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TABLE OF CONTENTS

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Emerging Markets – Global

Sovereigns' readiness for a "just transition" varies, as does associated credit impact

Summary

» **Achieving a "just transition" can bring credit-positive social benefits to sovereigns most exposed to a low-carbon future.** Exposed sovereigns that transition to a low-carbon economy and address the socioeconomic aspects (i.e., ensure a just transition) can incur credit-positive benefits such as increased innovation, productivity and employment opportunities in new economic sectors. But sovereigns that do not manage a transition well face increased social and economic risks such as unemployment, social unrest and tax-revenue losses. These risks have the potential to weaken sovereigns' credit quality. Sustained political and social support is key to a just transition.

» **Just transition will be more difficult for emerging markets.** A carbon transition is likely to be more difficult for emerging-market sovereigns than for their advanced-economy peers because the former typically have more exposure to social risks, weaker governance and lower financial buffers. 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.

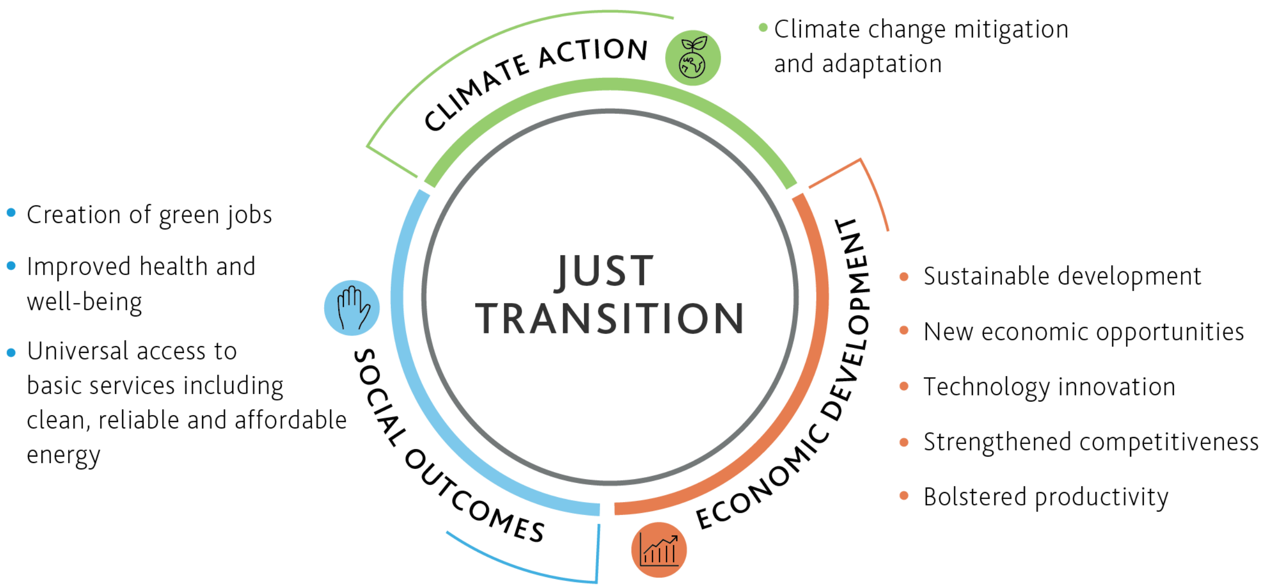
» **Least-prepared sovereigns have high exposure to carbon transition, social and governance risks.** We assessed 86 emerging-market sovereigns' relative readiness for a just transition by looking at a variety of carbon transition, social and governance risk indicators. Readiness varies widely. Nigeria (B2 stable), Angola (B3 stable), Republic of the Congo (Caa2 stable), Iraq (Caa1 stable) and Ecuador (Caa3 stable) are among the least prepared. They rely on hydrocarbons for economic activity, exports and government revenue. And social risks and weak governance magnify the credit challenges of carbon transition. Mauritius (Baa3 stable), Hungary (Baa2 stable) and Uruguay (Baa2 stable) are among the most prepared. Their comparatively strong governance and lower exposure to social risks provide important mitigants.

» **G-20 emerging markets' readiness also varies, as do reasons.** India (Baa3 stable) and South Africa (Ba2 stable) are among the least-prepared G-20 countries, for different reasons. India's growth aspirations will be hurdles to the implementation of carbon-transition policies. South Africa faces existing social pressures, and its main state utility relies on coal-fired generation and faces very high governance risks.

Just transition can bring credit-positive social benefits

The transition toward net-zero emissions will reshape economies globally, resulting in unevenly distributed costs and benefits. A "just transition" is one that seeks to maximize the socioeconomic benefits of decarbonization, while minimizing the impact on those negatively affected (Exhibit 1).[1] The concept of a just transition is relatively new, but the increased number of net-zero pledges across the globe and related climate change mitigation efforts have brought renewed attention to the potential social implications of decarbonization. During the 2021 United Nations Climate Change Conference (COP26), about 20 countries signed a declaration to support developing and emerging countries to ensure a just transition.

Exhibit 1
Just transition maximizes socioeconomic benefits of climate action plans



Source: Moody's Investors Service

Sovereigns that manage the transition well can incur credit-positive benefits. An effective transition to a low-carbon economy can open up employment in new economic sectors, accelerate innovation and bolster productivity. The decarbonization of processes and products has the potential to strengthen competitiveness by delivering high-performing technology that enhances productivity.

The improving economics of renewables versus fossil fuels will, over time, encourage the adoption of green and new technologies. As long as sufficient financing can be secured, 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.

However, carbon transition will entail difficult economic adjustments and potential labour market dislocation, particularly in countries where emissions-intensive sectors play an important role in economic activity and employment, including transport, agriculture and energy. [2] For this reason, political and social support is key for sustained economic development and long-term decarbonization plans.

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 net zero.

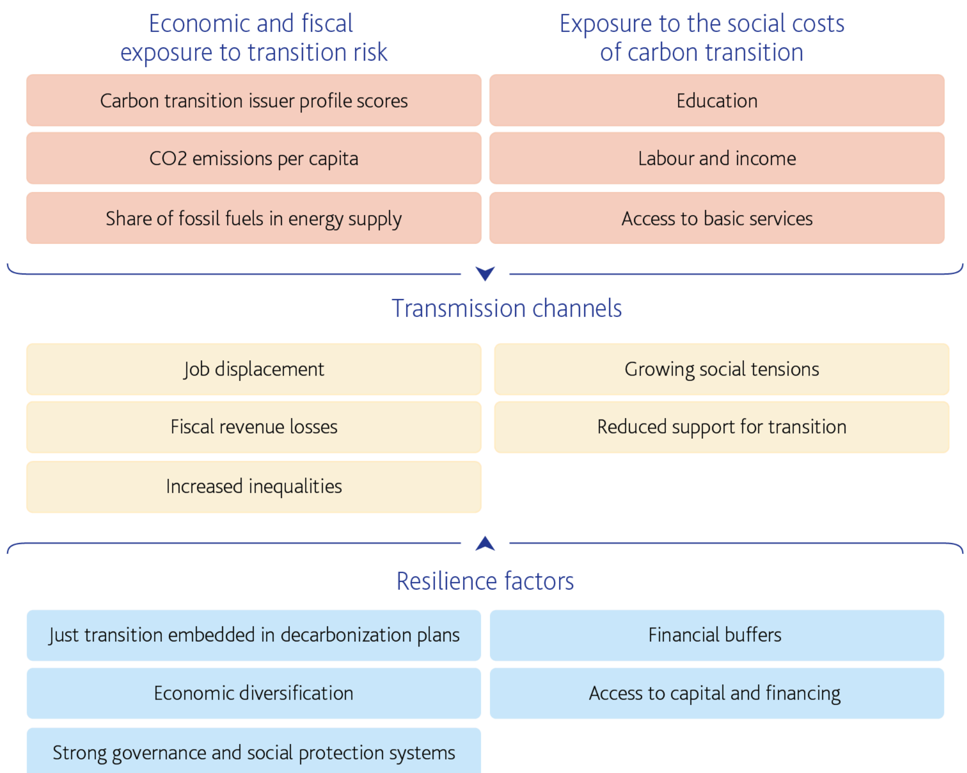
Failure to spearhead a just transition would increase the likelihood of social resistance and political pushback against decarbonization policies, weakening sovereigns' capacity to adjust and ultimately aggravating the credit implications of carbon transition.

Just transition will be more difficult for emerging markets

Balancing climate change efforts with social implications will be difficult for all sovereigns, but particularly so in emerging markets. Compared with advanced economies, emerging markets typically face higher or broader exposure to social risks, weaker governance and lower financial buffers; these attributes underpin sovereigns' ability to spearhead a just transition (Exhibit 2). Exposure to social risks, as reflected in sovereigns' social issuer profile and category scores, drives key aspects of credit quality for sovereign governments, influencing economic strength, government stability and financial flexibility.[3] At the same time, governance is typically weaker in emerging markets than in developed markets, and sovereigns' capacity to respond to shocks is therefore generally more limited.

Exhibit 2

Credit risks and mitigants associated with decarbonization plans



Source: Moody's Investors Service

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 decarbonization pledges. Emerging-market sovereigns that rely on fossil fuels for income and government revenue will face greater policy challenges spearheading a just transition. Furthermore, many larger emitters in emerging markets are government-related entities, which makes rebalancing efforts more complex.[4] For sovereigns that rely on fossil fuels 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.

We assess emerging-market sovereigns' relative readiness for a just transition through the channels indicated below. However, these channels do not attempt to capture the entirety of the considerations involved in just transition readiness, and their relative importance may also vary from sovereign to sovereign.

» **Exposure to carbon transition risks.** We consider the sovereigns' exposure to carbon transition risks, as indicated by the carbon transition category scores from the sovereigns' issuer profile scores. Our scores highlight sovereigns that derive a large portion of economic activity and fiscal revenue from hydrocarbons. The scores do not differentiate between sovereigns that use hydrocarbons as a source of energy. Therefore, we also considered the share of oil, natural gas and coal in the sovereigns' total energy supply, using International Energy Agency (IEA) data. We also include CO2 emissions per capita, using World Bank data.

» **Labour and income.** Existing higher unemployment levels and inequality of living standards will exacerbate challenges related to energy transition. Greater levels of labour market informality in emerging markets also leave a greater share of the population vulnerable to shocks and policy changes.[5] We used the labour and income category scores from the sovereigns' respective issuer profile scores as the indicator for this factor.

» **Access to basic services.** Sovereigns for which access to electricity or other basic services remains far from universal may need to balance competing objectives: increasing electrification — potentially entailing greater use of fossil fuel resources over the immediate future to meet rising domestic energy demand — and advancing sustainability goals. We used the access to basic services category scores from the sovereigns' respective issuer profile scores as the indicator for this factor. Access to electricity is particularly low across Sub-Saharan Africa, with only 48% of the population covered, according to World Bank data.

» **Education.** Comparatively low or uneven access to education is likely to make economic rebalancing and preparing labour forces for green jobs more difficult, in view of the significant new skills and training that will be required. The IEA estimates that around 60% of new roles related to clean energy created by 2030 will require some degree of post-secondary training.[6] We used the education category scores from the sovereigns' respective issuer profile scores as the indicator for this factor.

» **Governance.** The sovereigns with the strongest overall institutions and governance, and especially those with strong executive institutions and an established track record of fiscal policy effectiveness, are more likely to be able to implement transition plans and manage any socioeconomic risks to prevent a significant deterioration in their credit profiles. Governance typically plays an important role in determining a sovereign's resilience and in shaping the effectiveness of its policy response to all types of crises or shock. In the context of the transition to net zero, the strength of sovereigns' institutions and their ability to implement forward-looking policy frameworks will be key in driving transition efforts and supporting workforces and population groups affected by the wind-down of traditional fossil fuel supply sectors. Our assessment considered sovereigns' respective governance issuer profile scores to capture this factor.

» **Social protection systems**. Sovereigns that are able to deploy targeted support to the most vulnerable population groups, particularly at times of stress, will likely face reduced credit risks associated with increasing social tensions and political risks. Less effective safety nets may reduce governments' ability to extend support to workers or communities affected by weakening demand for fossil fuels, exacerbating the social impact of the transition toward net zero. We considered the effective social safety nets assessment we published previously to capture this factor, when available. We did not consider this factor in the overall assessment of 12 sovereigns in our cohort without sufficient data available.

» **Financial buffers.** Higher national income is associated with a greater capacity on the part of the population to absorb economic or fiscal shocks, and is key to supporting economic diversification efforts and stakeholders affected by the wind-down of fossil fuel production. Conversely, low income levels and pervasive poverty—a source of social risks—undermine a population's ability to absorb shocks. Our assessment considered GDP per capita on a purchasing power parity (PPP) basis to capture this factor. Furthermore, those sovereigns that have accumulated substantial offshore sovereign wealth fund assets—including a number of hydrocarbon exporters—will be able use them to buffer, at least temporarily, the impact of accelerating carbon transition. These assets also provide a financial resource to support economic diversification efforts.

In this report, we do not judge whether emerging-market sovereigns should seek to reduce emissions. Instead, we focus on the potential credit implications of managing an energy transition well or poorly from a social and economic perspective. As noted earlier, these assessments have limitations. Although we recognize the relevance of factors such as the concentration of government-related entities in carbon-intensive sectors, the lack of consistent and comparable data prevented the inclusion of considerations that are not available or consistent across sovereigns.

Least-prepared sovereigns have high exposure to carbon transition, social and governance risks

Our cohort includes 86 Moody's-rated emerging-market sovereigns, to which we had previously assigned ESG issuer profile and category scores, and have sufficient disclosure available for most of the remaining factors. Five of the nine indicators we consider are drawn from the issuer profile and category scores, which run on a five-point scale from positive (1) to very highly negative (5). We then assign a score for the remaining considerations mentioned above, from the least exposed (score of 1) to the most exposed (score of 5), reflecting the sovereigns' relative exposure to each just transition risk indicator. We then compile this information and rank the sovereigns by their relative exposure to just transition risks.

Our assessment indicates wide variation in emerging-market sovereigns' readiness for a just transition. (Please see Appendix for the full list of the sovereigns we assessed.) This suggests that political consensus and social cohesion behind the transition to net zero will be uneven across the globe. Efforts to diversify and a shift toward decarbonization will likely be most difficult for hydrocarbon-reliant sovereigns facing existing social challenges and institutional constraints. However, even countries with stronger capabilities to adjust could find maintaining public and political support for the complex trade-offs involved in the energy transition difficult over an extended time horizon.

The sovereigns most exposed to socioeconomic risks associated with the energy transition include Nigeria (B2 stable), Angola (B3 stable), Republic of the Congo (Caa2 stable), Iraq (Caa1 stable) and Ecuador (Caa3 stable) (Exhibit 3). Reliance on hydrocarbons for economic activity, exports and government revenue is high across all five sovereigns, even as high exposure to social risks and weak governance magnify the credit challenges associated with carbon transition.

Exhibit 3

The 10 emerging-market sovereigns most exposed to just transition risks

Readiness for just transition: ← MORE LESS →
IG / SG

EM Sovereign	Rating	Economic and fiscal exposure to carbon transition: Carbon transition score*	CO2 Emissions per capita	Share of fossil fuels in energy supply	Exposure to the social costs of carbon transition: Education*	Labour and income*	Access to basic services*	Resilience factors: 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

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. Ratings and scores as of 10/18/2022.
* Indicators were drawn from Moody's ESG issuer profile and category scores. Scores can be found on issuer pages of Moodys.com. Social safety net assessments can be found here. We assigned the other scores, specifically for this report, based on our assessments outlined in the second section of the report.
Source: Moody's Investors Service

Weak institutions and pressing social or political pressures suggest these governments are more likely to spend, rather than invest, their windfalls from higher oil prices. Recurring social tensions inhibit policy effectiveness by reducing political consensus on climate mitigation and adaptation efforts. Moreover, the quality of executive and legislative institutions is key to deliver these efforts. For example, economic diversification in Iraq has stalled amid extended periods of military conflict and very slow implementation of reforms to improve the business environment and attract investment into the non-oil sector. At the same time, persistent governance and political stability challenges, alongside social pressures from high youth unemployment and inadequate access to basic services, compound the difficulties involved in any transition away from fossil fuels. In the Republic of the Congo, a challenging business environment and institutional deficiencies similarly impede economic diversification away from oil.

Among hydrocarbon-reliant sovereigns, those with the strongest institutions and largest financial buffers are best positioned to mitigate longer-term carbon transition risks, including credit pressures under an accelerated energy transition. Those that have demonstrated the strongest capacity and readiness to adjust include the United Arab Emirates (Aa2 stable) and Malaysia (A3 stable).

Many have intensified their economic diversification efforts, or made plans to increase investments in renewables and alternative low-carbon fuels.

Overall, emerging markets that we assess as best placed to ensure a just transition include Mauritius (Baa3 stable), Uruguay (Baa2 stable) and Hungary (Baa2 stable) (Exhibit 4). Although the current reliance on fossil fuels in their energy mixes entails 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.

Exhibit 4
The 10 emerging-market sovereigns best placed to ensure a just transition

Readiness for just transition (MORE ← → LESS)	IG / SG	Economic and fiscal exposure to carbon transition			Exposure to the social costs of carbon transition			Resilience factors		
EM Sovereign	Rating	Carbon transition score*	CO2 Emissions per capita	Share of fossil fuels in energy supply	Education*	Labour 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

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. Ratings and scores as of 10/18/2022.
* Indicators were drawn from Moody's ESG issuer profile and category scores. Scores can be found on issuer pages of Moodys.com. Social safety net assessments can be found here. We assigned the other scores, specifically for this report, based on our assessments outlined in the second section of the report.
Source: Moody's Investors Service

G20 emerging-market sovereigns' readiness for a just transition also varies, as do reasons

Across the largest emerging markets, our assessment finds Brazil (Ba2 stable), Mexico (Baa2 stable) and China (A1 stable) to be relatively well placed (Exhibit 5). Brazil ranks among the world´s top 10 producers of renewable energy; by contrast the other BRICS countries (Russia, India, China and South Africa) generate less than 30% of their power from renewable sources. China has committed to reaching peak carbon emissions by 2030 and achieving carbon neutrality by 2060. Nevertheless, the implementation of carbon transition in China will be uneven. Provinces with weaker fundamentals and high exposure to carbon-emitting industries or coal production will have the most difficulty bearing the costs of carbon transition.

India (Baa3 stable) and South Africa (Ba2 stable) are comparatively more exposed to the social challenges stemming from the transition, for different reasons. While India's economic development path and growth aspirations will be hurdles to the implementation of carbon transition policies, South Africa faces existing social pressures related to high levels of income inequality, unemployment and poverty, even as the main state utility Eskom Holdings SOC Limited (Caa1 negative) remains reliant on coal-fired generation and faces very high governance risks.

India's 2070 net-zero target entails significant policy challenges for the central government, driving execution and sovereign credit risks. India's significant economic development needs and large agricultural sector will pose hurdles to the implementation of carbon transition policies, putting greater onus on private investors and companies to invest in decarbonization. With a young population and significant new entrants into the job market each year, shifting to decarbonization could create dislocation in the labour market and significant gaps in talent demand and supply, such as an oversupply of low-skill labour, and may lead to social unrest and political uncertainty.

Both Eskom and South Africa aim to achieve net zero emissions by 2050, with the plan assuming a material reduction in annual greenhouse gas emissions by 2030. According to South Africa's 2019 Integrated Resource Plan, 40% of South Africa's electricity generation capacity will be decommissioned in the next 10-30 years and demand is set to increase substantially over the next two decades, adding to strains. However, investment over the last few years has not even covered decommissioned capacity.[7] A just transition will face challenges from very high exposure to risks related to labour and income; South Africa has one of the highest levels of income inequality and very high unemployment, especially among the young.

Saudi Arabia (A1 stable) has carbon-transition exposure because of economic and fiscal dependence on the hydrocarbon sector. This exposure is mitigated by very low hydrocarbon production costs and relatively strong institutions and governance. Robust population dynamics will continue to drive rapid growth in the labour force over the coming decades, creating pressure to generate job opportunities for its citizens.

Exhibit 5
Of the G20 emerging-market sovereigns, India, South Africa are among those least prepared; Brazil, Mexico and China are among the most prepared

Readiness for just transition: ← MORE — LESS →
Rating: IG / SG

		Economic and fiscal exposure to carbon transition			Exposure to the social costs of carbon transition			Resilience factors		
EM Sovereign	Rating	Carbon transition score*	CO2 Emissions per capita	Share of fossil fuels in energy supply	Education*	Labour and income*	Access to basic services*	Governance IPS*	Social safety nets	GDP per capita (PPP)
India	Baa3	2	2	4	4	4	4	3	3	4
South Africa	Ba2	2	5	5	3	5	3	2	1	4
Saudi Arabia	A1	4	5	5	3	3	2	2	-	2
Indonesia	Baa2	3	3	4	3	4	3	2	3	4
Argentina	Ca	2	3	5	2	4	3	5	2	3
Turkiye	B3	2	4	5	3	3	3	4	3	2
China	A1	2	5	5	3	3	3	2	3	3
Mexico	Baa2	3	3	5	3	3	3	3	2	3
Brazil	Ba2	3	3	3	3	3	3	2	3	3

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. Ratings and scores as of 10/18/2022.
* Indicators were drawn from Moody's ESG issuer profile and category scores. Scores can be found on issuer pages of Moodys.com. Social safety net assessments can be found here. We assigned the other scores, specifically for this report, based on our assessments outlined in the second section of the report.
Source: Moody's Investors Service

Adaptation measures are fundamental to achieve a just transition in emerging markets

Emerging markets are more exposed to the adverse effects of climate change than advanced economies. Even if mitigation policies are effective in reducing carbon emissions, physical climate hazards will intensify in the coming decades. The physical effects of climate change are largely locked in through 2050 because of the continued impact of historical emissions.

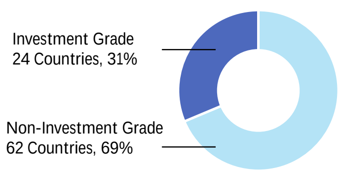
This underscores the importance of managing carbon transition and building climate resilience. We therefore expect social protection and climate adaptation measures to be considered in just transition plans globally. This involves avoiding actions that simply shift risks to other sectors—such as to the insurance sector—or reinforce existing vulnerabilities.

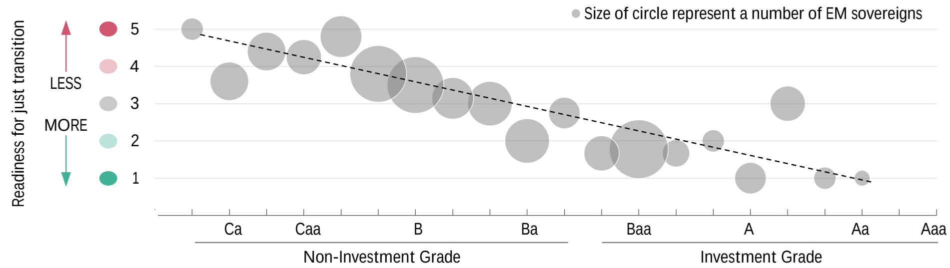
At the sovereign level, creating climate resilience involves protecting core services to ensure socioeconomic sustainability. Restoring mangroves, designing stormwater and sewage systems that can withstand floods, and enabling utilities to restore power quickly after wildfires are a few of the examples of adaptation measures that governments can take. Examples of benefits of investing in adaptation can include i) increased credibility; ii) less economic disruption; iii) reduced risk of infrastructure loss; iv) faster disaster recovery; v) reduced mortality in event risk.

Appendix: Readiness ranking

Exhibit 6

Sovereigns ranked by just transition readiness — from least prepared to most prepared





		Economic and fiscal exposure to carbon transition			Exposure to the social costs of carbon transition			Resilience factors		
EM Sovereign	Rating	Carbon transition score*	CO2 Emissions per capita	Share of fossil fuels in energy supply	Education*	Labour 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
Bolivia	B2	4	3	5	4	4	4	4	2	4
Pakistan	Caa1	2	2	4	4	4	4	4	5	5
Suriname	Caa3	3	4	5	3	4	3	5	-	3
Mozambique	Caa2	3	1	2	5	4	5	5	3	5
Gabon	Caa1	5	3	1	4	4	3	5	5	3
Zambia	Ca	2	1	1	4	5	5	5	5	5
Mongolia	B3	4	5	5	3	3	4	4	1	4
Honduras	B1	2	2	3	4	5	5	4	3	5
Ukraine	Caa3	3	3	4	4	4	5	5	1	4
Laos	Caa3	2	3	3	4	3	4	5	5	4
Cuba	Ca	2	3	5	2	3	5	5	-	-
Cameroon	B2	3	1	2	4	3	4	5	5	5
Ghana	Caa2	3	2	3	4	4	3	4	4	5
Uzbekistan	B1	3	3	5	3	3	3	4	-	4
Kazakhstan	Baa2	4	5	5	3	3	2	3	3	3
Togo	B3	2	1	1	4	4	5	4	5	5
Tanzania	B2	2	1	1	5	3	5	4	5	5
Sri Lanka	Ca	2	2	3	3	4	3	5	5	4
Nicaragua	B3	2	2	3	4	4	4	5	2	5
Jordan	B1	2	3	5	4	4	3	2	4	4
Bosnia and Herzegovina	B3	2	4	4	3	4	4	5	2	3
Tunisia	Caa1	2	3	5	2	5	3	4	3	4
Kuwait	A1	4	5	5	3	3	2	3	-	2
Oman	Ba3	5	5	5	2	3	2	3	-	2
Azerbaijan	Ba1	4	3	5	3	3	2	4	3	3
Cote d'Ivoire	Ba3	2	1	2	4	4	4	3	5	5
India	Baa3	2	2	4	4	4	4	3	3	4

Source: Moody's Investors Service

Exhibit 7

Sovereigns ranked by just transition readiness — from least prepared to most prepared

		Economic and fiscal exposure to carbon transition			Exposure to the social costs of carbon transition			Resilience factors		
EM Sovereign	Rating	Carbon transition score *	CO2 Emissions per capita	Share of fossil fuels in energy supply	Education*	Labour and income*	Access to basic services*	Governance IPS*	Social safety nets	GDP per capita (PPP)
Kenya	B2	2	1	2	3	5	4	4	4	5
Namibia	B1	2	2	4	4	5	4	3	2	4
Cambodia	B2	2	2	3	4	3	4	4	3	5
Tajikistan	B3	2	2	3	3	4	3	4	4	5
Guatemala	Ba1	2	2	2	4	4	4	3	5	4
Moldova	B3	2	3	5	2	3	4	5	3	3
South Africa	Ba2	2	5	5	3	5	3	2	1	4
Senegal	Ba3	2	2	4	4	3	4	3	3	5
Saudi Arabia	A1	4	5	5	3	3	2	2	-	2
Jamaica	B2	2	3	5	3	3	3	3	-	4
Indonesia	Baa2	3	3	4	3	4	3	2	3	4
Benin	B1	2	1	3	4	4	5	3	2	5
Ethiopia	Caa2	2	1	1	4	4	5	4	3	5
Argentina	Ca	2	3	5	2	4	3	5	2	3
Vietnam	Ba2	2	3	5	3	3	3	3	3	4
Morocco	Ba1	2	3	5	3	4	3	2	3	4
Dominican Republic	Ba3	2	3	5	3	3	3	4	3	3
Turkiye	B3	2	4	5	3	3	3	4	3	2
China	A1	2	5	5	3	3	3	2	3	3
Bahrain	B2	4	5	5	2	3	2	3	-	1
Kyrgyz Republic	B3	2	2	4	3	4	3	4	1	5
El Salvador	Caa3	2	2	3	3	3	3	5	3	4
Mexico	Baa2	3	3	5	3	3	3	3	2	3
Peru	Baa1	3	2	4	3	3	4	2	3	4
Botswana	A3	2	3	5	3	4	4	2	2	3
Belarus	Ca	3	4	5	2	3	2	5	1	3
Malaysia	A3	3	5	5	3	2	2	1	4	2
Albania	B1	2	2	4	3	3	4	3	3	3
Philippines	Baa2	2	2	4	3	3	3	2	4	4
Paraguay	Ba1	2	2	2	4	3	4	3	-	4
Bulgaria	Baa1	2	4	4	3	3	3	2	3	3
Serbia	Ba2	2	5	5	3	3	3	2	1	3
Colombia	Baa2	3	2	4	3	4	3	2	2	3
Brazil	Ba2	3	3	3	3	3	3	2	3	3
Thailand	Baa1	2	3	4	3	3	2	2	4	3
Montenegro	B1	2	4	4	3	3	3	2	2	3
United Arab Emirates	Aa2	4	5	5	2	3	2	1	-	1
Panama	Baa2	2	3	5	3	3	2	2	3	2
Romania	Baa3	2	3	4	3	3	3	2	3	2
Armenia	Ba3	2	3	4	3	3	2	2	3	3
Chile	A2	2	4	4	3	3	3	1	2	3
Poland	A2	3	5	5	2	3	2	1	2	2
Qatar	Aa3	4	5	5	2	2	2	1	-	1
Costa Rica	B2	2	2	3	2	3	2	3	3	3
Georgia	Ba2	2	3	4	3	3	2	2	1	3
Croatia	Baa2	2	4	4	3	3	3	1	1	2
Hungary	Baa2	2	4	4	3	3	2	2	1	2
Uruguay	Baa2	2	3	2	3	3	2	2	3	3
Mauritius	Baa3	2	3	5	2	2	1	2	2	3

* Indicators were drawn from Moody's ESG issuer profile and category scores, which run on a five-point scale from positive (1) to very highly negative (5). Moody's Issuer profile scores (IPS) are *opinions of an issuer´s or transaction's exposure to environmental, social and governance considerations. The IPS incorporate meaningful mitigating or strengthening actions related to those specific* exposures. Scores can be found on issuer pages of Moodys.com. We assigned the other scores, specifically for this report, based on our assessments outlined in the second section of the report. Ratings and scores as of 10/18/2022.

Source: Moody's Investors Service

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» ESG Credit and Sustainable Finance

ESG methodology

» General Principles for Assessing Environmental, Social and Governance Risks Methodology, 19 October 2021

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» Cross-Sector - Global: Are emerging market companies ready for carbon transition?, 11 May 2022

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To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available on the issuer's page. All research may not be available to all clients.

Endnotes

1 The **International Labour Organization defines a Just Transition** as a "process toward an environmentally sustainable economy that needs to be well managed and contribute to the goals of decent work for all, social inclusion and the eradication of poverty."

2 The IEA **estimates** that fossil fuels employ almost 32 million workers globally today.

3 Social issuer profile scores are opinions of an issuer's or transaction's credit exposure to social considerations and serve as inputs to the rating process. See **Sovereigns – Global: Explanatory Comment: New scores depict varied and largely credit-negative impact of ESG**, 18 January 2021 and **General Principles for Assessing Environmental, Social and Governance Risks Methodology**, 19 October 2021.

4 The OECD estimates that over 70% of oil and gas production assets and 60% of coal mines and plants globally are state owned, as well as over half of global power generation capacities. See OECD (2022), **Climate change and low-carbon transition policies in state-owned enterprises**.

5 The World Bank estimates that the informal sector, on average, accounts for around 70% of total employment in emerging markets, varying widely across regions and countries. See **World Bank: The Long Shadow of Informality, Challenges and Policies**, 2021.

6 In the IEA's Net Zero Emissions by 2050 Scenario, 60% of energy employment growth to 2030 requires at least two years of postsecondary education. See International Energy Agency, **World Energy Employment**, September 2022.

7 See **Government of South Africa: "FAQ on the fiscal and growth outlook, and resilience to shocks"**, 4 May 2022

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