

A photograph of a steel mill worker in a dark, protective suit and helmet, standing in the foreground. The worker is holding a long, flexible hose that extends towards a large, glowing molten metal ladle. The ladle is tilted, and a thick stream of bright orange and yellow molten metal is being poured out, creating a massive spray of sparks and a large plume of smoke that fills the upper right portion of the frame. The background shows the industrial structure of the mill, including metal beams and a control panel with a circular gauge. The overall lighting is dominated by the intense heat of the molten metal, creating a dramatic and high-contrast scene.

Just Transition

Are emerging market entities prepared to manage the social implications of global decarbonization?

Moody's

Executive Summary

SOVEREIGNS

- 1 The transition toward net-zero emissions will reshape economies globally, unevenly distributing costs and benefits. A “just transition” seeks to maximize the socioeconomic benefits of decarbonization while minimizing the negative impact. Credit-positive benefits for sovereigns of a successful transition include increased innovation, productivity and employment opportunities.
 - » Carbon transition will likely be more difficult for emerging market sovereigns because they typically have more exposure to social risks, weaker governance and lower financial buffers than advanced economies.
 - » Within emerging markets, the transition will be most difficult for sovereigns that rely on hydrocarbons as a source of income and revenue, especially when government-related entities operate in carbon-intensive sectors.



SUSTAINABLE FINANCE

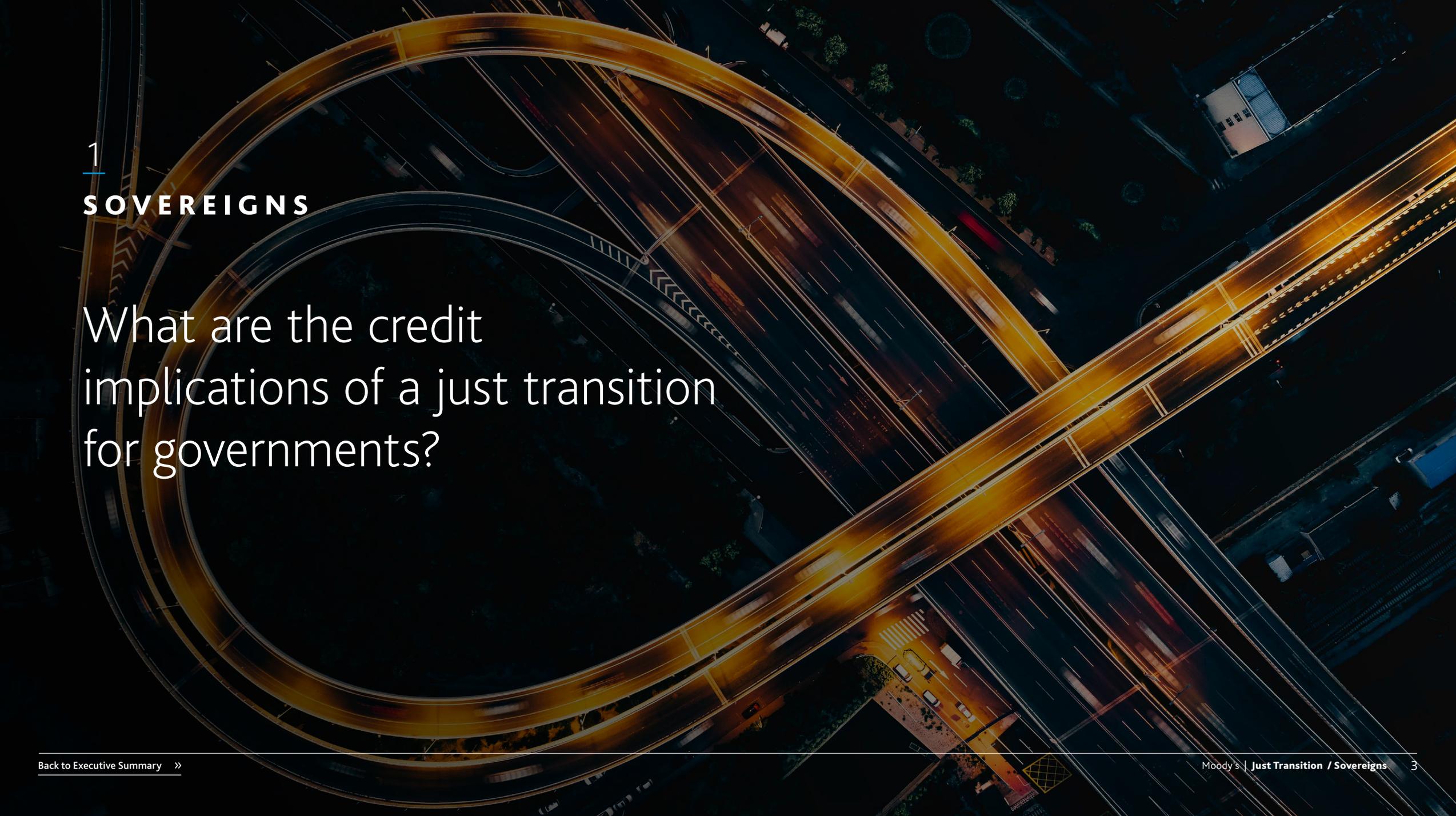
- 2 Sovereign governments, particularly those in emerging markets, are at the forefront of financing initiatives that can create guidance, standardization and subsidization of best practices that enable a just transition. Key policy levers include supporting workforces, encouraging policy development and using labeled green, social, sustainability and sustainability-linked (sustainable) bonds to finance just transition initiatives.
 - » Sovereign sustainable bond issuance is an increasingly prominent segment of the global sustainable bond market.
 - » Growth and innovation in emerging market sovereign sustainable bond issuance can help fill the substantial funding gap between sovereigns' current budgets and projected just transition costs.



CORPORATES

- 3 The net-zero transition will involve a significant reallocation of corporate resources that will affect workforces and communities. Companies in emerging markets are generally not well prepared to manage reorganization and professional development for workforces, or social and economic development for local communities.
 - » Companies that fail to demonstrate how they will implement policies and programs to manage the social consequences of the transition to a low-carbon economy are likely to face greater scrutiny from investors, policymakers and consumers, thereby raising potential market, reputational and legal risks.





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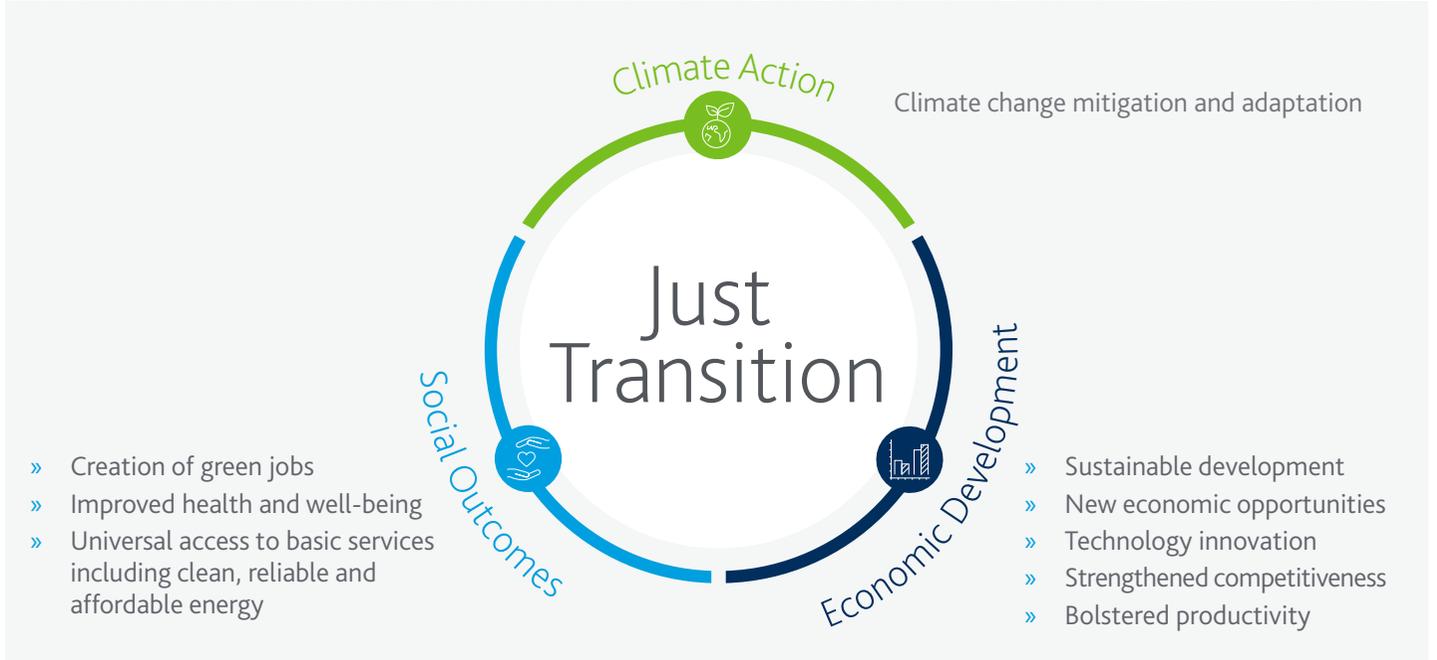
SOVEREIGNS

What are the credit implications of a just transition for governments?



Achieving a just transition can bring credit positive socioeconomic benefits to sovereigns, such as increased innovation, productivity and employment opportunities in new economic sectors. The decarbonization of processes and products has the potential to strengthen competitiveness by delivering high-performing technology that enhances productivity. Renewables development will advance goals such as affordable, reliable and universal energy access and independence, including for many low-income sovereigns. These potential gains come on top of broader environmental and social benefits associated with decarbonization, including improved health outcomes resulting from lower air pollution.

By contrast, governments that fail to consider the social ramifications of climate action—and that are unable to transition away from fossil fuels in as equitable a way as possible to those negatively affected—face increased risks of exacerbating social inequities and unemployment. This may ultimately undermine trust in institutions and support for the transition to a low-carbon economy. Failure to spearhead a just transition would increase the likelihood of social resistance and political pushback against decarbonization policies, weakening sovereigns' capacity to adjust and ultimately aggravating the credit implications of carbon transition.

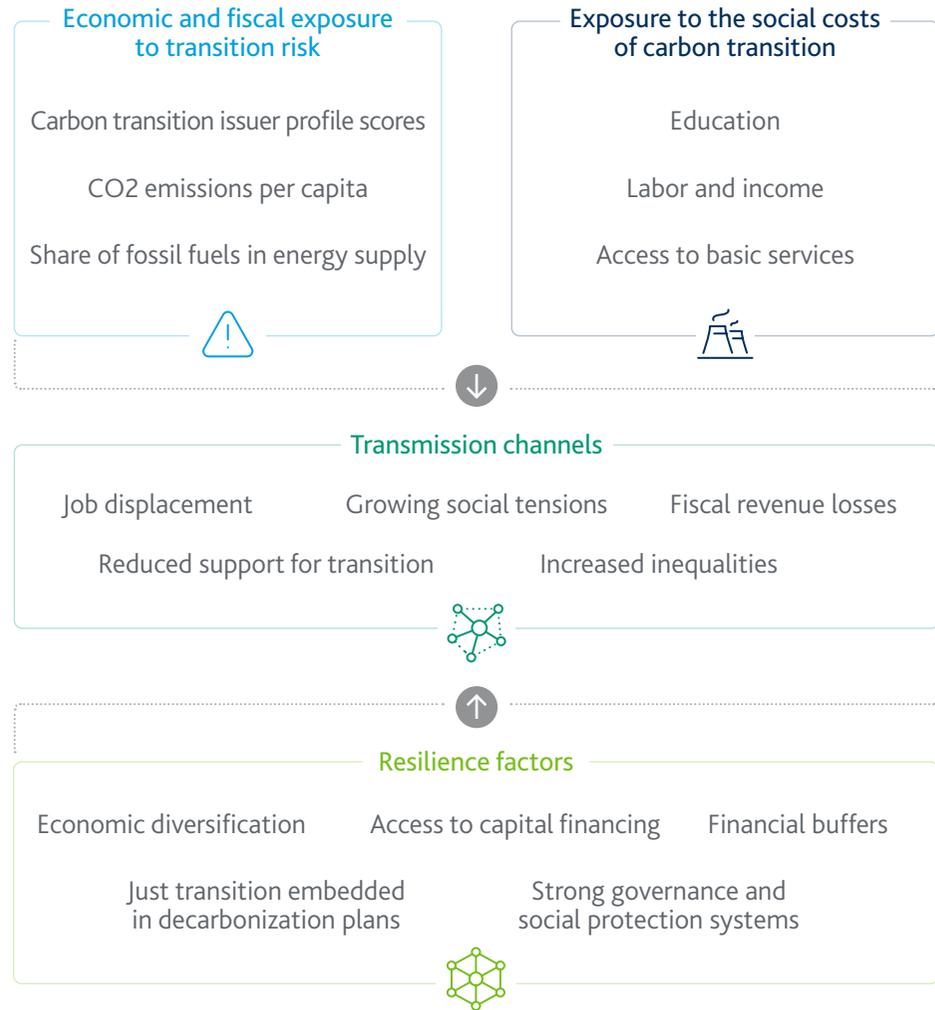


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SOVEREIGNS

What considerations will be important to achieve a just transition, and why are emerging markets likely to have more difficulty?

We assess emerging market sovereigns' relative readiness for a just transition through multiple channels



Carbon transition is likely to be more difficult for emerging markets because they typically have more exposure to social risks, weaker governance and lower financial buffers than advanced economies. Most emerging markets are not large carbon emitters, particularly in per capita terms. Still, many countries will be affected by advanced economies' and large emerging markets' implementation of net-zero pledges.

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SOVEREIGNS

Which sovereigns are most and least exposed to just transition risks?

Within emerging markets, the transition will be most difficult for sovereigns that rely on hydrocarbons as a source of income and revenue, especially when government-related entities operate in carbon-intensive sectors. For sovereigns that rely on hydrocarbons for energy and industry, and those that rely on agriculture, a transition will be difficult, but less so, unless global pressure to enact a more rapid transition intensifies.

According to analysis by Moody's Investors Service, the sovereigns most exposed to socioeconomic risks associated with the energy transition include Nigeria, Angola, Republic of the Congo, Iraq and Ecuador. Reliance on hydrocarbons for economic activity, exports and government revenue is elevated across all five sovereigns, even as high exposure to social risks and weak governance magnify the credit challenges associated with carbon transition.

The 10 emerging market sovereigns most exposed to just transition risks

EM sovereign	Readiness for just transition IG SG Rating	Economic and fiscal exposure to carbon transition			Exposure to the social costs of carbon transition			Resilience factors		
		Carbon transition score*	CO2 emissions per capita	Share of fossil fuels in energy supply	Education*	Labor and income*	Access to basic services*	Governance IPS*	Social safety nets	GDP per capita (PPP)
Nigeria	B2	5	1	2	5	5	5	5	5	5
Angola	B3	5	2	3	5	5	5	4	-	4
Republic of the Congo	Caa2	5	2	3	4	4	4	5	5	5
Iraq	Caa1	5	4	5	4	4	4	5	2	4
Ecuador	Caa3	5	3	5	4	3	4	5	3	4
Bangladesh	Ba3	2	1	5	5	5	4	4	4	5
Lebanon	C	2	4	5	3	5	4	5	3	-
Niger	B3	3	1	2	5	4	5	4	5	5
Egypt	B2	3	3	5	4	4	3	3	5	4
Dem. Rep. of the Congo	Caa1	2	1	1	5	5	5	5	5	5

Ratings and scores as of 18 October 2022.

Shades of color indicates the exposure to just transition risks: darker red indicates relatively higher risk exposure, darker green indicates relatively lower risk exposure, or social and governance strengths. *Indicators were drawn from Moody's ESG issuer profile and category scores. Scores can be found on issuer pages of Moody's.com. Scores and social safety net assessments can be found [here](#). More detail on sovereigns and their just transition preparedness can be found [here](#).

Source: Moody's Investors Service

Emerging markets that we assess as best placed to ensure a just transition include Mauritius, Uruguay and Hungary. Although the current reliance on fossil fuels in their energy mixes suggests the need for energy diversification and emission reductions over the coming decades, comparatively strong governance and lower exposure to social risks provide important mitigants.

For example, incomes for nearly all of Mauritius' population are above poverty levels and relatively evenly distributed, while the government offers universal free access to education and primary healthcare. Uruguay benefits from the predominant role of renewables in the energy supply, and a strong institutional framework reinforces political and social stability.

The 10 emerging market sovereigns best placed to ensure a just transition

EM sovereign	Readiness for just transition IG SG Rating	Economic and fiscal exposure to carbon transition			Exposure to the social costs of carbon transition			Resilience factors		
		Carbon transition score*	CO2 emissions per capita	Share of fossil fuels in energy supply	Education*	Labor and income*	Access to basic services*	Governance IPS*	Social safety nets	GDP per capita (PPP)
Mauritius	Baa3	2	3	5	2	2	1	2	2	3
Uruguay	Baa2	2	3	2	3	3	2	2	3	3
Hungary	Baa2	2	4	4	3	3	2	2	1	2
Croatia	Baa2	2	4	4	3	3	3	1	1	2
Georgia	Ba2	2	3	4	3	3	2	2	1	3
Costa Rica	B2	2	2	3	2	3	2	3	3	3
Qatar	Aa3	4	5	5	2	2	2	1	-	1
Poland	A2	3	5	5	2	3	2	1	2	2
Chile	A2	2	4	4	3	3	3	1	2	3
Armenia	Ba3	2	3	4	3	3	2	2	3	3

An aerial night view of a city, likely in East Asia, showing a dense urban landscape with numerous high-rise buildings. A prominent feature is a curved, multi-lane highway or expressway that winds through the center of the frame. The buildings are illuminated with various lights, creating a vibrant blue and white glow against the dark night sky. The overall scene conveys a sense of modern urban development and infrastructure.

2

SUSTAINABLE FINANCE

How can sustainable bonds support emerging market sovereigns' just transition strategies?

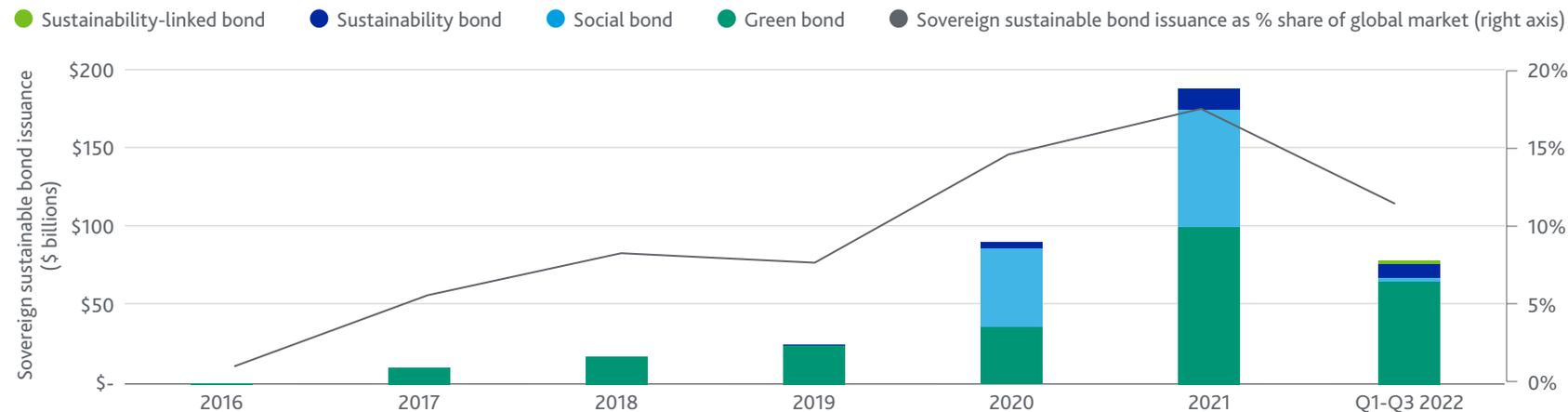
Sovereign governments, particularly those in emerging markets, are at the forefront of financing initiatives that can support sustainable development while ensuring a just transition. Government policy can provide guidance, standardization and subsidization of best practices that are socially inclusive. Key levers available to governments include supporting workforce training programs, encouraging policy development across regional and local governments, and using labeled green, social, sustainability and sustainability-linked (sustainable) bonds to finance just transition initiatives.

Sovereign sustainable bond issuance has experienced robust growth ever since Poland issued the first such bond in 2016. As a result, sovereign sustainable bond issuance has become an increasingly prominent segment of the global sustainable bond market, reaching an 18% share of the market in 2021, up from just 8% two years earlier.

Emerging market sovereigns are also playing a more significant role in the global sustainable bond markets. This year, they account for 16% of total labeled sovereign issuance, up from just 1% only five years earlier in 2017. This year sustainability bonds and sustainability-linked bonds represented 67% and 16%, respectively, of issuance volume, a sharp contrast from 2019 when green bonds accounted for 100% of issuance. Nonetheless, emerging markets require an additional annual \$4.2 trillion in funding (or \$33.6 trillion over the next eight years) above current budget projections.¹

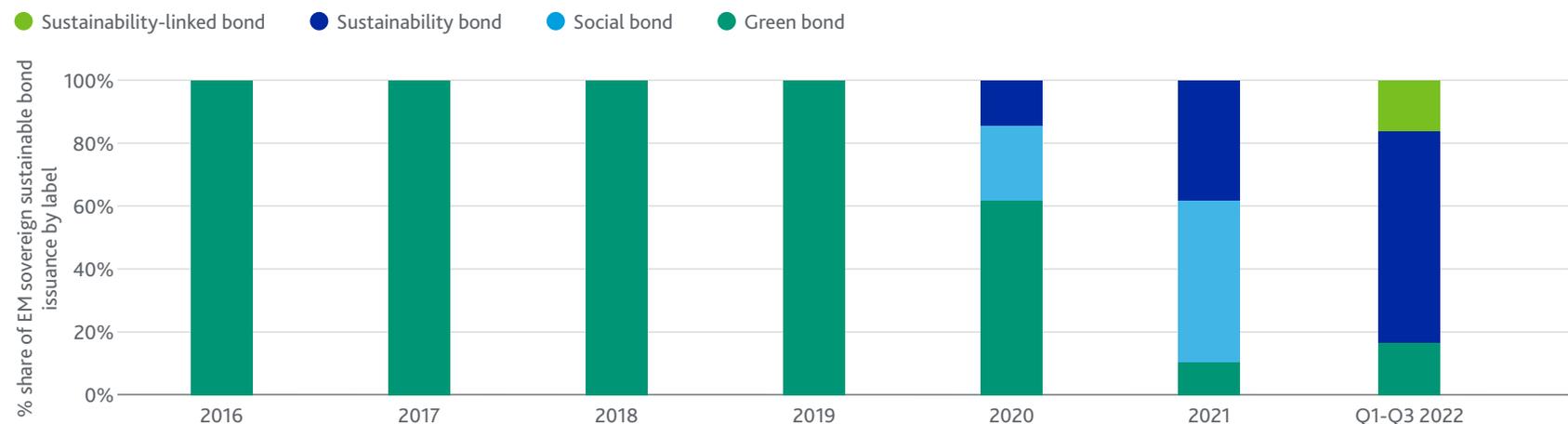
¹Report of the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment to the United Nations General Assembly, 10 August 2022

Sustainable bond issuance among sovereigns surged in 2021 amid need for COVID-19 financing relief



The European Union is categorized as a sovereign debt issuer for purposes of this report. Sources: Moody's Investors Service and Environmental Finance Data

Emerging market sovereign sustainable bond issuance continues to diversify



Sources: Moody's Investors Service and Environmental Finance Data

One area of particular focus for emerging market sovereigns will be the financing of projects, or investments, that reduce exposure to carbon transition risk. About one-fifth of Moody's-rated emerging market sovereigns have highly negative or very highly negative credit exposure to carbon transition risk, according to Moody's Investors Service issuer profile scores. Of these sovereigns, only Ecuador and Nigeria have issued sustainable bonds to date.

Additional emerging market sovereigns that have tapped the sustainable debt market have moderately negative credit exposure to environmental factors. And roughly 40% of the sovereigns that tapped the market have either highly or very highly negative exposure to social considerations—pointing to the importance of managing social considerations associated with carbon transition.

Emerging market sovereign sustainable bond issuers and their credit impact scores, social and environmental issuer profile scores, and carbon transition scores

Credit impact score (CIS)	EM sovereign	Social issuer profile score	Environmental issuer profile score	Carbon transition risk category score	Sustainable bond labels issued	Total issuance (\$ billions)
CIS-2	Malaysia	● 2	● 3	● 3	Sustainability	\$ 1.3
	Poland	● 3	● 3	● 3	Green	\$ 4.3
CIS-3	Chile	● 3	● 3	● 2	Green, social, sustainability and sustainability-linked	\$ 29.1
	Colombia	● 3	● 3	● 3	Green	\$ 0.2
	Fiji	● 3	● 4	● 2	Green	\$ 0.1
	Hungary	● 3	● 2	● 2	Green	\$ 2.9
	Indonesia	● 3	● 3	● 3	Green, sustainability	\$ 6.3
	Mexico	● 3	● 3	● 3	Sustainability	\$ 5.1
	Peru	● 3	● 3	● 3	Social, sustainability	\$ 4.4
	Philippines	● 4	● 4	● 2	Sustainability	\$ 1.6
	Serbia	● 3	● 3	● 2	Green	\$ 1.2
	Thailand	● 4	● 3	● 2	Sustainability	\$ 1.6
CIS-4	Benin	● 4	● 3	● 2	Sustainability	\$ 0.6
	Ecuador	● 4	● 4	● 5	Social	\$ 0.3
	Egypt	● 4	● 4	● 3	Green	\$ 0.8
	Guatemala	● 4	● 3	● 2	Social	\$ 0.5
	Uzbekistan	● 3	● 3	● 3	Sustainability	\$ 0.9
CIS-5	Nigeria	● 5	● 5	● 5	Green	\$ 0.1

Data as of 24 October 2022.

Moody's Investors Service credit impact scores (CIS) communicate the impact of ESG considerations on the credit rating of an issuer or transaction. Issuer profile scores (IPS) and category scores indicate credit exposure to environmental, social and governance considerations. These scores run on an asymmetric five-point scale whereby 1 is positive, 2 is neutral to low, 3 is moderately negative, 4 is highly negative and 5 is very highly negative.

Sources: Moody's Investors Service and Environmental Finance Data

Sustainability-linked bonds present a potential area for innovation that can facilitate just transition spending. A recent novel structure from Chile linked the coupon step-up to the sovereign's climate-mitigation strategy to reduce greenhouse gas emissions. Innovations such as this can be mirrored by other emerging market sovereigns to intertwine financing goals with just transition themes, drawing on work by the World Bank² to highlight relevant key performance indicators and financing themes for sovereigns. Examples include supporting the scale-up of renewable energy generation and the incentivization of microfinance lending.

Although emerging market sovereigns will continue to issue sustainable bonds to support just transition efforts and other environmental and social goals, many face fiscal constraints. This points to the need for support from external parties, such as multilateral development banks (MDBs) with expertise in specific regions and the ability to allocate public and private capital efficiently.

MDBs' experience in channeling climate financing to low-income and middle-income economies, topping \$50 billion in 2021,³ highlights their ability to spur investments and encourage market best practices in delivering climate finance in emerging market countries. Given the complexity of just transition policies and the importance of facilitating cooperation and accountability among a wide range of stakeholders, MDBs' regional and local expertise will be essential to promote innovative just transition financing.

²Striking the Right Note: Key Performance Indicators for Sovereign Sustainability-Linked Bonds, World Bank Group, November 2021

³Joint Report on Multilateral Development Banks' Climate Finance, African Development Bank Group, 17 October 2022

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CORPORATES

How prepared are
emerging market companies
for a just transition?



The push toward a net-zero global economy will require an unprecedented shift in how companies produce and deliver goods and services, particularly in sectors that are both carbon- and labor-intensive.

Exposed companies in emerging markets are already affected more than their advanced economy peers by the challenges that climate change poses to their operations and supply chains. For example, more prevalent (compared with advanced economies) acute and chronic physical climate risks, such as drought, flooding, extreme heat and changing weather patterns, can cause costly business disruptions and pose threats to the long-term viability of business models. This, combined with less potential to access capital and direct it to tackling these threats, leaves emerging market companies at a disadvantage.

Carbon transition will involve a significant reallocation of companies' resources, which will affect workforces and communities. Companies that fail to demonstrate how they will implement policies and programs to manage the social consequences of the transition are likely to face greater scrutiny from investors, policymakers and consumers, thereby raising potential market, reputational and legal risks.

Moody's ESG Solutions' assessment of over 150 emerging market companies in sectors exposed to just transition risks finds a lack of preparedness for the coming impacts on workforces and communities. Average scores for ESG criteria related to workforce and community issues, which take into account reorganization, career management, labor relations, human rights and community impacts, are "weak" (less than 30 out of 100) or "limited" (between 30-49 out of 100)—roughly in line with those of advanced economy peers.

ESG assessment scores indicate emerging market companies in sectors exposed to just transition risks are not well prepared



Data as of 29 September 2022.
Source: Moody's ESG Solutions

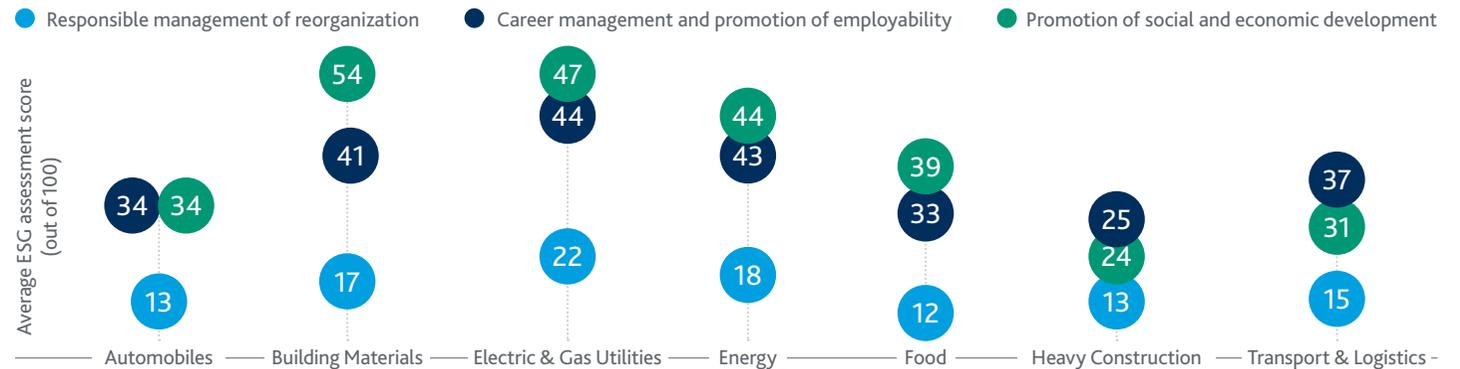
Responsible management of reorganization remains the most poorly addressed criteria across emerging market companies we assessed, with average sector performance "weak" (less than 30 out of 100). While the net-zero transition will likely gradually become a net creator of employment, a core sustainability challenge for the most affected sectors will be managing the effects of financial and operational changes related to decarbonization.⁴ This reorganization has the potential to displace large swaths of workforces and cause job losses. Companies that are unable to disclose how they are limiting layoffs, maintaining employment, enabling career development or managing restructuring may see reputational risks rise.

Average scores for **career management and promotion of employability** are "limited" (between 30-49 out of 100). A lack of professional-development support for workers, or tools that help them adapt to a changing work environment, risks reducing employability and fostering social disruption. Given growing engagement on economy-wide net-zero ambitions and green jobs prospects, a lack of readiness to support workforces is likely to weigh on the worst-performing companies, potentially hurting their reputations and hindering transformation efforts.

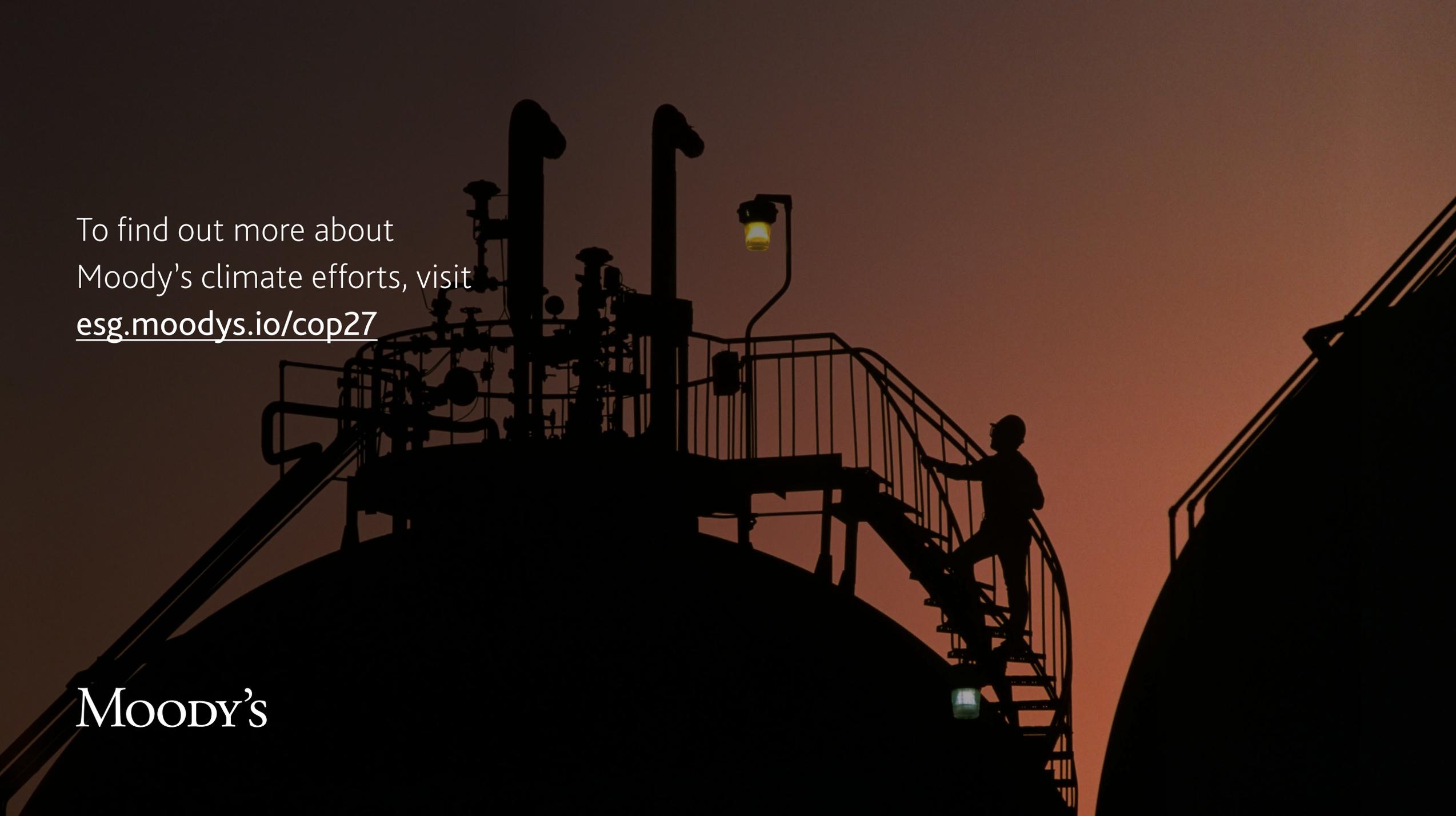
Average scores for **promotion of social and economic development** are also "limited" (between 30-49 out of 100). These scores capture issues ranging from capacity building and impact assessments to technology transfer to tax transparency. As disruption occurs in local communities where net-zero implementation will likely reshape economies, we expect assessment of future social and economic development to come under greater scrutiny. The usefulness of disclosures will be tied to growing demand for aligning location-based socioeconomic impact assessments with transition trajectories and physical climate risks and impacts.

⁴Roughly five million jobs will be lost globally, largely in fossil fuel-linked sectors, but up to 14 million new jobs will be created by 2030, according to the International Energy Agency's [Net Zero by 2050 report](#), May 2021.

Sector-level preparedness varies across three of the just transition indicators



Source: Moody's ESG Solutions

A silhouette of an industrial worker wearing a hard hat and safety gear, standing on a metal staircase. The worker is positioned on the right side of the frame, looking towards the left. The background is a warm, orange-red sunset sky. In the center, there is a complex industrial structure with pipes, valves, and two tall vertical pipes. A single illuminated light fixture hangs from the structure. The overall scene is dark, with the worker and the industrial equipment appearing as black shapes against the bright sky.

To find out more about
Moody's climate efforts, visit
esg.moody's.io/cop27

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