constraints and opportunities related to climate change impacts on the labour market.

Specifically, the guidelines highlight how to analyze the impact of climate change and the transition to environmental sustainability on the labour market and provide evidence based and computational approaches to identify challenges and opportunities for sustainable pathways towards productive employment for all in low- and middle-income countries. The ultimate objective of deploying a green employment diagnostics study is to provide specific and actionable recommendations to governments and the ILO's social partners to assist them in proposing policy interventions to improve the sustainability and inclusiveness of national employment policies and their coherence with climate policies and strategies.

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1

Introduction and objectives

Addressing climate change is one of the defining challenges of the twenty-first century. Climate change is already directly impacting an estimated 85 per cent of the world's population¹ and disrupting global health, development and welfare for all.² These effects disproportionately impact the poorest and most vulnerable in society.

Employment landscapes across the world are undergoing climate-induced transformations and longer-term changes. The physical impacts of climate change threaten to reduce productivity in many sectors and are detrimental to the ability of many workers to sustain decent livelihoods. Climate change-induced migration also affects labour markets and risks increasing social conflicts. Responding to the risks posed by climate change requires a fundamental reorientation of the development trajectory away from greenhouse gas (GHG) emissions-intensive activities and towards more resilient and sustainable societies and economies. This sets fundamental challenges for many sectors and countries where models for growth and development are based on activities that are incompatible with agreed climate and environmental goals.

Responding to climate change and other environmental pressures by reducing emissions and supporting biodiversity and other environmental objectives is not only about risks and costs. There is robust evidence that, at the aggregate level, reducing emissions will support economic growth and welfare.³ Developing new economic activities, or reformulating existing ones, can help countries and sectors to flourish.

Accordingly, the ILO emphasizes that a just transition towards environmentally sustainable economies and societies for all can be advanced through concerted efforts and social dialogue involving governments, employers, workers and all concerned. It is recognized that such a transition is complex and requires that policies, plans and structures address employment losses, decent work deficits, inequality and sector-specific challenges.⁴ Hence, developing a robust knowledge base is a critical first step to inform national endeavours towards a just transition.

This knowledge base should account for the complex linkages between changes in the natural environment, in the economy and in the employment landscape. It should then be used to inform and formulate policies and accompanying measures that reduce adverse climate and environmental impacts, while simultaneously leading to socially just outcomes with employment opportunities for all. These latter employment outcomes are essential to ensuring the necessary support for the required reforms.



Effective policies to catalyse green economies are vital to ensure full, productive and decent employment and to achieve sustainable development and a just transition.

Analyses of changes in the economy and the labour market are a cornerstone of the ILO's policy advice. Employment diagnostics are often the first step in designing policies aimed at achieving full and productive employment for all. Integrating a green perspective into this methodology ensures that data and analyses are available to guide policies that leverage green growth opportunities and prepare the workforce to thrive in emerging green sectors.



¹ Max Callaghan et al. "Machine-learning-Based Evidence and Attribution Mapping of 100,000 Climate Impact Studies", *Nature Climate Change* 11 (2021): 966–972.

² IPCC, *Climate Change 2022: Impacts, Adaptation and Vulnerability*, 2022.

³ ILO, *World Employment and Social Outlook 2018: Greening with Jobs*, 2018.

⁴ ILO, *Resolution concerning a just transition towards environmentally sustainable economies and societies for all*, ILC.111/Resolution V, 2023.

The purpose of these Guidelines is to complement existing employment diagnostic approaches to support countries' understanding of and policy responses to the opportunities and threats posed by climate and environmental change. Developed in line with the ILO's *Guidelines for Employment Diagnostics in Times of Continuous Change*,⁵ the present Guidelines provide ILO constituents and staff with:

- ▶ direction and guidance on **identifying the underlying trends, constraints, risks and opportunities** related to the context-specific impacts that climate change and transition pathways can have on the labour market; and
- ▶ guidance on **identifying and/or informing policies for achieving productive employment for all**.

The evidence and insights generated by implementing green employment diagnostics serve as the foundation for informed discussions with key government counterparts, such as ministries of labour. Furthermore, the diagnostics findings can facilitate dialogues between nodal agencies and other relevant government entities, including ministries of planning and industry, environmental/climate change ministries, and agencies involved in climate adaptation and mitigation planning. Additionally, tailored advice can be directed towards workers' and employers' organizations to support their engagement in the transition towards green and sustainable employment practices.

The objectives of green employment diagnostics include the following:

- ▶ Understanding the challenges climate change poses to ensuring equitable economic development and the creation of decent employment opportunities for all.
- ▶ Understanding how policy and market responses to climate change and other environmental pressures provide new opportunities for inclusive growth that generates decent jobs.
- ▶ Identifying policies that can help manage these risks and opportunities – and other potential constraints to implementing these policies – within the context of national employment policies.

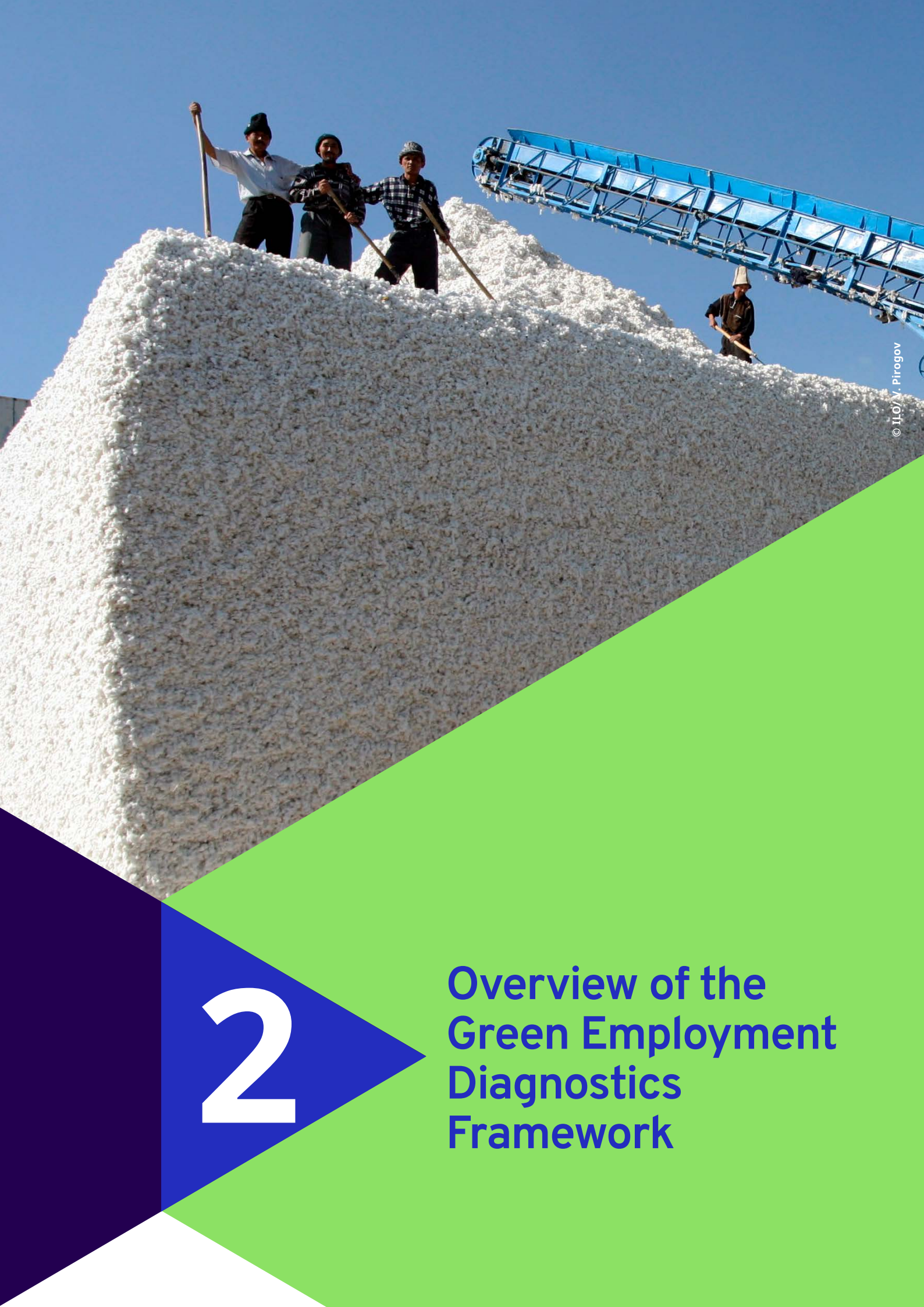
These Guidelines lay out the process to conduct a green employment diagnostic to achieve the above objectives. They propose the framework for green employment diagnostics, and present modules that set out the steps for implementation. The Guidelines are presented below using the following structure:

- ▶ **Chapter 2. Overview of the framework for green employment diagnostics.** This chapter introduces key concepts relating to the development of green employment diagnostics as well as the analytical framework for green employment diagnostics.
- ▶ **Chapter 3. Step I: Country profiling to identify focus areas for investigation.** This chapter presents the first step of the Green Employment Diagnostics Framework: country profiling. This entails utilizing easily accessible data to gain insights into a country's economic, labour market and poverty/inequality contexts, as well as the key climate events and associated risks the country experiences. Country profiling also involves undertaking a rapid policy landscape analysis to identify the existing policies and strategies at the employment–climate–environment nexus. This step derives an overall narrative for the country under study, and helps prioritize sectors of interest and key questions for further investigation in Step II.

⁵ Elina Scheja, Sher Verick and Drew Gardiner, [Guidelines for Employment Diagnostics in Times of Continuous Change](#) (ILO, 2023).

- **Chapter 4. Step II: In-depth assessment by key implications.** This chapter is divided into three sections that relate to, respectively, the economic, labour market, and poverty and inequality implications of: (i) physical climate risks; (ii) transition risks; and (iii) transition opportunities. This chapter, presenting the second step of the Green Employment Diagnostics Framework, generates insights into the existing challenges and implications across the core pillars identified, using tailored questions, evidence sourcing and/or evidence generation, and reporting for policy considerations.
- **Chapter 5. Step III: Developing policy recommendations.** This chapter provides a detailed guide on how to identify gaps in current policies as regards addressing the challenges identified in Step II, and offers strategies for improving policy. The ultimate objective of Step III is to offer users policy options that facilitate a fair and resilient climate transition in the realm of jobs and labour markets and are underpinned by the ILO Just Transition principles.
- **Chapter 6. Process: Implementing a green employment diagnostic.** This chapter provides a step-by-step implementation procedure for conducting a green employment diagnostic, including the key considerations when doing so and the timelines and resources required to effectively deploy the Green Employment Diagnostics Framework.

Across the chapters, boxes are included that summarize the key insights that will be generated by applying each step of the diagnostics framework, to provide a quick reference for users.



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2

Overview of the Green Employment Diagnostics Framework

2.1. Key concepts for green employment diagnostics

The core insight on which green employment diagnostics rests is that climate change – and policy responses to it – will have a significant impact on all economies, and that these impacts will affect the labour market and may exacerbate poverty and inequality if left unaddressed. Additionally, three key considerations ensure that the diagnostics are flexible, multi-layered, adaptable and applicable to individual country contexts:

1. **Different types of climate events create different types of risks:** Accordingly, the framework ought to allow for the inclusion of multiple and differentiated types of climate events and risks, which, in turn, define the subsequent focus for analysis (for example, risk from droughts is skewed towards the agriculture sector, as compared to other sectors).
2. **Economies vary by type, extent of vulnerability and adaptive capacity:** This necessitates that the framework ought to be sufficiently flexible to accommodate these differences. Key variabilities across developing countries include, among others, differences in employment parameters, low/medium/high levels of climate risk exposure and vulnerabilities, differences in macro-fiscal stabilities, and differences in adaptive capacities at the institutional and micro levels.
3. **The key to informed decision-making lies at the sectoral level and how sectors can be affected by climate change:** Consequently, there is a need for a focus on the key economic sectors impacted by climate change. This enables the use of targeted interventions – informed by evidence – to ensure policy alignment and coherence with other sectors, to facilitate monitoring and evaluation, and to enhance stakeholder engagement. This not only ensures the applicability of the framework in the decision-making context, but also allows for assessing changes across sectors, which may also be aggregated to represent economy-wide sectoral impacts.

Green employment diagnostics are organized around four core pillars, three of which are already used in the existing [*ILO Guidelines for Employment Diagnostics in Times of Continuous Change*](#). These core pillars act as levers, around which the assessment is undertaken.

1. **Climate change and environmental pillar:** This refers to the trends, frequency and severity of climate events, the impacts of climate change on the economy and labour market, as well as changes in the economy and labour market due to the transition to a low-carbon economy, including, for instance, the vulnerability of certain sectors and occupations to climate-related disruptions, and the emergence of new green industries and changing skills requirements. Understanding these dynamics helps in assessing the key risks faced by countries, their implications for sectors and workers, and the formulation of appropriate policies.
2. **Economic pillar:** This pillar considers how the identified climate change impacts and environmental challenges, as well as national and international policy and market responses to these challenges, affect the economy, both at the aggregate level and across key sectors.
3. **Labour market pillar:** This pillar focuses on the consequences that the economic impacts have on the labour market of. It considers employment and productivity across key sectors, as well as changes in relation to the gender, age, skills, occupation and location of the workforce. This also helps in identifying the changing skills requirements and to what extent current policy settings are well-calibrated to address emerging challenges.

- 4. Poverty and inequality pillar:** This pillar explores how people's welfare characteristics are impacted by the changes in the labour market. It focuses on poverty and inequality changes, and the extent to which government policy is well set up to address these.

Additionally, the diagnostics framework incorporates key determinants of climate change consequences that cut across the core pillars, to ensure a uniform structure of the diagnostics framework. These include the:

- ▶ **physical impacts of climate change**, focused on climate risk characteristics;
- ▶ **the impacts of the transition in terms of risks**, based on national and global policy and market responses to climate change affecting an economy; and
- ▶ **impacts of the transition in terms of opportunities** – namely, opportunities in the form of new job creation potential, new skills requirement, gains in sectors through shifts/innovations and so on.

The Guidelines have been **enhanced based on lessons learned from the deployment of the Green Employment Diagnostic Framework in Morocco**, incorporating key methodological refinements to improve sectoral assessments, labour market transition analysis and policy applications. A significant addition is the incorporation of a quantitative method to measure the greenness of existing occupations in the national labour force database and to identify skill transition needs. The methodology applied in the case of Morocco was the task-based approach (TBA).⁶ By linking TBA-generated insights to sectoral labour demand projections, the updated Guidelines aim to help governments and stakeholders to prioritize workforce investments, develop training curricula and design incentives that align labour supply with emerging green economic opportunities.

Additionally, the Guidelines include guidance for selecting sectors to prioritize for in-depth sectoral assessments on the basis of factors such as economic significance, labour productivity, climate risk exposure and transition vulnerabilities. Given the importance of informality in green employment, a new approach has been introduced to assess, quantify and integrate the contribution of informal labour into policy frameworks. The Guidelines also explore the use of geospatial analysis as a complementary tool for mapping informal labour clusters, identifying green employment hotspots and informing localized policy responses. By incorporating spatial intelligence alongside traditional labour market assessments, the revised framework allows for data-driven, region-specific interventions that enhance employment planning and support inclusive, just and sustainable labour market transformations.

⁶ The TBA methodology is described in: Francesco Vona et al., "Environmental Regulation and Green Skills: An Empirical Exploration", *Journal of the Association of Environmental and Resource Economists* 5, No. 4 (2018): 713-753. Other examples of a TBA being applied to national labour force databases are available in: Hernan Winkler et al., "[Measuring Green Jobs: A New Database for Latin America and Other Regions](#)", World Bank Policy Research Working Paper No. 10794, 2024.

2.2. Analytical framework for green employment diagnostics

Relying on the above insights, green employment diagnostics follow a three-step approach, supported by an Excel-based toolkit that guides the operations of each step by identifying specific questions and required data points and data sources, as well as outlining appropriate methodologies. The crux of the analytical framework recognizes that the most relevant (research) questions and issues will differ across countries according to their climatic, economic, labour market and poverty/inequality contexts. This approach enables the generation of insights concerning the most pressing issues and context-specific needs for each country, which, in turn, may translate into targeted policy interventions.

Step I identifies the key climatic/environmental, economic, labour market and poverty/inequality contexts of a country, along with a rapid assessment of the existing policy landscape at the employment–climate–environment nexus, in order to develop a sound understanding of the country profile. This helps to prioritize the questions posed in Step II, in accordance with the key contextual characteristics of the country and the challenges/opportunities identified.⁷

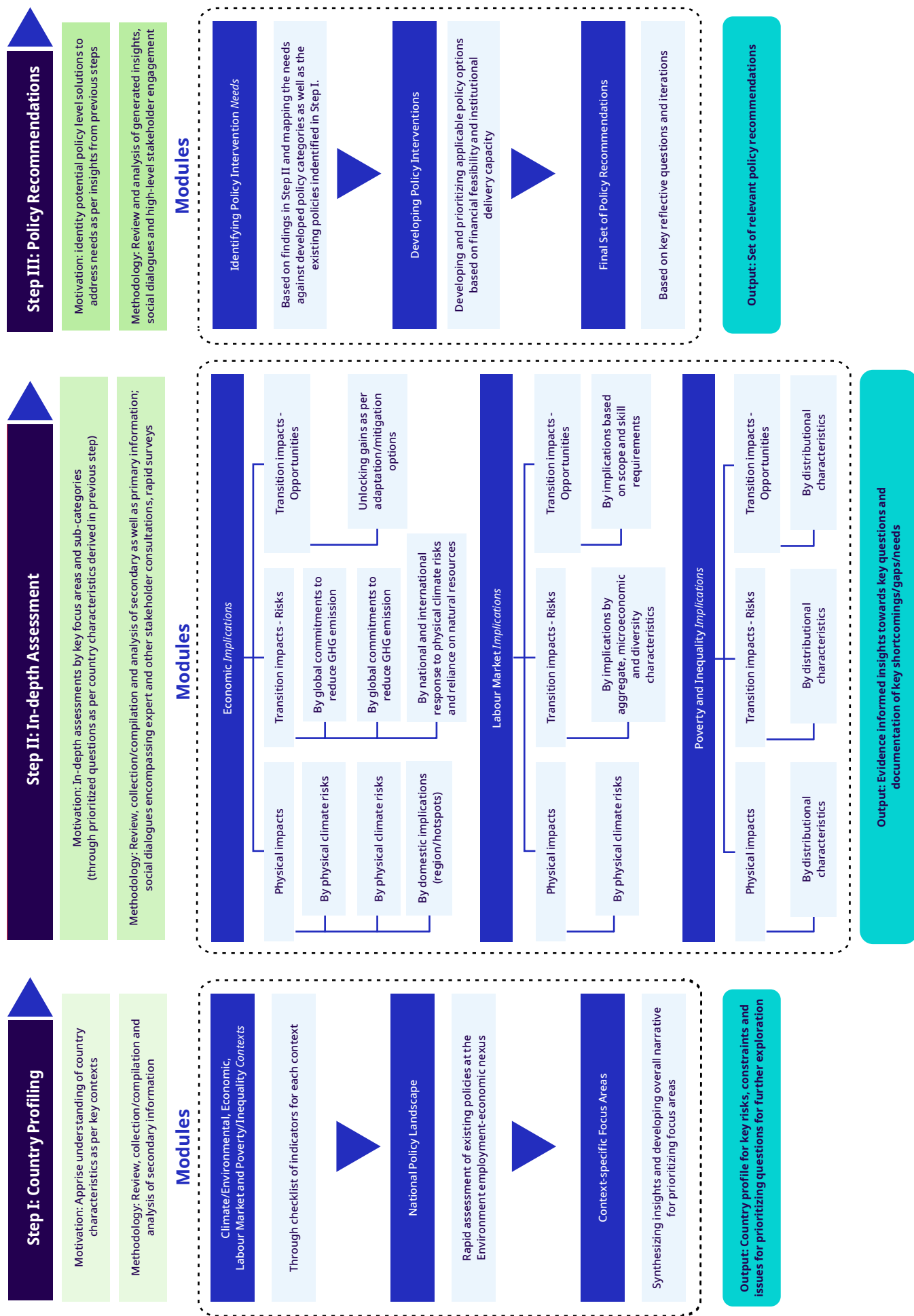
Step II dives deeper into the country's economic, labour market, and poverty and inequality dynamics, disaggregated by the physical impacts of climate change as well as the risks and opportunities embedded within transition impacts. This is done through posing guiding questions, which are tailored to the profile “highlights” of the country. To complete this step, a combination of existing analytical and academic studies, country-specific data, expert interviews, consultations with social partners (including workers' groups, employers' groups and government entities), focus group discussions, and rapid surveys or primary data generation modules is undertaken. Where country-specific data is unavailable or outdated, case studies from other similar contexts may be used for guidance.

Step III identifies policy options. It leverages information from Steps I and II to lay out where new or altered policy is needed and to identify the entry points for making these policy changes.

An overall outline of the analytical framework encompassing these three steps is shown in figure 1 below. The key considerations and details of each step are described in the subsequent sections. The core pillars are conceptually applied and presented in a different order and include different elements in each of the steps. Specifically, **Step I focuses on reviewing and understanding the key “contexts”** across the climate/environment, economic, labour market and poverty/inequality pillars for a selected country. **Step II focuses on the key “implications”,** referring to the economic, labour market and poverty/inequality pillars and as per the identified (and most relevant) questions for the country based on insights from Step I. **Step III revisits the insights from Steps I and II and identifies the key “needs”,** as per the shortcomings in existing policies, in order to address the identified challenges/opportunities, **and provides options for developing policy recommendations** across the core pillars

⁷ The interest may lie not so much in defining a unique profile for each country, but rather in the types of risks and impact pathways.

Figure 1. Outline of the Green Employment Diagnostics Framework





3

**Step I: Country
profiling to identify
focus areas
for investigation**

Country profiling involves making use of readily available data to generate an understanding of the country's economic, labour market and poverty/inequality contexts and the key climate events and associated risks the country is experiencing. This step may also involve investigating the national policy framework in the context of:

- climate adaptation and mitigation-related actions;
- sector-specific development priorities;
- employment promotion;
- skills and human capital development;
- social protection; and
- other dimensions of decent work.

These preliminary insights provide the basis for prioritizing the most pertinent sub-thematic areas – and questions related to them – to be investigated in Step II. The following figure highlights the flow of activities in Step I.

 **Figure 2. Collecting and reporting key data/information to understand the country context**



The country profile checklist found in table 1 sets out the quantitative and semi-quantitative data that can be collected, the reason for collecting it and the key sources that may be used, in order to develop a nuanced understanding of the overall country context. The table should be read in conjunction with the accompanying Excel-based tool, which provides a template for recording the data for key indicators and the corresponding sources for data collection, reflecting the Rapid Situational Analysis framework of the employment–climate–environment nexus championed by ILO⁸ and other international best practices. This information can help to define the narrative in order to prioritize more in-depth research for related questions posed in Step II. It should be noted that the data collection exercise needs to be adapted to the country context – different indicators may be chosen, depending on the country's situation.

⁸ ILO, *Rapid Situational Analysis of the Employment–Climate–Environment Nexus: Identifying Just Transition Policies – Nigeria*, 2020.


Table 1. Country profile checklist of key indicators and data points

Sl.	Key indicator	Why is it important?	Source (suggested) ⁹
1. Climate/environmental context			
1.1. Main climate hazards		To understand which climate-induced events occur most frequently and which are most intense. To help develop a focused lens for assessing said hazards.	https://climateknowledgeportal.worldbank.org/country-profiles
1.2. Extent of physical risks from climate change impacts (This is on a 0–10 scale for each element, where 10 is highest risk.)		To distil and centralize the assessment prioritization narrative on climate-driven physical risks. This encompasses three sub-thematic indicators: 1. climate-driven hazard and exposure; 2. vulnerability; and 3. lack of coping capacity.	https://climatedata.imf.org/pages/fi-indicators
1.3. GHG emissions by sector and GHG emissions per capita		To understand the scale of the challenge that the country might face in reducing emissions across different sectors, as well as international expectations for action.	https://ourworldindata.org/greenhouse-gas-emissions
1.4. Degree of preparedness for a low-carbon transition		To filter the key capacity constraints hindering progress, as well as the opportunities for a low-carbon transition.	https://climatedata.imf.org/pages/fi-indicators
1.5. Forest area or green cover as a percentage of total land area		Allows for a comprehensive understanding of the potential for green job creation within the forestry sector, as well as the broader linkages between forests and other sectors. It promotes sustainable economic development, identifies opportunities for climate resilience and adaptation and helps guide policy and investment decisions towards a greener and more inclusive economy.	https://data.worldbank.org/indicator/AG.LND.FRST.ZS
1.6. Deforestation rate		To provide insights into the environmental and socio-economic impacts of deforestation. It helps prioritize questions related to employment opportunities in activities related to forest restoration, sustainable land management and conservation.	https://www.globalforestwatch.org/dashboards/global
1.7. Air Quality Index – annual average over past three years		To inform the prioritization narrative regarding the health implications of air pollution, identify green job creation opportunities, address climate change and environmental impacts and promote sustainable urban development.	https://www.iaqair.com/in-en/world-most-polluted-countries
1.8. Green production capabilities ranking		To understand the scale of opportunities the country might have in regard to manufacturing goods needed in a low-carbon economy.	https://www.sciencedirect.com/science/article/pii/S0048733320300287
2. Economic context			
2.1. Country income classification		Based on levels of aggregate income, various factors – such as the country's level of development, natural resource availability, environmental challenges and policy priorities – can be gauged, and understanding of these can shape the specific considerations for a green employment diagnostic in the country.	https://blogs.worldbank.org/opendata/new-world-bank-group-country-classifications-income-level-fy24

⁹ The suggested sources come from international datasets, as this data will facilitate consistent treatment across countries, allowing for international comparisons to be drawn where relevant.

Sl.	Key indicator	Why is it important?	Source (suggested) ⁹
2.2.	Country size in square kilometres.	To enable the prioritization of considerations and in-depth questions based on the scalability of interventions and related needs. This information also complements the understanding of other key parameters, including the proportion of agricultural land and irrigated land relative to total area, the proportion of green cover, and so on.	https://data.worldbank.org/indicator/AG.LND.TOTL.K2
2.3.	Population size (millions)	To obtain insights into market potential, job creation potential, human capital availability, policy priorities and socio-economic and environmental pressures.	https://data.worldbank.org/indicator/SP.POP.TOTL
2.4.	Population density	To obtain additional insights into market potential, job creation potential, human capital availability, policy priorities and socio-economic and environmental pressures.	https://data.worldbank.org/indicator/EN.POP.DNST
2.5.	Gross domestic product (GDP) (current US dollars) and GDP per capita	To generate insights into the country's overall levels of development, investment attractiveness and so on. These insights will aid in understanding the nation's progress and identifying areas that require attention and improvement to achieve sustainable development.	https://data.worldbank.org/indicator/NY.GDP.MKTP.CD
2.6.	GDP growth rate (annual %) and per capita GDP growth rate (annual %) for the past five years	To understand the trends and patterns in economic contributions, which can help in identifying national development priorities where green employment considerations can be mainstreamed.	https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG
2.7.	Sectoral contributions (%) to GDP: - Agriculture - Industries - Manufacturing - Services	Given that the overarching goal of the diagnostics to generate insights at the sectoral level, this is a crucial metric for understanding the key sectors contributing to GDP, and accordingly, can provide a sense of exposure to climate risks for each sector. Key economic sectors will be prioritized for more in-depth assessments.	https://wdi.worldbank.org/table/4.2
2.8.	Latest debt sustainability analysis score (all debt and external debt)	To understand the extent to which the country has fiscal room for manoeuvring.	https://www.imf.org/en/publications/dsa https://www.imf.org/external/datamapper/GGXCNL_G01_GDP_PT@FM/DEU
3. Labour market context			
3.1.	Total size of labour force	To understand aggregate market potential in a country.	https://ilostat.ilo.org/data/
3.2.	Labour force participation rate disaggregated by age and gender	To understand aggregate market potential, disaggregated by gender and age, which is useful for undertaking a green employment diagnostic and to ensure targeted approaches.	https://ilostat.ilo.org/data/ ¹⁰
3.3.	Youth unemployment rate	To understand aggregate market potential, with a focus on youth, which is useful for undertaking a green employment diagnostic and to ensure targeted approaches.	https://ilostat.ilo.org/topics/youth/
3.4.	Employment distribution by key economic sectors	To identify sectors with potential for green job creation, assessing the need for reskilling and transition, aligning policies with green employment objectives and understanding the socio-economic impacts of green job creation.	https://genderdata.worldbank.org/indicators/sl-empl-zs/

¹⁰ If ILO modelled estimates are used by officials deploying green employment diagnostics, they should be triangulated through consultations with country experts. Estimates for countries with very limited labour market information have a high degree of uncertainty. Hence, estimates for countries with limited nationally reported data should not be considered as “observed” data, and great care needs to be applied when using these data for analysis, especially at the country level. See <https://webapps.ilo.org/ilostat-files/Documents/TEM.pdf>

Sl.	Key indicator	Why is it important?	Source (suggested) ⁹
3.5.	Share (%) of informal employment	This helps in providing insights for policymakers seeking to design effective interventions that empower and support informal workers in transitioning to formal and sustainable employment in the green economy.	https://ilostat.ilo.org/topics/informality/
3.6.	Employment by sex and status in employment	This is another critical indicator for assessing economic vulnerability, promoting social protection, fostering inclusive development, supporting entrepreneurship and evaluating policy effectiveness.	ilostat.ilo.org/data
4. Poverty and inequality context			
4.1.	Poverty rate (headcount ratio at national poverty lines as % of population)	To prioritize key focus areas, based on the needs of economically vulnerable and marginalized populations, and to assess if green employment programmes can create sustainable livelihoods, reduce inequalities and build economic resilience while advancing environmental sustainability goals.	https://data.worldbank.org/indicator/SI.POV.NAHC?locations=1W&start=1984&view=chart
4.2.	Share (%) of population having access to modern cooking fuels	To understand the extent of support required for the transition to sustainable cooking practices, which will foster gender equality and social empowerment, and to identify job opportunities in relevant sectors encompassing sustainable biomass management, reforestation and carbon offsetting projects.	https://www.iea.org/data-and-statistics/data-product/
4.3.	Share (%) of population with access to electricity	To understand the extent of energy access, and the scope for promoting the renewable energy transition, for supporting energy efficiency and demand management, and for contributing to sustainable economic growth and poverty alleviation.	https://www.iea.org/data-and-statistics/data-product/
4.4.	Gini Index (as a measure of country's income inequality levels)	To generate insights into the distribution of income and wealth across different segments of the population. Understanding income inequality is essential for assessing the inclusiveness and social impact of green employment policies and initiatives.	https://data.worldbank.org/indicator/SI.POV.GINI

Reviewing and assessing the relevant national policy landscape:

To further inform the appraisal of the country context, an additional module is proposed that involves reviewing the existing national policy landscape at the nexus of employment–climate–environment dynamics. This may be undertaken by:

- ▶ sourcing relevant policies/development strategies that are applicable to the country. These might include the national employment policy, Nationally Determined Contributions (NDC) and World Bank *Country Climate and Development Reports*, among others.
- ▶ compiling information on the different national policies/strategies, and comparing these against key determinants of the diagnostics' policy-related needs.

The idea is to assess whether the key determinants – or “key words” – can be found in each of these policies/strategies. If they are, different colour intensities should be used to indicate which key determinants receive stronger/weaker consideration within each policy/strategy. This colour-coding process also facilitates the identification of the main gaps and entry points, which can be further explored in Steps II and III. Tables 2 and 3 provides illustrative examples that highlight this approach.

 **Table 2. Illustrative example of signalling criteria and colour codes**

Signalling criteria/ conditions applied	Corresponding colour	Corresponding inference/insight
Occurs between 1 and 25 times		Minimal inclusion and prevalence of thematic determinant in policy/ strategy, and requires major changes/updates in the policy/strategy
Occurs between 26 and 100 times		Moderate inclusion and prevalence of thematic determinant in policy/ strategy, and requires some changes/updates in the policy/strategy
Occurs 101 or more times		Significant inclusion and prevalence of thematic determinant in policy/strategy, and requires limited changes/updates in the policy/ strategy, and can be leveraged further to inform the employment- climate–environment nexus

 **Table 3. Illustrative example of a policy landscape analysis table for a representative country**

Thematic consideration	Key policy determinants/ keywords ¹	NEP ²	Medium- term development strategy	NDC	National strategies for SDGs ³	Economic recovery and growth plan	UNFCCC adaptation plans and strategies ⁴
Employment–Climate–Environment nexus	Mitigation strategies						
	Adaptation and resilience strategies						
	Green jobs strategies/ employment in environmental sector						
	Risk reduction/ disaster response						
	Social protection/ sustainable social protection strategies						
	Vulnerable populations/ community-based protection/ climate resilience						
	Sustainable/ resilient enterprises and businesses						
	Skill development/ green skills/ capacity-building						
	Social dialogue						

¹ These can be modified as per the country contexts and search strategies.

² NEP = national employment policy. For more details, see: <https://www.ilo.org/global/topics/employment-promotion/epaf/lang--en/index.htm>.

³ SDGs = Sustainable Development Goals.

⁴ Available at: <https://www4.unfccc.int/sites/NAPC/Pages/adaptation-plans-and-strategies.aspx>.

Synthesizing insights and developing the overall narrative for prioritizing focus areas

Once the above modules are completed and insights have been generated from them, an overall narrative should be developed for the country in order to identify the focus areas for Step II. An indicative reporting template has been included in the Excel toolkit for ease of documentation and to identify the focus areas/key questions that warrant further investigation when moving from Step I to Step II.

Summary of insights to be developed for the country profile

Officials conducting a green employment diagnostic for any country should conclude Step I with a clear understanding of the following (as relevant):

- ▶ What are the key drivers and characteristics of the climate change/environmental dynamics for the country? Accordingly, what should be the focus areas/key questions for further investigation in Step II?
- ▶ What are the key drivers and characteristics of the economic dynamics for the country? Accordingly, what should be the focus areas/key questions for further investigation in Step II?
- ▶ What are the key drivers and characteristics of the employment/labour market dynamics for the country? Accordingly, what should be the focus areas/key questions for further investigation in Step II?
- ▶ Which existing policies and strategies promote an enabling environment for addressing the impacts of climate change and transition pathways on the country's labour market?



4

Step II: In-depth assessment by key implications

Step II entails an in-depth assessment of the economic, labour market, and poverty and inequality implications within the country. It builds upon the initial insights and prioritized focus areas identified in Step I to provide a more detailed assessment of key implications in these focus areas, looking across each of the core thematic pillars. As before, the analysis considers each of the physical risks of climate change, as well as the risks and opportunities associated with transitional impacts. This is accomplished by utilizing the accompanying Excel-based tool, which presents a comprehensive set of questions, related sources of information and applications/case studies/methodologies. These questions encompass the material outlined in the section below and offer a detailed framework for assessing and addressing the relevant aspects.

The in-depth assessment involves a combination of country-specific data and research, expert interviews, social dialogue¹¹ (including discussions with workers' groups, employers' groups and government officials), and rapid surveys or primary data generation modules. In the event that country-specific data is unavailable or outdated, case studies and peer-reviewed academic research can serve as proxies to provide guidance based on similar questions addressed in the past.

It is important to note that this step provides a comprehensive examination that considers the diverse contexts in which countries operate. However, during practical implementation in a specific country, the focus should be directed towards the elements that are most pertinent to that country, as identified in Step 1.

This chapter is structured into three main sections, covering the economic implications (Section 4.1), labour market implications (Section 4.2) and the implications for poverty and inequality (Section 4.3) resulting from the physical risks associated with climate change, as well as the risks and opportunities arising from countries' transition pathways. Each section further breaks down into specific subcategories that provide valuable insights into the primary factors influencing the risks and opportunities. Within each subcategory, key considerations and questions and relevant data sources are highlighted to facilitate the generation of insights.

4.1. Economic implications

This section explores how identified climate change impacts – and both national and international policy and market responses to these challenges – are expected to affect the economy, both at the aggregate level and across key sectors. Some of the key questions for analysis are presented below. This section should be read in conjunction with the accompanying Excel-based tool, which provides a comprehensive checklist of questions that can be tailored to the country-specific context.

¹¹ The ILO employs various social dialogue techniques to facilitate cooperation and address labour-related issues effectively. These include: tripartite consultations, collective bargaining, labour legislation, conflict resolution, social dialogue committees, capacity-building, research, promotion of labour standards, international framework agreements, policy advocacy, advisory services and monitoring and reporting.

4.1.1. Physical impacts and their effects on the economy

Physical climate impacts (risks and opportunities)

Key considerations: As a first step, the in-depth assessment aims to further investigate the key climate risks and opportunities facing the country, as synthesized in Step I. The key risks may include, but are not limited to, the following:

- ▶ temperature-related: increases in average and extreme temperature events;
- ▶ precipitation-related: change in average precipitation and increases in extreme precipitation events;
- ▶ sea level: sea-level rise leading to saline intrusion and coastal flooding;
- ▶ storm surges.
- ▶ extreme events: an increase in the frequency and intensity of extreme events like floods, droughts, cyclones and landslides; and
- ▶ other chronic risks, like changing seasonal patterns, changing disease patterns and wildfires.

Some of the key questions that may be posed here include, but are not limited to, the following:

- ▶ For each key climate risk, how will these affect the economy in the short/medium term (next five to ten years) and in the longer term (beyond 10 years)?
- ▶ What are the transmission mechanisms through which this arises?
- ▶ Will changes in the physical climate bring any economic opportunities? In which sectors and activities? (For example, will some agricultural crops become more attractive than others?)
- ▶ How do the physical risks and opportunities change with different emissions scenarios? (This is especially relevant for the longer term.)
- ▶ How much uncertainty is there about these impacts?

Data sources and methodology/assessment reference: Evidence for the above will come primarily from sources like the “Climate Risk Country Profiles” developed by the World Bank¹² and the Asian Development Bank, as well as country National Communications submitted to the United Nations Framework Convention on Climate Change (UNFCCC).

Economy-wide and sectoral economic consequences

Key considerations and related questions: As a next step, the green employment diagnostic should consider the potential economic impacts of the identified physical risks of climate change, looking at how the aggregate economy and its different sectors are affected. Such an assessment will aid policymakers in recognizing the economic significance of the physical impacts of climate change as a developmental risk. While undertaking such assessments, one should also consider how well-equipped or “well-adapted” the country is to respond to these economic and sectoral impacts.

Some of the key questions that may be posed here include, but are not limited to, the following:

- ▶ What is the total expected damage to the economy (in monetary units)?
- ▶ Is there evidence that captures the wider macroeconomic impacts of the identified climate risks? (For example, what are the impacts on fiscal/monetary/trade flows?)
- ▶ How will the agriculture, forestry and fishing sector (similarly, infrastructure, services, manufacturing, construction, and so on) be affected by the physical impacts of climate

¹² World Bank, “[Climate Risk Country Profiles](#)”.

change? Is this through changes in input costs, a reduction in productivity, asset damage and so on?

- What are the possible knock-on implications that the impacts in these sectors might create for other sectors of the economy?
- Are there differences across different actors within the same sector? (For example, international financial districts will experience very different impacts from the tourism sector, but both are part of the services sector.)
- How well-equipped or well-adapted is the country to respond to these economic and sectoral impacts?

Data sources and methodology/assessment reference: Countries may have already undertaken their own macroeconomic assessments or performed assessments for individual sectors. These may be found in climate risk and vulnerability assessments, national adaptation plans and so on. Information on occupational profiles by sector may be obtained from country Labour Force Surveys and census reports. Other possible sources of information include the following (among others):

- The 2019 International Monetary Fund (IMF) working paper “Long-Term Macroeconomic Effects of Climate Change: A Cross-Country Analysis” provides results from a robust methodology to undertake such assessments, based on a stochastic growth model where the aggregate economy, individual sectors and labour productivity are assessed by country-specific climate variables – defined as deviations of temperature and precipitation from their historical norms.¹³ The results for countries covered as part of this (and any other similar) study can provide insights that can help in answering some of the questions highlighted above.
- Dell, Jones and Olken (2012) report results and evidence based on historical fluctuations in temperature within countries to identify the effects on aggregate economic outcomes.¹⁴
- The [IMF Climate Change Indicators Dashboard](#) and the [ND-GAIN Country Index](#) can provide the basis for sourcing evidence on how well-equipped or well-adapted the country is to respond to these economic and sectoral impacts. In some cases, the adaptive capacities reflect sustainable adaptation solutions. In other cases, they reflect capacities to put newer, more sustainable adaptations into place, and the extent to which the countries are prepared to leverage investments and convert them into adaptation actions.
- Evidence for understanding differential impacts between formal and informal workers in the sectors under consideration may need to be extrapolated from the ILOSTAT database’s “[Statistics on the Informal Economy](#)” or through primary data collection modules (such as rapid surveys targeting the two groups and/or focus group discussions).

Sector selection for more in-depth insights for the green employment diagnostic

A structured and evidence-based approach to sector selection is critical for the effective deployment of a green employment diagnostic. **Identifying priority sectors ensures that analytical efforts focus on sectors with the greatest potential for green job creation, economic transformation and resilience to climate change.** The selection process should be data-driven and context-specific, incorporating a combination of economic, environmental

¹³ Matthew E. Kahn et al., “[Long-Term Macroeconomic Effects of Climate Change: A Cross-Country Analysis](#)”, IMF Working Paper No. WP/19/215, 2019.

¹⁴ Melissa Dell, Benjamin F. Jones and Benjamin A. Olken, “Temperature Shocks and Economic Growth: Evidence from the Last Half Century”, *American Economic Journal: Macroeconomics* 4, No. 3 (2012): 66–85.

and policy considerations to identify sectors where green transitions can deliver meaningful employment opportunities.

The sector selection framework applied in Morocco's green employment diagnostic serves as a practical example of how to assess economic significance, exposure to climate risks and green transition potential. By employing a systematic evaluation process, the diagnostic ensured that sectoral analysis was targeted, relevant and aligned with national development priorities. The approach outlined below provides a guideline for conducting sector selection in different country contexts. Key indicators suggested to be used for sector selection include:

- **Economic significance:** Economic significance forms the foundation for sector selection, ensuring that the analysis prioritizes sectors that are important contributors to GDP and employment. A sector's contribution to economic output, workforce absorption and labour productivity trends determines its role in shaping future employment dynamics.

A key metric for sector selection is its **GDP contribution**, which reflects the sector's overall weight in the economy. Understanding whether a sector's share of GDP is increasing or declining provides insights into its growth trajectory and economic relevance. Expanding sectors may present greater opportunities for green job creation, whereas declining sectors may require targeted interventions to support workforce transitions. National statistical offices and international databases, such as the World Bank's World Development Indicators or the IMF's National Accounts can provide relevant data towards this.

Equally important is **employment share**, which assesses the proportion of total jobs sustained by a sector and whether it is experiencing net job creation or contraction. Sectors with high employment shares are particularly important, as transitions within these industries will have wide-reaching labour market effects. Labour Force Surveys, national employment reports and the ILO's ILOSTAT database provide sectoral employment data that can be analysed over time to detect trends.

Finally, **labour productivity** is a critical factor in determining whether a sector is modernizing or stagnating. Increasing productivity suggests a sector that is evolving, potentially integrating new technologies and skills that could align with green transitions. Conversely, stagnant or declining productivity may indicate structural barriers to transformation. Productivity data can be sourced from national productivity reports, the World Bank Productivity Database and industrial sector studies.

Morocco case example: The green employment diagnostic deployed in Morocco used GDP contribution, employment share, and labour productivity trends as the primary screening criteria for sector selection. This allowed for the prioritizing of industries that were economically significant and that had either strong potential for green job expansion or faced urgent transition challenges due to productivity shifts and structural changes.

- **Exposure to climate risks and opportunities:** The green transition is shaped by the sector's exposure to physical climate risks, its role in emissions mitigation and its potential for climate adaptation. These considerations ensure that diagnostic focuses on sectors that either require urgent interventions due to climate vulnerabilities or hold opportunities for resilience-building.

Physical climate risks should be mapped for each sector to understand how climate change may affect productivity, employment stability and resource availability. To assess physical risks, practitioners should refer to climate risk assessments in national development plans, the World Bank's "Country Climate and Development Reports" (CCDRs), Intergovernmental Panel on Climate Change (IPCC) climate projections and United Nations Development Programme adaptation frameworks.

Sectors should also be evaluated for their **mitigation role**, specifically their contribution to national emissions and their potential for decarbonization. Industries with high emissions intensity – such as transport, manufacturing and energy – should be assessed for potential policy shifts, regulatory risks and the feasibility of transitioning to low-carbon alternatives. National GHG inventories, UNFCCC NDC submissions and sector-specific emissions reports provide critical data for this analysis.

In addition, **adaptation potential** should be examined to determine whether a sector plays a strategic role in enhancing national climate resilience. Sectors such as agriculture, water management and infrastructure development are particularly relevant in climate adaptation strategies, and prioritizing them in green employment diagnostics ensures that labour market assessments align with broader sustainability goals. National adaptation plans, Food and Agriculture Organization (FAO) reports on climate-smart agriculture and sectoral resilience studies are key sources of information.

Morocco case example: The Morocco green employment diagnostic assessed physical climate risks by integrating findings from the World Bank CCDR, stakeholder consultations and Morocco's national adaptation policies. The assessment allowed analysts to prioritize sectors that were vulnerable to climate impacts as well as sectors that held green transition potential.

- **Green economic transition potential:** In addition to economic and environmental factors, the ability of a sector to transition towards green growth and participate in global low-carbon value chains is a critical determinant in sector selection for the diagnostic.

A useful metric for evaluating transition readiness is the **Green Complexity Index (GCI)**, which assesses a country's capability to develop green industries based on its existing economic complexity and productive knowledge base. A high GCI score suggests that a sector has the necessary workforce, infrastructure and industrial base to transition towards green production, making it a strong candidate for green employment diagnostic analysis. Data for this can be sourced from Harvard's Economic Complexity Observatory, MIT's Green Complexity Index and national industrial development plans.

Sectors should also be assessed for **international green market opportunities**, such as carbon credit eligibility, demand for green exports and integration into global sustainability-driven trade mechanisms. Identifying such opportunities ensures that diagnostic prioritizes sectors where green job expansion is aligned with trade competitiveness and investment potential. International trade data, UN Conference on Trade and Development (UNCTAD) green economy reports and carbon pricing studies are useful references for this assessment. Furthermore, sectoral selection should align with existing green transition policies and road maps. Reviewing national green strategies, circular economy policies and sustainable industrial frameworks ensures that the diagnostic is aligned with broader policy efforts and leverages ongoing green sector development programmes.

Morocco case example: The green employment diagnostic in Morocco integrated green transition potential by evaluating sectoral opportunities under Morocco's industrial green strategy, Nationally Determined Contributions (NDCs) and trade competitiveness in sustainable industries.

- **Economic transition risks:** While some sectors may have strong green transition potential, it is also important to assess economic transition risks that could impact employment stability, competitiveness and trade relations. One major risk is **regulatory and trade exposure**, particularly for industries vulnerable to carbon pricing mechanisms, border adjustment tariffs and deforestation-related restrictions. Countries deploying a green employment diagnostic should analyse exposure to international carbon pricing regulations, trade policies and sustainability standards by using sources such as World Trade Organization

trade policy reports, documentation from the European Union (EU) Carbon Border Adjustment Mechanism (CBAM) and national industry impact studies.

Morocco case example: The green employment diagnostic in Morocco examined sectoral exposure to CBAMs¹⁵ and other trade regulations to assess risks associated with green transition policies in international markets. A key insight revealed from this examination was that the country's exports of carbon-intensive products such as steel and cement could face tariffs under the EU CBAM, affecting competitiveness and employment in these industries.

Sectors can then be categorized into four groups to guide the depth of analysis:

1. **High-importance sectors:** Selected for detailed deep dives based on their significance in the labour market, substantial exposure to climate risks and/or opportunities for resilience-building or green job creation.
2. **Green-linked sectors:** Important sectors that have green job potential but also significant non-green employment. These sectors can be included if scope permits, but focus remains on high-impact sectors first.
3. **Supporting sectors:** Sectors that facilitate green transitions (for example, financial services, IT, logistics), but are not the direct focus of green job creation efforts.
4. **Other sectors:** Sectors with limited relevance to green transitions, low exposure to climate risks or minimal importance in national employment. These are excluded from deeper analysis.

The sector selection process for a green employment diagnostic will differ based on the economic structure, climate vulnerabilities and green transition priorities of each country. The approach outlined above provides a framework for systematically identifying high-priority sectors, but it should be adapted to national contexts, available data and the specific scope of each diagnostic deployment. A more extensive table with key highlights for the Moroccan sectors' characteristics – which informed the country's sector selection exercise – has been provided in the Annex for reference.

Domestic implications by region or hotspot

Key considerations and related questions: Different regions or locations within a country may have varying levels of vulnerability, resources and potential for green employment opportunities. Differences in geographic characteristics and socio-economic composition across regions within a country can also lead to differentiated impacts of climate change, as varying landscapes, infrastructure and economic activities may result in disparities in vulnerability, adaptive capacity and resilience to the effects of climate change. By assessing these regional variations, policymakers can develop targeted strategies to address specific challenges and capitalize on regional strengths. For example, coastal regions may be more susceptible to the impacts of climate change, such as rising sea levels and increased frequency of extreme weather events. Therefore, green employment diagnostics can identify activities/sectors like coastal restoration and sustainable fisheries that can create jobs while enhancing climate resilience in those areas. Such an assessment considers the geographic locations within a country where these physical impacts and their associated sectoral economic impacts might be most pronounced.

Some of the key questions that may be posed here include, but are not limited to, the following:

- Are there climate hotspots where the physical impacts are expected to be most pronounced?

¹⁵ CBAMs are essentially tariffs levied on carbon-intensive products.

- In what regions of the country are the most climate-sensitive sectors and activities concentrated?
- What are the potential economic and social consequences of sectoral climate change impacts on regional development and livelihoods?
- Can new opportunities be generated by such regional differences? (For example, crops that may thrive in the changed climate in specific regions.)
- Are some economic activities more attractive in the new climate? (For example, outdoor activities at different times of the year.)

Data sources and methodology/assessment reference: The primary source of such information would be country reports and studies already developed. Alternatively, data may need to be generated through consultations. Some sources of information (among others) are the following:

- **Vulnerability and risk assessments:** Subnational-level vulnerability and risk assessments can help identify regions that are at higher risk of climate impacts. These assessments consider socio-economic factors, infrastructure resilience, ecological sensitivity and community vulnerability to determine the potential severity and likelihood of climate-related risks.¹⁶
- **Ecosystem mapping and analysis:** Mapping and analysis of ecosystems can provide insights into regions with high biodiversity, ecological significance and sensitivity to climate change. Based on such existing documentation, areas with unique and fragile ecosystems may be identified as climate hotspots, requiring special attention in regard to conservation and adaptation measures.¹⁷
- **Socio-economic and demographic analysis:** Understanding the socio-economic characteristics and demographic patterns of different regions within a country can help identify vulnerable populations and areas that are prone to climate-related challenges. Reports that include factors such as poverty rates, access to basic services, employment patterns and social vulnerability indices can inform the identification of climate hotspots.
- **Stakeholder consultations:** Engaging with local representatives of workers' and employers' organizations, communities, experts and stakeholders through consultations and participatory processes can provide valuable insights into region-specific climate challenges and priorities. Local knowledge and perspectives can complement scientific assessments and help identify climate hotspots based on lived experiences and on-the-ground observations.
- **Integrated assessment frameworks:** The IPCC Working Group II Assessment Reports¹⁸ provide information on regional impacts and vulnerabilities. These reports identify regions that are particularly vulnerable to climate change effects, based on their geographic characteristics, socio-economic conditions and exposure to climate hazards. These reports make use of integrated assessment models that combine multiple indicators and methodologies, and so can provide a holistic understanding of climate hotspots. These frameworks consider both biophysical and socio-economic aspects, allowing for a

¹⁶ For more information on undertaking climate risk and vulnerability assessments, see Climate ADAPT, "[2.4 Conducting Risk and Vulnerability Assessments](#)".

¹⁷ For reference on such assessments, see: Vihervaara, Petteri, Arto Viinikka, Luke Brander, Fernando Santos-Martín, Laura Poikolainen, Stoyan Nedkov. 2019. Methodological Interlinkages for Mapping Ecosystem Services – from Data to Analysis and Decision-support. One Ecosystem. <https://doi.org/10.3897/oneeco.4.e26368> and AI-powered modelling platform for mapping ecosystem services using AI and semantic modelling: <https://aries.integratedmodelling.org/>

¹⁸ IPCC, [Climate Change 2022](#).

comprehensive analysis of the interaction between climate change impacts, vulnerability and adaptive capacity.

4.1.2. Transition risks and their economic implications

This step looks at the economic implications of a national and global shift to a greater focus on GHG emissions reduction. A number of different studies have found that adopting low-emissions practices and promoting “green growth” can have positive economic outcomes on a global scale.¹⁹ However, it is important to acknowledge that certain sectors will inevitably be negatively impacted by these changes, and these sectors may be of significant economic importance in some countries. There is therefore a need for countries to plan for the impacts of this transition. The Green Employment Diagnostics Framework breaks this down into three components:

- ▶ risks arising from global commitments to reduce GHG emissions;
- ▶ risks arising from national commitments to reduce GHG emissions; and
- ▶ risks arising from national and international responses to physical climate risks and reliance on natural resources.

Given the global attention on climate change, we distinguish risks associated with GHG emission reductions from responses to other environmental pressures, while noting that many climate change mitigation measures also support other environmental goals (for example, protecting forests supports biodiversity). We also distinguish risks arising from global shifts from those arising from national commitments, as the former are out of the control of national policymakers.

Risks arising from global commitments to reduce GHG emissions

Key considerations and related questions: There are at least three channels which need to be considered.

- ▶ **Declines in domestic and export demand for fossil fuels:** The Green Employment Diagnostics Framework encourages obtaining an understanding of the current economic importance of fossil fuel exports (measured as a percentage of exports), as well as identifying any existing national plans to increase these exports in future. This should ideally be complemented by an understanding of the cost-competitiveness of these fossil fuel exports (as globally high-cost production is much more vulnerable than globally low-cost production) and the feasibility of redirecting this production for national use, taking into account each country’s climate commitments. It is important to recognize that most climate policy scenario analyses suggest the fall in global coal demand will be more rapid than the fall in oil or gas demand.
- ▶ **A decline in the demand for carbon-intensive exports:** Use relevant sectoral data to understand whether the exports of the diagnostic country are more or less carbon-intensive than those exported by other countries. One example is considering the country’s exposure to CBAMs. As of 2023, the EU’s CBAM is particularly significant, with plans to implement a carbon border adjustment on imports of cement, fertilizers, iron and steel, aluminium, electricity and hydrogen.
- ▶ **A decline in the demand for products associated with nature-based practices:** In the case of deforestation, this typically includes cattle (beef and leather), cocoa, coffee, maize, palm oil, rubber and soy. The diagnostic may also consider whether the country has taken any measures to reduce the risk of commodity production associated with deforestation.

¹⁹ The New Climate Economy, [Unlocking the Inclusive Growth Story of the 21st Century: Accelerating Climate Action in Urgent Times](#), 2018.

This consideration should be informed by the country context and may be applicable to a wider range of sectors that rely heavily on nature-based practices with implications for GHG emissions (such as agriculture).

Some of the key questions that may be posed here include, but are not limited to, the following:

Declines in domestic and export demand for fossil fuels:

- What is the current economic importance of fossil fuel exports as a percentage of total exports?
- Are there any national plans to increase fossil fuel exports in the future?
- How cost-competitive are fossil fuel exports, considering the vulnerability of high-cost production?
- What is the feasibility of redirecting fossil fuel production for national use, considering the country's climate commitments?
- What are the projected declines in global demand for coal, oil and gas, and how might these impact the country's fossil fuel exports?
- What is the overall intensity of GHG exports?

A decline in the demand for carbon-intensive exports:

- Which industries in the country are particularly carbon-intensive?
- Are the country's exports more or less carbon-intensive compared to other countries?
- What is the country's exposure to CBAMs, and particularly the EU's CBAM?

A decline in the demand for products associated with nature-based practices:

- What is the economic importance of exports traditionally associated with deforestation, such as cattle, cocoa, coffee, maize, palm oil, rubber and soy?
- Has the country implemented any measures to reduce the risk of commodity production being associated with deforestation?

Data sources and methodology/assessment references:

- Data on fossil fuel and other exports can be sourced from the [United Nations Comtrade Database](#).
- Interviews with key stakeholders (in ministries of energy/natural resources) will likely be needed to obtain much of the other information.
- The overall GHG intensity of exports can be obtained from the Organisation for Economic Co-operation and Development (OECD)²⁰ and other sources.
- National data can then be mapped back to understand what industries are particularly carbon-intensive within the country under consideration.
- Country-specific information on measures taken to mitigate deforestation risks in commodity production might need to be generated through rapid surveys or key informant interviews.

Risks associated with national commitments to reduce GHG emissions

Key considerations and related questions: This part of the step aims to identify how national commitments to reduce GHG emissions might influence different sectors.

Some of the key questions that may be posed here include, but are not limited to, the following:

- Which sectors are expected to drive emissions reductions?

²⁰ See: OECD, "[Greenhouse Gas Footprint Indicators](#)".

- ▶ How important are these sectors – as a percentage of GDP and as a percentage of the labour force, drawing on Step I?
- ▶ How are these sectors expected to deliver emissions reductions?

Data sources and methodology/assessment references: It can be beneficial to differentiate between two approaches to emissions reductions: “doing different things” and “doing things differently”:

- ▶ **“Doing different things”** involves changing activities, such as switching from coal to renewable energy sources, or protecting forests so that the land is not used for agricultural production or other purposes.
- ▶ **“Doing things differently”**, on the other hand, involves changing the processes used to perform activities, such as implementing energy efficiency measures in industries or adopting alternative agricultural production techniques.

Though these two categorizations may oversimplify the complexities involved, they provide a useful framework for understanding different avenues of achieving emissions reductions. Information on national commitments can be taken from the country’s NDC, potentially supplemented with information from national climate action plans and equivalent documents.

From an employment perspective (as highlighted later), sectors that are expected to deliver significant emissions reductions are usually labour-intensive, and where there is a need to do different things, these sectors are likely to require more attention.

Risks arising from national and international responses to physical climate risks and reliance on natural resources

Key considerations and related questions: The approach to this step will need to vary by country but some of the key questions that ought to be posed include, but are not limited to, the following:

- ▶ Are there any economically important sectors that are heavily reliant on inefficient water consumption, recognizing that a policy to encourage water efficiency will likely be an important driver of increasing climate resilience?²¹
- ▶ Are there any economically important sectors with current practices that rely on the unsustainable exploitation of natural resources (for example, fisheries)?

Data sources and methodology/assessment references: This information will mainly be found in national data and research, supplemented by interviews with relevant stakeholders.

4.1.3. Transition opportunities and their economic implications

This step considers how a country can harness the new economic opportunities arising from the transition to a greener economy. Regions with abundant renewable energy resources, such as solar or wind potential, can focus on developing renewable energy projects that not only reduce GHG emissions but also provide employment opportunities in the clean energy sector. By tailoring green employment initiatives to regional contexts and leveraging local resources and expertise, countries can maximize the positive impacts of their climate actions, promote equitable development across different regions and ensure that the transition to a green economy benefits all.

²¹ This issue may also be considered above when considering physical climate risks. Strictly speaking, the question here is focused on understanding sector exposure to policies that may be introduced to help manage physical climate risks (rather than exposure to physical climate risks themselves), but the user of the diagnostic tool should take a pragmatic approach that avoids repetition.

Unlocking gains, as per the transition (adaptation and/or mitigation) options

Key considerations and related questions: The potential opportunities will vary depending on the country; some key opportunity areas to be considered are the following:

- minerals for electrification and low-carbon growth;
- different types of renewable power (for both domestic use and export);
- green manufacturing (including green hydrogen);
- sustainable forest products;
- ecosystem protection/restoration (and associated activities, like ecotourism);
- employment opportunities in energy efficiency (such as retrofitting buildings).

Across each opportunity area, some of the key questions include, but are not limited to, the following:

- What is the potential scale of the opportunity in terms of market size, measured as potential output in a specific year multiplied by the price of the output?
- What are the key strengths of the country that can facilitate the exploitation of this opportunity, such as being a low-cost producer or having a strong skills base?
- What are the weaknesses or challenges that the country needs to address in order to fully capitalize on this opportunity, such as the presence and effectiveness of a policy framework, the existing investment environment, the political context and so on?

Data sources and methodology/assessment references: The above questions being exploratory and subjective in nature, evidence/insights in these areas will largely need to come from engagement with national stakeholders through interviews and stakeholder workshops. In some cases, international comparative assessments can help better understand the relative position of the country. Relevant sources of information for the identification and applicability of transition opportunities in any country include the following (among others), by select key opportunity areas:

- **Minerals for electrification and low-carbon transition:** The applicability of this – and the evidence on it – can be explored from the International Energy Agency's *The Role of Critical Minerals in Clean Energy Transitions* report²² and relevant mineral databases, and from estimates cited in the World Bank's *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition* report,²³ which shed light on how these minerals can fuel a just transition towards electrification and a low-carbon future, while also assessing the economic and labour market implications.
- **Renewable power:** Officials can check the potential of renewable power generation for the diagnostic country using insights from the *Assessing and Mapping Renewable Energy Resources* study²⁴ and data repositories from the renewable energy agencies cited in that study. This exploration will not only reveal the potential for a just transition towards renewable energy sources, but will also shed light on the economic implications of fostering a sustainable energy landscape.
- **Green manufacturing:** The potential for green manufacturing in the country can be explored by referring to Mealy and Teytelboym's 2022 journal article "Economic Complexity

²² IEA, *The Role of Critical Minerals in Clean Energy Transitions*, 2021.

²³ Kirsten Hun et al., *Minerals for Climate Action: The Mineral Intensity of the Clean Energy Transition* (World Bank, 2020).

²⁴ ESMAP, *Assessing and Mapping Renewable Energy Resources*, second edition (World Bank, 2021).

and the Green Economy”,²⁵ and by exploring data from green manufacturing indexes and economic development agencies. In their article, Mealy and Teytelboym construct a new dataset of traded products with environmental benefits, develop a novel measure of green production capabilities across countries, demonstrate a method for mapping out new green export opportunities, and provide evidence-backed predictions on future green export growth across countries to highlight key implications for green growth and green industrial policies. The article provides valuable insights into how green manufacturing can drive a just transition in the industrial sector, while considering its economic implications.

- ▶ **Sustainable forest products:** Opportunities in sustainable forestry may be investigated by referring to data from the United Nations Economic Commission for Europe’s “Forest Products Annual Market Review”,²⁶ including the respective statistical annexures, which provide more comprehensive data and trade flows, offering valuable market dynamics and insights into responsible forest management practices across geographies.
- ▶ **Ecosystem protection and restoration:** Valuable information can be obtained from the World Resources Institute’s [“Atlas of Forest and Landscape Restoration Opportunities”](#) and the International Union for Conservation of Nature’s [“Restoration Barometer”](#). These resources can not only guide efforts to preserve biodiversity and restore ecosystems, but also shed light on the economic implications of such actions, while promoting a just transition for both nature and society.

Summary of insights to be developed on economic implications

Officials deploying green employment diagnostics in any country should end this section with a clear understanding of the following (as relevant):

- ▶ The extent to which physical climate risks threaten future economic activity in the country, the sectors where these impacts are expected to be most pronounced (and most likely, in the short term), the geographic concentration of these risks, and the country’s capacity to manage these risks.
- ▶ The key sectors where international climate action and/or national climate action are likely to have implications, the importance of these sectors to economic activity and employment, and the nature of the change that is likely to be required within those sectors.
- ▶ The key economic opportunities that growing interest in climate change action – and action related to addressing other environmental pressures – offer in the country, the potential scale of that opportunity, and the strengths and constraints associated with realizing this potential.

²⁵ Penny Mealy and Alexander Teytelboym, “Economic Complexity and the Green Economy”, *Research Policy* 51, No. 8 (2022): 103948.

²⁶ See UNECE, [“Annual Market Reviews and Data Briefs”](#).

4.2. Labour market implications

The purpose of this section of the diagnostic is to explore how the above economic impacts are expected to affect labour markets and the country's ability to ensure inclusive, gender-responsive and job-rich growth (with decent employment). It follows the same structure as the economic implications section, assessing the impacts associated with physical risks first, then those associated with transition risks and finally those associated with transition opportunities.

4.2.1. Physical risks and their labour market implications

Key considerations and related questions: The physical risks from climate change can impact the labour market significantly. Events like floods, extreme temperatures, droughts, landslides, storms and wildfires can disrupt economic activities, leading to job losses, worker displacement and reduced productivity in vulnerable sectors. Damage to infrastructure, supply chain disruptions and output reductions are key transmission mechanisms. Understanding these implications, including how impacts can vary under different emissions scenarios, is essential for developing informed policy and adaptation strategies to build a resilient and sustainable workforce.

Based on the key impacted sectors identified in the previous step, some of the key questions here include, but are not limited to, the following:

- Are there any available estimates or projections for the number of individuals who may be affected by these climate risks in the sector?
- What are the specific transmission mechanisms through which these physical risks impact the labour market, such as disruptions to infrastructure, supply chains or agricultural productivity?
- Are the labour market impacts more likely to result from a decline in the number of jobs in the sector or a reduction in workers' productivity and earnings potential? Is the former more likely in the formal sector, and the latter more likely in the informal sector?
- Are there different impacts for formal and informal workers in the sectors under consideration?
- What are the characteristics of the affected workforce in terms of formal and informal employment, skills, occupational profile, gender, age and prevalence of disadvantaged groups?
- What potential spillover effects could arise from changes in employment, such as rural workers seeking alternative employment in urban areas or migrating to other areas?
- How might other sectors that rely on inputs or outputs from the sectors that are heavily affected by physical climate risks be impacted?
- Have adaptation policies and measures been identified to address the labour market impacts in these sectors, as outlined in relevant adaptation planning documents such as National Adaptation Plans?
- If adaptation measures have been identified, are they being effectively implemented to mitigate the expected labour market impacts in the select sectors?
- If adaptation measures have been identified but not implemented, what are the key barriers to implementation, including technical, financial and political economy constraints?

Data sources and methodology/assessment references:

- ▶ Countries' Labour Force Surveys provide a sound evidence base regarding some of the key questions highlighted above.
- ▶ Evidence on the impacts on worker productivity may be derived from existing studies/ reports at the national and sectoral levels: for example, the World Bank's report on *Global Productivity: Trends, Drivers, and Policies* and its related data.²⁷
- ▶ Existing reports/studies can be leveraged to derive results from assessments to understand the spillover effects of the changes, based on characterizing the change as a shock in demand for a product/service then using an input-output or other macro model to understand these effects. However, for productivity shocks, the assessments will likely require a more sophisticated model: for example, simulation models and those developed by the ILO.²⁸
- ▶ Sectoral stakeholder consultations and rapid surveys can provide additional information, as may be required.

4.2.2. Transition risks and their labour market implications

Implications by aggregate, microeconomic and diversity characteristics

Key considerations and related questions: The labour market implications of sectors exposed to changes in international demand and sectors affected by domestic GHG emissions reductions are significant considerations in understanding the impacts of climate change.

In sectors that are exposed to declines in international demand, the decline poses potential risks to employment. It is crucial to assess the number of people employed in these sectors and to estimate the potential job losses. Additionally, understanding the characteristics of the affected workforce in terms of public versus private sector, formal or informal employment, skills profiles, gender, age, and the prevalence of disadvantaged groups is important for identifying vulnerabilities and designing targeted interventions. Moreover, analysing the spillover effects of declining demand on other sectors provides insights into the broader economic repercussions.

Similarly, in sectors that are affected by domestic emissions reductions, there is a need to evaluate the labour market implications of the decarbonization agenda and to assess if policies recognize and address these implications effectively. This involves examining the alignment of key policies with labour market considerations, such as potential structural unemployment risks and the availability of alternative employment opportunities. Understanding these labour market dynamics is essential for developing inclusive and resilient strategies to navigate the transition to a low-carbon economy.

Based on the key impacted sectors identified in the previous step, some of the key questions that may be asked on the transition risks on the labour market include, but are not limited to, the following:

- ▶ How many people are currently employed in these sectors, and what is the estimated number of jobs that may be threatened?²⁹

²⁷ Alistair Dieppe, ed., *Global Productivity: Trends, Drivers, and Policies* (World Bank, 2021).

²⁸ See, for example: ILO, *Working on a Warmer Planet: The Impact of Heat Stress on Labour Productivity and Decent Work*, 2019.

²⁹ Assuming that a macroeconomic model is not available, this could be done, for instance, by downscaling expected global changes in demand for key different carbon-intensive commodities in different climate scenarios to country production levels and assuming a linear relationship between production and employment.

- What are the characteristics of the workforce that is exposed to these risks in terms of public versus private sector, employee versus self-employed, formal or informal employment, skills/occupational profile, gender, age and prevalence of disadvantaged groups?
- Is there any evidence to identify changes in worker productivity?
- What are the potential spillover effects of declining demand in these sectors on other sectors in the economy?
- How are domestic emissions reductions expected to impact these sectors, and what are the potential labour market implications?
- Have the potential labour market implications of the domestic decarbonization agenda been recognized in key policies?
- Are the necessary policies and institutional arrangements in place to address these labour market implications?
- Will the domestic transition risks lead to an increase or decrease in labour input, and what is the magnitude of these changes?
- What human capital and skills changes may be required to implement these emissions reduction opportunities?
- Have policies been formulated to ensure the availability of the required skills?

Data sources and methodology/assessment references:

- Countries' Labour Force Surveys provide a sound evidence base for some of the key questions highlighted above and, in particular, for understanding the potential impacts of changes in international demand for employment in key sectors of the economy and the characteristics of those who might be affected.
- The possible spillover effects of changes in international demand for carbon-intensive products relative to changes in demand from other sectors can be identified from studies that have modelled this using a basic input-output analysis, tracing how a decline in demand for the commodity/sector in question might affect output elsewhere in the economy. The outputs of input-output models should be used cautiously, considering variations in input data quality and availability, as these models provide insights and estimations rather than precise predictors of real-world outcomes. Further triangulation techniques are warranted, requiring comprehensive desk research, expert judgement and interviews.
- Using interviews and consultations, one should also consider the extent to which the government is proactively planning for potential decreases in the demand for key exports (that is, through reinvesting resource rents), and whether these plans are proceeding effectively.
- The analysis above can then be repeated for those sectors affected by domestic emissions reductions where the emissions reductions will be delivered through "doing different things" (and hence where there is the greatest risk for structural unemployment). The policy assessment should focus on whether the potential labour market implications of the domestic decarbonization agenda have been recognized in key policies, and if these policies are being implemented. This can be achieved through interviews and stakeholder engagement.

Understanding and addressing informality in labour market implications: Informality presents a significant dimension in understanding labour market implications during green transitions, particularly in sectors informal workforces often dominate, such as waste management, agriculture and construction. Incorporating informal workers into the

green transition requires targeted diagnostics to understand their roles, vulnerabilities and opportunities for inclusion.

Select methods for assessing informality in climate (physical and transition) risk contexts:

- ▶ **Sector-specific informality profiles:** Develop detailed profiles of sectors prone to high informality, identifying key informal occupations and their contributions to green transitions. For example, in Morocco, informal workers in waste management played pivotal roles in sorting and recycling materials, contributing directly to green outcomes but often lacked recognition, protections or access to formal employment benefits.
- ▶ **Spatial analysis of informality:** Use geospatial tools to map informal activities in urban and rural areas, identifying clusters of green opportunities. For example, this can reveal hubs of informal recycling or urban farming, enabling localized interventions to formalize and support these activities. By employing Geographic Information System (GIS) technologies and remote sensing, practitioners can derive insights for formulating targeted interventions aimed at formalizing these sectors, thereby enhancing their economic contributions and promoting sustainable development. To effectively map informal activities, a combination of high-resolution satellite imagery and GIS tools can be utilized. Satellite imagery from sources like Sentinel-2 or Landsat provides detailed visual data, enabling the detection of informal settlements, unauthorized waste disposal sites and unregistered agricultural plots. GIS platforms such as QGIS or ArcGIS facilitate the integration of this imagery with other datasets, including land use patterns, infrastructure networks and demographic information. Field data collection, through methods like mobile GPS surveys or participatory mapping with local communities, and working closely with national meteorological departments can supplement these datasets by providing ground-truthing and additional context. Data on informal economic activities can be sourced from national statistical agencies, local government records and non-governmental organizations (NGOs) engaged in community development.



Case study:

Spatial analysis of informal sector activities in Nigerian cities

A study titled “Spatial Ordering of Informal Sector Activities in African Cities: Perspectives and Lessons from the Development of Informal Sector in Nigeria” analysed the spatial distribution of informal sector activities in four Nigerian cities, selected for their diverse urban forms and social practices. The research employed geospatial techniques to map the locations and concentrations of various informal economic activities, such as street vending, informal manufacturing and unregistered services. Key indicators analysed included proximity to major transportation routes, density of informal enterprises and their spatial relationship to formal economic zones. The findings revealed distinct spatial patterns, with informal activities often clustered in areas with high pedestrian traffic and near transportation hubs. This spatial arrangement underscores the adaptability of informal enterprises to urban dynamics and highlights their integral role in the urban economy.

Source: Emmanuella C. Onyenechere et al., “Spatial Ordering of Informal Sector Activities in African Cities: Perspectives and Lessons from the Development of Informal Sector in Nigeria”, South African Geographical Journal 105, No. 3 (2023): 306–328.

4.2.3. Transition opportunities and their labour market implications

Implications based on scope and skills requirements

Key considerations and related questions: As the next step, there is a need to assess how transition pathways may lead to opportunities in sectors such as renewable energy, energy efficiency, circular economy and sustainable infrastructure, and how these may affect labour demand. There is also a need to identify which sectors are expected to experience job growth and the types of skills and qualifications that will be in demand.

This step also proceeds sector by sector. For each of the sectoral opportunities identified under the “transition opportunities and their economic implications” section above (section 4.1.3), the following key questions can be explored in further research:

- How many direct jobs may be expected to be in demand in terms of new sectoral opportunities?
- What is the possible or likely occupational and gender profile that can be expected if the transition opportunities are successfully realized?
- Where are the potential or likely geographic locations of these jobs? Are they concentrated in certain regions? If so, to what extent are these regions in proximity to existing areas of high unemployment and any potential job losses associated with transition or physical risks outlined in previous sections?
- What are the skills needs associated with realizing these transition opportunities? Do sufficient numbers of people possess these skills in the country?
- To what extent is policy currently in place to address any skills gaps?
- Based on international experience, what is the risk that the jobs created may not meet the criteria of being “decent” according to the ILO indicators?³⁰

Data sources and methodology/assessment references:

- The easiest way to assess the scale of the job opportunities that might be expected is likely to be through making use of existing sources regarding the labour intensity of these activities, including, for example, in relation to grid scale renewable energy,³¹ sub-utility scale renewable energy³² and ecosystem protection and restoration,³³ as well as previous jobs multipliers estimates by the ILO, country statistics on energy-efficient manufacturing, and renewable energy production data from country studies/reports.
- The ILO’s green job assessment reports³⁴ provide another sound evidence base, since these analyse the potential for job creation and transformation in the context of sustainable and environmentally friendly economic activities. These reports provide valuable insights into the productivity gains and skills requirements associated with green jobs, offering policymakers and stakeholders the necessary data to develop effective strategies for ensuring a more sustainable and skilled workforce. Using analysis of input–output tables, the possible spillover effects from these direct jobs (that is, indirect and induced jobs) can be derived. Where the jobs are associated with industries that are not yet reflected in national accounts data, various proxies or case studies based on composite activities may be possible. In 2013, the 19th International Conference of Labour Statisticians adopted the

³⁰ See <https://www.ilo.org/resource/decent-work-indicators>

³¹ Rockefeller Foundation, *Transforming a Billion Lives: The Job Creation Potential from a Green Power Transition in the Energy Poor World*, 2021.

³² Scotland, Glasgow City Council, *The Glasgow Green Deal: Towards Equitable, Net Zer Carbon, Climate Resilient Living by 2030 –Our Roadmap and Call for Ideas: Technical Version*, 2021.

³³ WWF International and ILO, *Nature Hires: How Nature-based Solutions Can Power a Green Jobs Recovery*, 2020.

³⁴ ILO, “*Green Jobs Assessment Reports*”.

first international statistical standards to support the measurement of green jobs in official statistics.³⁵ Country studies leveraging this framework provide another source of evidence on the demand for green jobs at the national level.

- Stakeholder consultations, particularly interviews with industry experts and government officials, are likely to be the most promising way of identifying the key (new/green) skills required and to understand the strength of existing policies to bridge the skills gap.

Leveraging a task-based approach (TBA) to identify green employment opportunities and assess green skills: As economies transition to greener pathways, accurately identifying green jobs and assessing the evolving demand for green skills becomes critical. A nuanced understanding of these shifts underpins policy measures that effectively address skills gaps, facilitate workforce transitions and enable the generation of inclusive green employment opportunities. A task-based approach (TBA) provides a robust and innovative methodology to achieve this by focusing on the granular level of tasks performed within occupations, offering insights into the greening of jobs that are otherwise overlooked in traditional sectoral or occupational analyses.

By linking green skills to the specific tasks required in emerging and transitioning roles, a TBA enables the identification of targeted skill needs and informs capacity-building efforts. This is particularly relevant for achieving just transitions in which workforce preparedness is pivotal to ensuring that the opportunities created by green economies are accessible and inclusive.

In Morocco, the entry point of the TBA application was to derive a quantitative measure of the greenness of jobs – that is, a scale of jobs qualified as “green” – in the current national jobs data. This was achieved using data from the country’s ENE (National Employment Survey).

Methodology overview

A TBA shifts the analytical focus from entire occupations to their constituent tasks, recognizing that the greening of work often occurs incrementally within roles rather than through entirely new professions. Using detailed task-level data, such as the US Occupational Information Network (O*NET), a TBA categorizes occupations into three classifications based on their relationship to the green economy:

1. **Increased green demand:** Jobs where the demand for existing tasks increases due to green transitions (for example, water pipe maintenance workers addressing water efficiency needs).
2. **Enhanced green skills:** Roles that require new or modified skills to support greener practices within existing occupations (for example, construction workers installing energy-efficient systems).
3. **New green and emerging occupations:** Entirely new professions created by the green economy, such as sustainability consultants or renewable energy specialists.

To operationalize this approach in national contexts, the methodology establishes concordance between international occupational classifications (such as O*NET) and local frameworks (such as, Morocco’s Nomenclature des Activités et Professions (NAP)). The key steps include:

- Mapping occupations using International Standard Classification of Occupations (ISCO) codes as intermediaries to align national and international data.
- Assigning green task weights to occupations, quantifying the share of green activities within each role.

³⁵ ILO, [Guidelines concerning a Statistical Definition of Employment in the Environmental Sector](#), 19th International Conference of Labour Statisticians, 2013.

- Aggregating employment data to derive green job estimates at the sectoral and national levels.

This method enables dynamic analysis of how green employment evolves over time and across economic sectors, offering a granular understanding of skills demands.

Application in Morocco

The application of a TBA in Morocco involved a multi-step process integrating international occupational frameworks with national labour market data.

- **Mapping tasks to green attributes:** The first step involved establishing a concordance between Morocco's National Analytical Professions (NAP) classification and the O*NET occupational framework, which provides detailed breakdowns of tasks and skills associated with each occupation. This mapping allowed researchers to determine the greenness of occupations by linking Moroccan labour classifications with international standards on task-based green intensity.
- **Assigning green weights to occupations:** Using the task-based framework, occupations were assigned a green proportion score based on the share of tasks classified as "green" within the total occupational task structure. The following equation was applied:

$$\text{Green Proportion}_i = (\text{Green Task Count}_i) / (\text{Total Task Count}_i)$$

where i represents the occupational category. This proportion quantifies the degree to which each occupation is contributing to the green transition, allowing policymakers to distinguish between fully green jobs, transitioning jobs and non-green jobs.

- **Validation and contextual refinement:** Given that task-based classification systems were derived from US labour market data, adjustments were made to reflect the Moroccan labour market context. This involved working closely with the High Commission of Planning to validate the green task mapping and ensure its relevance to Morocco's economic and labour market realities.

Key results and findings for Morocco

The TBA analysis in Morocco provided critical insights into sectoral green employment trends, workforce transition needs and skill gaps:

- **Identification of high-potential green growth sectors:** The analysis identified renewable energy, sustainable construction and waste management as key sectors where green jobs are growing. Specifically, the solar and wind energy sectors showed strong green employment potential, with a high concentration of occupations requiring enhanced green skills. The construction industry also exhibited a rising demand for sustainable building practices, particularly in energy-efficient retrofitting and eco-friendly materials.
- **Skill gaps in transitioning occupations:** The TBA approach revealed that several occupations traditionally not considered "green" are increasingly requiring green skills. For example:
 - Electricians and construction workers required additional training in energy efficiency and solar panel installation.
 - Agricultural workers needed upskilling in climate-smart irrigation and organic farming techniques.
 - Engineers and technicians in the manufacturing sector had a growing need for expertise in energy-efficient production and waste reduction technologies.

- ▶ **Variations in green employment across regions:** The analysis also highlighted geographical disparities in green employment potential.
 - Urban centres such as Casablanca and Rabat showed higher concentrations of renewable energy and energy-efficient construction jobs.
 - Rural regions had strong opportunities for green agricultural practices, but faced higher skills gaps and training needs.
- ▶ **Expansion of “greening” occupations:** Several traditionally non-green occupations were found to be undergoing a green transformation, requiring a partial redefinition of their job functions. For example, waste collection workers were increasingly involved in waste sorting and circular economy activities, necessitating formal recognition and inclusion in structured recycling systems.

Advantages of the task-based approach

- ▶ **Granularity:** The focus on tasks allows for a more precise measurement of green transitions within occupations.
- ▶ **Dynamic analysis:** The methodology facilitates longitudinal assessments, enabling the tracking of green job growth and the evolution of skill demands over time.
- ▶ **Comparability:** By leveraging international frameworks like O*NET, the TBA can support cross-country comparisons and benchmarking.
- ▶ **Integration with national surveys:** Embedding TBA metrics within national labour market surveys (for example, the ENE in Morocco) enhances the robustness of green employment diagnostics.

Summary of insights to be developed on labour market implications

Officials deploying green employment diagnostics in any country should end this section with a clear understanding of the following (as relevant):

- ▶ How vulnerability to physical climate risks in key sectors could affect employment and productivity in these sectors (and over what timescale); the way in which these impacts may be experienced by different parts of the labour force; and the extent to which government policy is able to manage these risks.
- ▶ The scale of the potential impact of transition risks on employment opportunities in the country (and over what timescale); the way in which these impacts may be experienced by different parts of the labour force; and the extent to which government policy is positioned to respond to these risks.
- ▶ The scale of the potential opportunity for new jobs to be created by transition opportunities; the likely profile of these jobs (including the risk of them not being decent jobs); the extent to which there is a match between the people and locations that may lose jobs because of transition and physical risks and where these new jobs may be established; and the extent to which government policy is helping to address any skills gaps associated with realizing these opportunities.

4.3. Poverty and inequality implications

This section explores the distributional implications of the (sectoral) economic and labour market impacts explored in the previous two pillars, with a particular focus on how the poorest and most vulnerable in society might be affected. It also explores the possibility that the impacts will aggravate or, by contrast, ameliorate existing inequalities.

4.3.1. Physical risks and their poverty and inequality implications

Physical risks – Distributional impact

Key considerations and related questions: The physical risks of climate change can exacerbate poverty and inequality by disproportionately impacting vulnerable populations who have limited resources to cope with and recover from these risks, further widening the socio-economic gap and hindering inclusive development efforts. In order to better understand these risks, the following key questions may be explored:

- To what extent are the reductions in nominal income and/or employment associated with the realization of physical climate risks disproportionately experienced by individuals at the lowest end of the income distribution?
- How might impacts on welfare that are not directly related to nominal income and employment be disproportionately affected by climate change? This might include potential increases in the prices of goods and services that are disproportionately consumed by the poorest and most vulnerable, or the reduced availability of critical goods and services provided by ecosystems.
- What are the potential distributional implications of climate change for assets, considering the damage to or destruction of the built environment and its impact on different socio-economic groups?
- How well-positioned are existing social protection systems to address the challenges posed by physical climate risks, both in terms of chronic stresses and their ability to respond effectively to acute events?

Data sources and methodology/assessment references:

- Consumption estimates to derive reductions in nominal income and/or employment associated with the realization of physical climate risks may need to be generated through primary surveys at the household level, using a statistically representative sampling technique, as appropriate. Alternatively, utilizing studies that look at how climate impacts might affect yields/agricultural productivity or labour productivity, and then inferring what this might mean for income levels (assuming income is linked to productivity) is another sound approach for generating evidence on reductions in nominal income.
- Additionally, country case studies that employ the World Bank's methodologies, including Poverty and Social Impact Analysis (PSIA)³⁶ and Social Resilience and Climate Change modules³⁷, may be leveraged to source evidence. These methodologies offer comprehensive frameworks for assessing the poverty and inequality implications of climate change. PSIA incorporates climate change scenarios into existing poverty assessments, allowing for the identification of vulnerable groups and potential impacts on their well-being, including changes in agricultural productivity, natural resource availability and access to services. The

³⁶ World Bank, [Poverty and Social Impact Analysis \(PSIA\): Reviewing the Link with In-Country Policy and Planning Processes – Synthesis Report](#), 2009.

³⁷ World Bank, [Social Resilience and Climate Change: Operational Toolkit](#), 2011.

Social Resilience and Climate Change modules focus on understanding the social dimensions of climate change and evaluating the effectiveness of adaptation and resilience-building measures. Through the examination of differential impacts on socio-economic factors, such as gender, age and geographic location, these studies provide valuable insights into poverty and inequality dynamics that are exacerbated by climate change.

4.3.2. Transition risks and their poverty and inequality implications

Transition risks – Distributional impact

Key considerations and related questions: Some of the key questions that may be posed here include, but are not limited to, the following:

- ▶ To what extent are the reductions in (nominal) income and/or employment resulting from transition risks disproportionately affecting individuals at the lower ends of the income distribution or those who are otherwise disadvantaged?
- ▶ How are policies supporting emissions reductions associated with changes in the prices of goods and services, and are these changes progressive or regressive? Additionally, to the extent that it is relevant, what is the impact of carbon pricing in different contexts, and does it contribute to progressive or regressive outcomes?
- ▶ Are social protection systems and other policy mechanisms adequately equipped to address the challenges posed by transitions? Can they effectively target individuals who are at risk of job losses due to transition risks? Furthermore, are there compensation mechanisms in place to mitigate possible regressive impacts of mitigation policies, and how well-targeted are these compensation measures?

Data sources and methodology/assessment references: Information will primarily come from Labour Force Surveys, Demographic and Health Surveys, stakeholder consultations and rapid surveys (at the household and institutional levels) tailored to generate insights in this area.

4.3.3. Transition opportunities and their poverty and inequality implications

Transition opportunities – Distributional impact

Key considerations and related questions: Some of the key questions that may be posed here include, but are not limited to, the following:

- ▶ How do the occupational and geographic profiles of the new jobs created by climate change mitigation-related opportunities provide employment opportunities for individuals at the lowest end of the income distribution?
- ▶ Do these opportunities lead to an increase in consumption patterns?
- ▶ Has the government identified the risks associated with the potential lack of decent jobs in the context of climate-related opportunities, and what steps are being taken to safeguard the poorest section of the society?

Data sources and methodology/assessment reference: Information will primarily come from stakeholder consultations and rapid surveys (at the institutional level) tailored to generate insights in this area, as well as from experiences/case studies from other countries.

 Summary of insights to be developed on poverty/inequality implications

Officials deploying green employment diagnostics in any country should end this section with a clear understanding of the following (as relevant):

- The potentially disproportionate impact of climate change impacts, transition risks and opportunities on the income and employment of those who are at the lowest ends of the income distribution or who are otherwise disadvantaged.
- Potential changes in the prices of goods and services resulting from policies supporting emissions reductions, and whether these changes are progressive or regressive in nature, particularly in relation to their impact on the poorest and most vulnerable populations.
- The effectiveness of social protection systems and other policy mechanisms in addressing the challenges associated with climate change-related transitions, such as targeted support for individuals who are at risk of job loss and compensation measures to mitigate the regressive impacts of mitigation policies.
- The relationship between the occupational and geographic profiles of new jobs created by climate-related opportunities and their potential to provide employment opportunities for individuals at the lowest end of the income distribution.
- The risk that new jobs associated with climate-related opportunities may not meet decent work standards, and the extent to which this risk disproportionately affects the poorest and most vulnerable populations.
- The government's awareness of the risks associated with the lack of decent jobs in the context of climate-related opportunities, as well as understanding of the adequacy of and access to social protection and the measures being taken to address such risks and to ensure equitable outcomes.



5

Step III: Developing policy recommendations

Policy options that take account of the challenges of climate change and the impacts of transition processes can address vulnerabilities, promote decent employment and sustainable development, foster social equity, enhance technology transfer and capacity-building, attract international support, and provide access to clean energy. Implementing such policies enables countries to effectively respond to climate challenges while achieving their development objectives in a fair and inclusive manner.

The overarching goal for Step III is to guide users towards policy options and implementation guidelines that ensure a just and resilient climate transition in the context of jobs and labour markets. The key entry points for effective policy-level interventions will be based on the in-depth investigations and findings from Step II. Economically rational choices to address specific challenges and opportunities through effective policy design and implementation do exist, but it is imperative not to be overly prescriptive. Numerous other constraints in local policymaking remain unknown, such as political feasibility, implementation capacity and political preferences. Moreover, how policies are derived and implemented is just as important as the policies themselves, since the “justice” aspect of the low-carbon transition is not automatic and necessitates the intentional inclusion of different voices throughout the process to achieve the intended outcome.

Step III of the green employment diagnostic highlights a three-pronged approach to building on existing policies and filling in gaps where they exist. The overall approach aims to be consistent with the nine key principles of the ILO’s *Guidelines for a Just Transition*.³⁸ The modules included in Step III are as follows:

- **Identification of policy-level intervention needs** based on the findings from Step II, and mapping these needs against developed policy categories, as well as the existing policies identified in Step I.
- **Developing the time frame for policy interventions** to address the gaps in existing policies and to cater to the challenges synthesized in the previous step, and to prioritize the most relevant policy interventions based on financial feasibility and institutional delivery capacity.
- **Further prioritizing key policy interventions**, based on addressing reflective questions, to inform the final selection.

Underpinning these three modules, there is a need for countries to continue to establish the fundamentals for low-carbon, climate-resilient development in a way that explicitly embeds an employment and labour market perspective into their climate strategy and policy. This approach recognizes that countries should pursue development pathways that take account of the importance of climate change – and the global policy response to it – as a critical factor shaping country opportunities and threats. This is most obvious in relation to physical climate risks: countries should embed an understanding of these risks into all elements of development planning and policy. Doing so will help to significantly reduce the threat that climate change poses, including to those who are currently part of the labour force and those who will enter the labour force in future years. It also means that countries should advance commitments in their existing NDC and uphold the principle that efforts should ratchet up over time, while harnessing the international support available to support these goals. Countries should also make sure that the economic and fiscal consequences of these changes are well understood and planned for.

However, it is important that within the context of their (scaled-up) climate policy and strategy, countries consciously factor in the interactions between climate change and the labour force. This might be achieved, for example, by embedding the principles of a just transition into key

³⁸ ILO, [Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All](#), 2015.

climate strategy documents, such as NDCs and climate action plans, and/or by mandating that climate policy impact assessments take into account the impacts on workers and the poor and vulnerable. The rest of this section focuses on specific policy actions that can be considered in this context of climate strategy and action that explicitly embeds a labour and labour market perspective.

5.1. Module 1. Identification and mapping of policy-gaps

As a starting point for Step III, it is critical to take stock of:

- ▶ which policies are already in place/being planned;
- ▶ the extent to which they address the issues identified by the diagnosis (in Step II); and
- ▶ their expected impact.

This can be achieved through the following:

- ▶ **Identifying policy-level intervention needs** based on the insights derived from the in-depth analysis in Step II. These needs may be grouped into **key policy categories** – for example, enhancing social protection, labour market integration, labour-oriented adaptation, reskilling and training, job creation, and economic diversification and strengthening, among others. These key policy categories should be based on the context and the nature of the identified needs, which will differ for each country.
- ▶ **Identifying existing national policies which support these needs**, based on the baseline insights derived from Step I (the policy landscape assessment).
- ▶ **Assessing the gaps in these policies**, which are to be filled in or built upon, for the formulation of relevant policies.

An effective way to identify gaps in existing policies aiming to address the categorized challenges is to conduct a workshop with relevant stakeholders from the government, workers' organizations and employers' organizations. The workshop would assess the developed policy categories based on two key criteria:

1. **The importance of policy to future development:** During the workshop, participants – including policymakers, social partners and ILO officials – would collectively score each category based on its importance to the country's future development. This scoring can be done using a 1–n ranking system, where a score of 1 indicates that a category is of the lowest importance and a score of “n” signifies that it is of the highest importance – where “n” represents the total number of policy categories to be developed. The workshop would also provide the scope to iterate, validate and refine these scores, incorporating stakeholder perspectives and insights as required.
2. **Strength of existing policies:** Evaluating the strength of existing policies is a more challenging task. However, the workshop can still utilize a similar ranking system to score each policy. The scoring can be categorized as follows:
 - **low scores** – for policies where there is no significant policy ambition in place;
 - **mid scores** – where policies exist but face implementation challenges due to technical or financing constraints; and
 - **high scores** – where policies are in place and are effectively functioning as intended.

After the scoring process, the focus would be on the categories where policy importance receives high scores but the current policy strength is weak (that is, low or mid scores). These

identified categories would become the focus areas for policy development and improvement, enabling stakeholders to concentrate efforts on enhancing policies in critical sectors.

By involving various stakeholders in the workshop and combining international expertise with national perspectives, this approach ensures that the identification of policy gaps is inclusive, transparent and tailored to the country's unique context. This collaborative effort will foster the alignment of policy priorities with future development objectives, facilitating a targeted and impactful approach to addressing challenges in social protection and structural unemployment.

Officials deploying green employment diagnostics should refer to the reporting template provided in the Excel toolkit, which enables:

- mapping of the identified intervention needs based on the insights derived from Step II;
- mapping of the corresponding policies that exist to support these needs; and
- recording the scores generated through stakeholder engagement to identify focus areas for developing policy recommendations.

 **Table 4. Illustrative example of a reporting template for identification of policy-level intervention needs**

Policy categories ¹	Key findings and intervention needs	What are the existing policies to support these?	Identifying focus areas for policy recommendations		Specific gaps/ shortcomings in existing policies
			Ranking of policy's importance to future development	Score for strength of existing policies	
1. Social protection	Map insights derived from Step II by each policy category	Map identified policies from Step I for each intervention need	Rank each policy category from 1 to n	Score each policy as low, mid or high	Document key shortcomings in selected policy focus areas
2. Labour market integration					
3. Labour-oriented adaptation					
4. Reskilling and training					
5. Job creation					
6. Economic diversification and strengthening					

¹ To be developed as per country's context and insights derived from Step II of the diagnostics. While it is not possible to suggest a standardized set of policy categories applicable to all countries, reviewing existing literature and engaging in stakeholder consultations can help inform these categories for a country's unique context. The ILO's [Guidelines for Shaping Employment Policies That Support a Green Recovery and a Just Transition](#) offer a comprehensive list of relevant policy areas that can serve as a valuable resource.

5.2. Module 2. Developing options to fill policy gaps

The key policy categories capture the critical areas that would need attention in the context of climate change impacts on – and the transition of – country economies. Given the complexity and differences across countries, the relative importance of each policy category will differ across countries. **After the identification of the policy intervention needs within the key categories, Module 2 focuses on developing the options to fill the gaps.** These policy options need to be carefully crafted, drawing from a wealth of case studies and extensive consultations with policymakers and various government stakeholders. This comprehensive

approach ensures that the resulting policies are well-informed, practical and responsive to the unique needs of the context. To ensure structured and continuous progress of implementation, it is also essential to include time frames of the implementation of the policy options. Below are some suggested policy options. These are not exhaustive, and the final set of policy options should align with the specific contextual needs of the country.

1. **Social protection:** Climate change impacts, coupled with the impacts of transitioning to a low-carbon economy, will have direct and indirect impacts on the labour market. Many workers will find themselves in jobs that may be threatened by the low-carbon transition, and some may be too old to transition to new labour opportunities or undertake upskilling and training. In other cases, climate-related shocks may leave people out of work for either short or long periods of time. In both cases, providing protection for these workers will be critical. Some potential options for policy recommendations in this category include the following:
 - **Social protection for structural unemployment:** This refers to measures and programmes that provide financial and non-financial support to individuals who are facing long-term unemployment due to fundamental shifts in the economy or other structural changes. For countries where a large percentage of jobs will be at risk, strengthening social protection policies and programmes will be of critical importance. ILO recommends tools to help countries assess the adequacy and effectiveness of their social protection systems in regard to providing income security, access to essential services and access to social support to vulnerable populations.³⁹ The ILO Just Transition Policy Brief on Social Protection for a just transition assists in identifying opportunities for strengthening social protection coverage and expanding social security programmes.⁴⁰
 - **Shock-responsive social protection:** This is another important policy option, which offers immediate support and assistance to vulnerable populations who are the most affected by shocks, helping them to cope with the consequences and to recover more rapidly. For example, the shock-responsive social protection measures in Mozambique after Cyclone Idai were crucial in providing immediate relief and support to vulnerable communities affected by the climate change-induced disaster.⁴¹ Similarly, conditional cash transfers, combined with vocational training or productive investment grants, have helped Nicaraguan households exposed to weather variability smooth their consumption and diversify their economic activities.⁴² By analysing successful case studies like these and leveraging standard frameworks, guidelines and available country reports, including Post Disaster Needs Assessments (PDNAs)⁴³ for countries, it is possible to design effective and context-specific policy options that address the unique challenges of responding to shocks and crises while safeguarding vulnerable populations.⁴⁴

³⁹ See <https://www.social-protection.org>

⁴⁰ ILO. Just Transition Policy Brief: Social Protection for a just transition. January 2023.

⁴¹ IPC-IG and WFP Mozambique, "[Adaptive Social Protection in Mozambique: Improvements in Emergency Response](#)", IPC-IG One Paper No. 512, 2022.

⁴² Karen, Macours, Patrick Premand and Renos Vakis, "Transfers, Diversification and Household Risk Strategies: Can Productive Safety Nets Help Households Manage Climatic Variability?", *The Economic Journal* 132, No. 647 (2022): 2438–2470.

⁴³ UNDP, [Post Disaster Needs Assessment: Volume A – Guidelines](#), 2013.

⁴⁴ In addition to ILO resources, the [Shock-Responsive Social Protection Systems](#) study led by Oxford Policy Management offer valuable resources such as case studies and toolkits on shock-responsive social protection. These provide country-specific insights and policy recommendations to help identify relevant policy options tailored to each country's needs.

- **Anticipatory climate financing:** In this approach, social protection is put in place in anticipation of climate change impact, so it can respond swiftly. Such policy options may be developed based on stakeholder consultations and reviews of the existing climate finance landscape in countries. This category of policy response is likely to be particularly relevant if:
 - Climate impacts are expected to lead to large numbers of people finding themselves extremely vulnerable – as identified through the “physical risks” section of the labour market implications pillar in Step II of the diagnostic framework (section 4.2.1 above).
 - There are risks of large-scale structural employment shocks from national or global mitigation policy efforts – as identified through the “transition risks” section of the labour market implications pillar in Step II of the diagnostic framework (section 4.2.2 above).

2. Labour-oriented adaptation: A labour-oriented approach to adaptation can improve worker productivity and labour supply, as well as worker well-being. This directly relates to the ILO’s work on Employment Intensive and Public Works Programmes, which aims to further enhance the employment outcomes of public investments in infrastructure and environmental works (including nature-based solutions), and thereby support groups of society in vulnerable situations.⁴⁵ Adopting cooling technology is a good example. The adoption, primarily by firms/organizations, depends on the costs and benefits, comparing the gains in output and productivity with the cost of investment (though the firm’s social responsibility and concerns about its reputation may also play a role). Government subsidies can help where a shift in behaviour is desirable but held back, for instance, by the high initial cost of early adoption; while cost is expected to fall substantially over time, possibly helped by large demand. The scarce evidence suggests that adaptation is less likely for low-skilled labour, which is where subsidies may be most beneficial.

Policy options may vary by the nature of climate change impacts – specifically, the physical risks induced by climate change. For example, to ensure adaptation policies can be optimized to the extent needed to mitigate the impacts of heat stress on labour productivity, ILO’s heat stress report⁴⁶ and existing studies like one conducted by Vivid Economics for the UK Department for International Development⁴⁷ provide a useful reference to consider when selecting policy options. To ensure countries pursue development pathways that acknowledge the importance of climate change – and the global policy response to it – as critical factors shaping country opportunities and threats, international taxonomies and key principles (for example, the World Bank’s Adaptation Principles⁴⁸) can provide a sound basis for consideration and deployment.

This category of policy response is likely to be particularly relevant if:

- The physical impacts of climate change are expected to lead to large numbers of people finding themselves extremely vulnerable – as identified through the “physical risks” section of the labour market implications pillar in Step II of the diagnostic framework (section 4.2.1 above).

⁴⁵ ILO, “[COVID-19: Job Creation through Employment Intensive Public Workers Programmes](#)”, Employment-Intensive Investment Programme Guidance Brief, 5 May 2020.

⁴⁶ ILO, [Working on a Warmer Planet](#).

⁴⁷ Vivid Economics, [Impacts of Higher Temperatures on Labour Productivity and Value for Money](#) (United Kingdom, Department for International Development, 2017).

⁴⁸ World Bank, “[The Adaptation Principles: 6 Ways to Build Resilience to Climate Change](#)”, 17 November 2020.

3. Labour market integration: This involves creating opportunities for and removing barriers to individuals finding suitable and productive employment in light of sectoral shifts in employment (displacement), job quality/working conditions and productivity, or possible labour market inclusion (disadvantaged groups). For example, increasing labour mobility across the economy will facilitate the reallocation of labour across sectors and places. Integration with wider labour markets can facilitate climate-induced migration within a country, regionally and internationally. There is no specific universal source that provides case studies and guidelines on developing labour market integration policies. However, the ILO offers a range of publications and reports related to the role of employment services⁴⁹ and active labour market programmes⁵⁰, including labour market integration. These can be leveraged, along with adequate stakeholder consultations, to develop relevant policy options applicable to a country's context. Active labour market policies (ALMPs) and employment services play an important role in cushioning income losses, protecting existing jobs, facilitating employment and promoting labour market attachment.

This category of policy response is likely to be particularly relevant if:

- A country experiences significant structural unemployment, either because of the low-carbon transition or because climate impacts render some jobs so unproductive that people seek alternative employment (for instance, rural-urban migration due to agriculture productivity falling) – as identified through the “transition risks” section of the labour market implications pillar in Step II of the diagnostic framework (section 4.2.2 above).

4. Reskilling and training: New market opportunities will arise in the transition towards a low-carbon economy. Furthermore, existing markets may need to introduce new technologies. Thus, reskilling and training will be critical for existing workers who are affected, as well as for entrants into the labour market. The ILO's *Skills for Green Jobs: A Global View*⁵¹ is a report that focuses on the importance of skills development in promoting green jobs and supporting the transition to a greener and more sustainable economy. The report provides policy recommendations and strategies for policymakers and stakeholders to enhance skills development for green jobs and to promote a just transition to a sustainable economy. It also includes case studies from different countries that showcase successful initiatives and best practices in promoting green skills development and green job creation.

This will be relevant for:

- Benefitting from the economic opportunities that might arise from the global low-carbon transition – as identified through the “transition opportunities” section of the labour market implications pillar in Step II of the diagnostic framework (section 4.2.3 above) – or where domestic mitigation efforts require doing different things (or doing things differently, but where people do not yet have the skills to do them differently).

5. Job creation: Policy options that aim to foster the creation of green jobs while ensuring a just and inclusive transition to a low-carbon and environmentally sustainable economy should be prioritized, thereby promoting both economic growth and social equity. The ILO report *Skills for Green Jobs: A Global View* provides insights into the demand for green skills and the role of skills development in promoting green jobs.⁵² A United Nations Environment Programme

⁴⁹ ILO, *Public Employment Services and Active Labour Market Policies for Transitions: Global Report Part I – Responses to Mega Trends and Crises*, 2023.

⁵⁰ ILO, “*The Role of Active Labour Market Policies for a Just Transition*”, ILO Just Transition Policy Brief, 2023.

⁵¹ Olga Strietska-Ilina et al., *Skills for Green Jobs: A Global View* (ILO, 2011).

⁵² Olga Strietska-Ilina et al., *Skills for Green Jobs: A Global View*.

report, *Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World*, explores the concept of green jobs and provides policy recommendations for their creation.⁵³ Similarly, the ILO's *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All*⁵⁴ and *Guidelines for Shaping Employment Policies that Support a Green Recovery and a Just Transition*⁵⁵ offer a references for policymakers to develop just transition policies that promote green job creation. Many countries have their own guidelines and case studies on policies for creating green jobs. Officials deploying green employment diagnostics must also coordinate with government ministries responsible for environment, labour and economic development to identify relevant publications.

This will be relevant for:

- Benefitting from the new market opportunities that will arise from the transition towards a low-carbon economy and, with this, the new jobs which will be created – as identified through the “transition opportunities” section of the labour market implications pillar in Step II of the diagnostic framework (section 4.2.3 above).

6. Economic diversification and strengthening: The impacts of climate change and a just transition will require certain industries to pivot towards low-carbon growth avenues. Furthermore, new market opportunities will arise that need to be capitalized on for growth. For countries to emphasize economic diversification, particularly based on selecting new products, perhaps closely related to existing industries (especially given the broad-based structural changes that (some) countries are likely to require), the World Bank's discussion on “Diversification and Cooperation in a Decarbonizing World”⁵⁶ provides a sound basis for the exploration and creation of relevant policy options.

This will be relevant for:

- Specific economic activities that are identified as being at high risk from physical climate risks; for example, countries that are heavily dependent on beach tourism are likely also subject to significant sea level rise – as identified through the “physical impacts” section of the economic implications pillar in Step II of the diagnostic framework (section 4.1.1 above).
- Managing the transition risks identified, especially those arising from international action – as identified through the “transition risks” section of the economic implications pillar in Step II of the diagnostic framework (section 4.1.2 above).

⁵³ UNEP, [Green Jobs: Towards Decent Work in a Sustainable, Low-Carbon World](#), 2008.

⁵⁴ ILO, [Guidelines for a Just Transition](#).

⁵⁵ Kees van der Ree, [Green Recovery with Jobs through Employment Policies: Guidelines for Shaping Employment Policies that Support a Green Recovery and a Just Transition](#) (ILO, 2022).

⁵⁶ Grzegorz Peszko et al., [“Diversification and Cooperation in a Decarbonizing World: Climate Strategies for Fossil-fuel Dependent Countries”](#), World Bank Development and a Changing Climate (blog), 2 July 2020.

The developed policy options, along with the time frames for implementation, can be reported as per the template provided in the Excel toolkit. An indicative list of potential policy options is provided in the Annex.

 **Table 5. Illustrative example of a reporting template for developing policy options/interventions**

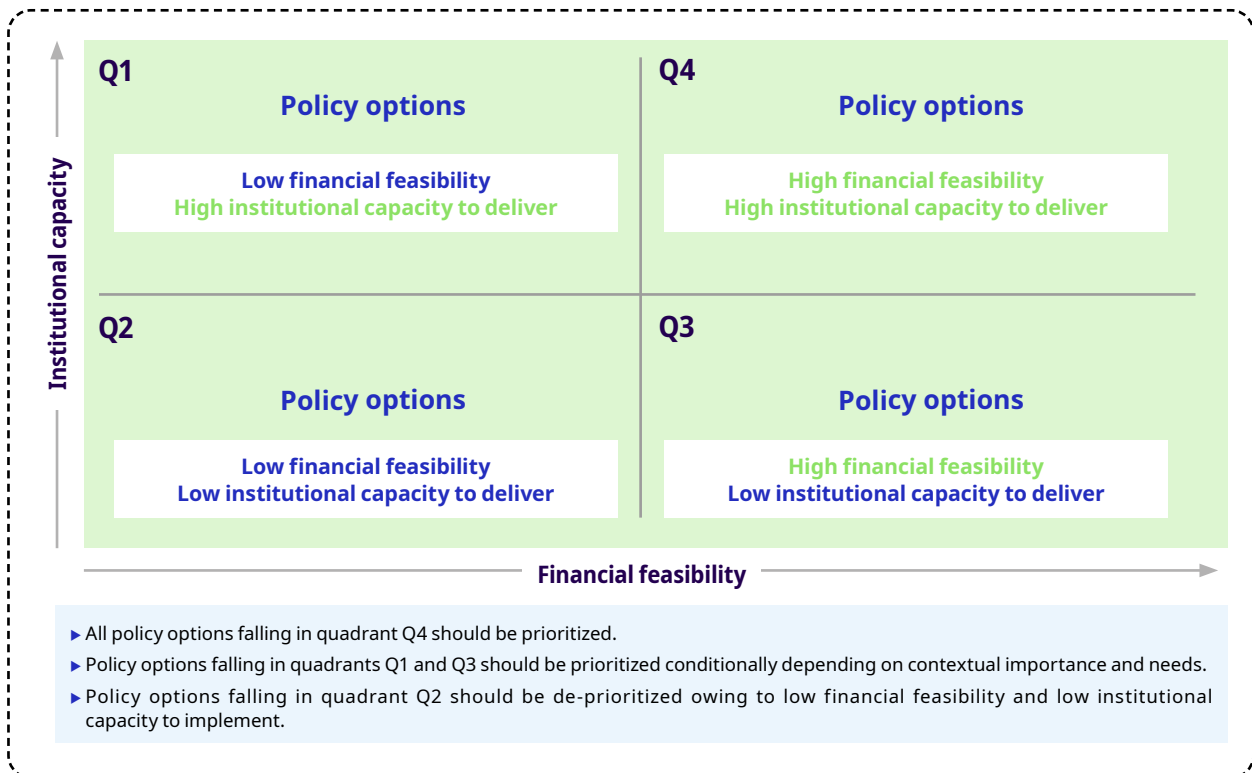
Policy category	Identified needs	Proposed policy option	Timeframe for implementation and key targets
Category #1	Listed needs against each category, as identified in the previous module	Listed policy options developed for each need against each category	Target years for implementation of the policy options
Category #2			
...			
Category #n			

The policy categories, and the interventions under them, will require financing, coordination support and buy-in from key institutions that have functional responsibility for their implementation. Government budgets alone will be insufficient to finance the creation of new industries to scale, which will require research and development, technological innovation, reskilling and training of workers and so on, nor will it be adequate to provide the capital needed to upgrade other extant industries. Consequently, the transition towards a low-carbon economy, coupled with adapting to the impacts of climate change, requires an integrated approach with support from a variety of actors – private and public, national and international – to enable a just transition that is inclusive and provides decent jobs for all. This should be reflected in financial/investment strategies and associated enabling policies.

In order to prioritize which policy interventions need to be considered for implementation, it is recommended that insights be gained from desk-based research, stakeholder consultations and social dialogue to **develop a four-quadrant matrix to assess both the financial feasibility and institutional capacity to implement the proposed policy interventions.** This can be accomplished by drawing on valuable insights and cost-effectiveness lessons from the successful implementation of similar efforts in other countries. Additionally, officials can consider employing a Delphi survey method or conducting stakeholder workshops to gather scores and feedback on various options from key stakeholders.

After analysing the information gathered, each policy intervention can be strategically positioned within the matrix, based on its potential viability, as illustrated in figure 3 below. The matrix offers a clear visual representation, enabling policymakers to identify and prioritize financially feasible policy interventions that align with the country's institutional capabilities.

Figure 3. Illustrative example of a four-quadrant matrix to assess the financial feasibility and institutional capacity to implement the proposed policy interventions



5.3. Module 3. Further prioritizing key policy interventions

Module 3 is an optional module towards the selection of policy recommendations, adding an additional layer of prioritization involving reflective questions. These questions are posed to inform the prioritized selection of policy options and to validate the feasibility of each option across governance, operational capacity and expected outcomes. These reflective questions should be tailored according to the country's context and applicable policy options thereof. These questions include, among others, the following:

Governance:

- What specific entry points are there within existing policy frameworks to integrate and implement the prioritized policy options effectively? Examples of policies to consider include (among others) the national employment policy, the National Determined Contribution (NDC), any medium-term development strategy, any economic recovery and growth plan, and the Sustainable Development Goals (SDGs).
- Is there a mechanism to coordinate across policy areas?
- What are the policy levers that would be used for the prioritized options – legislative, administrative, regulatory or other?
- Are there any governance-related support gaps that may need to be addressed to ensure more effective implementation of the prioritized policy options?
- What are the monitoring and evaluation mechanisms that need to be in place for effective implementation of the prioritized policy options?

Operational:

- ▶ Is there sufficient operational capacity to implement the policy options? This should be considered in terms of financial, human and technical resources, as well as in light of existing mechanisms, for example, action plans, dedicated functional agencies, leadership capabilities and so on.
- ▶ Will incentives, lobbying or increased political will be needed to make this policy more palatable and implementable?

Outcomes:

- ▶ Who will the policy options target as beneficiaries?
- ▶ What are the expected outcomes and impacts? What might be the unintended positive and negative impacts of the policy?
- ▶ What are the possible trade-offs for adopting/implementing this policy?

The questions at this stage can be tailored as per the requirements of the diagnostic country and should be based on the contextual nuances of the policy options selected and strengths and/or weaknesses across the same. Once the above modules are completed, the policy interventions can be prioritized, and a finalized set of recommendations can be provided, in accordance with the reporting framework provided in the Excel toolkit.

Effective policymaking involves navigating complex decisions and trade-offs and considering multiple objectives, stakeholders and constraints. For instance, implementing stricter environmental regulations to combat pollution may lead to increased costs for businesses or potential job losses, illustrating the trade-offs involved in pursuing environmental sustainability while considering economic impacts. Similarly, a country facing high levels of debt may find it challenging to implement large-scale climate or employment-related programmes financed by government borrowing, demonstrating the need to balance fiscal stability with the pursuit of climate and employment goals. Officials deploying green employment diagnostics need to carefully analyse economic, social and environmental factors, along with long-term goals, considering various factors such as economic impacts, social consequences, environmental sustainability and macro-fiscal stability, to strike a balance between competing interests and to optimize outcomes for the greater good of society.

Using task-based approach (TBA) findings to inform policy recommendations: The TBA provides a quantitative, evidence-based framework for understanding the extent of green employment, skill demands and workforce transition needs. By leveraging the insights derived from a TBA analysis, policymakers can develop targeted interventions that align with labour market realities, sectoral priorities and national green transition goals. The following outlines how quantitative findings from a TBA can be used to shape effective policy recommendations.

1. Identifying high-potential green sectors and prioritizing investment

TBA results highlight which sectors are undergoing the most significant green transformations and where green employment opportunities are concentrated. This enables policymakers to prioritize investment in sectors with the highest potential for job creation, economic growth and climate resilience. To ensure resources are allocated effectively, policymakers can:

- ▶ **Conduct sectoral prioritization exercises** by ranking industries based on green employment potential, labour demand and skill requirements. This can be done using weighted scoring frameworks that assess factors such as job creation potential, transition feasibility and alignment with industrial policy objectives. For example, if the TBA analysis identifies a high concentration of green jobs in the solar energy sector, the government

can establish a sector-specific fund to expand solar panel manufacturing and installation services, ensuring sustained job growth in this area.

- **Develop tailored incentive mechanisms** that support high-potential green industries through subsidies, tax breaks, concessional financing and market-based instruments. For instance, if the TBA analysis indicates a growing demand for energy-efficient construction, governments can provide tax credits for developers using green materials and incentivize large-scale retrofitting projects that create employment for certified green construction workers.
- **Align public and private sector investment strategies** by creating green industrial policy road maps to ensure that financial flows are directed towards sectors demonstrating both strong employment potential and environmental benefits. For example, if the TBA analysis finds that climate-smart agriculture has significant green labour potential, policymakers can facilitate blended financing models to scale up sustainable farming initiatives.

2. Designing targeted green skills training programmes

A key insight from a TBA is the identification of skill gaps in occupations transitioning towards greener production processes, services and technologies. To bridge these gaps and to enhance workforce adaptability, policymakers can:

- **Assess workforce readiness and skills mismatches** by analysing task-level requirements in occupations with a high green proportion score. This involves mapping training supply against projected labour demand to ensure education and vocational training programmes are aligned with market needs. For example, if the TBA analysis reveals a shortage of trained wind turbine technicians, policymakers can collaborate with private energy firms and vocational training institutions to establish dedicated training centres for wind energy maintenance.
- **Modernize technical and vocational education and training (TVET) systems** by integrating green skills into existing curricula, developing new occupational standards and establishing certification frameworks for emerging green professions. For example, if electricians increasingly require competencies in energy storage and smart grid technologies, governments can introduce modular training programmes that allow mid-career professionals to upskill without disrupting employment.
- **Create incentives for enterprises to invest in workforce training**, such as tax deductions for in-house green skills development, public-private training partnerships and employer-led apprenticeship schemes. For instance, if the construction industry is transitioning to energy-efficient building designs, policymakers can subsidize on-the-job training programmes for workers in sustainable architecture and energy-efficient retrofitting.

3. Strengthening labour market formalization and social protections

TBA findings often indicate a significant presence of informal workers engaged in green tasks, particularly in waste recycling, urban agriculture and small-scale eco-friendly production. To ensure equitable inclusion in the green transition, policymakers can:

- **Identify pathways for formalization** by conducting informality mapping exercises that assess the number and composition of and barriers faced by informal green workers. These assessments should inform policy design for integrating informal workers into structured employment models. For example, if the TBA analysis finds that informal waste pickers play a crucial role in the circular economy, policymakers can implement legal reforms that

integrate them into municipal waste management systems through cooperative structures or licensing arrangements.

- ▶ **Introduce regulatory frameworks that support formalization while preserving economic opportunities.** These can include simplified business registration processes, legal recognition of informal worker cooperatives and streamlined tax compliance models. For instance, if urban farmers contribute to food security but lack land tenure, policymakers can create zoning policies that allocate specific urban spaces for sustainable farming under recognized land-use rights.
- ▶ **Expand social protection mechanisms** to cover informal workers who contribute to green economy activities, including portable benefits systems, micro-pension schemes and access to financial services. For example, if informal artisans in the eco-friendly manufacturing sector lack income security, governments can introduce contributory savings programmes that allow them to build financial resilience while remaining self-employed.

4. *Developing just transition policies for high-risk occupations*

TBA analyses can indicate which occupations are at risk of decline due to decarbonization policies, automation or shifts in global trade patterns. To ensure that workers are not left behind, policymakers can:

- ▶ **Assess displacement risks and transition pathways** by integrating task-based employment projections into just transition frameworks. This includes modelling occupational decline trajectories, identifying viable alternative employment sectors and designing structured retraining programmes. For instance, if the TBA analysis shows that coal miners are at risk of job displacement, policymakers can introduce retraining programmes for geothermal drilling or ecological restoration jobs.
- ▶ **Develop wage and employment protection schemes** for workers transitioning out of high-carbon industries, including income guarantees, relocation assistance and early retirement options for those unable to reskill. For example, if fuel-based transport jobs are declining, policymakers can introduce wage subsidies that encourage logistics companies to retrain and retain workers in electric vehicle fleet management roles.
- ▶ **Establish regional just transition initiatives** to support areas that are heavily dependent on carbon-intensive industries. These strategies should integrate economic diversification programmes, infrastructure investment plans and social safety nets to mitigate local labour market shocks. For example, if the TBA analysis reveals a high reliance on oil refinery jobs in a specific region, governments can prioritize investments in alternative industries such as hydrogen production and sustainable chemicals manufacturing.

5. *Informing regional and localized green workforce strategies*

TBA findings often reveal regional variations in green employment potential, requiring localized, data-driven workforce strategies. Policymakers can:

- ▶ **Develop subnational green employment strategies** by mapping regional labour market strengths, skill gaps and industrial capacities. For example, if coastal areas demonstrate strong potential for offshore wind energy, local governments should prioritize skills development programmes focused on offshore turbine maintenance and marine energy infrastructure.
- ▶ **Promote the development of green economic zones** by clustering industries and skills development initiatives around high-growth green sectors. For example, if a rural region excels in regenerative agriculture, governments can provide targeted investment incentives to scale up agroecological production and export linkages.

6. Aligning TBA findings with national and international climate and labour policies

To maximize impact, TBA insights should be integrated into broader employment, industrial and climate policy frameworks. Policymakers can:

- **Ensure alignment with Nationally Determined Contributions (NDCs)** by incorporating TBA labour market findings into sectoral decarbonization pathways. For example, if the TBA analysis highlights job expansion in low-carbon transport, NDC targets should include workforce training provisions for electric mobility and public transport upgrades.
- **Leverage international financing mechanisms** – such as, the Green Climate Fund or Just Energy Transition Partnerships – to support workforce development in high-potential green sectors. For instance, if the TBA analysis reveals a demand for green building skills, green investment funds should be directed towards subsidizing workforce training for sustainable construction.

By systematically analysing the task-level composition of green jobs, a TBA equips policymakers with a precise and quantitative understanding of how labour markets are evolving in response to green transitions. These findings serve as a foundation for evidence-based policymaking, ensuring that skills development, workforce formalization, just transition planning and economic incentives are aligned with real labour market needs.

Leveraging insights on informality for policy development: In addition to the insights on informality derived through a TBA (among other key aspects), policymakers must address barriers by identifying entry points for informal workers into the formal green economy, ensuring that transition policies do not disproportionately exclude or displace them.

A key policy strategy is the gradual formalization of informal green labour activities through cooperative models, regulatory incentives and social protection measures. For instance, waste pickers engaged in recycling and circular economy activities can be integrated into municipal waste management systems by formalizing waste collection networks, issuing worker permits and providing training in advanced sorting and processing techniques. Similarly, informal urban farmers contributing to food security and carbon sequestration can benefit from policies that regularize land tenure, provide access to financial credit and introduce technical training on climate-smart agriculture. Policymakers should also leverage vocational training programmes to support the reskilling of informal workers in sectors such as eco-construction, solar panel installation and sustainable forestry, ensuring their smooth transition into growth areas within the green economy.

As discussed in section 4.2.2, geospatial analysis can provide a robust empirical foundation for understanding labour market informality by mapping where informal workers operate, assessing their exposure to climate risks and identifying opportunities for integrating them into green sectors. By overlaying spatial data on informal employment clusters with environmental and socio-economic indicators, policymakers can identify areas where informal workers are already engaged in activities relevant to green transitions, such as waste recycling, renewable energy micro-enterprises and agroecology practices. This spatial intelligence enables governments to design geographically targeted policies that maximize the economic potential of informal workers while mitigating risks associated with climate change and economic restructuring.

To operationalize these insights, policymakers should integrate geospatial analysis into labour market planning, urban policy frameworks and climate adaptation strategies. For example, mapping informal waste collection zones in urban areas can inform the strategic placement of formal recycling hubs, public-private partnership investments in circular economy value chains and the expansion of social protections for waste workers. Similarly, geospatial data on

flood-prone or heat-exposed informal settlements can be used to implement climate resilience measures, such as incentivizing informal construction workers to adopt sustainable building techniques, improving urban drainage systems and relocating high-risk settlements with social safeguards. Furthermore, if geospatial analysis reveals that informal micro-enterprises are concentrated in areas with high renewable energy potential, such as regions suitable for off-grid solar deployment, targeted policies can facilitate their inclusion in decentralized energy production, solar installation jobs and local grid maintenance initiatives.

Ultimately, the integration of geospatial intelligence into labour market diagnostics and policy planning can ensure that green transition strategies account for the realities of informal workforces. By leveraging geospatial insights, policymakers can develop evidence-based, spatially nuanced and economically inclusive policies that support the transition of informal workers into sustainable and productive employment, contributing to both climate resilience and equitable economic growth.



Summary of insights towards developing policy recommendations

Officials deploying green employment diagnostics in any country should conclude Step III with informed policy recommendations that reflect the following:

- ▶ An understanding of the extent to which existing policies and strategies address the identified climate-induced challenges in the labour market and incorporate the ILO just transition principles, and what the current gaps are within these policies and strategies.
- ▶ A list of policy interventions – identified through research, stock-taking and social dialogues – to bridge existing gaps, and which, in turn, can further help address the identified climate-induced impacts on the labour market and the cascading impacts on people's welfare.
- ▶ Prioritized policy options informed by social dialogue, multiple stakeholder perspectives, financial feasibility and the institutional capacity to implement the policy options.
- ▶ An understanding of the need for additional investigation to ensure more informed policy design and implementation as a means of achieving progressive mainstreaming of green and decent employment considerations in the national policy landscape.



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6

**Process:
How to implement
a green employment
diagnostic**

The three-step approach to green employment diagnostics places stakeholder engagement at the heart of the process. It involves participatory processes and social dialogue involving:

- **government entities**, including, among others, the ministry of labour, planning ministries and climate change/environment ministries;
- **workers' organizations**; and
- **employers' organizations**;

and where relevant:

- development partners – United Nations, multilaterals and bilaterals;
- academics and think tanks; and
- NGOs.

Such processes ensure that relevant information is embedded in policy responses linked to employment and climate change, while accessing different views that have a bearing on the analysis.

Considering the comprehensive nature of the diagnostics, **careful consideration of feasibility is imperative during implementation**. The scope of the study should be demand-driven and part of the country's policy advancement processes, tailored to the available resources and timeline, and prioritizing context-specific and relevant focus areas. While the study's conclusions will remain objective and evidence-based, the consultative process during the analysis will enrich the insights and foster ownership among stakeholders, who can take action based on the study findings. It is also suggested to engage social partners in consultations to apprise the exact outputs expected from the diagnostics. Various factors will influence the exact implementation of green employment diagnostics in any given country, but some key common steps that should be taken when conducting a green employment diagnostic include the following:

Establish a task team: Conducting green employment diagnostics demands careful planning and allocation of resources. The composition of the task team may vary based on available time and resources. For optimal outcomes, it is advisable to form a task team early in the process, composed of international and/or national labour market and employment specialists as well as development and climate change economists. This task team would typically comprise two to four officials/experts who will be responsible for the analytical work and will consult with a broader range of stakeholders during the diagnostic process.

Sprint planning and defining reference points for the diagnostic: Conducting a green employment diagnostic typically takes four to six months, allowing time for meaningful policy discussions with partners, contingent on available resources. Step I may take three to four weeks; Step II around eight to twelve weeks; and Step III, focusing on policy formulation and recommendations, approximately five to six weeks. Developing need-based sprint plans/blueprints/work schedules is important to deliver the study in an efficient manner. To ensure accurate and contextually relevant findings, it is crucial to include time-based reference points in the diagnostic. The evolution of climate-induced risks and data availability may vary in different countries, impacting the definition of time-based reference points. Recognizing the time lag between the peak of a climate-related shock and its employment impact (along with the varying recovery rates among different groups) and defining the period of analysis are critical aspects of the process.

Collect and review existing evidence, data and studies: The analytical work should not start from scratch, but should be based on existing studies and secondary information from available data repositories. Prior to commencing the analysis, it is crucial to identify and review

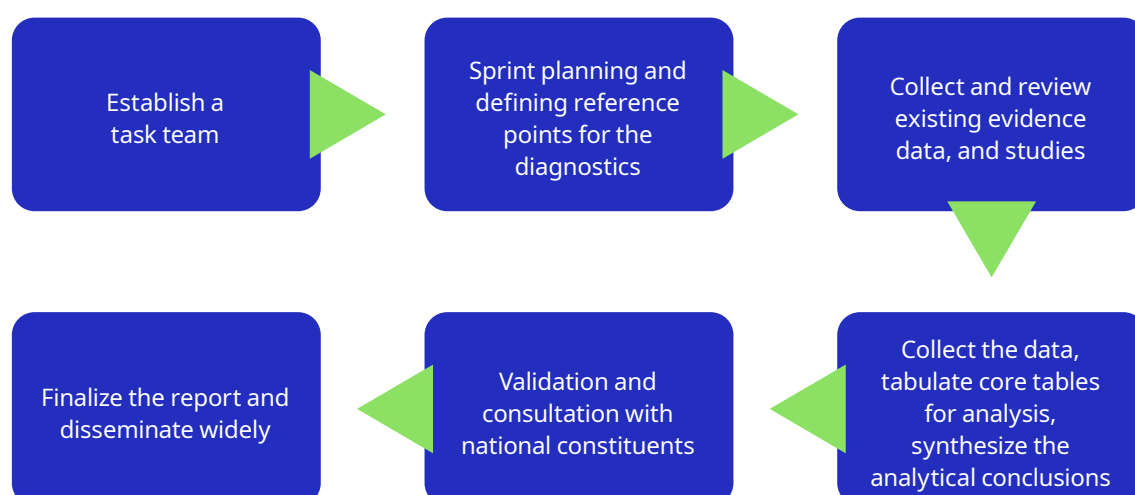
various data sources, national policies, development and climate action plans, as well as recent diagnostics and climate impact assessments related to the country, encompassing different sectors, employment and the labour market. For most countries, a wealth of studies exist that can serve as a critical foundation, providing essential context and a baseline for conducting the green employment diagnostic. Engaging in discussions with key partners further aids in setting the scene for the analysis. In instances where significant information asymmetries or data unavailability arise, it will be necessary to plan and implement primary data generation techniques, such as rapid surveys, focus group discussions and key informant interviews, among others, to address the gaps.

Collect the data, tabulate core tables for analysis and synthesize the analytical conclusions: The Excel toolkit provides checklists and reporting templates to be used to collect and compile statistics and to tabulate core tables across all three steps during the period of analysis. These checklists and templates may be adjusted according to the context, the data and the main areas of interest. Some of the templates provided may be aspirational for countries with limited data availability, but they still provide a sense of direction with regard to the type of information that is needed. What does the data tell you? Is the data in line with the information from previous studies and from partners? What are the inferences that can be drawn through the collected data? While the secondary analysis is likely to be complex, distilling the main messages and trends will be helpful to get the message across and to facilitate drawing actionable policy conclusions. Using both quantitative and qualitative sources of data will help to deepen the understanding of the national context.

Validation and consultation with national constituents: In addition to the need-based consultations during the data collection and analysis phases, presentation and discussion of the main findings and conclusions at a meeting with constituents will be important for validating the results. Preferably, this would take the form of a joint analytical workshop. Here, the conclusions can be discussed in light of the government strategies, informing policy priorities and validating other relevant frameworks that have a bearing on the policy actions that lie ahead.

Finalize the report and disseminate it widely: After validation and consultation, the finalized report – and/or an accompanying shorter version serving as a policy brief – can be disseminated widely to all stakeholders and interested parties. Making sure the analysis is available to decision-makers and development actors, as well as the general public, will contribute to transparency, mutual learning and knowledge generation.

 **Figure 4. Process for conducting a green employment diagnostic**





Annex

Table developed for sector selection exercise in Morocco – for reference only

Sector	Code	Category	% Emp. (2021)	% GVA (2021)	Emp. Growth (2014-21)	Rationale
Agriculture and Forestry	AGRI	A	27.42%	12.59%	-21.13%	Crop production remains mainly rainfed in Morocco (87%). In future dry years, this could greatly impact yields, with projections suggesting a 50-75% drop. This dryness will also increase the risk of land degradation. In the NDC, key sectoral priorities have therefore been on increasing irrigation and increased reforestation (including arboriculture) to improve water retention and reduce soil erosion. The country is currently a net importer of both irrigation equipment and seedlings, so whilst green jobs will be increased along the value chain, it would be even greater if these key products could be produced domestically. Complexity analysis from the Green Transition Navigator does not cover the agriculture and forestry sector. However, a competitive strength that is mentioned is the production of valves for water resource management, and this may well transfer over into the production of irrigation equipment.
Manufacture of Chemical Products	CHIM	A	0.30%	3.83%	24.81%	Morocco has 70% of the global stock of phosphate rock, and as such the country is the fourth largest exporter of fertilizer in the world. Notably, fertilizers are included in the EU CBAM, and greening of the fertilizer industry is a necessary transition. The country is currently a substantial importer of ammonia (\$1bn in 2022). Combined with the focus on green hydrogen, the potential to produce green ammonia (and therefore green fertilizer) domestically is great, and could produce many green jobs. Furthermore, complexity analysis suggests that Morocco has a competitive advantage in some key chemicals for wastewater management, such as CaHPO ₄ , other calcium phosphates, and manganese dioxides. The country is currently a net exporter in calcium phosphates, but not in manganese dioxide, and demand could grow greatly as water management becomes a greater necessity.
Manufacture of Basic Metals and Metal Products, Except Machinery and Equipment	METAL	A	1.03%	0.84%	-8.14%	Similarly to fertilizer, iron and steel is also an EU CBAM sector. Due to the country's renewable electricity potential and green hydrogen ambition, there is potential to produce both green iron and green steel. The country is once again a net importer of iron and steel (\$1.9bn imports in 2022), but a domestic market does exist (\$106mn exports in 2022). According to the complexity analysis, the country also has a green opportunity in the production of related iron and steel appliances for water management.
Manufacture of Transport Equipment	VEHI	A	1.09%	0.92%	48.81%	The manufacture of EVs will become increasingly important in Morocco. As mentioned, automotive parts are already a large export sector, and the country's ambition is for electric vehicles to make up 60% of these exports by 2030. Regarding other modes of transport, among the national ambitions are to expand rail transport, and increase urban public transport offerings. This aligns with another green opportunity for the country, namely the production of locomotive parts.
Electricity and Gas Distribution - Water Distribution, Sewerage, Waste Management	ENE&EAU	A	0.91%	3.97%	41.35%	The energy sector currently accounts for 65% of national GHG emissions, but the renewable energy potential in Morocco is vast, and its role in greening other sectors is crucial. Furthermore, the desalination and wastewater treatment sectors are very energy intensive. The NDC ambitions specify 1427 MW of installed wind capacity and 827 MW of solar capacity (in addition to 1500MW on industrial sites). Although the country almost exclusively imports solar panels, jobs will be created along the value chain, with particular needs for project management, installation, construction, and operations and maintenance (O&M). There are also a number of complexity opportunities, including electric transformers and steam producing boilers. Finally, the country has expressed a desire to become an exporter of renewable energy in the near future. The water sector will also be crucial across the economy. Resources are currently scarce, but national plans aim to increase both wastewater treatment and desalination, and the end goal is for these sources to make up 15% of the water supply in 2035. The country is a rapidly growing importer of water treatment machinery, but green opportunities exist in the production of valves, UV treatment equipment, and drain and sewage infrastructure.

Sector	Code	Category	% Emp. (2021)	% GVA (2021)	Emp. Growth (2014-21)	Rationale
Extraction	MINI	B	0.67%	2.12%	89.46%	Whilst mining does pose some risks for coastal erosion, and currently accounts for 65% of industrial energy use, the country does have some stores of transition minerals. The country is a large global producer of cobalt, silver, copper and, as mentioned, is a crucial supplier of phosphates. Additionally, recent explorations suggest that the country may also have exploitable lithium reserves.
Manufacture of Food Products, Beverages, and Tobacco	A&BOI	B	3.22%	4.29%	9.76%	As the agricultural sector is made more climate-resilient, downstream opportunities will become more appealing. This includes the production of food and beverage products.
Manufacture of Textiles, Apparel, Leather, and Leather Products	TEXT	B	3.58%	2.09%	-1.91%	Textiles are a major source of manufacturing employment in Morocco and, despite slow growth, remains an important export sector. As sustainable fabrics and circular economy practices are mainstreamed globally, the sector could be a key source of green jobs.
Manufacture of Wood and Paper Products; Printing and Reproduction of Media	PAPIER	B	0.49%	0.63%	-13.14%	The national focus on increasing reforestation and arboriculture also presents an opportunity for sustainable commercial forestry practices.
Construction	CONS	B	8.19%	5.88%	7.35%	The construction sector will be paramount in the green transition. National ambitions to build water storage and treatment infrastructure, desalination and green hydrogen plants, solar and wind power facilities, and solar water heaters will all create green job opportunities in the sector. Furthermore, there is a need to green the cement sector. Petroleum coke, which is currently imported (\$400mn) could be replaced in the production process by olive pomace (as well as used tires, wastewater sludge, and household waste), which creates a domestic linkage to arboriculture (447,000ha of olives trees aimed to be planted by 2030).
Transportation and Storage	TRA&ENT	B	3.48%	3.26%	14.81%	As locomotives and trams become an increasingly available public transport option, green jobs will be created in their operation. Additionally, as green hydrogen and EVs are integrated into Moroccan transportation, green jobs will emerge across the sector.
Accommodation and Food Service Activities	TOUR	B	3.11%	2.32%	-8.23%	Tourism is key for the national development model of Morocco and is mentioned heavily in the NDM. National ambitions to create a label for sustainable and responsible tourism are to be developed. Finally, in rural areas, ecotourism could be a good source of green jobs.
Financial and Insurance Activities	FIN	B	0.94%	4.95%	45.48%	Agricultural insurance penetration rates are currently low in Morocco, especially for small- and medium-scale farmers. The market for agro-insurance is currently very unsaturated, with only one clear current provider. Private sector funds and the mobilization thereof will be essential for many of the green infrastructure projects that Morocco requires, and the delivery of adaptation financing solutions will be a provider of both direct and indirect green jobs.
Research and Development and Business Support Services	R&D	C	5.32%	4.98%	44.38%	The development of innovative solutions to climate change that are adapted to the Moroccan context can be a key enabler of green job creation.
Public Administration; Mandatory Social Security	ADMIN	C	5.59%	11.02%	6.15%	Good governance surrounding policy will be a vital insulating sector for the creation of green jobs across the economy.
Education, Human Health, and Social Work Activities	EDUC	C	4.35%	7.98%	11.76%	Education and the provision of green skills throughout various curricula will needless to say be essential for the green transition.

Note: Category A - High importance sector; Category B - Green-linked sector; Category C - Supporting sector

Policy options by each policy category – indicative

Policy categories		Interventions informing the policy options - indicative	
Policy categories	Proposed policy options		
	Social Protection	Job Retention and Public Employment Programmes	Provide long-term support for communities heavily reliant on industries undergoing a transition. This can involve community development initiatives, investment in sustainable infrastructure, and job creation programmes that align with the local context and needs.
	Reskilling and training	Skills Development and Training Programmes	Embed sustainability and green skills training into the education system from early childhood to higher education. This ensures that future generations are equipped with the knowledge and skills needed for green jobs and sustainable practices.
	Job creation	Support for Small and Medium-sized Enterprises (SMEs) and targeted tax incentives and subsidies for the private sector	Establish comprehensive lifelong learning programmes that enable workers to continually update their skills and adapt to changing job requirements in the green economy. This can include subsidies for professional development courses, mentoring programmes, and career transition support.
	Economic diversification and strengthening	Support for Renewable Energy and Energy Efficiency Projects	Establish standardized green skills certification programmes and standards to ensure the quality and consistency of skills acquired in the green economy. This enhances employability, facilitates job mobility, and enables workers to demonstrate their qualifications to potential employers.
Policy categories	Proposed policy options		
		Green Infrastructure Investments	Encourage the creation of green jobs through targeted investment and incentives. Promote the growth of green industries, including renewable energy, sustainable agriculture, green construction, and clean technologies. Economic diversification strategies can help transition regions heavily dependent on fossil fuels or carbon-intensive industries to new green sectors.

Policy categories		Proposed policy options		Interventions informing the policy options - indicative	
Economic diversification and strengthening		Green Public Procurement	Introduce green public procurement policies that prioritize the purchase of environmentally friendly products and services. This creates demand for green goods and services, stimulating job growth in industries aligned with the green economy.	Implement industrial policies that promote the growth of green industries and businesses. This can include targeted incentives, tax breaks, and grants for companies engaged in sustainable practices, renewable energy production, and green manufacturing. Such policies encourage job creation and facilitate the transition of traditional industries to greener alternatives.	Promote the transition to a circular economy that minimizes waste, maximizes resource efficiency, and encourages sustainable consumption patterns. This shift can create new job opportunities in recycling, remanufacturing, and sustainable product design.
		Sector-specific Support:	Identify sectors that are particularly vulnerable to job losses during the transition and provide tailored support to protect employment. This can involve targeted subsidies, grants, or retraining programmes for workers in industries such as fossil fuel extraction, heavy manufacturing, or traditional agriculture.	Expand and enforce green public procurement policies that prioritize the purchase of environmentally sustainable products and services. This increases demand for green goods and services, driving market growth and job creation in green industries.	Increase funding for research and development in green technologies, innovation, and sustainable practices. This supports the emergence of new industries, drives technological advancements, and creates high-skilled jobs in areas such as renewable energy, energy storage, and sustainable transportation.
		Green Innovation and Research Funding	Increase funding for research and development of green technologies and innovation. This can support the emergence of new industries and job opportunities in areas such as clean energy, circular economy, and sustainable agriculture.	Focus on regional development and diversification strategies that promote sustainable industries and job creation. This can involve targeted investments in regions heavily reliant on fossil fuels or carbon-intensive sectors, aiming to support the transition and create new economic opportunities.	Strengthen social dialogue platforms and mechanisms to ensure meaningful participation of workers, trade unions, and community representatives in decision-making processes related to the green transition. This ensures that their perspectives are considered and that policies are designed to protect their interests.
Economic diversification and strengthening		Monitoring and Evaluation	Establish mechanisms to monitor the impact of policies on job protection and regularly evaluate their effectiveness. This allows for adjustments and improvements to be made based on real-time data and feedback.	Establish dedicated funds to support workers and communities affected by the transition. These funds can provide financial assistance for retraining, job placement programmes, and community development initiatives that promote sustainable economic activities.	Allocate public investment and use fiscal policies to promote green sectors and technologies. This can include green infrastructure projects, research and development funding, and tax incentives for sustainable businesses. Redirecting public resources towards the green economy stimulates job growth and private sector investment.
		Government Subsidies for Cooling Technology Adoption	To encourage firms and organizations to adopt cooling technology and enhance labour-oriented adaptation, government subsidies can play a crucial role in offsetting the high initial costs of early adoption, making it financially viable for businesses to invest in.	Implement campaigns to raise awareness about energy-efficient cooling technologies and the benefits of subsidies to drive adoption; Provide grants and incentives for the development of innovative, energy-efficient cooling solutions to accelerate technology advancement.	Enforce energy efficiency standards and labelling schemes to guide consumers towards sustainable cooling choices; Gradually phase out environmentally harmful cooling technologies and support the transition to greener options.
Labour market integration		Infrastructure development and connectivity	Invest in infrastructure development, particularly road networks and transportation systems. This is crucial to facilitate labour market integration. Improved connectivity between regions and sectors will enable easier labour mobility, allowing workers to access job opportunities in different areas.	Prioritize investment in green infrastructure projects that not only improve connectivity but also create sustainable job opportunities aligned with the findings from green employment diagnostics.	Develop long-term green transport and mobility strategies that reduce emissions, create employment opportunities, and enhance accessibility to sustainable jobs.

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