In collaboration with
Boston Consulting Group

Accelerating an Equitable Transition: A data-driven approach

INSIGHT REPORT

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Executive summary

Limitations in data, frameworks and tools to understand the socioeconomic implications of climate action risk slowing down the pace of the green transition. In recent years, measures to implement environmental taxes or to reform fossil-fuel subsidies have raised concerns of rising cost of living in some countries, while efforts to decommission fossil-fuel infrastructure have surfaced immediate fears over local employment impacts. Governments in some countries have, consequently, been compelled to delay or suspend necessary reforms, recalibrating the pace of climate action. In many parts of the world – including Latin America, Southern Africa, and emerging Asia – economic growth remains a critical but competing priority with pressures to decarbonize. In the absence of financing and broad-based access to technology and know-how, leapfrogging to "green growth" can be elusive. These experiences illustrate that fairness in the distribution of costs and benefits of climate action is critical to building public support and policy stability. The criticality of equity and fairness in climate action is widely acknowledged, including by many countries in their Nationally Determined Contributions (NDCs) submitted for the Paris Agreement as well as long-term climate-action strategies. However, the evidence, frameworks and tools necessary for an informed and effective policy response are lacking. This paper proposes metrics to help stakeholders understand the incidence and severity of the multi-dimensional equity implications of the greening of emissions-intensive sectors. Out of 58 indicators identified in this paper, only five are systematically collected and published at a global level. Where data is unavailable, the paper relies on proxy metrics to develop six country dashboards which are illustrative examples of how these metrics can be used to identify country-level focus areas.

Challenges to an equitable transition can materialize in countries across income levels or stages of development, but many will share similar challenges and can leverage common strategies for a fair and inclusive transition. Economic, institutional, demographic and geographical specificities within countries can lead to varied exposure to economic equity risks. While consistent and comparable evidence on exposure to potential economic equity risks at a country level is lacking, this report presents six country archetypes that give leaders a forward view on key opportunities and challenges for an equitable transition. Countries of the same archetype share some structural similarities that indicate their economic equity challenges may also be similar.

1. **Inclusive Green Adopters:** High-income, service-driven economies that have made significant strides in reducing their emission intensity by adopting available green technologies, while keeping in place frameworks and mechanisms to ensure inclusion and economic equity. A skilled workforce and high financial capability are among their strengths while eroding competitiveness, cost-of-living pressures and an aging workforce seem to be potential challenges. Countries in this archetype include mainly Western and Northern European countries (e.g. France, Spain, Sweden and the United Kingdom) in addition to Australia, New Zealand, Canada and Singapore.

2. **Emerging Green Adopters:** High-income and upper-middle income economies transitioning to higher value-add service sectors. Although they have highly educated populations and strong frameworks to support green growth, these countries tend to have a significant share of their workforce in legacy industrial sectors that require significant transformation, making reskilling and support for job transitions key imperatives. They include mainly Central and Eastern European countries (e.g. Bulgaria, Poland and Romania) in addition to Ireland, Italy, Türkiye, Uruguay and others.

3. **Fossil-Fuel Exporters:** Economies that heavily rely on fossil-fuel rents and subsidized energy consumption to support national growth and prosperity, resulting in high-levels of emission intensity. Countries in this group typically benefit from a STEM-focused workforce and strong fiscal balances but restructuring the fiscal system to account for subsidy phase-outs and economic diversification more broadly can prove challenging in the years ahead. The fossil-fuel exporters mainly include countries in the Middle-East (e.g. Iran, Kuwait, Oman, Qatar, Saudia Arabia and United Arab Emirates) and Central Asia (e.g. Azerbaijan and Uzbekistan)

4. **Growth Economies:** Rapidly industrializing upper-middle income economies with growing energy demand that will, in the short term, need to navigate potential trade-offs between climate mitigation and socioeconomic development. Countries in this cluster are well positioned to reap a demographic dividend, but addressing income inequality and unlocking finance to stimulate an innovation-driven economy remain potential challenges. They are mainly located in Latin America (e.g. Bolivia, Brazil, Chile and Colombia), Southern Africa (Namibia and South Africa), and emerging Asia (e.g. India, Malaysia and the Philippines).

5. **Frontier Economies:** Low-income and lower-middle income economies with large youth populations and low emissions per capita that still need to invest in foundational capacity for inclusive and sustainable long-term growth. These countries are highly vulnerable to physical climate risks yet lack sufficient capabilities to build resilience. Ensuring a skilled workforce and identifying new financing mechanisms can open opportunities for sustainable development, powered by green growth. Countries in this cluster are mainly Sub-Saharan countries (e.g. Angola, the Democratic Republic of the Congo, Ghana, Kenya and Nigeria) but extend to include countries in other regions, like Asia (e.g. Bangladesh, Myanmar, Pakistan, Sri Lanka, Nepal and Yemen).

6. **Green Developers:** Highly-industrialized and technologically-advanced countries that are leading the development of green technologies and business models that can help the world transition to net zero. While well-positioned in terms of labour, finance and technology, these countries are among the largest carbon emitters globally and need to manage the transition of large, ageing workforces, into cleaner industries to ensure continued prosperity. They include China, Germany, Japan, South Korea and the United States.

In addition to country-level variance, equity risks differ depending on the sector. Business executives surveyed in the World Economic Forum's 2024 Executive Opinion Survey consistently cited unequal access to financing for green investments as the top equity risk associated with the green transition across sectors, from energy and agriculture to heavy industry and transportation. Thereafter, gaps in technology and know-how and risks to consumers' accessibility of goods and services prove to be top of mind for executives.

The pace and efficacy with which leaders can advance on climate objectives rests – at least in part – on the degree to which the costs and benefits of mitigation action are fairly distributed. Evidence-backed strategies, with policy-relevant metrics at the intersection of climate action and socioeconomic inequities, can provide a sufficient baseline on risk, generate informed strategies, and ensure climate action serves both people and planet.

This paper is developed as part of the World Economic Forum's Equitable Transition Initiative, supported by Laudes Foundation and Boston Consulting Group. The initiative aims to develop and build consensus on a vision and organizing principles for an equitable green transition, distilling thought leadership into actionable frameworks and tools at sectoral, national and local levels. The initiative is backed by a global, cross-sector coalition of leaders who are working to ensure that policies, business strategies and investments driving the net-zero transformation solve for both climate change and inequality.

Introduction

Economic equity in the climate transition

Addressing climate change and accelerating a green and fair transition is imperative for our shared future. There is an urgent need to ramp up climate action if the global community is to maintain focus on its ambitions to limit global temperature increases to less than 1.5°C, as outlined in the Paris Agreement. However, well-intentioned policies and climate-positive actions by the private sector could exacerbate existing economic inequities and leave society more fragmented and polarized, ultimately slowing both environmental and socioeconomic progress.

As countries and companies amplify their efforts to mitigate climate change, the uneven distribution of costs and benefits of climate policies has contributed to rising backlash. Measures to implement environmental taxes or to reform fossil-fuel subsidies have raised concerns of rising cost of living in some countries, prompting governments to delay or suspend proposed reforms. Decommissioning fossil-fuel infrastructure – such as coal mines, thermal power generation plants or emission intensive industrial facilities – has affected local employment and economic development. Rising levels of social and economic discontent from climate action can be observed in countries across geographies and income levels.

These experiences illustrate that fairness in the distribution of costs and benefits of climate action is necessary if we want to embark on a climate transition in a way that is acceptable to all people. In many cases, climate change mitigation efforts continue to disproportionately benefit wealthier segments of society. For instance, evidence suggests that majority of incentives for adoption of renewable energy or electric vehicles accrue to high income households. Similarly, programs to address cost of living implications of energy price shocks do not reach low-income beneficiaries. In 2023, for example, governments spent $620 billion subsidizing the use of fossil fuels, primarily in emerging and developing economies. While poorer households typically spend a greater proportion of their household budget on energy bills overall, these subsidy benefits largely accrued to higher-income groups with higher usage of subsidized fuel,[1] illustrating a lose-lose situation for both climate and economic equity. As governments contend with constrained fiscal space, targeting climate mitigation policies and reallocating expenditures to safeguard the most vulnerable in society can recalibrate the distribution of costs and benefits and contribute to a greater sense of fairness while delivering on climate ambitions. A whole-of-society approach, with due consideration to all stakeholder groups, is a precondition for securing the long-term policy stability that accelerated climate action requires.

BOX 1

The data challenge: Measuring economic equity in the context of the climate transition

When stakeholders do not have a sufficient baseline to assess and understand the economic and social ramifications of climate initiatives, it creates a barrier to action. At present, there are significant data gaps that can hinder a consideration of equity in climate action. Some metrics exist for assessing green transition efforts and other metrics assess social outcomes, but few address the intersection of the two. On climate, for example, the United Nations Framework Convention on Climate Change (UNFCCC) tracks greenhouse gas (GHG) emissions to monitor progress towards Nationally Determined Contributions (NDCs), and Regulatory Indicators for Sustainable Energy (RISE) indicators assess policies on sustainable energy. On social outcomes, many organizations track data to help monitor progress towards the UN Sustainable Development Goals (SDGs), which include the goal to "eradicate poverty in all its forms everywhere." For example, the World Bank tracks the proportion of the population living below the national poverty line. There are also some emerging metrics, typically tracked at the country level, that measure the impact of the climate transition on economic equity. The UK Climate Change Committee, for example, estimates climate-policy induced job losses in various sectors. But these metrics are scarce, alluding to the difficulty in isolating impacts specifically related to the climate transition. We need to know, for example: how much do climate policies to support the transition away from fossil fuels alter the affordability of electricity versus broader macroeconomic factors?

Identifying pathways to an equitable transition

In the absence of readily available data on how climate policy and the actions of companies in key sectors directly impact economic equity, it is first crucial to recognize that countries will have varied exposure to equity risks based on their existing economic, institutional, demographic and geographical specificities. Understanding the starting point can provide a forward view on where efforts to mitigate and manage economic equity risks can be concentrated. Second – and complementing a view on the starting point – it is prudent to develop and maintain a holistic view on key socioeconomic indicators that climate action can adversely impact. The location-specific impacts of the transition necessitate that these metrics be tracked at a country level. Recognizing and conceptualizing countries' different starting points as well as converging on shared metrics to assess distributional risks within countries can afford decision-makers an opportunity to minimize the risk that transitioning to a low-carbon future intensifies inequalities.

This paper applies the Economic Equity Framework (Figure 1) presented in the 2024 report, "Accelerating an Equitable Transition: A Framework for Economic Equity", to help close the current data gaps around an equitable green transition and develop a country-level analysis of economic equity risks to workers, consumers and companies, particularly small businesses.

The framework consists of seven green transition dimensions, high-emitting and major segments of the economy that require transformation to achieve carbon neutrality, and five economic equity dimensions that reflect key components of economic participation.

FIGURE 1

Economic Equity Framework

		Economic equity dimensions				
		Employment and job transition	Affordability of goods and services	Accessibility of goods and services	Access to financing and investments	Access to capacity
Green transition dimensions	Transitioning away from fossil fuels Scaling up low-carbon energy sources Greening transportation and mobility Greening agriculture and food production Greening heavy industry Greening infrastructure and built environment Moving to a circular economy	Ability to navigate job loss with adequate social protection, support for reskilling, and to have access to good work in new and existing value chains	Ability to purchase relevant products and services (e.g., impact of short-term price hikes) as well as green alternatives	Availability and ability to use relevant products and services as well as green alternatives	Ability to access finance and investments to transition into and out of industries/sectors	Ability to access knowledge, technology and other resources to create and use relevant products and services

Source: World Economic Forum, *Accelerating an Equitable Transition: A Framework for Economic Equity*, 2024.

Economic equity is one aspect of fairness, with human rights and procedural fairness among other significant areas of relevance in enabling a just and equitable transition. Yet, economic equity, which is fundamentally concerned with the distribution of costs and benefits, warrants a clear and continued focus. If climate action accelerates as required to stay on course and minimize the threat of future climate hazards, immediate economic costs will need to be met, with uneven intensities across geographies and communities. Along with concerns over climate change, the global cost-of-living crisis continues to impose pressures on household budgets in many parts of the world, particularly for low- and lower-income households. Mitigation action cannot, then, come at the expense of maintaining and improving global standards of living. If such chasms are created, economic risks can spur and reinforce adjacent societal risks within countries – such as social polarization, political instability and an erosion of standards of living. In this way, climate change and socioeconomic inequities can serve as reinforcing systemic risks.

This paper is organized into three parts.

Building on the Economic Equity Framework in Figure 1, the first section presents new data collected through the World Economic Forum Executive Opinion Survey that analyses the perceptions of business leaders from across the world on key economic-equity risks associated with the journey to carbon neutrality of various sectors. The results help shed light particularly on the concerns of businesses to fairly participate in and benefit from the economic gains associated with the green transition.

The second section presents six country archetypes, developed by evaluating the structural factors that influence economic equity across the five economic equity dimensions of the framework and that help characterize a country's climate mitigation challenge. The archetypes can provide a starting point for policy makers to assess their current context and readiness to address the economic equity risks arising from climate mitigation action. Countries that conform to a given archetype may be able to leverage similar strategies to strengthen inclusion and reduce their exposure to economic inequality arising from mitigation action.

The third section presents an overview of metrics that can be leveraged by decision-makers to identify and manage distributional disparities that, if unaddressed, could intensify economic inequity and compromise public acceptance of transition plans. Where these metrics don't exist today, proxy metrics have been suggested to support country-level analysis. The metrics are not a comprehensive list of indicators, but rather a starting point for decision-makers.

Finally, the third section also presents six country profiles, one per transition archetype. The country profiles illustrate a country's position relative to the archetype it conforms to as well as its status across the prioritized metrics (where data availability permits). Countries were selected for analysis based on data availability and to offer variation with respect to region, income level and performance across emissions rankings.

1 Measuring economic equity risks in the transition of key sectors

Businesses are among the stakeholders that are affected by the transition to a low-carbon economy. While collecting data on the actual asymmetric impact of the climate transition across businesses remains challenging, the fears and perceptions of business executives highlight concerns around the absence of a level playing field for companies when it comes to the opportunities associated with the transition.

These concerns are reflected in the results of the 2024 World Economic Forum Executive Opinion Survey (see Appendix A for more detail). Respondents were asked to identify up to two economic equity risks that are most likely to occur in relation to the transition of seven economic sectors outlined in the framework. They could choose from a list of six economic equity risks that broadly reflect the five economic-equity dimensions outlined in the framework:

1. Workers will be displaced (Employment and job transition)

2. Goods and services will become unaffordable for most consumers (Affordability of goods and services)

3. Goods and services will become less accessible for most consumers (Accessibility of goods and services)

4. Most companies will not have capital or financing for green investments (Access to financing and investments)

5. Most companies will not have the know-how and technology necessary for green investments (Access to capacity)

6. Most companies will not have access to critical raw materials for green investments (Access to capacity)

Access to financing is consistently cited as the economic equity risk most likely to materialize across all green transition dimensions. But when risks associated with access to capital are accounted for, a wider set of social equity concerns prove to be top of mind for businesses, including technology and know-how across companies as well as consumers' accessibility of goods and services.

The relevance and potential impact of a given risk varies by green transition dimension, highlighting the different equity priorities in different segments of the economy (Table 1).

TABLE 1

Top 3 most relevant green transition sectors for each economic equity risk

Workers will be displaced	Transitioning away from fossil fuels
	Greening heavy industry
	Greening agriculture and food production
Goods and services will become unaffordable for most consumers	Greening agriculture and food production
	Transitioning away from fossil fuels
	Greening transportation and mobility
Goods and services will become less accessible for most consumers	Greening agriculture and food production
	Greening transportation and mobility
	Transitioning away from fossil fuels
Most companies will not have capital or financing for green investments	Greening infrastructure and built environment
	Greening transportation and mobility
	Scaling up low-carbon energy sources
Most companies will not have the know-how and technology necessary for green investments	Moving to a circular economy
	Greening infrastructure and built environment
	Greening heavy industry
Most companies will not have access to critical raw materials for green investments	Greening heavy industry
	Moving to a circular economy
	Greening infrastructure and built environment

For example, unequal access to technology and know-how is more concerning in relation to segments of the transition to net-zero that are most technology-intensive: the development of a circular economy, greening of heavy industry and infrastructure. The capacity to continue to reach all consumers with the provision of essential goods and services and to maintain affordability is a key concern in transition areas pertaining to food and agriculture, transport, and energy. The displacement of workers is most likely to occur in the transition away from fossil fuels, the greening of heavy industry and the shift to circular ways of production. These activities employ large shares of the workforce, and the data signals that a larger share of companies in these sectors—compared to other sectors—might not be able to reposition themselves into green production roles and that the redeployment and reskilling of their workers might be more difficult. At the other end of the spectrum, the greening of infrastructure and the built environment as well as the scale-up of low-carbon energy sources are less likely to drive workers' displacement. Concerns regarding access to capacity (both in terms of technology and critical raw materials) are particularly acute around the greening of heavy industries and of infrastructure as well as the transition to a circular economy. Lack of access to technology is also perceived as a risk to the scale-up of innovative, low-carbon technologies. As outlined above, limited access to financing and investing is the most cited economic equity risk across all areas of the green transition, making it the most cross-cutting challenge of the equitable transition in the minds of business leaders. Capital-intensive sectors such as infrastructure, transportation and energy are where this risk is expected to be particularly exacerbated, while it is perceived as relatively less challenging in the greening of agriculture and the development of a circular economy.

The consistency of these results in countries across income classifications confirms the urgency to strive for an equitable transition both within and between countries.

2 Equitable transition archetypes

While the climate transition and its associated socioeconomic implications look different for each country depending on their unique circumstances, some countries share similar challenges and potential pathways to an equitable transition. In this section, we cluster countries into six archetypes, based on pre-existing structural characteristics which are likely to influence the emergence of equity implications resulting from their transition to net zero.

The archetypes are constructed using a K-means clustering approach. The clustering process uses 29 metrics for each country and is limited to six clusters to maintain balance (further detail on this methodology can be found in Appendix B). These archetypes are not expected to predict the future or reflect the historical situations of countries; instead, they are meant to reflect their current context and position. Not every country fits perfectly within an archetype.

Across the 29 metrics listed in Table 2, we consider the average level of education of the workforce, the reskilling enablement, the level of labour protection and the demographic structure of the population as key drivers that might influence employment outcomes and job transitions in the country. The level of inequality, cost of living pressures and the ability of a country to redistribute are considered to drive affordability challenges related to the climate transition, while accessibility of goods and services will likely depend on the level of current divides in access and the policies and investments that are in place to reduce gaps. Access to finance and investments is supported by the ability of government to finance the transition, the availability of private sector capital and the stability of the financial system. A country's innovation, research and development (R&D) ecosystem, and its ability to access human and natural capital are foundational to its capacity to develop green products and technologies. Overall, climate mitigation challenges in each country will be influenced by its current economic structure, emissions intensity, fossil-fuel dependency and adoption of renewable energy sources. A comprehensive list of all metrics, with definitions and data sources, is available in Appendix B.

The localized and place-based nature of economic equity impacts is critical to ensuring an equitable transition and these risks must be evaluated considering country-level nuances, particularly for effective policy decision-making and action. Further, policy- and decision-making often occur at the subnational level in countries. This is particularly the case for larger countries, such as India, China and the United States, which have significant subnational variations in resource availability, economic structure, levels of development and climate policy governance.

TABLE 2

Overview of metrics for archetype analysis

Employment and job transition	Affordability	Accessibility	Finance and investments	Capacity
Driver and Metric	**Driver** and Metric	**Driver** and Metric	**Driver** and Metric	**Driver** and Metric
Level of education • Percentage of population with secondary school completion • Tertiary graduates in STEM disciplines **Reskilling enablement** • Investments in reskilling **Labour rights and protection** • National compliance with labour rights • Social protection coverage **Future workforce potential** • Share of youth population (aged 15-24 years)	**Level of inequality** • Share of income of bottom 50% **Cost-of-living pressures** • Real wage growth (10-year average) **Ability to redistribute** • Tax progressivity	**Place-based inclusion** • Share of rural population • Inclusion in public spaces **Access to goods and services** • Legal framework for renewable energy • Policies to support greener transport • Coverage of public transport	**Fiscal capacity** • Fiscal balance as % GDP **Quality and stability of financial system** • Financial system resilience **Availability of finance** • SME finance availability • Domestic credit to the private sector as % of GDP	**Level of innovation and R&D** • R&D expenditure as % of GDP • Number of green patents **Access to green talent** • Talent gaps for economic transformation: green and energy transition **Regulatory environment** • Regulatory quality **Access to natural capital** • Land-use availability

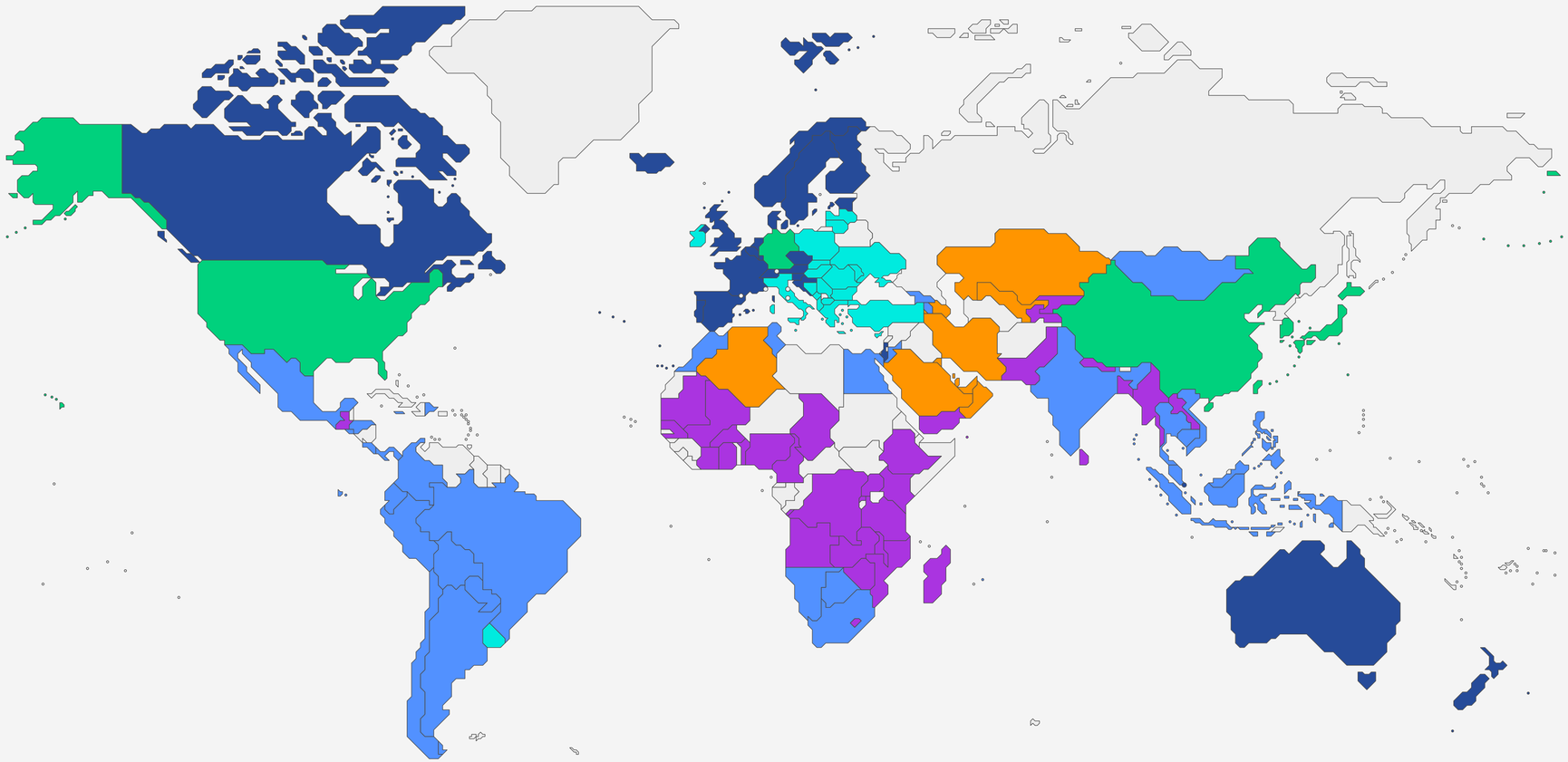
Additional metrics that shape mitigation challenges	
Driver	Metric
Economic structure	• Share of GDP from agriculture and industry • Share of employment in agriculture and industry
Emissions level	• CO_2 emissions intensity (kg per $GDP PPP)
Fossil-fuel dependence	• Fossil fuel subsidies as a share of GDP • Fossil-fuel rents as a share of GDP
Renewable energy use	• Renewable energy consumption (% total final energy consumption)

Taking into account these drivers and associated metrics, the clustering exercise resulted in six archetypes, each named to reflect some of the main characteristics of the countries in that cluster:

- Inclusive Green Adopters
- Emerging Green Adopters
- Fossil-Fuel Exporters
- Growth Economies
- Frontier Economies
- Green Developers

Each archetype features a set of common opportunities and challenges that countries in that group may face with the climate transition. Opportunities can be maximized to position a country well for an equitable transition while challenges, if unaddressed, can lead to disproportionate implications on vulnerable stakeholder groups. Consequently, multiple countries within each archetype may be able to leverage similar elements of strategies to strengthen inclusion and reduce their exposure to economic inequality arising from mitigation action.

In the next section, we describe these potential opportunities and challenges and present data points for each archetype based on the subset of metrics that best explain the archetype's key characteristics.



Archetype 1: Inclusive Green Adopters

Countries of this archetype are typically high-income, with diversified service-driven economies and strong social protection mechanisms. They tend to have higher levels of emissions per capita, but their emissions intensity of GDP has been declining and is lower than the global average. This group tends to be geographically concentrated, with several countries located in Western Europe.

Archetype profile:

5.1%

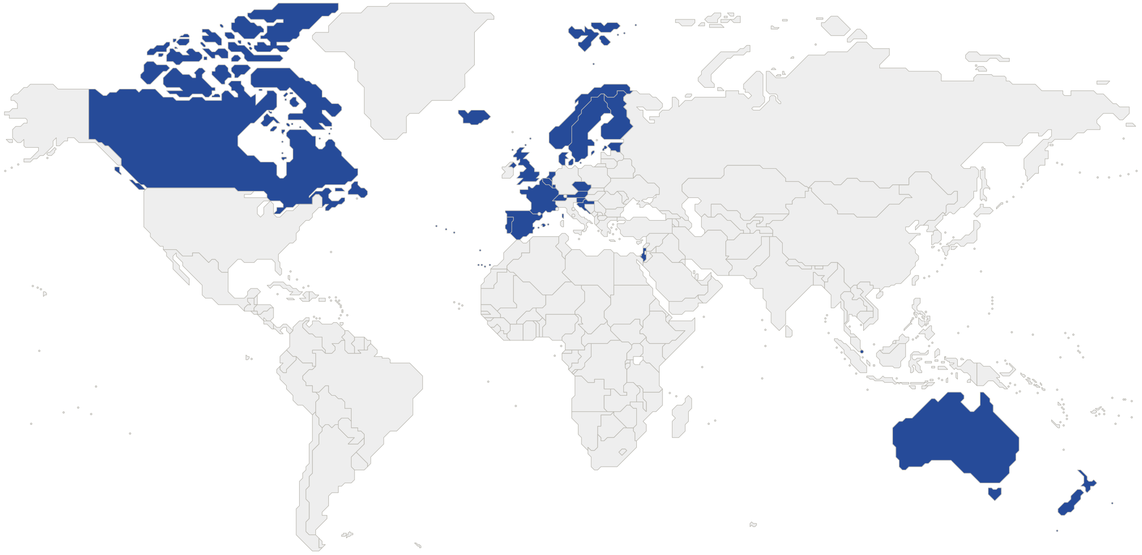
Share of Global Population
(World Bank, 2022)

8.1%

Share of Global GHG Emissions
(World Bank, 2020)

19.1%

Share of global real GDP, 2015 $
(World Bank, 2022)



Archetype 1: Inclusive Green Adopters

Potential opportunities

- **Skilled workforce and labour protection:** These countries typically demonstrate a high level of education, high investment in reskilling, wide coverage of social protection, strong compliance with labour standards as well as a lower proportion of youth.

- **High-income, inclusive economies:** Income levels in these countries are generally among the highest across archetypes, with relatively low levels of inequality and more progressive tax systems. Levels of access are high in these countries with high levels of public space inclusion and broad public transport coverage.

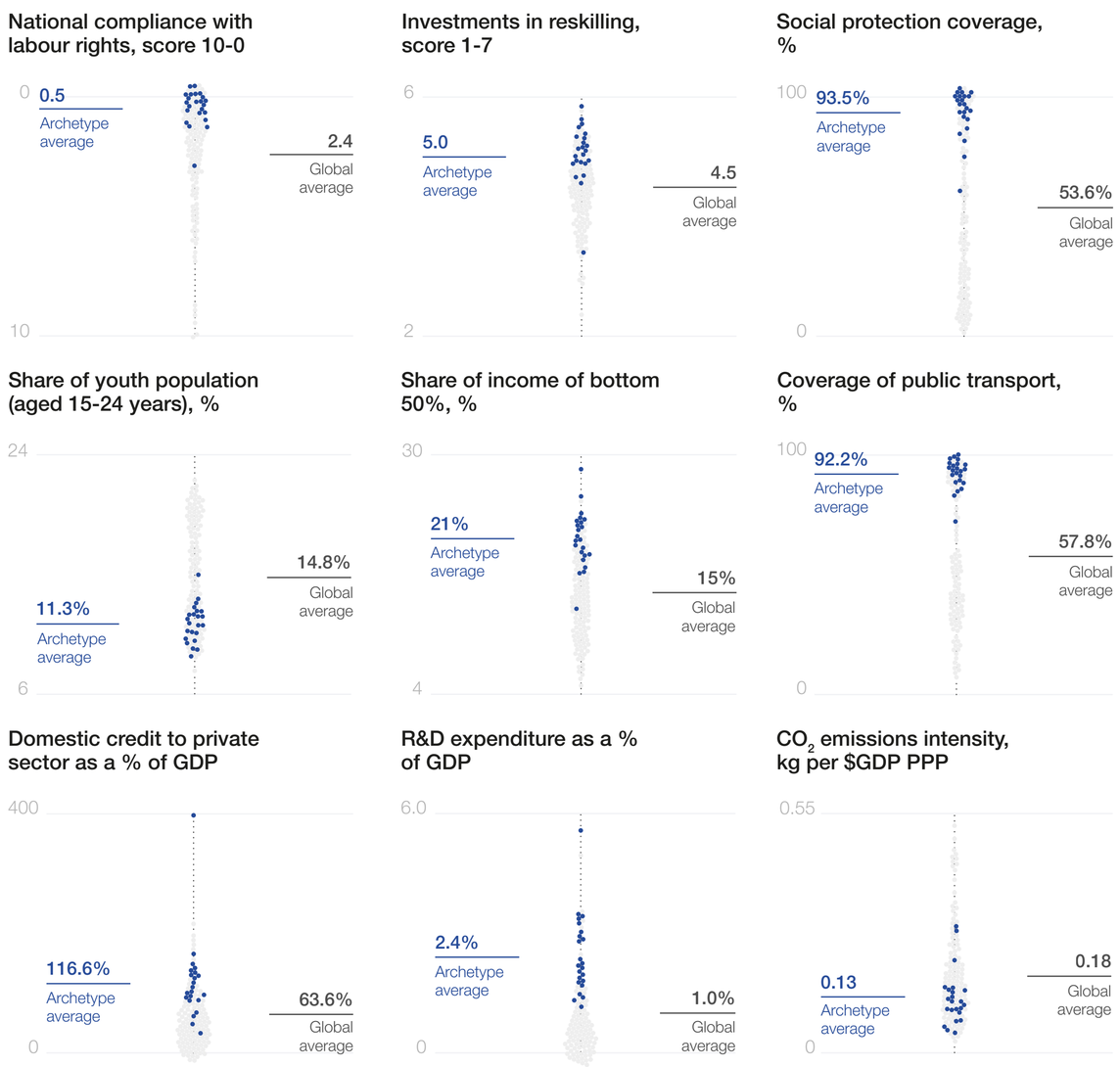
- **High financial and innovation capacity:** These countries see larger-than-average fiscal capacity, strong financial resilience, high SME finance availability and substantial domestic credit to the private sector. With high levels of R&D expenditure and good regulatory quality, companies can more easily invest and transition to more sustainable business models.

Potential challenges:

- **Eroding competitiveness, aging workforce:** With well-developed and technologically advanced industrial infrastructures and early adoption of policies to support the green transition, these countries are facing potential trade-offs between transitioning legacy industries and business models to low-emission production technologies, maintaining cost competitiveness, and generating employment opportunities. An aging workforce further signals reskilling priorities for an equitable transition for workers.

- **Stagnant growth, cost-of-living pressures:** Declining or stagnant economic growth and real wage growth can exacerbate the impact of rising costs, especially for housing and energy. Potential loss of tax revenue from fossil-fuel consumption can limit social expenditure to support low-income households.

- **Limited access to green know-how:** While these countries typically have robust innovation infrastructure and talent pools, they often lack specific technologies relevant for the climate transition. Wealth and know-how are often concentrated in large cities and bigger companies, risking underinvestment required for the climate transition in rural regions and for SMEs.



Note: Selected metrics are illustrative of archetype's key characteristics.

Archetype 2: Emerging Green Adopters

Countries in this group are mostly upper-middle and high-income economies where the industrial sector still employs a significant share of the population. They are starting to roll out policies to support the green transition while also transitioning to higher value-added service sectors. These countries tend to be located mainly in Central and Eastern Europe.

Archetype profile:

4.1%

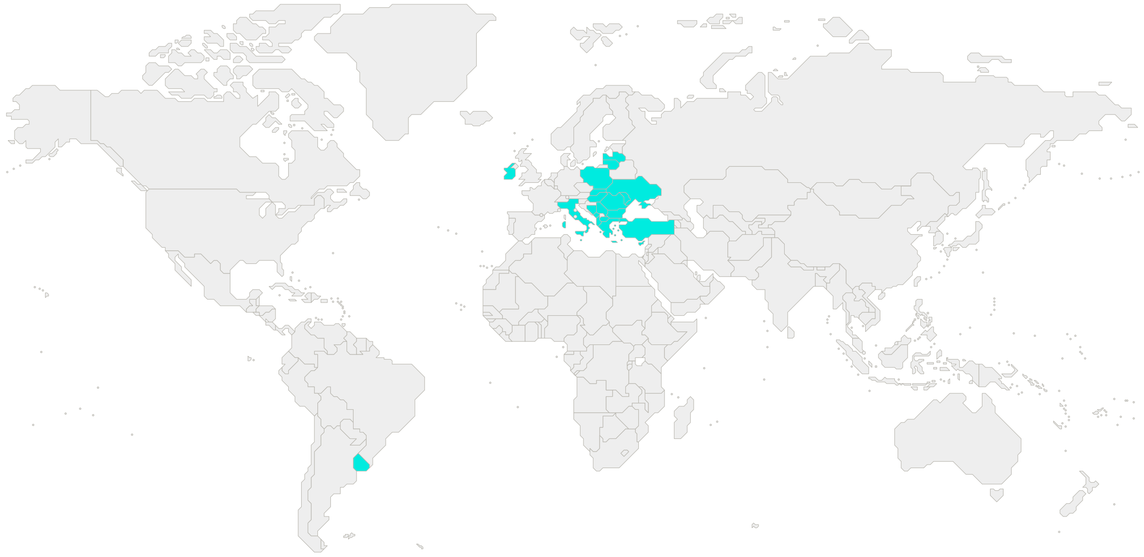
Share of Global Population
(World Bank, 2022)

4.9%

Share of Global GHG Emissions
(World Bank, 2020)

6.3%

Share of global real GDP, 2015 $
(World Bank, 2022)



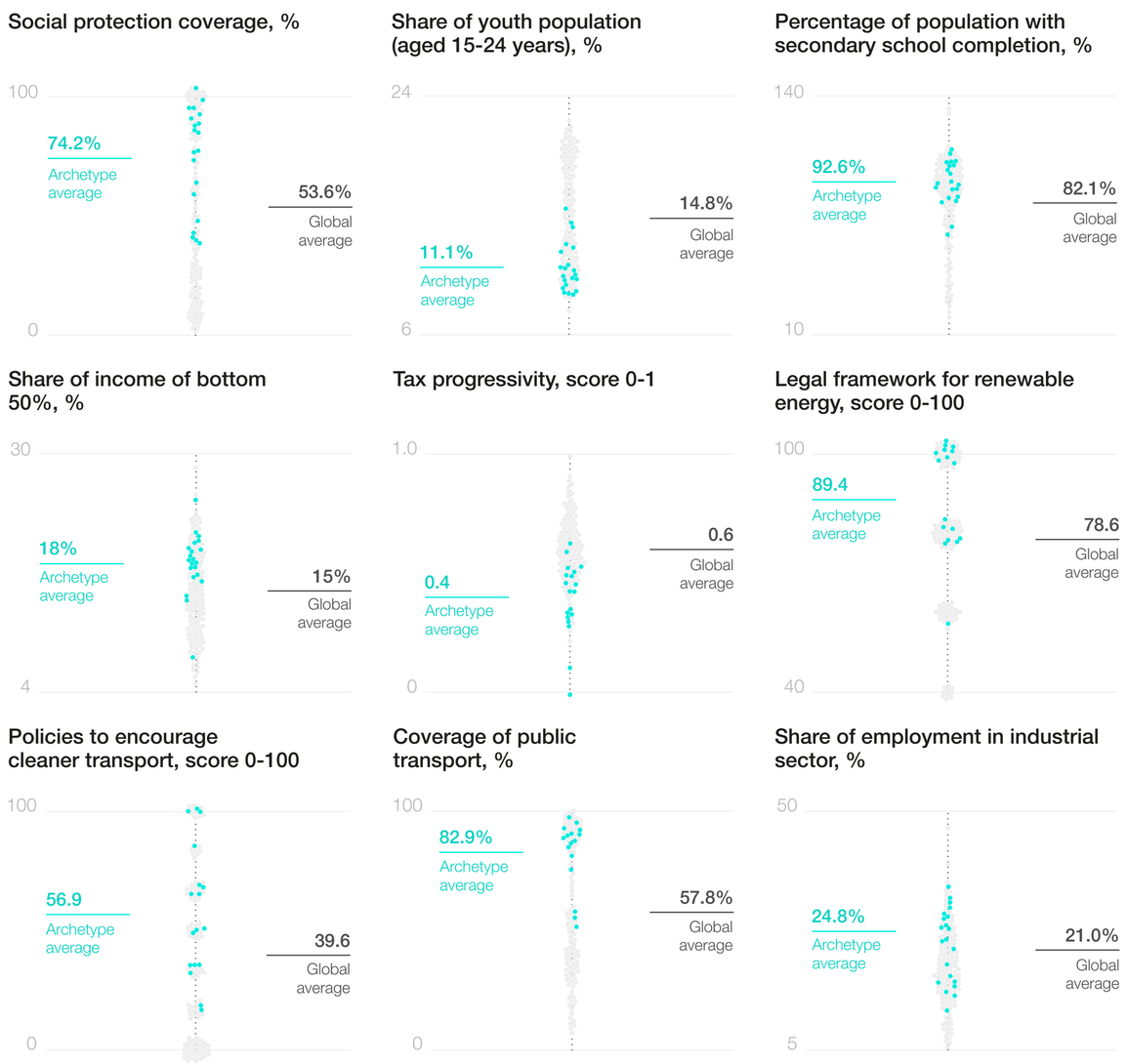
Archetype 2: Emerging Green Adopters

Potential opportunities

- **Strong human capital and social protection mechanisms:** This group generally exhibits higher-than-average education attainment rates, strong social protection coverage and compliance with labour rights.
- **High inclusion and accessibility:** Income levels in these countries are relatively high, with high levels of real wage growth and lower-than-average levels of inequality. This group also sees a higher-than-average level of inclusion in public spaces and good coverage of public transport and other services.
- **Conducive policies:** These countries have developed high-quality regulatory frameworks to support renewable energy development and clean transport.

Potential challenges:

- **Legacy brown industries and skill gaps:** These countries tend to have high employment in industries that might require significant transformation, with potential implications in terms of job displacement and the economic desertification of specific areas. New and service-driven businesses may cluster around larger cities. These countries typically have an aging workforce profile and limited investments in reskilling programmes.
- **Climate financing gaps:** Despite large investment needs, many of these countries have limited fiscal capacity and low tax progressivity, while also lacking deep financial markets that can help fill climate financing gaps.
- **Emerging innovation ecosystems:** Countries in this group are developing their innovation ecosystems and have the chance to build early specialization on sustainable products and business models. However, availability of talent for the green transition can be a constraint.



Note: Selected metrics are illustrative of archetype's key characteristics.

Archetype 3: Fossil-Fuel Exporters

Countries of this archetype are primarily high- or upper-middle-income, fossil-fuel exporting countries, predominantly located in the Middle East and Central Asia. These countries exhibit the highest levels of emissions intensity among all groups, largely due to their significant reliance on fossil-fuel exports.

Archetype profile:

3.5%

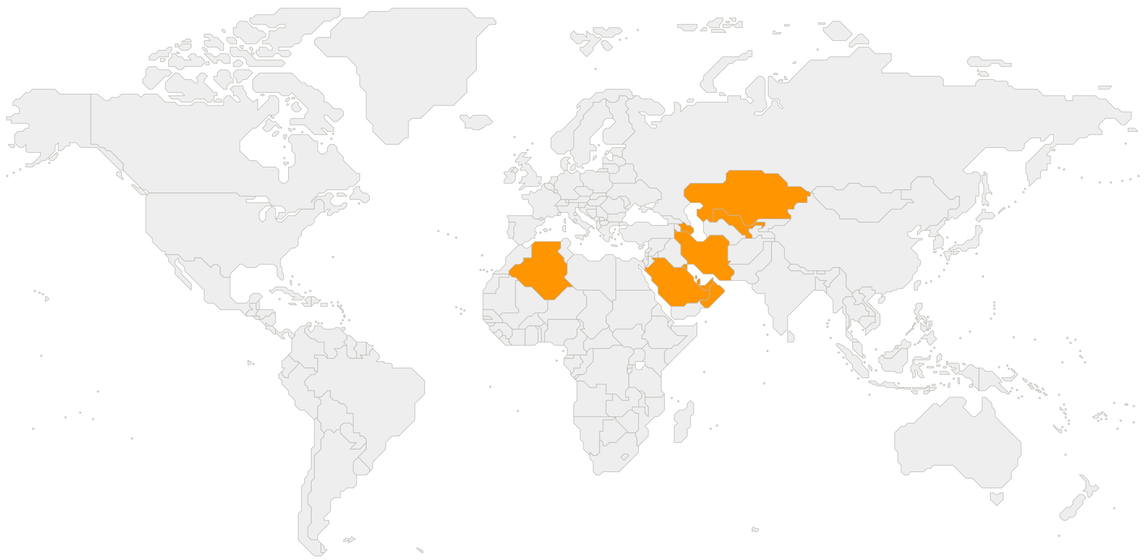
Share of Global Population
(World Bank, 2022)

7.4%

Share of Global GHG Emissions
(World Bank, 2020)

3.1%

Share of global real GDP, 2015 $
(World Bank, 2022)



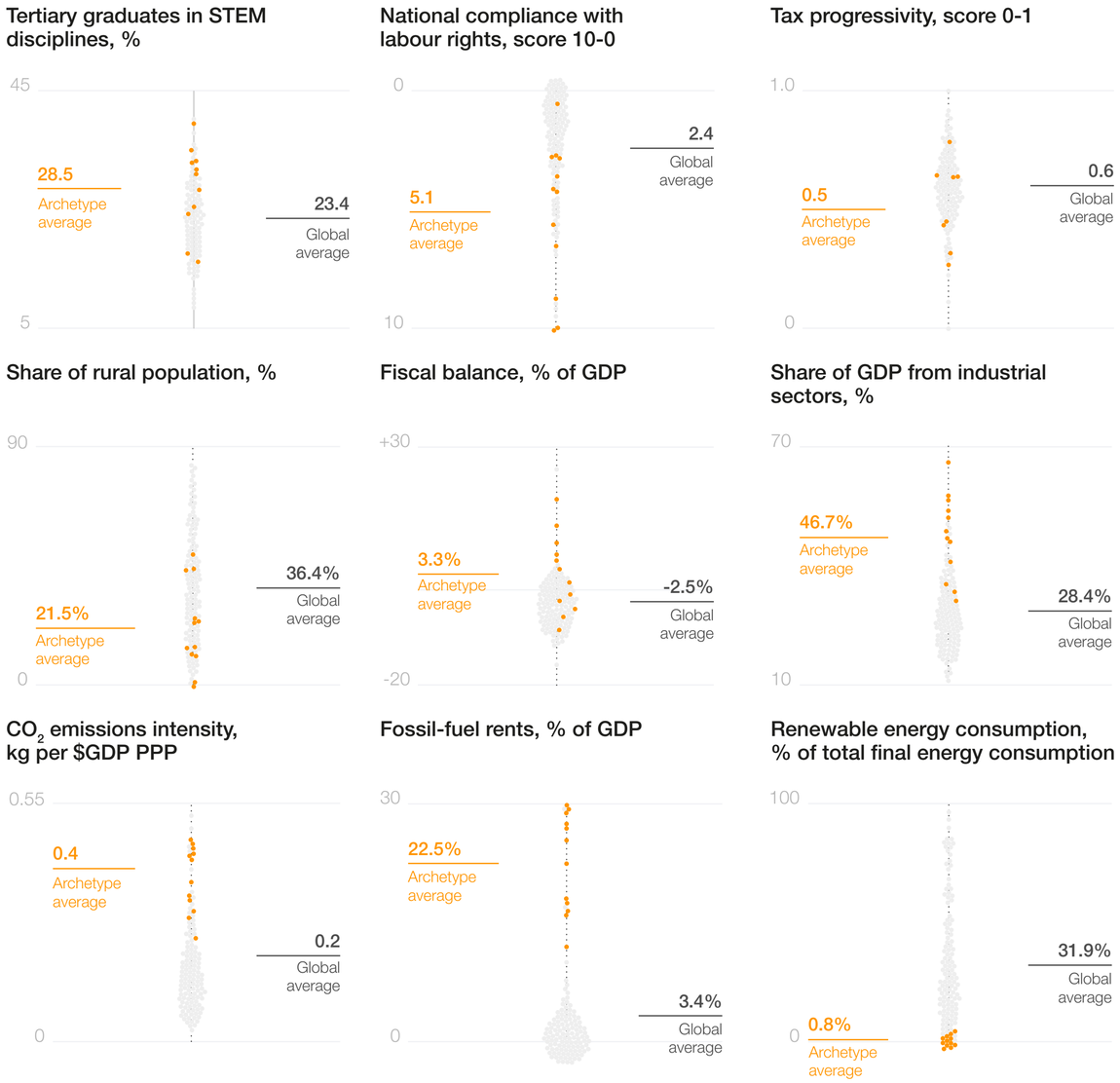
Archetype 3: Fossil-Fuel Exporters

Potential opportunities:

- **High fiscal balance:** These countries typically have larger fiscal capacity, thanks to the revenues generated through the export of fossil fuels. These resources can be channelled towards necessary investments to support an equitable transition.
- **STEM-focused workforce:** These countries have, on average, a high proportion of STEM graduates that could be leveraged to support the creation of new industries and technological innovations.
- **A strong industrial base:** Many of these countries have developed a strong industrial base, although often specialized in energy-intensive sectors. With the right investments, this capacity can be adapted and reconverted to lower-carbon activities.

Potential challenges:

- **Subsidies and taxes:** These countries generally have tax systems that are less progressive than the global average, high levels of income inequality, and support energy affordability through large fossil-fuel subsidies. Phasing out these subsidies without broader adjustment to the fiscal system might expose consumers to affordability shocks and face potential backlash.
- **Diversification:** Most countries in this group rely heavily on fossil-fuel industries to sustain their national prosperity, and they will need to develop new industries to diversify their economy and to sustain high levels of employment.
- **Upgrading labour markets:** Economic diversification will require a significant transition and upskilling of the workforce.[2] Strengthening social protection mechanisms and labour standards will help achieve an equitable transition for workers.



Note: Selected metrics are illustrative of archetype's key characteristics.

Archetype 4: Growth Economies

Countries of this archetype are typically lower- to upper-middle-income emerging economies. Many are undergoing rapid economic transformation, with increasing levels of industrialization and urbanization as well as ambitious growth and development plans. They typically have high levels of employment in industrial and agricultural sectors, and many are in Latin America, Southern Africa, and Southern and South-East Asia. Countries in this archetype tend to have large shares of increasing energy demand.

Archetype profile:

38.8%

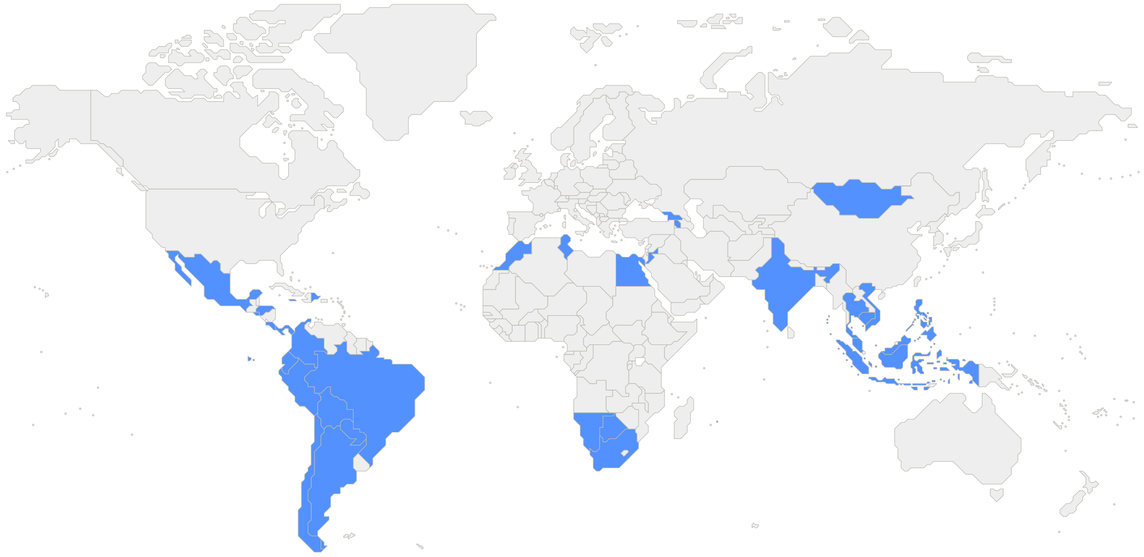
Share of Global Population
(World Bank, 2022)

23.0%

Share of Global GHG Emissions
(World Bank, 2020)

13.9%

Share of global real GDP, 2015 $
(World Bank, 2022)



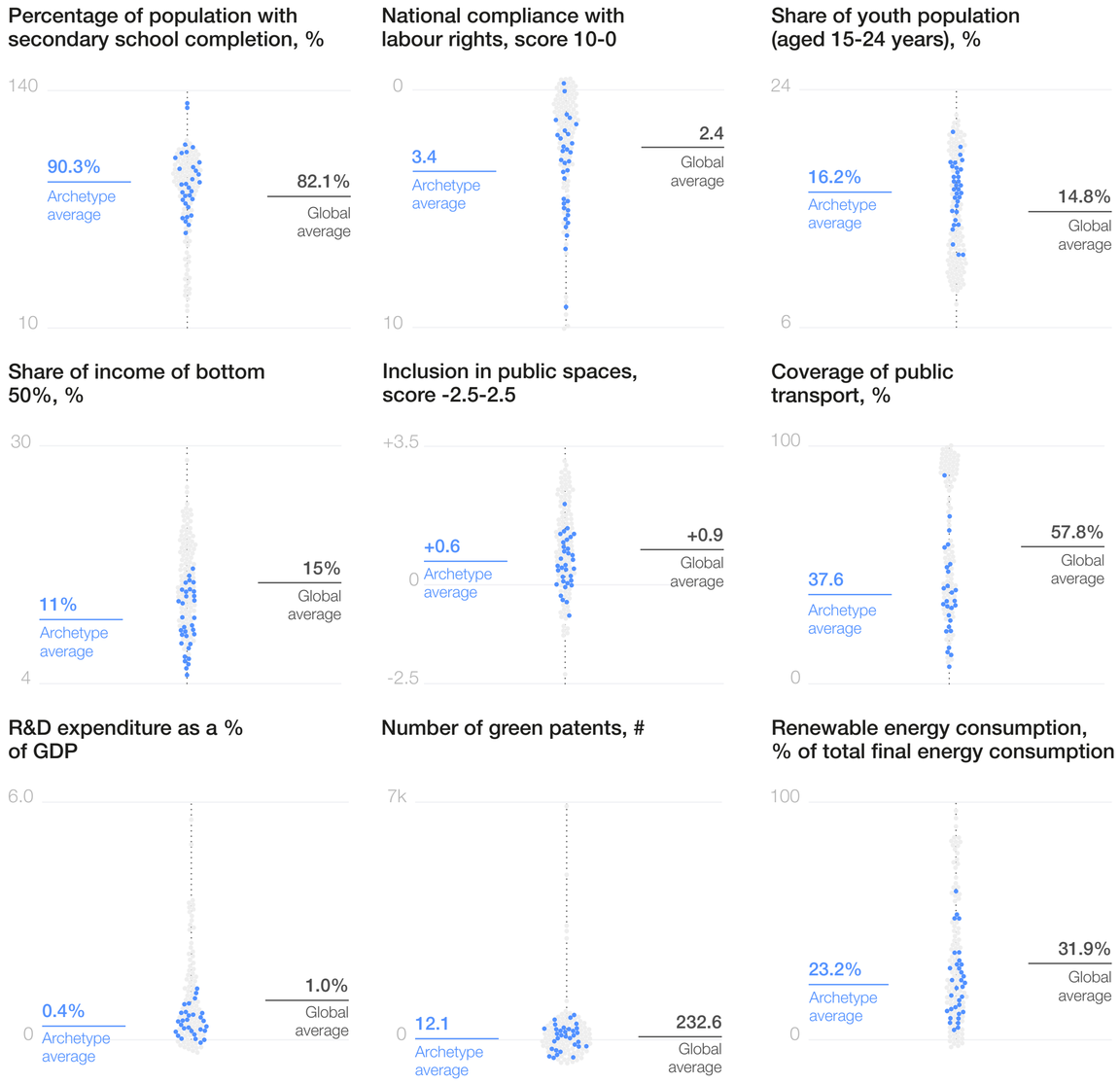
Archetype 4: Growth Economies

Potential opportunities

- **Strong education attainment:** Countries in this cluster tend to see higher levels of secondary education and focus on STEM disciplines at higher rates compared to the global average, providing a pool of talent that can be further trained to take on emerging green jobs.
- **Dynamic economies:** Countries within this cluster are largely industrializing economies. As they go through deep transformation processes, they have an opportunity to leapfrog and nurture cleaner industries.
- **Young populations:** Most countries in this group have a comparatively young population. Combined with good levels of education, they can reap a beneficial demographic dividend while also adapt more easily to green consumption trends and labour market needs.

Potential challenges:

- **Equity and inclusion:** These countries tend to display lower levels of social inclusion and higher levels of inequality. Labour markets are often characterized by lower labour standards, weak social protection coverage and a high level of informality. Improving equity and inclusion is also a priority for urban development, especially with respect to housing affordability and access to public transport services.
- **Financing and technology for clean energy:** Without access to large sources of financing or green technology, the energy mix of these countries often remains dependent on fossil fuels. Limited fiscal capacity and less resilient financial systems can be a barrier in financing decarbonization and developing robust growth and employment opportunities.[3]
- **New growth models:** In the context of an increasingly fragmented global economy, most countries in this archetype have not yet transitioned to a diversified, innovation-driven economy. Their R&D expenditure are still below the global average.



Note: Selected metrics are illustrative of archetype's key characteristics.

Archetype 5: Frontier Economies

Countries in this archetype are typically low- and lower-middle-income countries with a higher-than-average proportion of GDP from agriculture. With lower levels of economic development and emissions per capita, they will need to address significant socioeconomic challenges to grow and create shared prosperity, while also facing the consequences of climate hazards. This group includes mainly Sub-Saharan economies as well as some Asian and Latin American countries.

Archetype profile:

21.2%

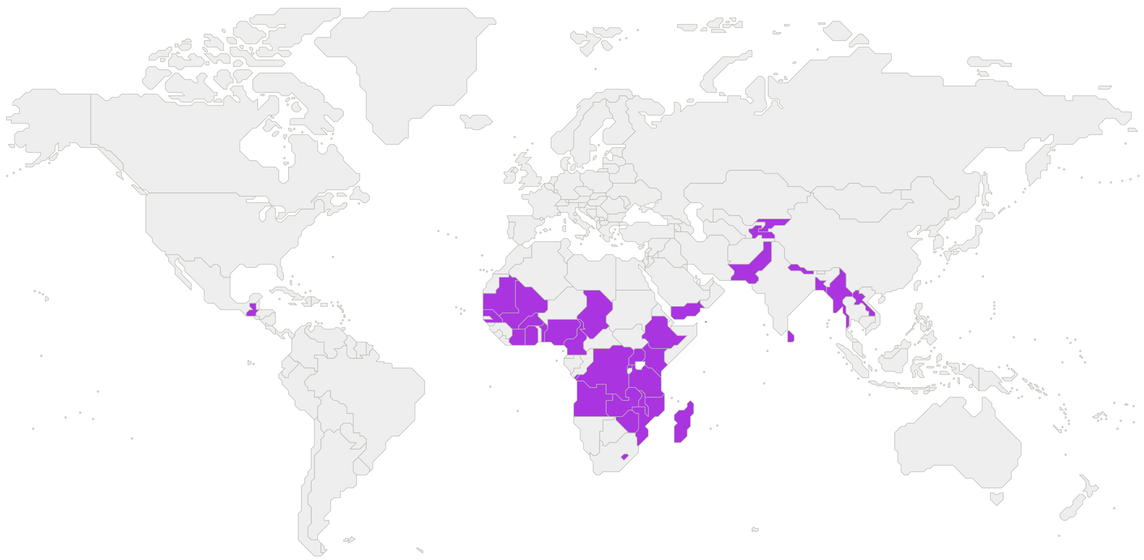
Share of Global Population
(World Bank, 2022)

5.7%

Share of Global GHG Emissions
(World Bank, 2020)

2.8%

Share of global real GDP, 2015 $
(World Bank, 2022)



Archetype 5: Frontier Economies

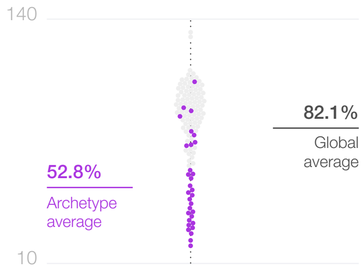
Potential opportunities:

- **A green start:** Countries of this archetype have comparatively lower emissions intensity and higher levels of renewable energy consumption, signalling strong prospects for green growth if supported with the right level of financing, technology and institutional frameworks.
- **Developing workforce:** Given the high proportion of youth, these countries typically have a growing workforce.[4] Investments in education and skills to bridge gaps in secondary and STEM education can support a strong workforce transition and improve available talent.
- **Sustainable development:** Many countries within this cluster have some of the highest rates of rural population in the world and are at the early stage of the structural transformation of their economy. There is an opportunity to leapfrog typical fossil-fuel based growth strategies to sustainable development paths.[5]

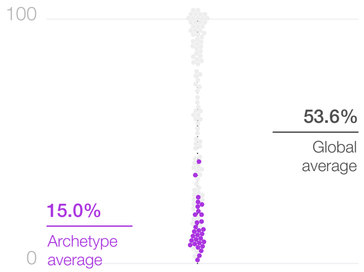
Potential challenges:

- **Inequality and limited accessibility:** These countries generally have a higher proportion of the population living below the poverty line, with high levels of inequality and weaker institutional capacity to improve access to energy, public services and infrastructure.[6]
- **Labour skilling:** Frontier countries tend to have higher, growing levels of youth population, but typically have lower levels of quality education and investment in training. Lack of a sufficiently skilled workforce risks higher levels of unemployment due to an unskilled workforce unable to meet labour-market demands.[7]
- **Limited financing and innovation capacity:** These countries tend to have lower financial and technological resources, with limited public and private financing available and low innovation and R&D capacity.

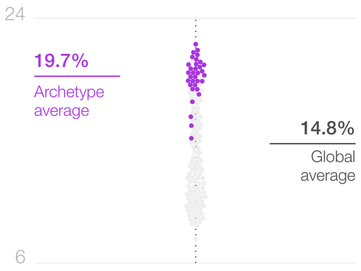
Percentage of population with secondary school completion, %



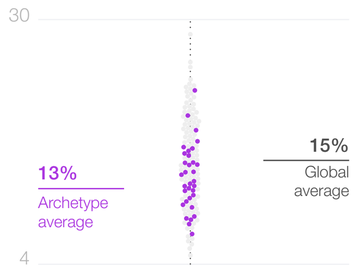
Social protection coverage, %



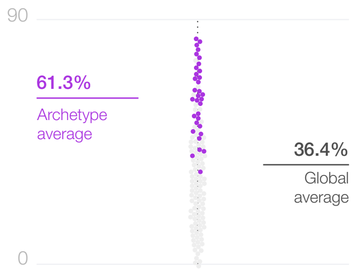
Share of youth population (aged 15-24 years), %



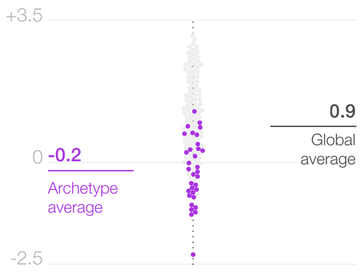
Share of income of bottom 50%, %



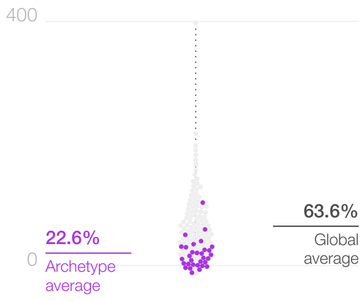
Share of rural population, %



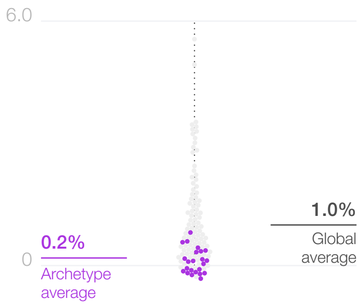
Inclusion in public spaces, score -2.5-2.5



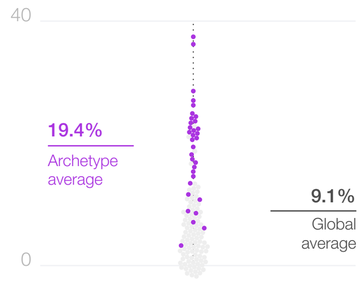
Domestic credit to private sector as a % of GDP



R&D expenditure as a % of GDP



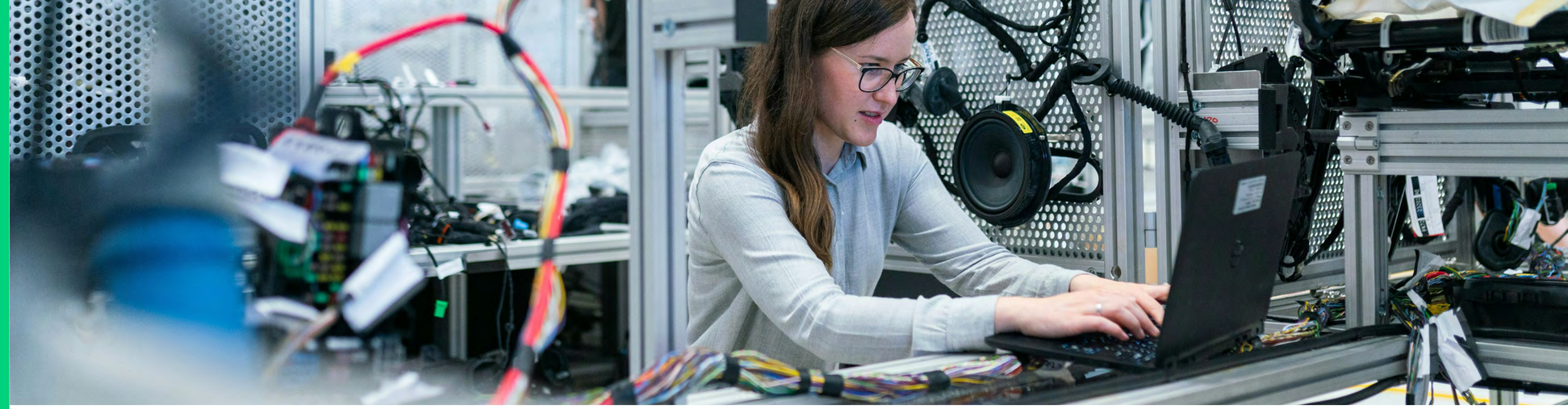
Share of GDP from agriculture, %



● Frontier Economies ● Other countries

Note: Selected metrics are illustrative of archetype's key characteristics.

Archetype 6: Green Developers



Countries in this archetype are typically high-income industrialized economies with large and diversified economies. Together, they account for the largest share of global GHG emissions. They lead globally in access to finance and innovation and collectively hold 85% of the world's green patents.[8] Most of the largest firms in the world, across different sectors, are domiciled in countries of this archetype. These countries also have deep and diversified industrial value chains, reinforcing the need to ensure equity in access to knowledge and capacity globally.

Archetype profile:

27.3%

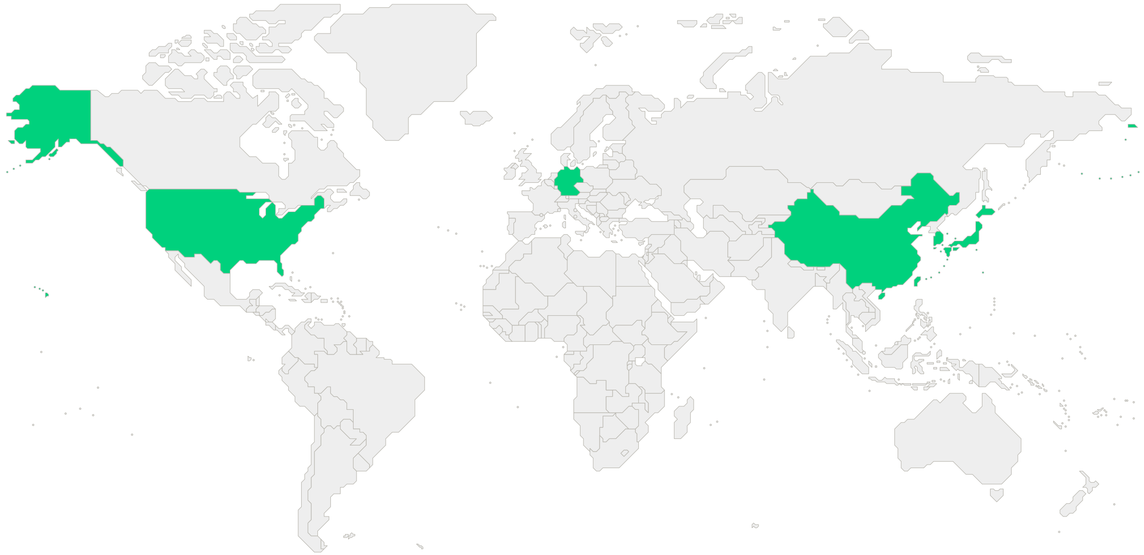
Share of Global Population
(World Bank, 2022)

51.0%

Share of Global GHG Emissions
(World Bank, 2020)

54.8%

Share of global real GDP, 2015 $
(World Bank, 2022)



Archetype 6: Green Developers

Potential opportunities

- **Strong reskilling and labour protections:** Countries in this group have some of the largest populations in the world, with many employed in traditional industries. However, these countries exhibit higher-than-average investment in reskilling and social protection coverage, which can support the workforce transition if investments are maintained.

- **High finance availability:** Owing to well-developed financial markets, the volume of investments in the green transition in these countries are among the highest globally, with better-than-average access to finance for SMEs.

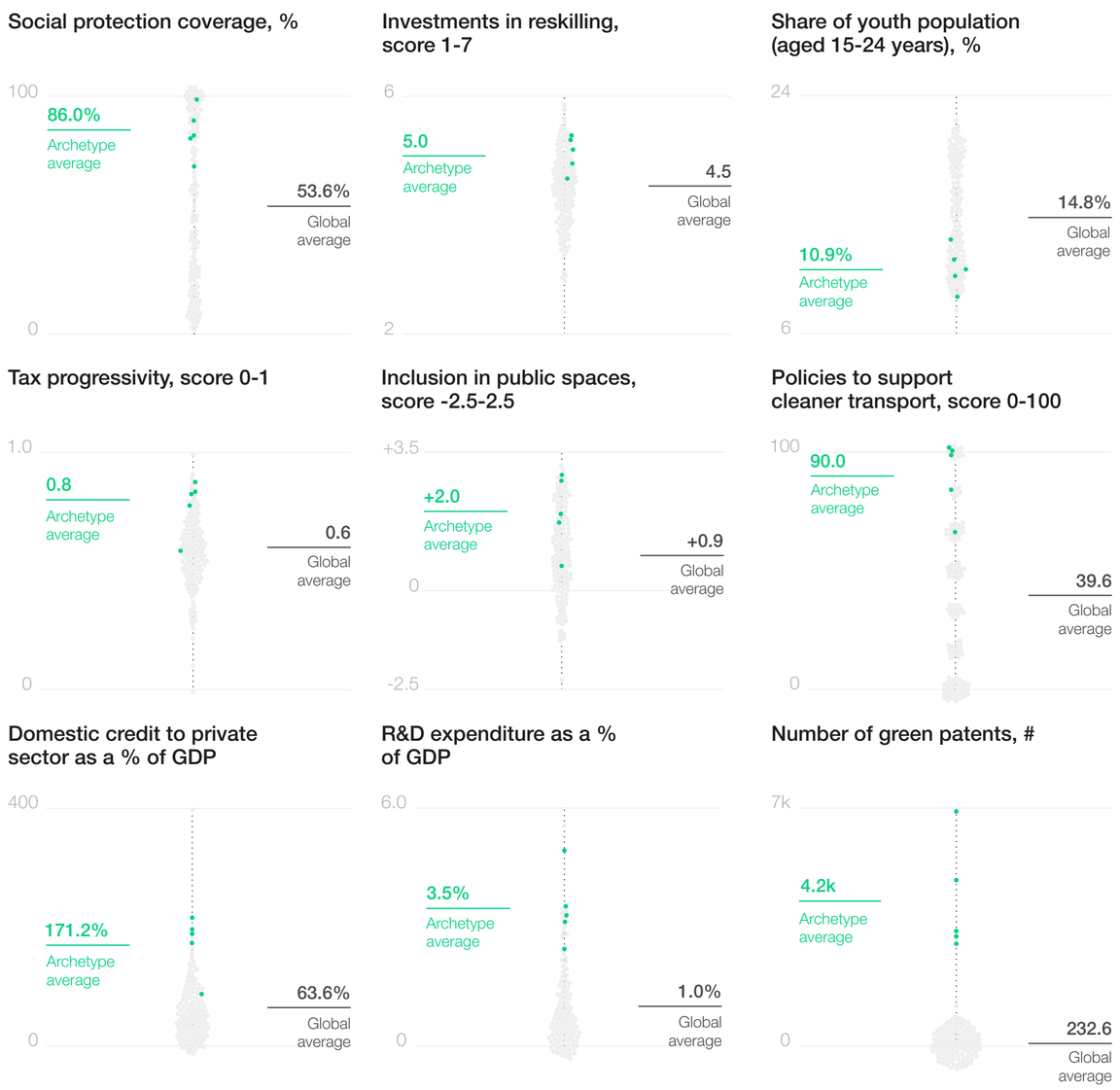
- **Green technology and innovation:** Governments in these countries have invested heavily in revitalizing the legacy industrial base to gain competitive advantage in emerging industries. These countries are dominant holders of green patents.

Potential challenges:

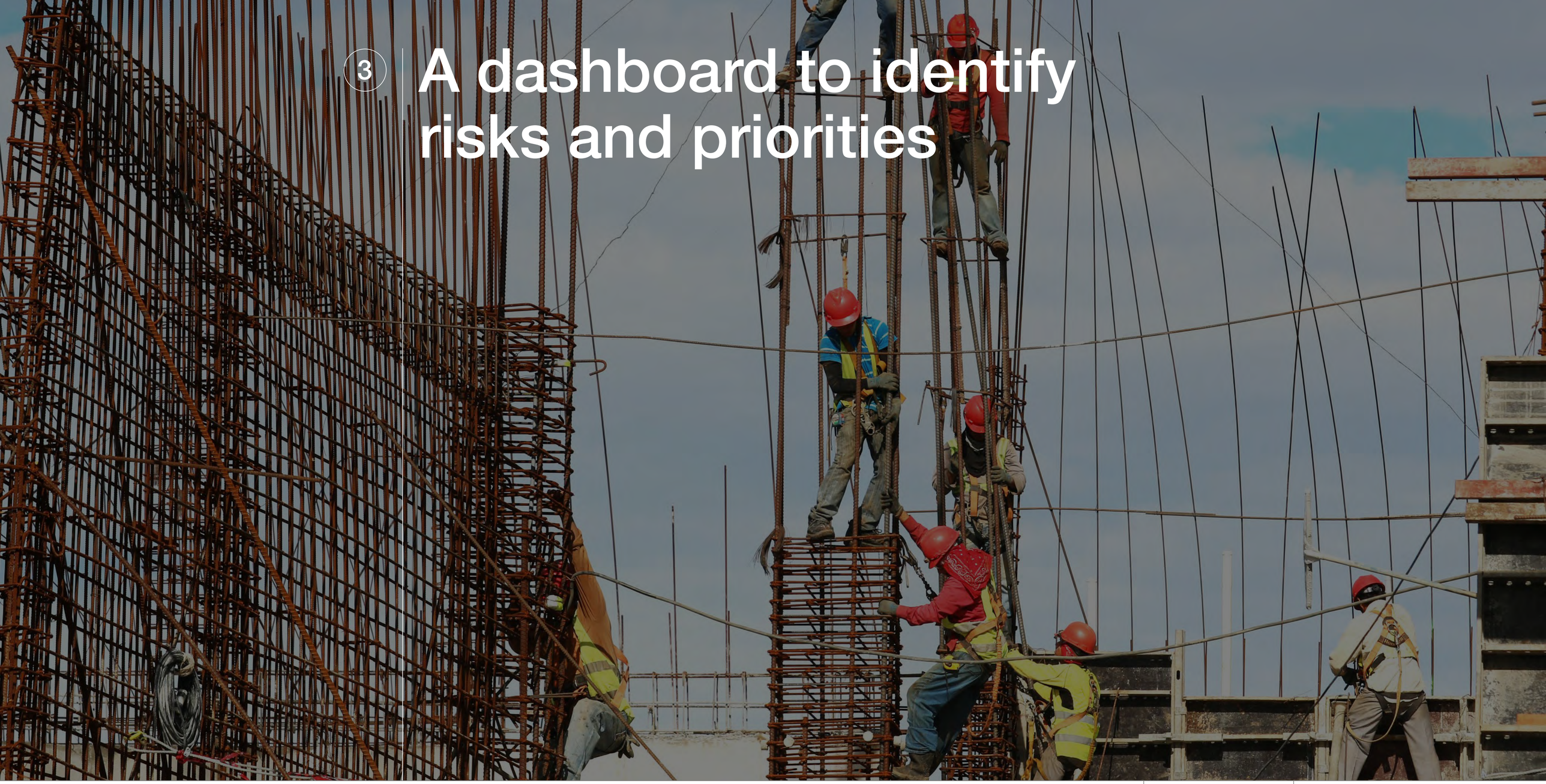
- **High emissions and emissions intensity:** Countries in this archetype are among the largest carbon emitters globally, with still a long journey to go to reach to net-zero emissions. While they are well-endowed with financial, technological and human capital to enable decarbonization, they will need to manage the transition of large workforces into cleaner industries.

- **Ageing populations:** Countries of this archetype are characterized by ageing populations, reinforcing the need to support reskilling and keep broad-based, productive employment.

- **Trade-offs of green subsidies:** Global leaders in the roll-out of green industrial strategies, countries of this archetype will have to navigate the trade-offs linked to green subsidies, including their impact on public finances and their equity implications, both within and between countries.



Note: Selected metrics are illustrative of archetype's key characteristics.



3 A dashboard to identify risks and priorities

The six equitable transition archetypes provide a starting point to understand how different countries might experience the challenges of ensuring equity throughout the green transition differently, and proxy for a series of structural drivers that can influence economic equity outcomes of the climate mitigation challenge. This cross-country view can be considered by policy-makers to complement the geographically specific impacts of the transition visible at the country-level to ensure mitigation action does not create new socioeconomic divides. Further – and as advocated for in the Economic Equity Framework – a comprehensive view on where a country is vis-à-vis an equitable transition requires a cross-sector view; the energy transition is central to unlocking progress but the transition is not confined to the boundaries of the energy system. A view on equity impacts must therefore extend to consider how and where transition efforts in other major segments of the economy affect economic equity outcomes.

Sector-specific metrics

The intersections of the green transition dimensions and the economic equity dimensions of the framework provide a basis for identifying metrics of interest. In addition to the structural indicators used to define country archetypes in the previous chapter, a set of sector-specific, "aspirational metrics" can be identified, based on the green transition dimensions and by considering the socioeconomic impacts of commonly implemented decarbonization policies (e.g. the impact of phasing out fossil fuels on electricity prices and accessibility). The objective is to support stakeholders in assessing and keeping sight of the relative degree of exposure of workers, consumers and small businesses to equity risks in various sectors during the green transition. In other words, the metrics proposed (Table 3) are intended to offer insight on the distributional inequities within countries that different climate mitigation areas can intensify.

Timely and consistent availability of information on the presence, extent and nature of distributional implications is an essential starting point to identify and address potential equity challenges. Isolating the distributional implications of climate policies can be complex at a national level, due to the simultaneous effects of a wide range of drivers such as geopolitics on energy prices, demographics on consumer preferences, structure of climate action governance on inclusiveness, and other factors. However, a consistent and timely monitoring of suitable indicators at a national level can support a comprehensive view of equity risks and more effectively set the agenda through incorporation into national frameworks such as NDCs. National-level indicators can be complemented by indicators measured at provincial, local or programme levels to better attribute the equity implications to specific climate mitigation actions. Where "aspirational metrics" are unavailable, we rely on proxy metrics to develop the country dashboards, which are illustrative examples of how these metrics can be used to identify country-level focus areas. Please refer to Appendix C for the full list of proxy metrics used.

TABLE 3

Aspirational metrics

Equity dimension	Green dimension	Indicator	Rationale
Employment and job transition	Multiple	Share of workers likely to face job loss from climate mitigation action	Progressive decarbonization can lead to gradual phasing out of emissions-intensive industrial installed base, with disproportionate impacts on the vulnerable workforce. Understanding the extent of exposure of workforce to job losses, as well as factors that lead to incresed vulnerability, can lead to timely and informed measures for an equitable transition for workers.
		Share of vulnerable groups (elderly, women, low-wage workers) in sectoral workforce	
		Wage differential in displaced vs climate mitigation-related jobs	Observing the difference in qualitative aspects such as wages, contracts and job security of new employment opportunties as compared to those in displaced industries can help identify adverse implications of the transition on workers.
		Differences in working conditions (working hours, contract type, etc.) in displaced vs mitigation-driven jobs	
		Share of workers likely to need significant reskilling in their current roles	Identifying skills gaps and reskilling workforce for emerging industries is important to ensure strong labour supply to support new sectors, and to enable workforce transition from legacy to emerging industrial sectors.
		Share of employment in low-skill occupations within relevant industries (ISCO-08 Skill Levels 1 and 2)	
Affordability of goods and services	Transitioning away from fossils fuels	Percentage increase in household electricity prices relative to wages	Cost pass-through of climate policies to consumers or removal of fossil-fuel subsidies can trigger price volatilities in the utility tariffs, transport fuels and cooking fuels.
		Percentage increase in transport fuel prices (diesel, gasoline) relative to wages	
		Percentage increase in cooking fuel prices (LPG) relative to wages	
		Share of income absorbed by energy costs for low-income households	Low-income households spend a larger proportion of their income on energy costs, and are at higher risk of affordability challenges from energy price volatilities. Household energy costs are sensitive to household size, local climate conditions, building construction material, etc. Income thresholds for low-income households vary across countries and subnationally.
		Share of low-income households participating in bill-payment support programmes	Timely and consistent monitoring of incidences of households with utility bill arrears, service disconnections or participation in bill-support programmes can highlight rising challenges to energy affordability and enable targeted support to vulnerable households.
		Share of households with utility bill arrears	
		Share of households with electricity disconnections	

Equity dimension	Green dimension	Indicator	Rationale
Affordability of goods and services	Scaling up low-carbon energy sources	Median income of households with residential solar photovoltaics (PV) installations, as compared to national median household income	Monitoring the income profiles of beneficiaries of government incentives to encourage adoption of low-carbon energy can help ensure equitable access of incentives to low-income individuals, who might face barriers of high upfront capital requirements.
		Weighted average levelized cost of energy (LCOE)	Substituting installed base of fossil-fuel powered electricity infrastructure with renewable alternatives will require scaling up capacity across multiple sources. Observing levelized cost weighted across multiple sources can help in understanding the shifts in cost competitiveness of electricity mix and potential effects on affordability.
		Green premium of energy-efficient appliances	Energy-effiicient alternatives of household appliances such as refrigerators, heat pumps, air conditioners, etc. have lower operating costs over lifetime of the appliance, though high upfront costs can be a barrier for low-income consumers.
	Greening transportation and mobility	Share of population that can afford public transport	As policies to phase out fossil-fuel powered vehicles come into effect, affordable public transport becomes a key component of a sustainable transport system. Affordability of public transport is sensitive to level of urbanization, population characteristics and local economic development.
		Green premium of Electric Vehicles (across different passenger vehicle segments)	Higher upfront capital requirements of electric vehicles as compared to conventional alternatives, such as internal combustion engines, can act as a barrier for low-income households to adopt greener mobility options.
		Relative cost difference between public and at-home EV charging	Public charging of electric vehicles is more expensive than at-home charging. Households with limited financial resouces to install at-home charging systems can face barriers from high-cost public charging, affecting the acceleration of low-carbon mobility.
	Greening agriculture and food production	Percentage of the population who cannot afford a healthy diet	As policies to switch to sustainable agricultural methods are implemented, and crops are redirected to produce biofuels (with the consequent impact on domestic food prices), food affordability will be crucial.
		Percentage increase in food prices over time, relative to wages	
		Percentage of households receiving food subsidies or assistance	
		Green premium of sustainable foods	The higher costs of foods produced through sustainable and regenerative agricultural methods can act as a barrier for low-income households to adopt greener options.

Equity dimension	Green dimension	Indicator	Rationale
Affordability of goods and services	Greening infrastructure and built environment	Housing affordability	As policies to decarbonize the housing sector come into place, they can exacerbate existing housing affordabiliity challenges. Despite long-term cost savings from energy efficiency retrofits, consumers may face high upfront costs, or even higher rents due to landlords raising rents to cover costs of green upgrades.
		Percentage increase in housing prices over time, relative to wages	
		Share of households receiving housing allowances in bottom quartile (%)	
		Green premium of energy-efficient homes	Higher upfront costs of energy efficient housing (and retrofits) can act as a barrier, particularly for low-income households with limited savings or ability to obtain credit.
	Moving to a circular economy	Green premium of recycled products	Higher costs of recycled products (e.g. driven by increased costs of raw materials or different production processes) can act as a barrier for low-income consumers.
Accessibility of goods and services	Transitioning away from fossils fuels	Access to electricity (% of population)	Phasing out of legacy fossil-fuel infrastructure, if unsynchronized with scaling up of low-carbon energy, can affect achievement of universal access to energy for different end uses, especially in countries currently lacking universal access.
		Access to electricity, rural (% of rural population)	
		Share of population without access to gas grid	
		Access to clean fuels and technologies for cooking (% of population)	
		Share of population unable to keep home adequately warm	
		Share of population without access to cooling	
	Scaling up low-carbon energy sources	Share of population without access to clean electricity	Infrastructure and supply-chain limitations can limit the accessibility of low-carbon energy and energy-efficient appliances. Monitoring the levels of accessibility across geographies, especially in rural areas, can enable wider and equitable adoption of sustainable alternatives.
		Share of population with access to energy-efficient appliances	
		Proportion of residential solar PV systems installed, by building ownership type	Rented and multi-family occupied buildings have lower levels of residential solar PV adoption, as compated to single-family, owner-occupied buildings.
		Share of residential renewable energy-adoption incentives distributed to low-income households	Government incentives to encourage renewable energy adoption may not accrue equitably to low-income households, which face barriers such as information gap, lack of sufficient collateral and upfront capital costs. Monitoring levels of low-income beneficiaries can improve programme participation.

Equity dimension	Green dimension	Indicator	Rationale
Accessibility of goods and services	Greening transportation and mobility	Proportion of population that has convenient access to public transport (%)	Expanding coverage of reliable and frequent public transport to connect underserved and low-income communities with high demand areas can support equitable access to moblity.
		Share of population with access to EV infrastructure	Sufficient and equitable public charging infrastructure is required to accelerate mobility transformation, and to provide access to charging services to consumer segments beyond early adopters.
		Share of EV adoption incentives distributed to low-income individuals	Government incentives to encourage sustainable mobility may not accrue equitably to low-income households, which face barriers such as information gap, lack of sufficient collateral to obtain credit and upfront capital costs. Monitoring levels of low-income beneficiaries can improve programme participation.
	Greening agriculture and food production	Share of population with access to a healthy diet	Access to sustainable options may be limited due to several reasons, including geographic location (e.g. urban areas may have more supermarkets and specialty stores), consumer knowledge and regulatory environment (e.g. organic certification standards). Monitoring the levels of access of the population can improve programme participation.
		Share of population without access to sustainable food products	
	Greening infrastructure and built environment	Share of population without access to basic housing	Current accessibility gap in adequate housing can be exacerbated by climate policies targeted towards building decarbonization and greening of public spaces.
		Share of population without access to energy-efficient homes	
		Relative adoption of energy-efficient housing retrofit, by income group	Monitoring levels of adoption of energy-efficiency retrofits among groups such as rented accommodations and low-income households can inform development of targeted interventions for equitable access to sustainable housing.
		Relative adoption of energy-efficient housing retrofit, by home-ownership status	
		Share of housing energy efficiency retrofit incentives distributed to low-income households (%)	Government incentives to encourage energy efficiency retrofits may not accrue equitably to low-income households that face barriers such as information gap, lack of sufficient collateral, and upfront capital costs. Monitoring levels of low-income beneficiaries can improve programme participation.
	Moving to a circular economy	Share of population with access to recycled products and services	Access to sustainable options may be limited due to several reasons, including geographic location (e.g. urban areas may have options), consumer knowledge and regulatory environment (e.g. recycling certification standards). Monitoring the levels of access of the population can improve programme participation.

Equity dimension	Green dimension	Indicator	Rationale
Access to financing and investments	Multiple	Share of firms with less than 250 employees in relevant industries	The green transition faces a financing gap, which is particularly important for small and medium enterprises (SMEs). Monitoring the access to and usage of financial services by SMEs and the differences in lending costs as compared to large well-capitalized firms can help in targeted support to provide high-quality financial services to SMEs.
		Share of SMEs with access to green financing	
		Lending rate differential between SMEs and other firms	
		Climate-transition finance gap	Industry sectors differ in structural characteristics, such as concentration of firms, depth of domestic supply chains, levels of productivity, etc. As climate-transition finance flows follow cost competitiveness or lower-risk premiums, this can restrict opportunities to firms lacking cost-competitive investment opportunities, affecting reliant regions and supply chains. A better understanding of sectoral access to climate finance can inform development of suitable financial instruments.
		Total investment in relevant industries	
		Venture capital investment in relevant industries	
		Cost of capital for relevant climate-transition investments	Lower cost of capital for climate transition investments can foster adoption by low-income consumers and small businesses.
Access to capacity	Multiple	Share of SMEs with access to relevant knowledge and technology	Access to capabilities such as knowledge, talent and technologies for the green transition is necessary for firms to implemented decarbonization strategies. SMEs, which lack resources as compared to large organizations and are less connected to global knowledge networks, can be at a disadvantage in accessing these capabilities.
		Share of businesses that invest in R&D within relevant industries	
		Concentration of green patents among businesses	
		New business creation in relevant industries	The opportunities created by the green transition can support development of new economic activities, technologies and business models. Monitoring ease of new business creation can highlight equity in access to opportunities, especially for entrepreneurs who might lack familiarity with regulations and compliance standards.

Cross-country data on this preliminary list of aspirational metrics is largely unavailable at present. For example, there are no global datasets that capture, at a country level, the percentage of the population with access to energy efficient homes or the green premium on sustainable foods. In these cases, we look at country-level sources or draw on the closest substitute to the aspirational metric to support analysis in the country dashboards. Appendix C includes a full summary of aspirational metrics and maps to substituted metrics.

Illustrative country dashboards

The country archetypes and sector-specific metrics aim to support practitioners and policy-makers in conducting a diagnostic analysis of their country, surfacing overall systemic strengths and challenges, and assessing progress and risks at specific intersections of green and economic equity dimensions.

This section includes examples of dashboards for six countries selected across different archetypes, regions and income levels (see Table 4 for a brief overview). The goal is to provide a useful first step for the selected countries, which can be complemented with additional data gathered and through consultations with key stakeholders in the country.

TABLE 4

Overview of country profiles key data

Inclusive Green Adopters	Europe | High income
United Kingdom	
GDP ($ trillions, 2022)	**3.21**
GHG Emissions ($MTCO_2eq$, 2020)	**398.3**
Population (millions, 2022)	**67.0**

Emerging Green Adopters	Latin America | High income
Uruguay	
GDP ($ trillions, 2022)	**0.06**
GHG Emissions ($MTCO_2eq$, 2020)	**36.0**
Population (millions, 2022)	**3.4**

Fossil-Fuel Exporters	Middle East | High income
Oman	
GDP ($ trillions, 2022)	**0.09**
GHG Emissions ($MTCO_2eq$, 2020)	**95.1**
Population (millions, 2022)	**4.6**

Growth Economies	Asia | Upper-middle income
Malaysia	
GDP ($ trillions, 2022)	**0.39**
GHG Emissions ($MTCO_2eq$, 2020)	**302.1**
Population (millions, 2022)	**33.9**

Frontier Economies	Africa | Lower-middleincome
Kenya	
GDP ($ trillions, 2022)	**0.09**
GHG Emissions ($MTCO_2eq$, 2020)	**80.2**
Population (millions, 2022)	**54.0**

Green Developers	Asia | High income
Republic of Korea	
GDP ($ trillions, 2022)	**1.74**
GHG Emissions ($MTCO_2eq$, 2020)	**659.3**
Population (millions, 2022)	**51.6**

United Kingdom

The United Kingdom contributes 398,324kt in GHG emissions, equivalent to around 1.0% of the global total. The country's most recent NDC aims for net-zero GHGs by 2050, which includes a targeted 68% reduction in emissions by 2030 compared to 1990 levels. These commitments are legislated for in the Climate Change Act. To achieve this, the United Kingdom plans to phase out coal-fired power plants by 2024, increase renewable energy sources and invest in new nuclear power capacity.[10] In February 2023, the Department for Energy Security and Net Zero was established, signalling the government's commitment to these goals.

Key government priorities[11] include replacing fossil fuels with "cheaper, cleaner and domestic sources of energy" such as hydrogen, power with carbon capture usage and storage, and nuclear plants. In its 2023 Green Finance Strategy, the government committed to creating the potential for over £100 billion in private investments by 2030 to enhance market liquidity.[12]

As part of its net-zero efforts, the United Kingdom has expressed a keen commitment to supporting workers, communities and businesses.[13] Its Green Jobs Taskforce, for example, aims to create a skilled workforce with a particular focus on ensuring that workers in high-carbon sectors are supported throughout the transition. Ensuring women are equally represented in new green jobs is an equivalent focus, with explicit goals to ensure equal pay and equal leadership in the clean energy sector by 2030.

Challenges to equitable transition in the United Kingdom are emerging from different sectors. Fuel poverty levels have risen, with 6 million households unable to keep their houses warm in 2024. Housing prices, already near all-time highs, are even higher for energy-efficient houses. Considering implications of the speed of climate policy implementation on consumers, deadlines for phasing out diesel and petrol engine vehicles and gas boilers were pushed in 2024. Effects of the green transition on workers are also emerging – for instance, in the case of job losses from proposed modification of steel plants in Wales.

United Kingdom

Value | Economy | Archetype average | Global average

Indicator Unit	Value	Domain
Employment & job transition		
Percentage of population with secondary school completion %	96.6	0-140
Tertiary graduates in STEM disciplines %	22.3	0-100
Investment in reskilling 1-7 (best)	4.9	1-7
National compliance with labour rights 0-10 (best)	1.2	0-10
Social protection coverage %	92.1	0-100
Share of youth population (aged 15-24 years) %	11.6	0-100
Affordability of goods & services		
Share of income of bottom 50% %	20.2	0-100
Real wage growth (10-year average) %	0.4	0-100
Tax progressivity 0-1 (best)	0.7	0-1
Access to goods & services		
Share of rural population %	15.6	0-100
Inclusion in public spaces -2.5 - +2.5 (best)	1.3	-3.5 - +3.5
Maturity of legal framework for renewable energy 0-100 (best)	80.0	0-100
Policies to support greener transport 0-100 (best)	66.7	0-100
Coverage of public transport %	95.6	0-100

Indicator Unit	Value	Domain
Access to financing & investments		
Fiscal balance as % of GDP %	-5.5	-30 - +30
Financial system resilience 1-7 (best)	4.9	1-7
SME finance availability 1-7 (best)	4.9	1-7
Domestic credit to the private sector as % of GDP %	129.9	0-400
Access to capacity		
R&D expenditure as % of GDP %	2.9	1-6
Number of green patents #	717.4	0-7,000
Talent gap for economic transformation: green and energy transition 1-7 (best)	4.6	1-7
Regulatory quality -2.5 - +2.5 (best)	1.6	-2.5 - +2.5
Land-use availability km sq	47,805.5	0-3,500,000
Mitigation		
Share of GDP from agriculture %	0.8	0-100
Share of GDP from industry %	16.7	0-100
Share of employment in agriculture %	1.0	0-100
Share of employment in industry %	18.1	0-100
CO_2 emissions intensity kg per $GDP PPP	0.10	0-0.6
Fossil fuel subsidies as a % of GDP %	0.02	0-0.5
Fossil fuel rents as a % of GDP %	0.6	0-30
Renewable energy consumption % of total final energy consumption	13.5	0-100

United Kingdom | Transitioning away from fossil fuels

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Up to 16.4k workers across oil, gas and coal may be at risk or affected by climate transition by 2030

Workers within sector (#)

344,697.0

Workers in sector (% as a proportion of total workforce)

1.0%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.6

Affordability of goods & services

European Energy Poverty Index (0-100, with 100 being best)

75.0

Change in average income of bottom 50% of population relative to electricity prices, over time (ratio)

0.6

Change in average income of bottom 50% of population relative to gasoline prices, over time (ratio)

0.8

Access to goods & services

Access to electricity (% of population)

100%

Access to electricity, rural (% of rural population)

100%

Access to financing & investments

Venture capital investments (sector agnostic, $ millions)

3,526.1

Share of "zombie firms" among listed companies (%)

9.7%

Climate transition finance gap

$1.3bn-$2.5bn per year from 2020 to the 2050s to decarbonize fuel supply and producing low-carbon fuels

SME finance availability (1-7, best)

4.9

Access to capacity

New businesses registered per 1,000 population (#)

11.3

Share of total green patents (%)

30.8%

Research and development expenditure (% of GDP)

2.9%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

United Kingdom | Scaling up low-carbon energy sources

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

145.2k in renewables energy sector as of 2022, 2.5k to 95k new jobs could be created in renewables and nuclear energy development by 2030

Talent gap for economic transformation: green and energy transition (1-7, best)

4.6

Affordability of goods & services

Green premium of energy-efficient appliances

Estimates indicate that without incentives, the lifetime cost of heat pumps is 14% higher than that of gas boilers (in the UK, Germany, Japan, and US)

Access to goods & services

Renewable energy consumption (% of total final energy consumption)

13.5%

Minimum energy-efficiency performance standards (%)

77.8%

Access to clean fuels and technologies for cooking (% of population)

100%

Access to financing & investments

Venture capital investments (sector agnostic, $ millions)

3,526.1

Share of "zombie firms" among listed companies (%)

9.7%

Climate transition finance gap

$1.3bn-$2.5bn per year from 2020 to the 2050s to decarbonize fuel supply and producing low-carbon fuels

Cost of capital for solar PV (country- and technology-specific real after-tax WACC assumptions, %)

2.0%

SME finance availability (1-7, best)

4.9

Access to capacity

Number of energy startups (#)

158.8

New businesses registered per 1,000 population (#)

11.3

Share of total green patents (%)

30.8%

Research and development expenditure (% of GDP)

2.9%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

United Kingdom | Greening transportation and mobility

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Job losses expected in automotative fuel sector and job redirect in aviation and vehicle maintenance; overall job growth expected in railways, battery/ vehicle manufacturing, sustainable aviation

Workers within sector (#)

1,981,489.0

Workers in sector (% as a proportion of total workforce)

6.0%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.6

Affordability of goods & services

Change in average income of bottom 50% of population relative to transport prices, over time (ratio)

0.7

Access to goods & services

Proportion of population that has convenient access to public transport (%)

95.6%

Number of electric Light Duty Vehicles per charging point (#)

21.0

Number of EV charging stations (#)

53,000.0

Access to financing & investments

FDI flows by sector

$7,344bn net FDI flows into transportation and storage

Venture capital investments (sector agnostic, $ millions)

3,526.1

Share of "zombie firms" among listed companies (%)

9.7%

Climate transition finance gap

$2.5bn-$15.3bn+ investments required per year from 2020 to 2050 in vehicles and charging infrastructure

SME finance availability (1-7, best)

4.9

Access to capacity

New businesses registered per 1,000 population (#)

11.3

Share of total green patents (%)

17.4

Research and development expenditure (% of GDP)

2.9%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

United Kingdom | Greening agriculture and food production

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Overall job growth expected in forestry, peatland restoration and non-livestock agriculture; redirect of jobs from livestock and meat/ dairy processing towards low-carbon solutions

Workers within sector (#)

1,981,716.0

Workers in sector (% as a proportion of total workforce)

6.0%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.6

Affordability of goods & services

Percentage of the population who cannot afford a healthy diet

0.4%

Change in average income of bottom 50% of population relative to food prices, over time (ratio)

0.8

Green premium of sustainable foods

Evidence of sustainable food alternatives being more expensive e.g. plant-based milks are "60% more expensive than dairy milk"

Access to goods & services

Prevalence of moderate or severe food insecurity in the population (%)

4.1%

Access to financing & investments

FDI flows by sector

$130bn net FDI flows into agriculture (and related activities)

Venture capital investments (sector agnostic, $ millions)

3,526.1

Share of "zombie firms" among listed companies (%)

9.7%

Climate transition finance gap

$0.25bn-$2.3bn per year from 2020 to 2050 in agriculture and land

SME finance availability (1-7, best)

4.9

Access to capacity

New businesses registered per 1,000 population (#)

11.3

Research and development expenditure (% of GDP)

2.9%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

United Kingdom | Greening heavy industry

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Up to 9.5k new jobs could be created in the construction of industrial facilities with a redirect of energy-intensive industry (e.g. steel, cement, glass)

Workers within sector (#)

1,070,143.0

Workers in sector (% as a proportion of total workforce)

3.2

Talent gap for economic transformation: green and energy transition (1-7, best)

4.6

Affordability of goods & services

Economic equity dimension not directly relevant for consumers

Access to goods & services

Economic equity dimension not directly relevant for consumers

Access to financing & investments

FDI flows by sector

$3369bn net FDI flows into manufacturing

Venture capital investments (sector agnostic, $ millions)

3,526.1

Share of "zombie firms" among listed companies (%)

9.7%

Climate transition finance gap

$1.3bn-$5bn per year from 2020 to 2050 for manufacturing and construction based on fuel switching and improvements to resource/energy efficiency

SME finance availability (1-7, best)

4.9

Access to capacity

New businesses registered per 1,000 population (#)

11.3

Share of total green patents (%)

9.3%

Research and development expenditure (% of GDP)

2.9%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

United Kingdom | Greening infrastructure and built environment

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

120k to 230k jobs expected to be created by 2030; no specific data on job loss mentioned

Workers within sector (#)

2,133,008.0

Workers in sector (% as a proportion of total workforce)

6.5%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.6

Affordability of goods & services

Housing cost overburden rate (%)

8.7%

Change in average income of bottom 50% of population relative to housing prices, over time (ratio)

0.7

Green premium of energy-efficient homes

Homes with energy performance certificate (EPC) improvements from F (low energy efficiency) to C (high energy efficiency) see an average price increase of £56,000, on top of local house price growth

Share of households receiving housing allowances in bottom quartile (%)

28.9

Access to goods & services

Average age of building stock (years)

1962

Access to financing & investments

FDI flows by sector

$974bn net FDI flows into construction

Venture capital investments (sector agnostic, $ millions)

3,526.1

Share of "zombie firms" among listed companies (%)

9.7%

Climate transition finance gap

$70bn household energy efficiency programme over next 15 years

SME finance availability (1-7, best)

4.9

Access to capacity

New businesses registered per 1,000 population (#)

11.3

Share of total green patents (%)

6.4%

Research and development expenditure (% of GDP)

2.9%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

United Kingdom | Moving to a circular economy

Employment & job transition

Workers within sector (#)
913,122.0

Workers in sector (% as a proportion of total workforce)
2.8%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.6

Affordability of goods & services

Green premium of recycled products
30% of UK customers said they would not consider net zero production in a recent survey for their next purchase compared to a global average of 17%

Access to goods & services

Recycling rate (%)
34%

Access to financing & investments

FDI flows by sector
$3369bn net FDI flows into manufacturing
-$36bn net FDI flows into water supply (including waste management)

Venture capital investments (sector agnostic, $ millions)
3,526.1

Share of "zombie firms" among listed companies (%)
9.7%

Climate transition finance gap
$2.2bn-$2.7bn per year from 2020 to 2050 in the waste sector

SME finance availability (1-7, best)
4.9

Access to capacity

New businesses registered per 1,000 population (#)
11.3

Share of total green patents (%)
6.2%

Research and development expenditure (% of GDP)
2.9%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Uruguay

Uruguay contributes 35,994kt in GHG emissions, equivalent to about 0.1% of the global total.[14] Its most recent NDC commits to achieving carbon neutrality by 2050.[15] Uruguay has already shifted its power mix towards renewables, with 98% now coming from renewable electricity generation. The government's use of targets, starting from as early as 2010 with Decree 354, have been instrumental in enabling this gradual shift.[16]

Despite having to increase fossil fuel generation in 2022 due to severe drought, renewable energy sources account for 85% of Uruguay's electricity generation. However, fossil fuels still account for approximately 45% of Uruguay's total energy supply. The country is now undergoing its second energy transition – focused on scaling up the use of green hydrogen in heavy industry and transportation. This initiative is funded by the Green Hydrogen Sectoral Fund in Uruguay and is projected to generate $1.9 billion in annual revenue and create over 30,000 jobs by 2040.[17] The focus on creating jobs is economy-wide; Uruguay is piloting the International Labour Organization's Just Transition guidelines and, as part of this, working to increase stakeholders' understanding of strategies to create green jobs economy-wide.

In 2023, Uruguay's largest export was related to food production, specifically beef,[18] with China, the United States and the European Union its most important markets.[19] Emissions from agriculture accounted for over 64% of Uruguay's absolute GHG emissions in 2022. In 2021, the government joined the Global Methane Pledge and has committed to reducing the intensity of methane and nitrous oxide emissions per unit of beef production by 35% and 36%, respectively, by 2030 compared to the 1990 baseline. These mitigation targets were complemented by the rollout of the Agroecological and Resilient Systems in Uruguay (SARU) project in 2022, aimed at supporting rural farmers to increase their capacity for mitigation and adaptation actions and to promote agroecological production.

Along with sector-specific technological and policy interventions for the green transition, Uruguay's latest NDC also acknowledges that, as a developing country vulnerable to climate change, its green transformation will need to balance the need for creating greater opportunities for its citizens, address poverty and achieve higher levels of equity in the society. Recognizing the need for developing green talent, Uruguay's NDC also outlines a roadmap for capacity-building to develop a workforce to support a green economy.

Uruguay

Value | Economy | Archetype average | Global average

Indicator Unit	Value	Domain
Employment & job transition		
Percentage of population with secondary school completion %	64.4	0-140
Tertiary graduates in STEM disciplines %	18.6	0-100
Investment in reskilling 1-7 (best)	4.7	1-7
National compliance with labour rights 0-10 (best)	0.9	0-10
Social protection coverage %	100.0	0-100
Share of youth population (aged 15-24 years) %	14.5	0-100
Affordability of goods & services		
Share of income of bottom 50% %	14.1	0-100
Real wage growth (10-year average) %	1.2	0-100
Tax progressivity 0-1 (best)	0.5	0-1
Access to goods & services		
Share of rural population %	4.3	0-100
Inclusion in public spaces -2.5 - +2.5 (best)	2.1	-3.5 - +3.5
Maturity of legal framework for renewable energy 0-100 (best)	80.0	0-100
Policies to support greener transport 0-100 (best)	83.3	0-100
Coverage of public transport %	55.7	0-100

Indicator Unit	Value	Domain
Access to financing & investments		
Fiscal balance as % of GDP %	-2.5	-30 - +30
Financial system resilience 1-7 (best)	5.7	1-7
SME finance availability 1-7 (best)	4.6	1-7
Domestic credit to the private sector as % of GDP %	26.4	0-400
Access to capacity		
R&D expenditure as % of GDP %	0.4	1-6
Number of green patents #	0.7	0-7,000
Talent gap for economic transformation: green and energy transition 1-7 (best)	4.1	1-7
Regulatory quality -2.5 - +2.5 (best)	0.7	-2.5 - +2.5
Land-use availability km sq	35,675.6	0-3,500,000
Mitigation		
Share of GDP from agriculture %	7.3	0-100
Share of GDP from industry %	17.6	0-100
Share of employment in agriculture %	8.4	0-100
Share of employment in industry %	18.1	0-100
CO_2 emissions intensity kg per $GDP PPP	0.08	0-0.6
Fossil fuel subsidies as a % of GDP %	0	0-0.5
Fossil fuel rents as a % of GDP %	0.01	0-30
Renewable energy consumption % of total final energy consumption	61.1	0-100

Uruguay | Transitioning away from fossil fuels

Employment & job transition

Workers within sector (#)
9,145.0

Workers in sector (% as a proportion of total workforce)
0.6%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.1

Affordability of goods & services

Change in average income of bottom 50% of population relative to electricity prices, over time (ratio)
1.0

Change in average income of bottom 50% of population relative to gasoline prices, over time (ratio)
0.8

Access to goods & services

Access to electricity (% of population)
100%

Access to electricity, rural (% of rural population)
100%

Access to financing & investments

FDI flows by sector
$216m net FDI flows into electricity (fossil fuels/low-carbon energy)

SME finance availability (1-7, best)
4.6

Access to capacity

New businesses registered per 1,000 population (#)
1.5

Research and development expenditure (% of GDP)
0.45%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Uruguay | Scaling up low-carbon energy sources

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

10.5k in renewables energy sector as of 2022; expected that green hydrogen strategy could create over 30k jobs by 2040

Talent gap for economic transformation: green and energy transition (1-7, best)

4.1

Affordability of goods & services

Green premium of energy efficient appliances

Evidence that operating sustainable heating systems has a premium e.g. operating a heat pump costs $1.84/1,000kcal whereas operating a fuel oil boiler costs $5.10/1,000kcal

Access to goods & services

Renewable energy consumption (% of total final energy consumption)

61.1%

Minimum energy-efficiency performance standards (%)

27.8%

Access to clean fuels and technologies for cooking (% of population)

100%

Access to financing & investments

FDI flows by sector

$216m net FDI flows into electricity (fossil fuels/low-carbon energy)

Climate transition finance gap

$1.8bn investment required between 2007 and 2030 on energy efficiency, wind power and biomass generation; additional investment required to green hydrogen

Cost of capital for solar PV (country- and technology-specific real after-tax WACC assumptions, %)

4.2%

SME finance availability (1-7, best)

4.6

Access to capacity

Number of energy startups (#)

5.8

New businesses registered per 1,000 population (#)

1.5

Research and development expenditure (% of GDP)

0.45%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Uruguay | Greening transportation and mobility

Employment & job transition

Workers within sector (#)
115,473.0

Informal workers within sector (#)
28,206.0

Workers in sector (% as a proportion of total workforce)
6.9%

Informal workers in sector (% as a proportion of total sector employment)
24.4%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.1

Affordability of goods & services

Change in average income of bottom 50% of population relative to transport prices, over time (ratio)
0.5

Green premium of Electric Vehicles (across different passenger vehicle segments)
Evidence of electric cars and trucks having "significantly higher" prices than combustion vehicles with equivalent performance

Access to goods & services

Proportion of population that has convenient access to public transport (%)
55.7%

Number of EV charging stations (#)
58.0

Access to financing & investments

FDI flows by sector
$43m net FDI flows into transportation and storage

Climate transition finance gap
Expected significant investment required to develop e-fuel production as part of Uruguay's Green Hydrogen transformation, investment also planned elsewhere in the transport setctor e.g. $5.5 million into 124 new EV charging stations

SME finance availability (1-7, best)
4.6

Access to capacity

New businesses registered per 1,000 population (#)
1.5

Research and development expenditure (% of GDP)
0.45%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Uruguay | Greening agriculture and food production

Employment & job transition

Workers within sector (#)
266,042.0

Informal workers within sector (#)
92,548.0

Workers in sector (% as a proportion of total workforce)
16.0%

Informal workers in sector (% as a proportion of total sector employment)
34.8%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.1

Affordability of goods & services

Percentage of the population who cannot afford a healthy diet
5.2

Change in average income of bottom 50% of population relative to food prices, over time (ratio)
0.5

Access to goods & services

Prevalence of moderate or severe food insecurity in the population (%)
15.2

Access to financing & investments

FDI flows by sector
$9m net FDI flows into agriculture

Climate transition finance gap
$4.6bn investment required between 2006-2030 to mitigate emissions and adapt to climate impacts across forestry, intensification and agriculture

SME finance availability (1-7, best)
4.6

Access to capacity

New businesses registered per 1,000 population (#)
1.5

Research and development expenditure (% of GDP)
0.45%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Uruguay Greening heavy industry

Employment & job transition

Workers within sector (#)
39,955.0

Informal workers within sector (#)
8,897.0

Workers in sector (% as a proportion of total workforce)
2.4%

Informal workers in sector (% as a proportion of total sector employment)
22.3%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.1

Affordability of goods & services

Economic equity dimension not directly relevant for consumers

Access to goods & services

Economic equity dimension not directly relevant for consumers

Access to financing & investments

FDI flows by sector
$1.6bn net FDI flows into manufacturing

Climate transition finance gap
Expected investment needed to enact plans to decarbonize steel and cement industries

SME finance availability (1-7, best)
4.6

Access to capacity

New businesses registered per 1,000 population (#)
1.5

Research and development expenditure (% of GDP)
0.45%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Uruguay | Greening infrastructure and built environment

Employment & job transition

Workers within sector (#)
127,608.0

Informal workers within sector (#)
58,593.0

Workers in sector (% as a proportion of total workforce)
7.7%

Informal workers in sector (% as a proportion of total sector employment)
45.9%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.1

Affordability of goods & services

Change in average income of bottom 50% of population relative to housing prices, over time (ratio)
0.5

Access to goods & services

Limited data available for metrics used for country profiles

Access to financing & investments

FDI flows by sector
$26m net FDI flows into construction

SME finance availability (1-7, best)
4.6

Access to capacity

New businesses registered per 1,000 population (#)
1.5

Research and development expenditure (% of GDP)
0.45%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Uruguay | Moving to a circular economy

Employment & job transition

Workers within sector (#)
66,499.0

Informal workers within sector (#)
31,845.0

Workers in sector (% as a proportion of total workforce)
4.0%

Informal workers in sector (% as a proportion of total sector employment)
47.9%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.1

Affordability of goods & services

Limited data available for metrics used for country profiles

Access to goods & services

Recycling rate (%)
24.8%

Access to financing & investments

FDI flows by sector
$1.6bn net FDI flows into manufacturing

SME finance availability (1-7, best)
4.6

Access to capacity

New businesses registered per 1,000 population (#)
1.5

Research and development expenditure (% of GDP)
0.45%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Oman

Oman contributes 0.2% of global GHG emissions, around 95,000kt.[20] Oman's most recent NDC commits to a 7% reduction in emissions by 2030, targeting sectors such as energy, agriculture, fisheries and urban areas.[21] Moreover, the government launched the National Strategy for an Orderly Transition to Net Zero to reach carbon neutrality by 2050.[22]

While oil and gas have long accounted for between 70% and 85% of government revenue, Oman is actively working on diversifying its economy to reduce this dependency.[23] Under Vision 2040, the government is working on increasing its renewable energy capacity, aiming for 20% of its electricity to come from renewable sources by 2030, and 35%-39% by 2040.[24]

This priority is supported by the creation of the Oman Hydrogen Center, an initiative focused on promoting R&D of green hydrogen technology.[25] According to the IEA, Oman could become the world's sixth-biggest exporter of hydrogen due to its rich renewable resources and vast tracts of available land.[26] Under this projection, annual production is forecasted to grow to 3.75 million tonnes by 2030 and more than double to 8.5 million tonnes each year by 2050. The National Strategy for an Orderly Transition to Net Zero estimates that an orderly transition could increase total employment in Oman by 20%-30%, driven by the nascent hydrogen market (~57% of total new direct jobs) and by the power sector (~43%).

Additionally, various programmes have been launched to support Vision 2040, including the National Program for Financial Sustainability ("Estidamah"). This initiative is aimed at unlocking "efficient allocation of resources towards high-yielding development projects that catalyse progress".[27]

Oman

Value | Economy | Archetype average | Global average

Indicator	Unit	Value	Domain
Employment & job transition			
Percentage of population with secondary school completion	%	90.1	0-140
Tertiary graduates in STEM disciplines	%	39.5	0-100
Investment in reskilling	1-7 (best)	5.0	1-7
National compliance with labour rights	0-10 (best)	4.2	0-10
Social protection coverage	%	16.3	0-100
Share of youth population (aged 15-24 years)	%	12.4	0-100
Affordability of goods & services			
Share of income of bottom 50%	%	9.0	0-100
Real wage growth (10-year average)	%	11.0	0-100
Tax progressivity	0-1 (best)	0.3	0-1
Access to goods & services			
Share of rural population	%	12.3	0-100
Inclusion in public spaces	-2.5 - +2.5 (best)	1.0	-3.5 - +3.5
Maturity of legal framework for renewable energy	0-100 (best)	100.0	0-100
Policies to support greener transport	0-100 (best)	0.0	0-100
Coverage of public transport	%	27.9	0-100

Indicator	Unit	Value	Domain
Access to financing & investments			
Fiscal balance as % of GDP	%	7.4	-30 - +30
Financial system resilience	1-7 (best)	5.5	1-7
SME finance availability	1-7 (best)	5.0	1-7
Domestic credit to the private sector as % of GDP	%	53.4	0-400
Access to capacity			
R&D expenditure as % of GDP	%	0.3	1-6
Number of green patents	#	0.8	0-7,000
Talent gap for economic transformation: green and energy transition	1-7 (best)	5.0	1-7
Regulatory quality	-2.5 - +2.5 (best)	0.4	-2.5 - +2.5
Land-use availability	km sq	32,421.1	0-3,500,000
Mitigation			
Share of GDP from agriculture	%	1.8	0-100
Share of GDP from industry	%	57.0	0-100
Share of employment in agriculture	%	6.1	0-100
Share of employment in industry	%	46.9	0-100
CO_2 emissions intensity	kg per $GDP PPP	0.45	0-0.6
Fossil fuel subsidies as a % of GDP	%	0.002	0-0.5
Fossil fuel rents as a % of GDP	%	29.2	0-30
Renewable energy consumption	% of total final energy consumption	0.1	0-100

Oman — Transitioning away from fossil fuels

Employment & job transition

Workers within sector (#)
52,113.0

Workers in sector (% as a proportion of total workforce)
2.5%

Talent gap for economic transformation: green and energy transition (1-7, best)
5.0

Affordability of goods & services

Change in average income of bottom 50% of population relative to gasoline prices, over time (ratio)
0.9

Access to goods & services

Access to electricity (% of population)
100%

Access to electricity, rural (% of rural population)
100%

Access to financing & investments

FDI flows by sector
$6393m net inflows into oil and gas exploration
-$14.8m net inflows into electricity and water

Share of "zombie firms" among listed companies (%)
FDI flow was $435.8m in 2022 for Manufacturing

Climate transition finance gap
The net-zero pathway requires an additional $190bn in capital investment compared to Oman's 'business-as-usual' scenario

SME finance availability (1-7, best)
5.0

Access to capacity

New businesses registered per 1,000 population (#)
1.2

Research and development expenditure (% of GDP)
0.29%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Oman | Scaling up low-carbon energy sources

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

3.6k in renewables energy sector as of 2022; based on 2050 production targets, the hydrogen economy is expected to create 291k to 382k employment opportunities - around 50% of these are related to the deployment of renewable electricity

Talent gap for economic transformation: green and energy transition (1-7, best)

5.0

Affordability of goods & services

Green premium of energy efficient appliances

An energy-efficient water heater may have a higher initial cost compared to repairing an old model or buying a less efficient one, but it saves energy and money throughout its lifetime

Access to goods & services

Minimum energy-efficiency performance standards (%)

19.0%

Access to clean fuels and technologies for cooking (% of population)

100%

Access to financing & investments

FDI flows by sector

-$14.8m net inflows into electricity and water

Share of "zombie firms" among listed companies (%)

FDI flow was $435.8m in 2022 for Manufacturing

Climate transition finance gap

Green hydrogen strategy involves cumulative investment of $1.4bn

Cost of capital for solar PV (country- and technology-specific real after-tax WACC assumptions, %)

8.2% (regional average cost of capital for renewables in the Middle East and Africa)

SME finance availability (1-7, best)

5.0

Access to capacity

Number of energy startups (#)

1.0

New businesses registered per 1,000 population (#)

1.2

Research and development expenditure (% of GDP)

0.29%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Oman Greening transportation and mobility

Employment & job transition

Workers within sector (#)
118,814.0

Workers in sector (% as a proportion of total workforce)
5.7%

Talent gap for economic transformation: green and energy transition (1-7, best)
5.0

Affordability of goods & services

Change in average income of bottom 50% of population relative to transport prices, over time (ratio)
0.6

Green premium of Electric Vehicles (across different passenger vehicle segments)
PEVs currently carry a higher upfront cost than conventional internal combustion engine (ICE) vehicles

Access to goods & services

Proportion of population that has convenient access to public transport (%)
27.9%

Access to financing & investments

FDI flows by sector
$42m net inflows into transport, storage and communication

Share of "zombie firms" among listed companies (%)
FDI flow was $435.8m in 2022 for Manufacturing

Climate transition finance gap
EV charging infrastructure investments of $10.8bn by 2050

SME finance availability (1-7, best)
5.0

Access to capacity

New businesses registered per 1,000 population (#)
1.2

Research and development expenditure (% of GDP)
0.29%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Oman Greening agriculture and food production

Employment & job transition

Workers within sector (#)

130,261.0

Workers in sector (% as a proportion of total workforce)

6.2%

Talent gap for economic transformation: green and energy transition (1-7, best)

5.0

Affordability of goods & services

Change in average income of bottom 50% of population relative to food prices, over time (ratio)

0.7

Access to goods & services

Limited data available for metrics used for country profiles

Access to financing & investments

Share of "zombie firms" among listed companies (%)

FDI flow was $435.8m in 2022 for Manufacturing

Climate transition finance gap

Over the next five years, OFIC plans to invest ~$950m in up to 23 new food-related ventures; these investments are aimed at modernizing agriculture and boosting food production through sustainable practices

SME finance availability (1-7, best)

5.0

Access to capacity

New businesses registered per 1,000 population (#)

1.2

Research and development expenditure (% of GDP)

0.29%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Oman Greening heavy industry

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Evidence of job creation: for example, a green steel cluster planned for establishment in Duqm Special Economic Zone, has the potential to create an estimated 2k direct jobs

Talent gap for economic transformation: green and energy transition (1-7, best)

5.0

Affordability of goods & services

Economic equity dimension not directly relevant for consumers

Access to goods & services

Economic equity dimension not directly relevant for consumers

Access to financing & investments

FDI flows by sector

$436m net inflows into manufacturing

Share of "zombie firms" among listed companies (%)

FDI flow was $435.8m in 2022 for Manufacturing

Climate transition finance gap

A $3.4bn green steel plant is being developed by the Jindal Steel Group in the Special Economic Zone at Duqm (Sezad)

SME finance availability (1-7, best)

5.0

Access to capacity

New businesses registered per 1,000 population (#)

1.2

Research and development expenditure (% of GDP)

0.29%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Oman Greening infrastructure and built environment

Employment & job transition

Workers within sector (#)
524,191.0

Workers in sector (% as a proportion of total workforce)
25.0%

Talent gap for economic transformation: green and energy transition (1-7, best)
5.0

Affordability of goods & services

Change in average income of bottom 50% of population relative to housing prices, over time (ratio)
0.7

Green premium of energy-efficient homes
Households in Oman could recoup up to OMR7,200 in energy savings over the next 25 years by switching from fossil fuels to solar energy

Access to goods & services

Population living in slums (% of urban population)
0%

Access to financing & investments

FDI flows by sector
-$42m net inflows into construction

Share of "zombie firms" among listed companies (%)
FDI flow was $435.8m in 2022 for Manufacturing

Climate transition finance gap
Infrastructure investments include Long-Duration Energy Storage and grid capacity expansion

SME finance availability (1-7, best)
5.0

Access to capacity

New businesses registered per 1,000 population (#)
1.2

Research and development expenditure (% of GDP)
0.29%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Oman Moving to a circular economy

Employment & job transition

Workers within sector (#)
261,647.0

Workers in sector (% as a proportion of total workforce)
12.5%

Talent gap for economic transformation: green and energy transition (1-7, best)
5.0

Affordability of goods & services

Limited data available for metrics used for country profiles

Access to goods & services

Recycling rate (%)
13.9%

Access to financing & investments

FDI flows by sector
$436m net inflows into manufacturing

Share of "zombie firms" among listed companies (%)
FDI flow was $435.8m in 2022 for Manufacturing

Climate transition finance gap
The volume of circular economy investments in the Sultanate of Oman is estimated to be at about $1.5bn

SME finance availability (1-7, best)
5.0

Access to capacity

New businesses registered per 1,000 population (#)
1.2

Research and development expenditure (% of GDP)
0.29%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Malaysia

Malaysia contributes 0.7% of global GHG emissions, around 300,000kt.[28] Malaysia's most recent NDC commits to a 45% reduction in emissions by 2030, targeting sectors such as energy, industrial processes, waste, agriculture and land use, land-use change, and forestry (LULUCF).[29]

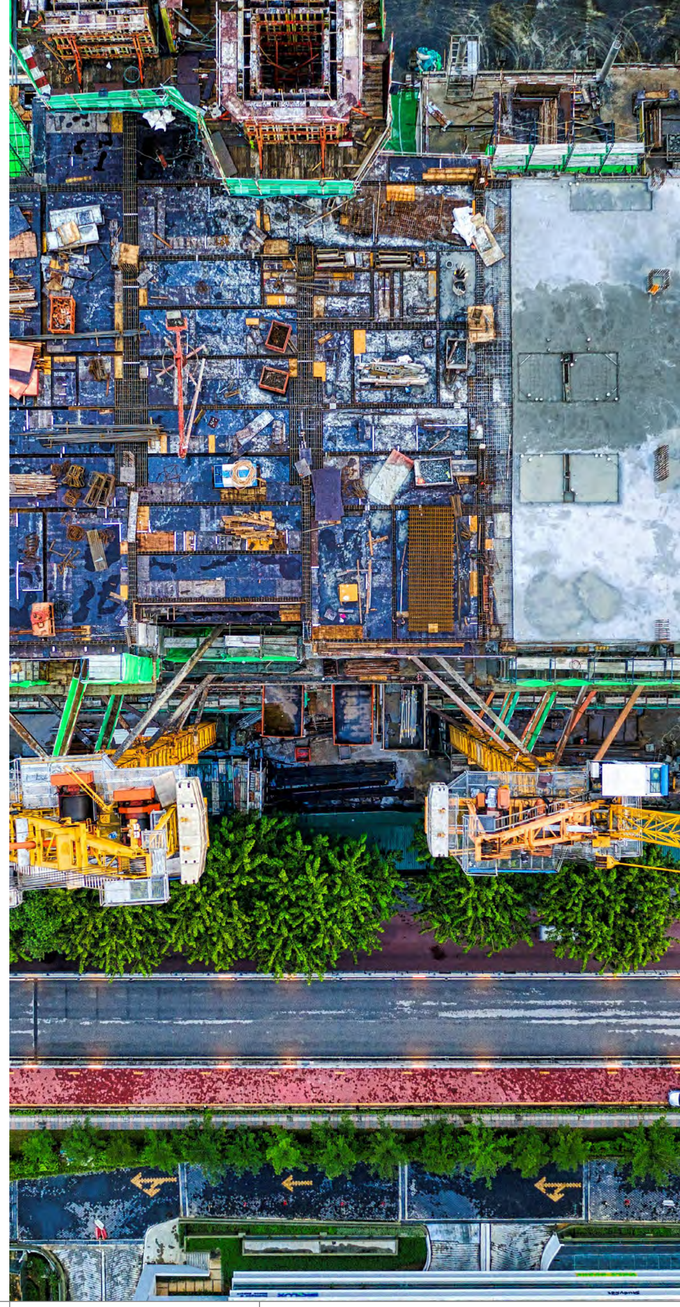
Malaysia's energy supply is primarily from natural gas (45%) and oil (27%), followed by coal (24%) and renewable energy (4%).[30] As a natural-gas exporter and as a major producer of aluminium, iron and manganese,[31] Malaysia will play a key role in the energy transition.

In 2022, the Malaysian government released the National Energy Policy plan, which emphasizes low-carbon development and highlights the transition of the energy sector as crucial for socioeconomic progress.[32] The plan also emphasizes the efficient use of resources and the sustainability of natural resources. It also identifies carbon capture and storage as a crucial technology to facilitate the transition. Overall, the government has committed to achieving 70% renewable-energy capacity in the country's energy mix by 2050.[33]

Examples of specific goals include:

- Increasing the total installed capacity of renewables from 7.6 GW to 18.4 GW
- Increasing the overall share of clean energy in the total primary energy supply from 7.2% to 17%
- Reducing coal capacity from 31.4% to 18.6%
- Increasing the EV share in the national fleet from under 1% to 38%
- Increasing energy self-sufficiency from 48% to 72%
- Utilizing Liquified Natural Gas (LNG) as an alternative fuel for 25% of marine transport

Malaysia's NDC acknowledges the importance of balancing its carbon agenda with wider socioeconomic development, which is reflected in accompanying plans, including the National Energy Transition Roadmap (NETR). The NETR has an overall emphasis on justice and inclusivity; it acknowledges the distributional inequalities that an energy transition can reinforce and intends to direct government policy accordingly. For example, earlier in 2024, the government introduced targeted subsidies aimed at helping lower-income groups cope with cost pressures; subsidies were decreased for the top 1% of heavy electricity users and held constant for the other 99%.[34] Investments stimulated under the NETR are expected to create approximately 310,000 green-growth job opportunities by 2050.[35]



Malaysia

Value | Economy | Archetype average | Global average

Indicator Unit	Value	Domain
Employment & job transition		
Percentage of population with secondary school completion %	83.1	0-140
Tertiary graduates in STEM disciplines %	40.2	0-100
Investment in reskilling 1-7 (best)	4.9	1-7
National compliance with labour rights 0-10 (best)	5.6	0-10
Social protection coverage %	27.3	0-100
Share of youth population (aged 15-24 years) %	16.5	0-100
Affordability of goods & services		
Share of income of bottom 50% %	13.8	0-100
Real wage growth (10-year average) %	1.3	0-100
Tax progressivity 0-1 (best)	0.5	0-1
Access to goods & services		
Share of rural population %	21.8	0-100
Inclusion in public spaces -2.5 - +2.5 (best)	0.6	-3.5 - +3.5
Maturity of legal framework for renewable energy 0-100 (best)	80.0	0-100
Policies to support greener transport 0-100 (best)	50.0	0-100
Coverage of public transport %	39.6	0-100

Indicator Unit	Value	Domain
Access to financing & investments		
Fiscal balance as % of GDP %	-5.9	-30 - +30
Financial system resilience 1-7 (best)	5.1	1-7
SME finance availability 1-7 (best)	4.8	1-7
Domestic credit to the private sector as % of GDP %	113.3	0-400
Access to capacity		
R&D expenditure as % of GDP %	1.0	1-6
Number of green patents #	11.7	0-7,000
Talent gap for economic transformation: green and energy transition 1-7 (best)	4.0	1-7
Regulatory quality -2.5 - +2.5 (best)	0.6	-2.5 - +2.5
Land-use availability km sq	79,553.8	0-3,500,000
Mitigation		
Share of GDP from agriculture %	8.9	0-100
Share of GDP from industry %	39.1	0-100
Share of employment in agriculture %	10.0	0-100
Share of employment in industry %	28.1	0-100
CO_2 emissions intensity kg per $GDP PPP	0.27	0-0.6
Fossil fuel subsidies as a % of GDP %	0.04	0-0.5
Fossil fuel rents as a % of GDP %	5.2	0-30
Renewable energy consumption % of total final energy consumption	5.8	0-100

Malaysia | Transitioning away from fossil fuels

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

23% of those employed in fossil-fuel related industries are at risk

Workers within sector (#)

163,400.0

Workers in sector (% as a proportion of total workforce)

1.1%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.0

Affordability of goods & services

Change in average income of bottom 50% of population relative to gasoline prices, over time (ratio)

0.9

Access to goods & services

Access to electricity (% of population)

100%

Access to electricity, rural (% of rural population)

100%

Access to financing & investments

FDI flows by sector

$1.23bn FDI inflows to mining and quarrying

Share of "zombie firms" among listed companies (%)

12.7%

SME finance availability (1-7, best)

4.8

Access to capacity

New businesses registered per 1,000 population (#)

1.4

Share of total green patents (%)

26.5%

Research and development expenditure (% of GDP)

0.95%

Potential for there to be...

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Malaysia | Scaling up low-carbon energy sources

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

128.7k in renewables energy sector as of 2022; 28k additional jobs expected in the renewable energy sector by 2025

Talent gap for economic transformation: green and energy transition (1-7, best)

4.0

Affordability of goods & services

Limited data available for metrics used for country profiles

Access to goods & services

Renewable energy consumption (% of total final energy consumption)

5.8

Minimum energy-efficiency performance standards (%)

72.2

Access to clean fuels and technologies for cooking (% of population)

93.8

Access to financing & investments

Share of "zombie firms" among listed companies (%)

12.7%

Climate transition finance gap

$19-51bn required by 2050 for new power capacities, storage, transmission infrastructure, maintenance, fuel, energy-efficiency and end-use technologies

Climate transition finance gap

$59.3-133.3bn required by 2050 for solar PV and hydropower expansion and grid infrastructure

Cost of capital for solar PV (country- and technology-specific real after-tax WACC assumptions, %)

5.4

SME finance availability (1-7, best)

4.8

Access to capacity

Number of energy startups (#)

3.4

New businesses registered per 1,000 population (#)

1.4

Share of total green patents (%)

26.5

Research and development expenditure (% of GDP)

0.95%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Malaysia Greening transportation and mobility

Employment & job transition

Workers within sector (#)
3,644,000.0

Workers in sector (% as a proportion of total workforce)
23.7%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.0

Affordability of goods & services

Change in average income of bottom 50% of population relative to transport prices, over time (ratio)
1.4

Green premium of Electric Vehicles (across different passenger vehicle segments)
Price of EV and batteries are relatively expensive, due to low localization for critical parts and components

Access to goods & services

Proportion of population that has convenient access to public transport (%)
39.6%

Number of EV charging stations (#)
428.0

Access to financing & investments

Share of "zombie firms" among listed companies (%)
12.7%

Climate transition finance gap
$16-108bn required by 2050 for expansion of public transport, to build domestic EV production capacity and increase manufacturing of EV charging infrastructure

SME finance availability (1-7, best)
4.8

Access to capacity

New businesses registered per 1,000 population (#)
1.4

Share of total green patents (%)
4.7

Research and development expenditure (% of GDP)
0.95%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Malaysia Greening agriculture and food production

Employment & job transition

Workers within sector (#)
1,540,800.0

Workers in sector (% as a proportion of total workforce)
10.0

Talent gap for economic transformation: green and energy transition (1-7, best)
4.0

Affordability of goods & services

Percentage of the population who cannot afford a healthy diet
2.5

Change in average income of bottom 50% of population relative to food prices, over time (ratio)
1.0

Access to goods & services

Prevalence of moderate or severe food insecurity in the population (%)
16.0

Access to financing & investments

FDI flows by sector
$0.15bn FDI inflows to agriculture

Share of "zombie firms" among listed companies (%)
12.7%

Climate transition finance gap
$6-10bn required by 2050 in biofuels

SME finance availability (1-7, best)
4.8

Access to capacity

New businesses registered per 1,000 population (#)
1.4

Research and development expenditure (% of GDP)
0.95%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Malaysia Greening heavy industry

Employment & job transition

Talent gap for economic transformation: green and energy transition (1-7, best)

4.0

Affordability of goods & services

Economic equity dimension not directly relevant for consumers

Access to goods & services

Economic equity dimension not directly relevant for consumers

Access to financing & investments

FDI flows by sector

$6.26B FDI inflows to manufacturing (incl. electrical equipment, transport manufacturing and other manufacturing industries)

Share of "zombie firms" among listed companies (%)

12.7%

Climate transition finance gap

$29-44bn required by 2050 for the energy transition in the industry sector

SME finance availability (1-7, best)

4.8

Access to capacity

New businesses registered per 1,000 population (#)

1.4

Share of total green patents (%)

25.9%

Research and development expenditure (% of GDP)

0.95%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Malaysia Greening infrastructure and built environment

Employment & job transition

Workers within sector (#)
1,170,500.0

Workers in sector (% as a proportion of total workforce)
7.6

Talent gap for economic transformation: green and energy transition (1-7, best)
4.0

Affordability of goods & services

Change in average income of bottom 50% of population relative to housing prices, over time (ratio)
1.2

Access to goods & services

Limited data available for metrics used for country profiles

Access to financing & investments

FDI flows by sector
$10.8m FDI inflows to construction

Share of "zombie firms" among listed companies (%)
12.7%

Climate transition finance gap
$1-34bn required by 2050 for the energy transition in the buildings sector

SME finance availability (1-7, best)
4.8

Access to capacity

New businesses registered per 1,000 population (#)
1.4

Research and development expenditure (% of GDP)
0.95%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Malaysia | Moving to a circular economy

Employment & job transition

Workers within sector (#)
2,679,000.0

Workers in sector (% as a proportion of total workforce)
17.4%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.0

Affordability of goods & services

Limited data available for metrics used for country profiles

Access to goods & services

Recycling rate (%)
22.1%

Access to financing & investments

FDI flows by sector
$6.26bn FDI inflows to manufacturing (incl. electrical equipment, transport manufacturing and others)

Share of "zombie firms" among listed companies (%)
12.7%

SME finance availability (1-7, best)
4.8

Access to capacity

New businesses registered per 1,000 population (#)
1.4

Share of total green patents (%)
5.9%

Research and development expenditure (% of GDP)
0.95%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Kenya

Kenya's GHG emissions account for ~80,000kt, equivalent to 0.2% of global emissions.[36] Kenya's most recent NDC commits to a 32% reduction in emissions by 2030, targeting sectors such as energy, land use, infrastructure, transport, waste management and urbanization.[37]

The country boasts substantial renewable energy capacity, with over 90% of its electricity generated from renewable sources in 2021.[38] However, energy access gaps exist, with 35% of the rural population lacking access to electricity and around one-half of the population lacking access to clean cooking fuels. Kenya's plans to leverage domestic and imported coal to expand power generation reflect the trade-off faced by developing economies between climate goals and development objectives.

Kenya is particularly vulnerable to climate change impacts (ranked 152 out of 181 countries in the global adaptation index),[39] which adversely affects key economic sectors including agriculture, tourism, forestry, water and transport. This tends to impact the most vulnerable groups in Kenya, with low-income households, women and children often experiencing the most severe disruptions.[40] Kenya's latest NDC acknowledges the disproportionate impacts on vulnerable groups and, to achieve fairness, aims to strengthen the access women, youth and other vulnerable groups have to climate finance and credit lines. Other measures include, for example, consolidating successful technologies and supporting transfer strategies to women, youth and other vulnerable groups.

Kenya

Value | Economy | Archetype average | Global average

Indicator Unit	Value	Domain
Employment & job transition		
Percentage of population with secondary school completion %	81.5	0-140
Tertiary graduates in STEM disciplines %	n.a.	0-100
Investment in reskilling 1-7 (best)	4.4	1-7
National compliance with labour rights 0-10 (best)	4.0	0-10
Social protection coverage %	7.2	0-100
Share of youth population (aged 15-24 years) %	20.8	0-100
Affordability of goods & services		
Share of income of bottom 50% %	13.0	0-100
Real wage growth (10-year average) %	0.4	0-100
Tax progressivity 0-1 (best)	0.8	0-1
Access to goods & services		
Share of rural population %	71.0	0-100
Inclusion in public spaces -2.5 - +2.5 (best)	0.5	-3.5 - +3.5
Maturity of legal framework for renewable energy 0-100 (best)	60.0	0-100
Policies to support greener transport 0-100 (best)	33.3	0-100
Coverage of public transport %	29.8	0-100

Indicator Unit	Value	Domain
Access to financing & investments		
Fiscal balance as % of GDP %	-5.8	-30 - +30
Financial system resilience 1-7 (best)	4.0	1-7
SME finance availability 1-7 (best)	3.7	1-7
Domestic credit to the private sector as % of GDP %	31.5	0-400
Access to capacity		
R&D expenditure as % of GDP %	n.a.	1-6
Number of green patents #	0.1	0-7,000
Talent gap for economic transformation: green and energy transition 1-7 (best)	4.5	1-7
Regulatory quality -2.5 - +2.5 (best)	-0.4	-2.5 - +2.5
Land-use availability km sq	91,846.2	0-3,500,000
Mitigation		
Share of GDP from agriculture %	21.2	0-100
Share of GDP from industry %	17.7	0-100
Share of employment in agriculture %	32.6	0-100
Share of employment in industry %	15.6	0-100
CO_2 emissions intensity kg per $GDP PPP	0.08	0-0.6
Fossil fuel subsidies as a % of GDP %	0.001	0-0.5
Fossil fuel rents as a % of GDP %	0	0-30
Renewable energy consumption % of total final energy consumption	72.5	0-100

Kenya Transitioning away from fossil fuels

Employment & job transition

Workers within sector (#)
34,756.0

Informal workers within sector (#)
21,561.0

Workers in sector (% as a proportion of total workforce)
0.2%

Informal workers in sector (% as a proportion of total sector employment)
62.0%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.5

Affordability of goods & services

Change in average income of bottom 50% of population relative to electricity prices, over time (ratio)
1.2

Change in average income of bottom 50% of population relative to gasoline prices, over time (ratio)
0.9

Access to goods & services

Access to electricity (% of population)
76.5%

Access to electricity, rural (% of rural population)
68.2%

Access to financing & investments

FDI flows by sector
-$6m net FDI flows into electricity, gas, and air conditioning supply; $68m net FDI inflows into mining and quarrying

Climate transition finance gap
Investment of ~$8.07bn needed in energy from 2024-2030 to implement Kenya's NDCs

SME finance availability (1-7, best)
3.7

Access to capacity

New businesses registered per 1,000 population (#)
0.9

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Kenya — Scaling up low-carbon energy sources

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

18.6k in renewables energy sector as of 2022; 364k direct, indirect and induced net jobs expected to be created in the power sector by 2050, due to investment in renewable generation

Talent gap for economic transformation: green and energy transition (1-7, best)

4.5

Affordability of goods & services

Green premium of energy-efficient appliances

Reports indicate energy-efficient appliances cost more than alternatives, however this equalizes over the lifetime of the product

Access to goods & services

Renewable energy consumption (% of total final energy consumption)

72.5%

Minimum energy-efficiency performance standards (%)

72.2%

Access to clean fuels and technologies for cooking (% of population)

23.9%

Access to financing & investments

FDI flows by sector

-$6m net FDI flows into electricity, gas, and air conditioning supply

Climate transition finance gap

Investment of ~$8.07bn needed in energy from 2024-2030 to implement Kenya's NDCs

Cost of capital for solar PV (country- and technology-specific real after-tax WACC assumptions, %)

8.4%

SME finance availability (1-7, best)

3.7

Access to capacity

Number of energy startups (#)

5.8

New businesses registered per 1,000 population (#)

0.9

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Kenya Greening transportation and mobility

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

123k direct, indirect and induced net jobs created in transport

Workers within sector (#)

1,438,939.0

Informal workers within sector (#)

1,283,594.0

Workers in sector (% as a proportion of total workforce)

7.7%

Informal workers in sector (% as a proportion of total sector employment)

89.2%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.5

Affordability of goods & services

Change in average income of bottom 50% of population relative to transport prices, over time (ratio)

0.6

Green premium of Electric Vehicles (across different passenger vehicle segments)

Evidence that electric vehicles are more expensive than their ICE counterparts: in a government study of EV taxes the current retail selling price of a (electric) Nissan Leaf was ~$37,000 whereas the price of a Toyota Premio (a similar ICE vehicle) was ~$20,800

Access to goods & services

Proportion of population that has convenient access to public transport (%)

29.8%

Number of EV charging stations (#)

15.0

Access to financing & investments

FDI flows by sector

-$6m net FDI flows into transportation and storage

Climate transition finance gap

Investment of ~$2.53bn needed in transport from 2024-2030 to implement Kenya's NDCs

SME finance availability (1-7, best)

3.7

Access to capacity

New businesses registered per 1,000 population (#)

0.9

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Kenya — Greening agriculture and food production

Employment & job transition

Workers within sector (#)
7,264,518.0

Informal workers within sector (#)
6,912,406.0

Workers in sector (% as a proportion of total workforce)
38.8%

Informal workers in sector (% as a proportion of total sector employment)
95.2%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.5

Affordability of goods & services

Percentage of the population who cannot afford a healthy diet
86.5%

Change in average income of bottom 50% of population relative to food prices, over time (ratio)
0.4

Green premium of sustainable foods
Evidence of a green premium for sustainable foods: plant-based milk can be up to 5 times more expensive than traditional milk

Access to goods & services

Prevalence of moderate or severe food insecurity in the population (%)
72.3%

Access to financing & investments

FDI flows by sector
$68m in net FDI flows into agriculture, forestry and fishing

Climate transition finance gap
Investment of ~$3.14bn needed in agriculture, livestock and fisheries from 2024-2030 to implement Kenya's NDCs

SME finance availability (1-7, best)
3.7

Access to capacity

New businesses registered per 1,000 population (#)
0.9

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Kenya Greening heavy industry

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

52k direct, indirect and induced net jobs expected to be created by 2050 across Hydrogen, building and industry sectors

Workers within sector (#)

258,086.0

Informal workers within sector (#)

221,786.0

Workers in sector (% as a proportion of total workforce)

1.4%

Informal workers in sector (% as a proportion of total sector employment)

85.9%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.5

Affordability of goods & services

Economic equity dimension not directly relevant for consumers

Access to goods & services

Economic equity dimension not directly relevant for consumers

Access to financing & investments

FDI flows by sector

$14m net FDI flows into manufacturing

Climate transition finance gap

Investment of ~$0.054bn needed in manufacturing from 2024-2030 to implement Kenya's NDCs

SME finance availability (1-7, best)

3.7

Access to capacity

New businesses registered per 1,000 population (#)

0.9

Share of total green patents (%)

1.0%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Kenya Greening infrastructure and built environment

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

52k direct, indirect and induced net jobs expected to be created by 2050 across hydrogen, building and industry sectors

Workers within sector (#)

1,292,689.0

Informal workers within sector (#)

1,205,524.0

Workers in sector (% as a proportion of total workforce)

6.9%

Informal workers in sector (% as a proportion of total sector employment)

93.3%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.5

Affordability of goods & services

Change in average income of bottom 50% of population relative to housing prices, over time (ratio)

0.7

Access to goods & services

Population living in slums (% of urban population)

50.8%

Access to financing & investments

FDI flows by sector

$14m net FDI flows into construction

SME finance availability (1-7, best)

3.7

Access to capacity

New businesses registered per 1,000 population (#)

0.9

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Kenya Moving to a circular economy

Employment & job transition

Workers within sector (#)
669,395.0

Informal workers within sector (#)
601,069.0

Workers in sector (% as a proportion of total workforce)
3.6%

Informal workers in sector (% as a proportion of total sector employment)
89.8%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.5

Affordability of goods & services

Limited data available for metrics used for country profiles

Access to goods & services

Recycling rate (%)
19.9%

Access to financing & investments

FDI flows by sector
$14m net FDI flows into manufacturing

Climate transition finance gap
Investment of ~$0.32bn needed in environment, devolution/solid waste management from 2024-2030 to implement Kenya's NDCs

SME finance availability (1-7, best)
3.7

Access to capacity

New businesses registered per 1,000 population (#)
0.9

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Republic of Korea

Republic of Korea emits ~660,000kt of GHG emissions annually, ~1.6% of the world's total, making it the 12th largest emitter globally.[41] Republic of Korea's most recent NDC aims for net-zero GHG emissions by 2050, as mandated by its Carbon Neutrality Act. The country has set an intermediate target of reducing emissions by 40% from 2018 levels by 2030. This target involves phasing out coal-fired power generation by 2030, expanding renewable energy sources and increasing deployment of zero-emission vehicles.[42,43] The government recognizes the impact its NDC implementation could have on workers and regions and prescribes measures to support those adversely affected. The Carbon Neutrality Act itself stipulates support for micro-enterprises, unemployment and reemployment support, and established the Korea Climate Action Fund to ensure funding accompanies these institutional commitments.

Nuclear power accounts for approximately 26% of the country's total energy mix, with coal at 36%, natural gas at 30% and renewables at 8%.[44]

Additionally, in 2021 the government announced the Green New Deal, focusing on providing financing for renewable energy and green infrastructure and fostering green industries, e.g. provide technology development support for environment and energy SMEs.[45]

Republic of Korea

Value | Economy | Archetype average | Global average

Indicator	Unit	Value	Domain
Employment & job transition			
Percentage of population with secondary school completion	%	95.2	0-140
Tertiary graduates in STEM disciplines	%	30.4	0-100
Investment in reskilling	1-7 (best)	4.6	1-7
National compliance with labour rights	0-10 (best)	4.6	0-10
Social protection coverage	%	82.9	0-100
Share of youth population (aged 15-24 years)	%	10.8	0-100
Affordability of goods & services			
Share of income of bottom 50%	%	21.9	0-100
Real wage growth (10-year average)	%	1.8	0-100
Tax progressivity	0-1 (best)	0.8	0-1
Access to goods & services			
Share of rural population	%	18.6	0-100
Inclusion in public spaces	-2.5 - +2.5 (best)	2.0	-3.5 - +3.5
Maturity of legal framework for renewable energy	0-100 (best)	100.0	0-100
Policies to support greener transport	0-100 (best)	100.0	0-100
Coverage of public transport	%	69.6	0-100

Indicator	Unit	Value	Domain
Access to financing & investments			
Fiscal balance as % of GDP	%	-1.6	-30 - +30
Financial system resilience	1-7 (best)	4.5	1-7
SME finance availability	1-7 (best)	4.6	1-7
Domestic credit to the private sector as % of GDP	%	175.0	0-400
Access to capacity			
R&D expenditure as % of GDP	%	4.9	1-6
Number of green patents	#	3,199.4	0-7,000
Talent gap for economic transformation: green and energy transition	1-7 (best)	4.3	1-7
Regulatory quality	-2.5 - +2.5 (best)	1.1	-2.5 - +2.5
Land-use availability	km sq	23,917.0	0-3,500,000
Mitigation			
Share of GDP from agriculture	%	1.6	0-100
Share of GDP from industry	%	31.7	0-100
Share of employment in agriculture	%	5.4	0-100
Share of employment in industry	%	24.5	0-100
CO_2 emissions intensity	kg per $GDP PPP	0.25	0-0.6
Fossil fuel subsidies as a % of GDP	%	0.005	0-0.5
Fossil fuel rents as a % of GDP	%	0.03	0-30
Renewable energy consumption	% of total final energy consumption	3.6	0-100

Republic of Korea | Transitioning away from fossil fuels

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Expected job loss of ~3k workers per year from fossil fuel industry from 2022 - 2030; expected job creation of 60k per year from 2022 to 2030

Workers within sector (#)

354,700.0

Informal workers within sector (#)

11,655.0

Workers in sector (% as a proportion of total workforce)

1.4%

Informal workers in sector (% as a proportion of total sector employment)

3.3%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.3

Affordability of goods & services

Change in average income of bottom 50% of population relative to electricity prices, over time (ratio)

1.3

Change in average income of bottom 50% of population relative to gasoline prices, over time (ratio)

1.2

Access to goods & services

Access to electricity (% of population)

100%

Access to electricity, rural (% of rural population)

100%

Access to financing & investments

FDI flows by sector

$234bn net FDI flows into electricity and gas (and related activities)

Venture capital investments (sector agnostic, $ millions)

3,666.8

Share of "zombie firms" among listed companies (%)

12.7%

Climate transition finance gap

~$33bn - $58.5bn per year from 2022 to 2050 to phase out fossil-fuel consumption

SME finance availability (1-7, best)

4.6

Access to capacity

Share of total green patents (%)

48.4%

Research and development expenditure (% of GDP)

4.93%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Republic of Korea | Scaling up low-carbon energy sources

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

47.1k in renewables energy sector as of 2022; expected job creation of ~207k jobs from 2022 to 2030 from clean renewable investments

Talent gap for economic transformation: green and energy transition (1-7, best)

4.3

Affordability of goods & services

Green premium of energy-efficient appliances

Price premium exists for products with the Energy Efficiency Grade Label

Access to goods & services

Renewable energy consumption (% of total final energy consumption)

3.6%

Minimum energy-efficiency performance standards (%)

93.1%

Access to clean fuels and technologies for cooking (% of population)

100%

Access to financing & investments

FDI flows by sector

$234bn net FDI flows into electricity and gas (and related activities)

Venture capital investments (sector agnostic, $ millions)

3,666.8

Share of "zombie firms" among listed companies (%)

12.7%

Climate transition finance gap

~$48Bbn per year from 2022 to 2030 including $25bn to solar and $14bn to wind

SME finance availability (1-7, best)

4.6

Access to capacity

Number of energy startups (#)

17.8

Share of total green patents (%)

48.4%

Research and development expenditure (% of GDP)

4.93%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Republic of Korea | Greening transportation and mobility

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Expected job loss of ~5k workers per year from 2022 to 2030 and 11.5k workers per year from 2031 to 2035; expected job creation of ~23k direct jobs per year from 2022 to 2030 due to public transportation expansion

Workers within sector (#)

2,436,057.0

Informal workers within sector (#)

266,864.0

Workers in sector (% as a proportion of total workforce)

9.3%

Informal workers in sector (% as a proportion of total sector employment)

11.0%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.3

Affordability of goods & services

Change in average income of bottom 50% of population relative to transport prices, over time (ratio)

1.2

Green premium of Electric Vehicles (across different passenger vehicle segments)

Average price of an electric vehicle in Korea is expected to be $53.3k in 2024 vs. a Hyundai passenger car at $38.9k in 2024

Access to goods & services

Proportion of population that has convenient access to public transport (%)

69.6%

Number of electric Light Duty Vehicles per charging point (#)

2.6

Number of EV charging stations (#)

201,000.0

Access to financing & investments

FDI flows by sector

$53bn net FDI flows into transportation and storage

Venture capital investments (sector agnostic, $ millions)

3,666.8

Share of "zombie firms" among listed companies (%)

12.7%

Climate transition finance gap

~$10bn between 2022 and 2030 to be dedicated to building retrofits, electric grid upgrades, industry efficiency, public transportation and zero-emission vehicles

SME finance availability (1-7, best)

4.6

Access to capacity

Share of total green patents (%)

8.7%

Research and development expenditure (% of GDP)

4.93%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Republic of Korea | Greening agriculture and food production

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

No specific data on agriculture, however, expected job creation of ~12k jobs per year from reforestration investment spending from 2022 to 2030

Workers within sector (#)

3,596,401.0

Informal workers within sector (#)

1,974,156.0

Workers in sector (% as a proportion of total workforce)

13.7%

Informal workers in sector (% as a proportion of total sector employment)

54.9%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.3

Affordability of goods & services

Percentage of the population who cannot afford a healthy diet

2.0

Change in average income of bottom 50% of population relative to food prices, over time (ratio)

1.0

Access to goods & services

Prevalence of moderate or severe food insecurity in the population (%)

5.6%

Access to financing & investments

FDI flows by sector

$0.2bn net FDI flows into agriculture (and related activities)

Venture capital investments (sector agnostic, $ millions)

3,666.8

Share of "zombie firms" among listed companies (%)

12.7%

SME finance availability (1-7, best)

4.6

Access to capacity

Research and development expenditure (% of GDP)

4.93%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Republic of Korea | Greening heavy industry

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Expected job creation of ~13k direct jobs per year from 2022 to 2030 from industrial efficiency

Workers within sector (#)

1,455,349.0

Informal workers within sector (#)

112,661.0

Workers in sector (% as a proportion of total workforce)

5.6%

Informal workers in sector (% as a proportion of total sector employment)

7.7%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.3

Affordability of goods & services

Economic equity dimension not directly relevant for consumers

Access to goods & services

Economic equity dimension not directly relevant for consumers

Access to financing & investments

FDI flows by sector

$2833bn net FDI flows into manufacturing

Venture capital investments (sector agnostic, $ millions)

3,666.8

Share of "zombie firms" among listed companies (%)

12.7%

SME finance availability (1-7, best)

4.6

Access to capacity

Share of total green patents (%)

13.0%

Research and development expenditure (% of GDP)

4.93%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Republic of Korea | Greening infrastructure and built environment

Employment & job transition

Share of workers likely to face job loss from climate mitigation action

Expected job creation of ~17k direct jobs per year from 2022 to 2030 from building retrofits

Workers within sector (#)

1,960,080.0

Informal workers within sector (#)

815,020.0

Workers in sector (% as a proportion of total workforce)

7.5%

Informal workers in sector (% as a proportion of total sector employment)

41.6%

Talent gap for economic transformation: green and energy transition (1-7, best)

4.3

Affordability of goods & services

Change in average income of bottom 50% of population relative to housing prices, over time (ratio)

1.1

Green premium of energy-efficient homes

Studies indicate that average annual heating energy demand could be reduced by 23% through retrofits

Access to goods & services

Limited data available for metrics used for country profiles

Access to financing & investments

FDI flows by sector

$88bn net FDI flows into construction

Venture capital investments (sector agnostic, $ millions)

3,666.8

Share of "zombie firms" among listed companies (%)

12.7%

Climate transition finance gap

~$10bn between 2022 and 2030 to be dedicated to building retrofits, electric grid upgrades, inudstry efficiency, public transportation and zero-emission vehicles

SME finance availability (1-7, best)

4.6

Access to capacity

Share of total green patents (%)

4.1%

Research and development expenditure (% of GDP)

4.93%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Republic of Korea | Moving to a circular economy

Employment & job transition

Workers within sector (#)
1,874,317.0

Informal workers within sector (#)
233,024.0

Workers in sector (% as a proportion of total workforce)
7.2%

Informal workers in sector (% as a proportion of total sector employment)
12.4%

Talent gap for economic transformation: green and energy transition (1-7, best)
4.3

Affordability of goods & services

Limited data available for metrics used for country profiles

Access to goods & services

Recycling rate (%)
67.1%

Access to financing & investments

FDI flows by sector
$2833bn net FDI flows into manufacturing; $3.6bn net FDI flows into waste management and water supply

Venture capital investments (sector agnostic, $ millions)
3,666.8

Share of "zombie firms" among listed companies (%)
12.7%

SME finance availability (1-7, best)
4.6

Access to capacity

Share of total green patents (%)
3.7%

Research and development expenditure (% of GDP)
4.93%

Potential for there to be…

- Lower equity risk
- Moderately lower equity risk
- Moderately higher equity risk
- Higher equity risk

Conclusion

As part of any country-level climate transition, it is imperative that leaders measure, report and track progress in terms of economic equity.

While collecting data on the asymmetric impact of the climate transition remains challenging, the fears and perceptions of business executives, as evidenced by the World Economic Forum's Executive Opinion Survey 2024, highlight that equity risks are not a peripheral concern and can manifest themselves with various intensities in the transition of different sectors. Companies' access to financing and know-how and consumers' accessibility of goods and services are top-of-mind for many executives.

Correspondingly, this paper has sought to bridge the discussion on climate action with economic equity by acknowledging the different transition starting points that groups of countries may find themselves in, given their existing socioeconomic conditions and mitigation context. However, the pace and efficacy with which global leaders can advance on climate objectives rests – at least in part – on the degree to which the costs and benefits of mitigation action are fairly distributed. If climate action intensifies existing inequalities, pushback is likely. These risks motivated our identification of country-level metrics (aspirational and available). The metrics proposed, while not exhaustive, can serve as a first step in conceptualizing and identifying where mitigation action can exacerbate existing socioeconomic divides. We invite policy-makers to leverage and refine the approach outlined in this paper to developing country dashboards to drive conversations among key stakeholders and respond to local data gaps that currently separate the climate agenda from economic equity.

To help advance progress, Equitable Transition Initiative will be leveraging this toolkit and the World Economic Forum Accelerators Network to support countries in identifying key challenges to an equitable transition and potential action areas. Forum Accelerators are public-private collaboration platforms that enable cross-sector efforts to unlock new ideas and drive progress on issues that require a multistakeholder approach. Recognizing that many governments and private-sector organizations have already begun to actively address economic equity, the objective of the Accelerators will be to build upon these efforts and, in collaboration with key stakeholders, expand on the data and frameworks presented here to support embedding economic equity into the design of national and subnational climate policies.

The Equitable Transition Initiative will also continue to develop and build consensus on a vision and organizing principles for an equitable green transition, distilling thought leadership into actionable frameworks and tools at sectoral, national and local levels. The initiative is backed by a global, cross-sector coalition of leaders working to ensure that policies, business strategies and investments driving the net-zero transformation solve for both climate change and inequality. Putting fairness and equity at the heart of climate efforts can accelerate progress for both people and planet in the decades ahead.

Appendix A.

Measuring economic equity risks in the transition of key sectors

Drawing on new data from the World Economic Forum's Executive Opinion Survey (EOS), the Economic Equity Framework helps identify, at a global level, areas of the green transition where specific economic equity risks are most likely to manifest themselves.

The EOS is the longest-running and most extensive survey of its kind. The Survey provides a yearly evaluation of critical aspects of socioeconomic development for which statistical data is missing because it is extremely difficult to measure on a global scale at current statistical capacity. Visit the Executive Opinion Survey homepage for more information regarding the Survey.

Respondents were asked to select up to two economic-equity risks that are most likely to materialize in their country, related to decarbonization and green transition areas, and aligning with the Economic Equity Framework adopted in this research.

Economic equity risks included:

- Goods and services will become less accessible for most consumers
- Goods and services will become unaffordable for most consumers
- Most companies will not have access to critical raw materials for green investments
- Most companies will not have capital or financing for green investments
- Most companies will not have the know-how and technology necessary for green investments
- Workers will be displaced

Decarbonization and green transition areas included:

- Greening agriculture and food production
- Greening heavy industry
- Greening infrastructure and built environment
- Greening transportation and mobility
- Moving to a circular economy
- Scaling up low-carbon energy sources
- Transitioning away from fossil fuels

This analysis is based on the responses of 6,325 respondents from 126 countries who had answered this question of the survey as of 8 July 2024. Full results are reported in Table A1. Survey respondents were able to select up to two risks for each green transition dimension.

TABLE A1

Share of responses to green transition question on Executive Opinion Survey, July 2024

	Workers will be displaced	Goods and services will become unaffordable for most consumers	Goods and services will become less accessible for most consumers	Most companies will not have capital or financing for green investments	Most companies will not have access to critical raw materials for green investments	Most companies will not have the know-how and technology necessary for green investments
Transitioning away from fossil fuels	39.7%	29.6%	34.1%	33.8%	25.5%	29.3%
Scaling up low-carbon energy sources	26.1%	28.9%	32.0%	39.6%	27.8%	35.4%
Greening transportation and mobility	27.5%	33.0%	39.0%	39.6%	28.4%	30.2%
Greening agriculture and food production	32.5%	34.0%	38.5%	33.8%	27.7%	31.1%
Greening heavy industry	37.1%	24.4%	28.5%	39.9%	31.0%	35.0%
Greening infrastructure and built environment	26.4%	26.6%	31.7%	42.4%	27.4%	34.3%
Moving to a circular economy	33.2%	26.2%	31.9%	34.0%	29.0%	39.9%
Selected at least once each economic-equity risk across various green transition areas:	**1,210**	**2,058**	**3,259**	**4,082**	**1,605**	**3,341**

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Ghana
Association of Ghana Industries

Greece
SEV Hellenic Federation of Enterprises

Guatemala
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Hong Kong SAR
Hong Kong General Chamber of Commerce

Hungary
KOPINT-TÁRKI Economic Research Ltd

Iceland
Confederation of Icelandic Enterprise

India
LeadCap Trust

Iran
Iran Chamber of Commerce, Industries, Mines and Agriculture (ICCIMA)

Iraq
Baghdad Economic Forum

Ireland
Irish Business and Employers Confederation (IBEC)

Israel
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Lesotho
Private Sector Foundation of Lesotho (PSFL)

Liberia, Sierra Leone
GQRDOTCOM Limited (GQR)

Lithuania
Innovation Agency Lithuania

Luxembourg
Chamber of Commerce of Luxembourg

Malawi
Malawi Confederation of Chambers of Commerce and Industry

Malaysia
Malaysia Productivity Corporation

Mali
Mali Applied and Theoretical Economics Research Group (GREAT)

Malta
Competitive Malta – Foundation for National Competitiveness

Mauritius
Economic Development Board of Mauritius

Mexico
Instituto Mexicano para la Competitividad (IMCO
Secretariat of Economy of Mexico

Mongolia
Open Society Forum

Montenegro
The Institute for Strategic Studies and Prognoses (ISSP)
DeFacto Consultancy

Morocco
Policy Center for the New South

Namibia
Institute for Public Policy Research (IPPR)

Nepal
Competitiveness and development institute (CODE)

Netherlands
University of Amsterdam Business School

Nigeria
Nigerian Economic Summit Group Ltd Gte (NESG)

Oman
Ministry of National Economy of Oman

Pakistan
Misha Pakistan

Paraguay
Fundación Paraguaya

Peru
Centro de Desarrollo Industrial de la Sociedad Nacional de Industrias

Poland
National Bank of Poland (NBP)

Portugal
Forum de Administradores de Empresas (FAE)
PROFORUM Associação par o Desenvolvimento da Engenharia

Qatar
Qatari Businessmen Association (QBA)

Romania
ADAF
The Chamber of Commerce and Industry of Romania

Rwanda
Rwanda Development Board (RDB)

Saudi Arabia
Alfaisal University
National Competitiveness Centre

Senegal
University Cheikh Anta Diop

Serbia
Foundation for the Advancement of Economics (FREN)

Singapore
Singapore Economic Development Board (EDB)

Slovak Republic
Business Alliance of Slovakia (PAS)

Slovenia
Institute for Economic Research
University of Ljubljana, Faculty of Economics

South Africa
Business Unity South Africa (BUSA)

Spain
IESE Business School

Sri Lanka
Institute of Policy Studies of Sri Lanka (IPS)

Switzerland
University of St. Gallen

Taiwan, China
Taiwan Institute of Economic Research

Tanzania
REPOA

Thailand
Chulalongkorn University

Trinidad and Tobago
Arthur Lok Jack Global School of Business

Tunisia
Institut Arabe des Chefs d'Entreprises (IACE)

Türkiye
TÜSIAD - Sabanci University Competitivness Forum (REF)

Ukraine
CASE Ukraine Center for Social and Economic Research

United Arab Emirates
The Federal Competitiveness and Statistics Centre (FCSC)

Uruguay
CPA Ferrere

Uzbekistan
Westminster International University in Tashkent

Venezuela
Venezuelan Council for Investment Promotion

Viet Nam
Ho Chi Minh City Institute for Development Studies (HIDS)

Yemen
Yemeni Business Club (YBC)

Zambia
University of Zambia

Zimbabwe
National Competitiveness Commission

Appendix B.

Archetype methodology and metrics

Country archetypes were identified through a K-means clustering exercise based on 29 metrics. These indicators span the five economic equity dimensions of the Economic Equity Framework and mitigation-related metrics on challenges faced by the countries. The ideal number of clusters was identified through a heuristic approach aimed at developing clearly defined and sufficiently homogenous country clusters.

The analysis uses the latest data available from 2013 to 2023. Indicators must cover a minimum 70% of the participating countries to provide a global overview. Countries are included if they meet data-quality standards and have at least 80% of indicators available. Data was downloaded as of April 2024.

Imputation was applied to (1) values which were outside two standard deviations from the mean, and (2) metrics and countries with missing data, using the following approaches:

1. Outlier values are imputed based on mean, plus or minus two standard deviations
2. Missing values are imputed using averages from specific regional and income groupings (Table B1)

Before clustering, indicators were normalized through a min-max normalization, using the following formula:

$Z = (x–min) / (max–min)$, where x is the original value, min is the minimum value or the minimum value possible, and max is the maximum value or the maximum value possible for a given metric.

Weighting was applied to balance the impact of each of the dimensions represented by the 29 indicators.

TABLE B.1

Income and regional groups

Imputation grouping	Countries included	Region	Income group
High-income Asia	Australia, Japan, Republic of Korea, New Zealand, Singapore	Asia Pacific	High income
High-income Europe and Northern America	Austria, Belgium, Canada, Switzerland, Cyprus, Czechia, Germany, Denmark, Spain, Estonia, Finland, France, United Kingdom, Greece, Croatia, Hungary, Ireland, Iceland, Italy, Lithuania, Luxembourg, Latvia, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden, United States of America	Europe and Northern America	High income
High-income Latin America and the Caribbean	Chile, Panama, Uruguay	Latin America and the Caribbean	High income
High-income Middle-East	United Arab Emirates, Bahrain, Israel, Kuwait, Oman, Qatar, Saudi Arabia	Middle-East	High income
Low-income, Middle-East and Africa	Burkina Faso, Democratic Republic of the Congo, Ethiopia, Madagascar, Mali, Mozambique, Malawi, Rwanda, Chad, Uganda, Yemen	Middle-East and Africa	Low income
Upper-middle income Asia	Armenia, Azerbaijan, Bangladesh, China, Georgia, Indonesia, India, Kazakhstan, Kyrgyzstan, Cambodia, Lao PDR, Sri Lanka, Myanmar, Mongolia, Malaysia, Nepal, Pakistan, Philippines, Thailand, Tajikistan, Uzbekistan, Viet Nam	Asia	Upper-middle income
Upper-middle income Europe	Albania, Bulgaria, Bosnia and Herzegovina, Republic of Moldova, North Macedonia, Montenegro, Russian Federation, Serbia, Türkiye, Ukraine	Europe and Northern America	Upper-middle income
Upper-middle income Latin America and the Caribbean	Argentina, Bolivia (Plurinational State of), Brazil, Colombia, Costa Rica, Dominican Republic, Ecuador, Guatemala, Honduras, Jamaica, Mexico, Peru, Paraguay, El Salvador	Latin America and the Caribbean	Upper-middle income
Middle-income Middle-East and Africa	Angola, Benin, Botswana, Côte D'Ivoire, Cameroon, Algeria, Egypt, Ghana, Iran (Islamic Republic of), Jordan, Kenya, Lesotho, Morocco, Mauritania, Mauritius, Namibia, Nigeria, Senegal, Tunisia, United Republic of Tanzania, South Africa, Zambia, Zimbabwe	Middle-East and Africa	Lower-middle income

TABLE B.2

Full list of countries in archetypes

Inclusive Green Adopters	Emerging Green Adopters	Fossil-Fuel Exporters	Growth Economies	Frontier Economies	Green Developers
Australia	Albania	Algeria	Argentina	Angola	China
Austria	Bosnia and Herzegovina	Azerbaijan	Armenia	Bangladesh	Germany
Belgium	Bulgaria	Bahrain	Bolivia (Plurinational State of)	Benin	Japan
Canada	Cyprus	Iran, Islamic Republic of	Botswana	Burkina Faso	Republic of Korea
Croatia	Greece	Kazakhstan	Brazil	Cameroon	United States of America
Czechia	Hungary	Kuwait	Cambodia	Chad	
Denmark	Ireland	Oman	Chile	Democratic Republic of Congo	
Estonia	Italy	Qatar	Colombia	Côte d'Ivoire	
Finland	Latvia	Saudi Arabia	Costa Rica	Ethiopia	
France	Lithuania	United Arab Emirates	Dominican Republic	Ghana	
Iceland	Malta	Uzbekistan	Ecuador	Guatemala	
Israel	Moldova		Egypt	Kenya	
Luxembourg	Montenegro		El Salvador	Kyrgyzstan	
Netherlands	North Macedonia		Georgia	Lao, PDR	
New Zealand	Poland		Honduras	Lesotho	
Norway	Romania		India	Madagascar	
Portugal	Serbia		Indonesia	Malawi	
Singapore	Slovakia		Jamaica	Mali	
Slovenia	Türkiye		Jordan	Mauritania	
Spain	Ukraine		Malaysia	Mozambique	
Sweden	Uruguay		Mauritius	Myanmar	
Switzerland			Mexico	Nepal	
United Kingdom			Mongolia	Nigeria	
			Morocco	Pakistan	
			Namibia	Rwanda	
			Panama	Senegal	
			Paraguay	Sri Lanka	
			Peru	Tajikistan	
			Philippines	Tanzania	
			South Africa	Uganda	
			Thailand	Yemen	
			Tunisia	Zambia	
			Viet Nam	Zimbabwe	

TABLE B.3

Archetype metrics, their description and sources

Metric	Source	Description
Percentage of population with secondary school completion, %	World Bank, *World Development Indicators* database	Measured as the gross intake ratio to the last grade of lower-secondary education; calculated as the number of new entrants in the last grade of lower secondary, regardless of age, divided by the population at the entrance age for the last grade of lower-secondary education.
Tertiary graduates in STEM disciplines, %	UNESCO, Institute for Statistics	Percentage of total graduates from Science, Technology, Engineering and Mathematics programmes in tertiary education.
Investments in reskilling, 1-7 (best)	World Economic Forum, Executive Opinion Survey	Average of the following business leaders' answers to the questions: a) "In your country, to what extent do companies invest in workforce upskilling and reskilling? [1 = Not at all; 7 = To a great extent]", and b) "In your country, to what extent does the public sector invest in workforce upskilling and reskilling? [1 = Not at all; 7 = To a great extent]".
National compliance with labour rights, 0-10 (best)	International Labour Organization (ILO), *ILOSTAT* database	Score 0-10 based on evaluation of six ILO sources & national legislation; focuses on whether population has freedom to associate and effective recognition of collective bargaining rights.
Social-protection coverage, %	International Labour Organization (ILO,) *ILOSTAT* database	Share of the population effectively covered by a social protection system, including social protection floors.
Share of youth population (aged 15-24 years)	UN Department of Economic and Social Affairs	Percentage of the total population aged 15-24.
Share of income of bottom 50%	*World Inequality Database*	Share of pre-tax national income accruing to the bottom 50% of the population.
Real wage growth (10-year average), %	International Labour Organization (ILO), *Global Wage Report*	Year-on-year change in real average monthly wages of all employees; real wages are calculated by adjusting nominal wage data for consumer-price inflation in the respective country.
Tax progressivity, 0-1 (best)	Oxfam, Commitment to Reducing Inequality Index	An index of standardized tax scores based on an assessment of (1) policy (the progressivity of the tax structure on paper & any harmful tax practices), (2) implementation (amount of revenue actually collected), and (3) impact (on inequality measured by incidence of taxes on the Gini coefficient).
Share of rural population, %	World Bank, *World Development Indicators* database	Rural population refers to people living in rural areas as defined by national statistical offices. It is calculated as the difference between total population and urban population.

Metric	Source	Description
Inclusion in public spaces, -2.5 - +2.5 (best)	University of Gothenburg, Varieties of Democracy Institute	An individual is considered excluded whenever access to services or participation in governed spaces is denied, measured across socioeconomic group, urban-rural, political group and social groups.
Legal framework for renewable energy, 0-100 (best)	World Bank, *Regulatory Indicators for Sustainable Energy (RISE)*	Score 0-100 (best): Evaluation of legal framework against the following questions: • Does the legal framework allow private-sector ownership of renewable energy generation? • Does an official renewable energy target exist? • Is the target legally binding? • Is the RE target linked to international commitments (e.g. NDC or regional commitment)? • Is there a renewable energy action plan or strategy to attain the target?
Policies to encourage cleaner transport, 0-100 (best)	World Bank, *Regulatory Indicators for Sustainable Energy (RISE)*	Score 0-100 (best): Evaluation of policies against the following question: • Are there any mandate or incentive programmes that support reduction of transport demands or shifts to more energy-efficient modes of transport for personal use?
Coverage of public transport, %	UN Habitat	Proportion of the population who are within 500m walking distance from a reference point (home/school/work) to a low-capacity transport system or within 1km of a high-capacity system.
Fiscal balance as % of GDP	Kose, M. Ayhan, Sergio Kurlat, Franziska Ohnsorge and Naotaka Sugawara,"A Cross-Country Database of Fiscal Space," *Journal of International Money and Finance* 128 (November): 102682, 2022	Government revenues minus government expenditures.
Financial system resilience, 1-7 (best)	World Economic Forum, Executive Opinion Survey	Business leaders' answers to the question: "In your country, to what extent is the financial system able to respond to crises? [1=Not at all; 7=To a great extent]".
SME finance availability, 1-7 (best)	World Economic Forum, Executive Opinion Survey	Business leaders' answers to the question "In your country, to what extent can small- and medium-sized enterprises (SMEs) access the finance they need for their business operations through the financial sector? [1 = Not at all; 7 = To a great extent]".
Domestic credit to the private sector as % of GDP	World Bank, *Global Financial Development* database	Extent of credit resources provided to the private sector, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment, divided by GDP. For some countries these claims include credit to public enterprises. It corresponds to the indicator DI.14 in the *Global Financial Development* database.
R&D expenditure as % of GDP	World Bank, *World Development Indicators* database	Gross domestic expenditures on R&D expressed as a percentage of GDP. Includes both capital and current expenditures in the four main sectors: Business enterprise, Government, Higher education and Private non-profit. R&D covers basic research, applied research and experimental development.

Metric	Source	Description
Number of green patents, #	Organisation for Economic Co-operation and Development (OECD) STI Micro-data Lab: *Intellectual Property* database	Total count of IP5 patent families in green technologies, by earliest filing date and inventor country. Green technologies are defined as environment related technologies tagged as Y02 in the Collaborative Patent Classification schema. Patents are counted if filed in at least two of the major five (IP5) offices in the world: European Patent Office (EPO), Japan Patent Office (JPO), Korean Intellectual Property Office (KIPO), State Intellectual Property Office of the People's Republic of China (SIPO) and United States Patent and Trademark Office (USPTO). Data is extracted from the *PATSTAT* database by earliest filing date and inventor country, using fractional counts. The average of the last three years available are taken into account to eliminate spikes in 1 particular year.
Talent gaps for economic transformation: green and energy transition, 1-7 (best)	World Economic Forum, Executive Opinion Survey	Business leaders' answers to the question: "In your country, to what extent do companies find the talent needed for the green and energy transition? [1=Not at all; 7=To a great extent]".
Regulatory quality, -2.5 - +2.5 (best)	World Bank, *World Development Indicators* database	Standardized score based on perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private-sector development. Gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.
Land-use availability, km sq	Food and Agriculture Organization (FAO)	Total area of a country spanning forestry and agricultural use (exc. buildings) and land area excluding inland waters.
Share of GDP from Agriculture and Industry, %	World Bank, *World Development Indicators* database	Value added by Agriculture & Industry (expressed as a % of GDP). Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs: 1. Industry - mining, manufacturing construction, electricity, water and gas 2. Agriculture - forestry, hunting and fishing, as well as cultivation of crops and livestock production
Share of employment in Agriculture and Industry, %	World Bank, *World Development Indicators* database	Persons of working age engaged in activities to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement in agriculture and industry sector.
CO_2 emissions intensity, kg per PPP $ of GDP	World Bank, *World Development Indicators* database	CO_2 emissions intensity (kg per PPP $ of GDP).
Fossil-fuel subsidies as a % of GDP	Fossil-fuel subsidy tracker: aggregation of data from OECD, IEA, IMF, UN, and World Bank	Government subsidies provided in coal, electricity, natural gas and petroleum products.
Fossil-fuel rents as a % of GDP	World Bank, *World Development Indicators* database	Rents are the difference between the value of crude production at regional prices and total costs of production over the GDP.
Renewable energy consumption (% of total final energy consumption)	World Bank, *World Development Indicators* database	Renewable energy consumption as a % of total final energy consumption.

TABLE C.1

Metrics for Country Dashboards

Indicator currently collected at a global level that is directly relevant to assess risks and progress in one of the areas of the framework.

Indicator currently collected at a global level that serves as a proxy to assess risks and progress in one of the areas of the framework.

Indicator	Source, United Kingdom	Source, Uruguay	Source, Oman	Source, Malaysia	Source, Kenya	Source, Republic of Korea
Share of workers likely to face job loss from climate mitigation action	UK Climate Change Committee, *A Net Zero Workforce*, May 2023, https://www.theccc.org.uk/wp-content/uploads/2023/05/CCC-A-Net-Zero-Workforce-Web.pdf; IRENA, *Renewable Energy by Employment by Country*, https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country, accessed July 2024	WRI, *Uruguay: Leveraging Partnerships to Create Green Jobs and Ensure a Just Transition*, 1 April 2021, https://www.wri.org/update/uruguay-leveraging-partnerships-create-green-jobs-and-ensure-just-transition; Uruguay Inter Institutional Group, *Uruguay's Roadmap for Green Hydrogen and Derivatives*, 2020, https://www.gub.uy/ministerio-industria-energia-mineria/sites/ministerio-industria-energia-mineria/files/documentos/noticias/H2_final-ingl%C3%A9s2020.pdf; IRENA, *Renewable Energy by Employment by Country*, https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country, accessed July 2024	Oman Observer, *Duqm green steel cluster to create 2000 jobs in Oman*, 17 December 2022, https://www.omanobserver.om/article/1129858/business/economy/duqm-green-steel-cluster-to-create-2000-jobs-in-oman#:~:text=A%20multibillion%2D-dollar%20green%20steel,and%20medium%20enterprises%20(SMEs)%2C; Oman Observer, *Oman's hydrogen economy for 380000 jobs by 2050*, 4 December 2023, https://www.omanobserver.om/article/1146458/business/energy/omans-hydrogen-economy-for-380000-jobs-by-2050#:~:text=%E2%80%9CBased%20on%20the%202050%20production,than%20produced%20locally-)%2C%E2%80%9D%20it; IRENA, Renewable Energy by Employment by Country, https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country, accessed July 2024	Bank Negara Malaysia, *IIF-Maybank Transition Finance Workshop*, 30 November 2023, https://www.bnm.gov.my/-/dgjc-spch-tfw#:~:text=It%20is%20estimated%20that%2020,need%20help%20to%20do%20so; Petronas, *Laying the Foundation for a Just Energy Transition*, November 2023, https://www.petronas.com/sites/default/files/uploads/content/2023/Laying%20the%20Foundation%20for%20a%20Just%20Energy%20Transition.pdf; IRENA, *Renewable Energy by Employment by Country*, https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country, accessed July 2024	State Ministry of Energy, *Kenya Energy Transition & Investment Plan*, 23 October 2023, https://energy.go.ke/sites/default/files/KAWI/Other%20Downloads/Kenya%20ETIP%202050%20-%20full%20doc_final%20231023.pdf; IRENA, *Renewable Energy by Employment by Country*, https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country, accessed July 2024	PERI Institute University of Massachusetts Amherst, *A Green Economy Transition Program for South Korea*, https://peri.umass.edu/images/SKorea-CleanEnergy-3-25-22.pdf, accessed May 2024; IRENA, *Renewable Energy by Employment by Country*, https://www.irena.org/Data/View-data-by-topic/Benefits/Renewable-Energy-Employment-by-Country, accessed July 2024
% workers in sector (as a proportion of total workforce)	International Labour Organization (ILO); *ILOSTAT*; https://ilostat.ilo.org/topics/employment/, accessed May 2024					
# workers in sector (as a proportion of total workforce)						
% of informal workers in sector (as a proportion of total sector employment)						
# of informal workers in sector (as a proportion of total sector employment)						

TABLE C.1

Metrics for Country Dashboards

Indicator currently collected at a global level that is directly relevant to assess risks and progress in one of the areas of the framework.

Indicator currently collected at a global level that serves as a proxy to assess risks and progress in one of the areas of the framework.

Indicator	Source, United Kingdom	Source, Uruguay	Source, Oman	Source, Malaysia	Source, Kenya	Source, Republic of Korea
Talent gap for economic transformation: green and energy transition	World Economic Forum, Executive Opinion Survey, 2023					
Change in average income of bottom 50% of population relative to electricity prices, over time	International Energy Association (IEA), *Energy Prices*, https://www.iea.org/data-and-statistics/data-product/energy-prices#energy-prices, accessed May 2024; *World Inequality Database*, "Pre-tax national income & Average National Income", https://wid.world/, accessed June 2024					
Change in average income of bottom 50% of population relative to gasoline prices, over time	Global Petrol Prices, "Gasoline prices", https://www.globalpetrolprices.com/gasoline_prices/, accessed June 2024 *World Inequality Database* , "Pre-tax national income & Average National Income", https://wid.world/, accessed June 2024					
European Energy Poverty Index	Openexp, *European Energy Poverty Index*, https://www.openexp.eu/sites/default/files/publication/files/european_energy_poverty_index-eepi_en.pdf, accessed May 2024					
Green premium of energy-efficient appliances	International Energy Agency, *Strategies for Affordable and Fair Clean Energy Transitions*, 30 May 2024, https://www.iea.org/reports/strategies-for-affordable-and-fair-clean-energy-transitions	Infonegocios, *Before next winter (the heat pump boom, a key technology for energy transition)*, 24 October 2022, https://infonegocios.biz/enfoque/antes-del-proximo-invierno-el-boom-de-las-bombas-de-calor-tecnologia-clave-de-transicion-energetica	n/a	n/a	Energy & Petroleum Regulatory Authority, 22 April 2024, https://allafrica.com/stories/202404220125.html	Park, Ju Young Park, *Is there a price premium for energy efficiency labels evidence from the introduction of a label in Korea*, December 2016, https://www.researchgate.net/publication/311882831_Is_There_a_Price_Premium_for_Energy_Efficiency_Labels_Evidence_from_the_Introduction_of_a_Label_in_Korea
Change in average income of bottom 50% of population relative to transport prices, over time	Euromonitor, *Index of Transport Prices*, accessed May 2024; *World Inequality Database*, "Pre-tax national income & Average National Income", https://wid.world/, accessed June 2024					
Green premium of Electric Vehicles (across different passenger vehicle segments)	n/a	Ministry of Labor and Social Security, *Electric Vehicles in Uruguay Report*, 14 March 2023, https://www.oitcinterfor.org/sites/default/files/Uruguay-Informe_MovilidadElectrica_2023.pdf	n/a	n/a	Ministry of Transport & State Department of Transport, *Electric Mobility Study*, January 2021, https://transport.go.ke/sites/default/files/Electric_Vehicle_Importation_and_Taxation.pdf	Statista, *Market Insights on Electric Vehicles - South Korea*, updated as of September 2023, https://www.statista.com/outlook/mmo/electric-vehicles/south-korea
Percentage of the population who cannot afford a healthy diet	Food and Agriculture Organisation (FAO), *Cost and Affordability of a Healthy Diet*, https://www.fao.org/faostat/en/#data/CAHD, accessed May 2024					
Change in average income income of bottom 50% of population relative to food prices, over time	Euromonitor, *Index of Food Prices*, accessed May 2024; *World Inequality Database*, "Pre-tax national income & Average National Income", https://wid.world/, accessed June 2024					

TABLE C.1

Metrics for Country Dashboards

Indicator currently collected at a global level that is directly relevant to assess risks and progress in one of the areas of the framework.

Indicator currently collected at a global level that serves as a proxy to assess risks and progress in one of the areas of the framework.

Indicator	Source, United Kingdom	Source, Uruguay	Source, Oman	Source, Malaysia	Source, Kenya	Source, Republic of Korea
Green premium of sustainable foods	Food Foundation, *Food Environment Metrics*, July 2022, https://foodfoundation.org.uk/sites/default/files/2022-07/FF_BP_AT%20A%20GLANCE.pdf	n/a	n/a	n/a	Business daily, *Brookside ventures into plant-based milk*, 10 April 2023, https://www.businessdailyafrica.com/bd/corporate/companies/brookside-ventures-into-plant-based-milk-4193890	n/a
Housing cost overburden rate	Organisation for Economic Cooperation and Development (OECD) & World Inequality Database, https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.oecd.org%2Fels%2Ffamily%2FHC1.2-Housing-costs-over-income.xlsx&wdOrigin=BROWSELINK, accessed May 2024					
Change in average income of bottom 50% of population relative to housing prices, over time	Euromonitor, Index of Housing Prices, accessed May 2024; *World Inequality Dataset*, Pre-tax national income & Average National Income, https://wid.world/, accessed June 2024					
Share of households receiving housing allowances in bottom quartile (%)	Organisation for Economic Cooperation and Development (OECD), *OECD Affordable Housing Database*, https://www.oecd.org/housing/data/affordable-housing-database/housing-policies.htm, accessed May 2024	n/a	n/a	n/a	n/a	n/a
Green premium of energy-efficient homes	Rightmove, *What's the average UK energy bill and how can I save money?*, 1 July 2024, https://www.rightmove.co.uk/news/articles/property-news/average-uk-energy-bills-how-to-save-money/#:~:text=Homes%20with%20lower%20energy%2Defficiency,higher%20carbon%20emissions%2C%20on%20average	n/a	Times of Oman, *'Sahim' scheme to power homes by solar energy*, 24 May 2017, https://timesofoman.com/article/109724/Oman/Solar-energy-initiative-%E2%80%99Sahim%E2%80%99-launched-in-Oman	n/a	n/a	Shin, D.H., S. H. Kim, J. H. Kim, S. Kim, "Experimental analysis of low-cost energy retrofit strategies for residential buildings to overcome energy poverty", *Case Studies in Thermal Engineering*, vol. 32, 2022, 101874
Green premium of recycled products	BCG, *Green Awakening: Are Consumers Open to Paying More for Decarbonized Products?*, 4 December 2023, https://www.bcg.com/publications/2023/consumers-are-willing-to-pay-for-net-zero-production	n/a	n/a	n/a	n/a	n/a
Access to electricity (% of population)	The World Bank, *Access to electricity (% of population)*, https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?view=chart, accessed May 2024					
Access to electricity, rural (% of rural population)	The World Bank, *Access to electricity, rural (% of rural population)*, https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?view=chart, accessed May 2024					

TABLE C.1

Metrics for Country Dashboards

Indicator currently collected at a global level that is directly relevant to assess risks and progress in one of the areas of the framework.

Indicator currently collected at a global level that serves as a proxy to assess risks and progress in one of the areas of the framework.

Indicator	Source, United Kingdom	Source, Uruguay	Source, Oman	Source, Malaysia	Source, Kenya	Source, Republic of Korea
Access to clean fuels and technologies for cooking (% of population)	The World Bank, *Access to clean fuels and technologies for cooking (% of population)*, https://databank.worldbank.org/source/world-development-indicators/Series/EG.CFT.ACCS.ZS, accessed May 2024					
Renewable energy consumption (% of total final energy consumption)	The World Bank, *Renewable energy consumption (% of total final energy consumption)*, https://data.worldbank.org/indicator/EG.FEC.RNEW.ZS?view=chart, accessed May 2024					
Minimum energy-efficiency performance standards	The World Bank, *Regulatory Indicators for Sustainable Energy (RISE)*, RISE Energy Efficiency 7.0, https://rise.esmap.org/indicators, accessed May 2024					
Proportion of population that has convenient access to public transport (%)	United Nations Department of Economic and Social Affairs (UNDESA), *Sustainable Development Indicators*, https://unstats.un.org/sdgs/dataportal, accessed June 2024					
Number of electric Light Duty Vehicles (LDV) per charging point	International Energy Agency (IEA), *Trends in charging infrastructure*, https://www.iea.org/reports/global-ev-outlook-2022/trends-in-charging-infrastructure, accessed May 2024					
Number of EV charging stations	International Energy Agency (IEA), *Trends in charging infrastructure*, https://www.iea.org/reports/global-ev-outlook-2022/trends-in-charging-infrastructure, accessed May 2024	Open Charge Map, *Number of charging stations by country*, https://openchargemap.org/site/country, accessed May 2024	Open Charge Map, *Number of charging stations by country*, https://openchargemap.org/site/country, accessed May 2024	Open Charge Map, *Number of charging stations by country*, https://openchargemap.org/site/country, accessed May 2024	Open Charge Map, *Number of charging stations by country*, https://openchargemap.org/site/country, accessed May 2024	International Energy Agency (IEA), *Trends in charging infrastructure*, https://www.iea.org/reports/global-ev-outlook-2022/trends-in-charging-infrastructure, accessed May 2024
Prevalence of moderate or severe food insecurity in the population (%)	Food and Agriculture Organisation (FAO), *Suite of Food Security Indicators*, https://www.fao.org/faostat/en/#data/FS, accessed May 2024					
Population living in slums (% of urban population)	The World Bank, *Population living in slums (% of urban population)*, https://data.worldbank.org/indicator/EN.POP.SLUM.UR.ZS?skipRedirection=true&view=map, accessed May 2024					
Average age of building stock (years)	Eurac Research, *European Building Stock Analysis*, https://webassets.eurac.edu/31538/1643788710-ebsa_web_2.pdf, accessed May 2024	n/a	n/a	n/a	n/a	n/a
Recycling rate (%)	Environmental Performance Index, *Recycling rate*, https://epi.yale.edu/epi-results/2022/component/rec, accessed May 2024					
SME finance availability	World Economic Forum, Executive Opinion Survey, Average business leaders' answers to the question "In your country, to what extent can small- and medium-sized enterprises (SMEs) access the finance they need for their business operations through the financial sector? [1 = Not at all; 7 = To a great extent]" (EOSQ425), 2023					
Share of "zombie firms" among listed companies	International Monetary Fund (IMF), *Share of zombie firms*, https://www.imf.org/en/Publications/WP/Issues/2023/06/16/The-Rise-of-the-Walking-Dead-Zombie-Firms-Around-the-World-534866, accessed July 2024					

TABLE C.1

Metrics for Country Dashboards

Indicator currently collected at a global level that is directly relevant to assess risks and progress in one of the areas of the framework.

Indicator currently collected at a global level that serves as a proxy to assess risks and progress in one of the areas of the framework.

Indicator	Source, United Kingdom	Source, Uruguay	Source, Oman	Source, Malaysia	Source, Kenya	Source, Republic of Korea
FDI flows by sector	Organisation for Economic Cooperation and Development (OECD), *FDI flows*, https://www.oecd-ilibrary.org/finance-and-investment/data/benchmark-definition-4th-edition-bmd4/foreign-direct-investment-financial-flows-by-industry_data-00743-en, accessed May 2024	Uruguay XXI, *Foreign Direct Investment Monitor in Uruguary*, April 2024, https://www.uruguayxxi.gub.uy/uploads/informacion/8be2470fcafc269de-ae4cc331c8108e3e05027b9.pdf, accessed May 2024	National Center for Statistics and Information, Oman, *Foreign Investments*, February 2024, https://www.ncsi.gov.om/Elibrary/LibraryContentDoc/bar_Foreign%20Investment%202018%20-%202022_d0127608-b200-4d86-847e-818a5d5e24b7.pdf	Malaysia Investment Development Authority, *Malaysia's FDI inflows rebounds above pre-pandemic levels*, https://www.mida.gov.my/malaysias-foreign-direct-investment-inflows-rebounds-above-the-pre-pandemic-levels, accessed May 2024	Central Bank of Kenya, *Foreign Investment Survey 2020*, https://www.centralbank.go.ke/wp-content/uploads/2021/08/Foreign-Investment-Survey-2020-Report.pdf, Accessed May 2024	Organisation for Economic Cooperation and Development (OECD), *FDI flows*, https://www.oecd-ilibrary.org/finance-and-investment/data/benchmark-definition-4th-edition-bmd4/foreign-direct-investment-financial-flows-by-industry_data-00743-en, accessed May 2024
Venture capital investments (sector agnostic)	Organisation for Economic Cooperation and Development (OECD), *Venture capital investments*, https://stats.oecd.org/Index.aspx?DataSetCode=VC_INVEST, accessed May 2024					
Cost of capital for solar PV (country- and technology-specific real after-tax WACC assumptions)	International Renewable Energy Agency (IRENA), *Country and technology-specific real after-tax WACC assumptions for 2021*, https://mc-cd8320d4-36a1-40ac-83cc-3389-cdn-endpoint.azureedge.net/-/media/Files/IRENA/Agency/Publication/2023/May/IRENA_Cost_of_financing_renewable_power_Appendix_2023.pdf?rev=0c9288a22ab44676a1fd5b8ca0c774e8&hash=E8C5348B995428736C886D228B3ECE5C, accessed May 2024					
Research and development expenditure (% of GDP)	The World Bank, *Research and development expenditure (% of GDP)*, https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS, accessed May 2024					
Share of total green patents (%) by sector	Organisation for Economic Cooperation and Development (OECD), *Patents by technology*, https://stats.oecd.org/index.aspx?queryid=29068, accessed May 2024					
Number of energy startups	Intenational Energy Agency (IEA), *Energy start ups*, https://www.iea.org/data-and-statistics/data-tools/energy-start-up-data-explorer, accessed May 2024					
New businesses registered per 1,000 people	The World Bank, *New businesses registered (number)*, https://data.worldbank.org/indicator/IC.BUS.NREG?skipRedirection=true&view=map, accessed May 2024					

Method to develop Country Dashboards
If data for the aspirational metric of a given country existed, it was used in the Country Dashboards. Where data did not exist, proxies were identified and used, as detailed in Table C1. The most recent data point between the years 2018 to 2023 was used for all countries and metrics (with specific exceptions mentioned below).

In cases where data for proxies was also unavailable, country-specific data was identified from sources such as national statistics offices, government or NGO reports, or reports from private-sector organizations.

Method to develop specific metrics
For most metrics, data was used as reported. However, some metrics were calculated as follows:

1. Change in average income of bottom 50% of population relative to prices of goods, over time: This metric was calculated as the ratio between change in average income of bottom 50% and change in the price of respective goods (electricity, gasoline, transport, food and housing). Respective average income and price values were considered for years 2022 and 2018 for the ratio for electricity prices, 2023 and 2017 for gasoline prices, and 2020 and 2010 for housing, food and transport prices.

2. New businesses registered per 1,000: This metric was calculated as the number of new businesses registered per 1,000 inhabitants in a country. Population numbers are from 2023, and last available value between 2018-2023 was used for new businesses registered.

3. Number of employees in a green transition dimension sector: Sectoral employment data from the International Labour Organization (ILO) as per International Standard Industrial Classification (ISIC) Revision-4 was used to estimate the number of workers (formal and informal) for all green transition dimension sectors, except Scaling up low-carbon energy sources. Where data existed in the last five years, we used Division-level data. Otherwise, Section-level data was used. The number of workers for the green transition dimension on Scaling up low carbon energy sources was calculated using the Renewable Energy Employment by Country (IRENA) indicator. Technologies included biogas, solar, liquid biofuels, hydropower, wind energy, solid biomass, geothermal energy and others. Table C2 maps green transition dimensions to ISIC sections and divisions to estimate the number of workers.

TABLE C.2

International Standard Industrial Classification (ISIC) Taxonomy – Section and Division levels

Section level

Green transition dimension	International Standard Industrial Classification (ISIC) Rev. 4 Taxonomy – Section level
Greening agriculture and food production	A. Agriculture; forestry and fishing
Transitioning away from fossil fuels	B. Mining and quarrying
Moving to a circular economy	C. Manufacturing
Transitioning away from fossil fuels	D. Electricity; gas, steam and air conditioning supply
Moving to a circular economy	E. Water supply; sewerage, waste management and remediation activities
Greening infrastructure and built environment	F. Construction
Greening transportation and mobility	G. Wholesale and retail trade; repair of motor vehicles and motorcycles
Greening transportation and mobility	H. Transportation and storage

TABLE C.2

International Standard Industrial Classification (ISIC) Taxonomy – Section and Division levels

Division level

Green transition dimension	International Standard Industrial Classification (ISIC) Rev. 4 Taxonomy – Division level
Transitioning away from fossil fuels	05 - Mining of coal and lignite 06 - Extraction of crude petroleum and natural gas 07 - Mining of metal ores 09 - Mining support service activities 19 - Manufacture of coke and refined petroleum products 27 - Manufacture of electrical equipment 35 - Electricity, gas, steam and air conditioning supply
Greening transportation and mobility	29 - Manufacture of motor vehicles, trailers and semi-trailers 30 - Manufacture of other transport equipment 45 - Wholesale and retail trade and repair of motor vehicles and motorccles 49 - Land transport and transport via pipelines 50 - Water transport 51 - Air transport 52 - Warehousing and support activities for transportation
Greening infrastructure and built environment	41 - Construction of buildings 42 - Civil engineering 43 - Specialized construction activities
Greening heavy industry	20 - Manufacture of chemicals and chemical products 21 - Manufacture of pharmaceuticals, medicinal chemical and botanical products 23 - Manufacture of other non-metallic mineral products 24 - Manufacture of basic metals 25 - Manufacture of fabricated metal products, except machinery and equipment 28 - Manufacture of machinery and equipment n.e.c. 33 - Repair and installation of machinery and equipment

Green transition dimension	International Standard Industrial Classification (ISIC) Rev. 4 Taxonomy – Division level
Greening agriculture and food production	01 - Crop and animal production, hunting and related service activities 02 - Forestry and logging 03 - Fishing and aquaculture 10 - Manufacture of food products 11 - Manufacture of beverages 56 - Food and beverage service activities
Moving to a circular economy	13 - Manufacture of textiles 14 - Manufacture of wearing apparel 15 - Manufacture of leather and related products 16 - Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials 17 - Manufacture of paper and paper products 22 - Manufacture of rubber and plastics products 26 - Manufacture of computer, electronic and optical products 31 - Manufacture of furniture 32 - Other manufacturing 38 - Waste collection, treatment and disposal activities; materials recovery 39 - Remediation activities and other waste management services 95 - Repair of computers and personal and household goods

Colour-coding rules

To evaluate how a country is performing, certain rules were applied to get an indication of the level of potential risk. There were four types of metrics considered:

- Metrics with a clear target
- Metrics without a clear target, but sufficient data points to allow comparison to other countries
- Metrics without a clear target, but insufficient data points to allow comparison to other countries
- Metrics that were specific to a given country

Country Dashboards were then colour-coded accordingly (Table C3).

TABLE C.3

Country Dashboard colour-coding rules

Category	Metric	Colour-coding rule
Metrics with clear target	• Access to electricity (% of population) • Access to electricity, rural (% of rural population) • Access to clean fuels and technologies for cooking (% of population) • Renewable energy consumption (% of total final energy consumption) • Proportion of population that has convenient access to public transport (%) • Minimum energy efficiency performance standards (%) • Percent of the population who cannot afford a healthy diet** • Prevalence of moderate or severe food insecurity in the population (%) • Population living in slums (% of urban population) **	Country's data point compared to the following thresholds: • 0-25% = dark blue • 26-50% = medium blue • 51-75% = pale blue • 76-100% = light blue **For certain metrics reverse colour-coding rules were applied
Metrics without clear target and sufficient data points to allow comparability* *Dataset for given metric includes >=50% countries based on 126 countries used in archetype analysis	• Recycling rate (%) • New businesses registered per 1,000 people (#) • Talent gaps for economic transformation: green and energy transition (1-7, best) • Number of energy startups (#) • Change in average income of bottom 50% of population relative to price of gasoline, over time (ratio) • SME finance availability, 1-7 (best) • R&D expenditure as % of GDP (%) • Cost of capital for solar PVs (%)**	Country's data point compared to that of other countries using quartiles: • < Q1 = dark blue • < median > Q1 = medium blue • > median < Q3 = pale blue • > Q3 = light blue **For certain metrics, reverse colour-coding rules were applied
Metrics without clear target and insufficient data points to allow comparability * *Dataset for given metric includes <50% countries based on 126 countries used in archetype analysis	• Share of "zombie firms" among listed companies (%) • Housing cost overburden rate (%) • Venture capital investments • Number of electric Light Duty Vehicles per charging point (#) • Average age of building stock (years) • European Energy Poverty index (0-100, best) • Change in average income of bottom 50% of population relative to price of electricity, housing, transportation, and food, over time (ratio) • Share of total green patents (%) • Foreign Direct Investment flows by sector	No colour-coding applied (insufficient number of data points, or absence of clear thresholds)
Country-specific metrics	• # workers in sector • % workers in sector • # informal workers in sector • % informal workers in sector • Green premium • Number of EV charging stations	No colour-coding applied (no comparable benchmark available)

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