

February 2022

DECARBONISATION IN EMERGING MARKETS

Perspectives and insights on Mexico, Central America
and the Caribbean, and South America



INTRODUCTION

At COP 26 in Glasgow in November 2021, Janus Henderson convened a panel of industry experts on the topic of Decarbonisation in Emerging Markets. The panel included academic experts, NGOs, national policy makers and industry executives.

The main takeaways were:

- Emerging markets are facing completely different decarbonisation challenges to developed countries. Many are still struggling with COVID, making it difficult to think about the transition towards a net-zero future. A fundamental issue is the need for much better financing mechanisms for emerging markets to transition to net zero, and especially the 'bankability' of renewable energy projects.
- Better financing mechanisms could be available if more climate related bond issuance enabled Emerging Markets to use the capital markets and help bridge the financing gap.
- Policy action is required as a supporting and enabling mechanism, particularly for emerging markets. Governments have a clear role to play in the energy transition and, arguably, should create the required framework and strategy.
- The energy sector is part of the climate change problem, given the dependency of many emerging markets on fossil fuels, but could also be part of the solution. The sector could also help tackle climate change, notably via wind and solar technology, and bring social and economic opportunities given the potential job creation linked to those projects.

Following the event, Janus Henderson committed to conducting in-depth research into the actions being taken to implement decarbonisation across Emerging Markets. Given the panel's concluding remarks, which focused on exploring the combination of successful initiatives being taken, policy frameworks, and financing need, we decided to create an index that could track all three issues via objective, third party, open sources.

RENEWABLE ENERGY/ PART OF ENERGY MIX



Sources: IRENA

Scores:

>30%: 2 points
15-30%: 1 point
<15%: 0 points

NET ZERO TARGET DATE



Sources: COP commitments/NDCs

Scores:

Before 2040: 2 points
2040-2050: 1 point
Beyond 2050: 0 points

CLEAN ENERGY FUNDING



Source: CBI
Climate bond issuance in region
(cumulative to end 2021)

Scores:

> \$50 bn: 2 points
\$1-50bn: 1 point
<\$1bn: 0 point

Total score:

- Each category weighted 1/3 each to get country composite score.
- Each country composite score weighted in regional index by % weight of each country in regional real GDP per capita in PPP dollars, as of end 2020 (Source: IMF.)
- Regional sum x100

The result is the Janus Henderson Decarbonisation EM Index, constructed as an equally weighted index of scores given to three trends that can be tracked effectively through time. Each trend is tracked following a proxy indicator which we believe can help track the degree, and speed, of forward progress on decarbonisation trends now and in the future.

- ▶ The first category, **renewable energy as part of total energy final consumption**, is meant to establish a benchmark level for existing renewable energy resources.
- ▶ The second, **net zero target dates** established as part of the Paris Agreement mandated National Determined Contributions (NDCs) are a proxy for the policy framework supporting moves towards decarbonisation.
- ▶ The third, **climate bond issuance to date**, is designed to capture to what degree a country or region has been able to tap capital markets to bridge the financing gap.

We will explore the results for the broad region covered by this report in the sections below, and report on other regions' performance throughout 2022. Each report will also highlight the most significant policy initiatives taken in each Emerging Market region, and discuss individual corporate decarbonisation actions which stand out as innovative in the eyes of the Janus Henderson investment team. Finally, we will issue a call to action for each region, to prompt some further thinking about the best way to accelerate the transition to net zero.

The result is the Janus Henderson Decarbonisation EM Index, constructed as an equally weighted index of scores given to three trends that can be tracked effectively through time.

REGIONAL OVERVIEW

Mexico, Central America and the Caribbean, and South America

The Janus Henderson Emerging Index for the region stands at 19.04 as of the end of 2021. The main reasons for the index's current level are

- Significant renewable energy as a percentage of the total final energy consumption in several large, heavily populated countries – mainly driven by hydropower
- Broad adherence to moving towards the 2050 net zero goal, with some notable exceptions
- Limited use to date of climate related financial instruments to finance decarbonisation projects, with some significant single country issuers such as Chile standing out

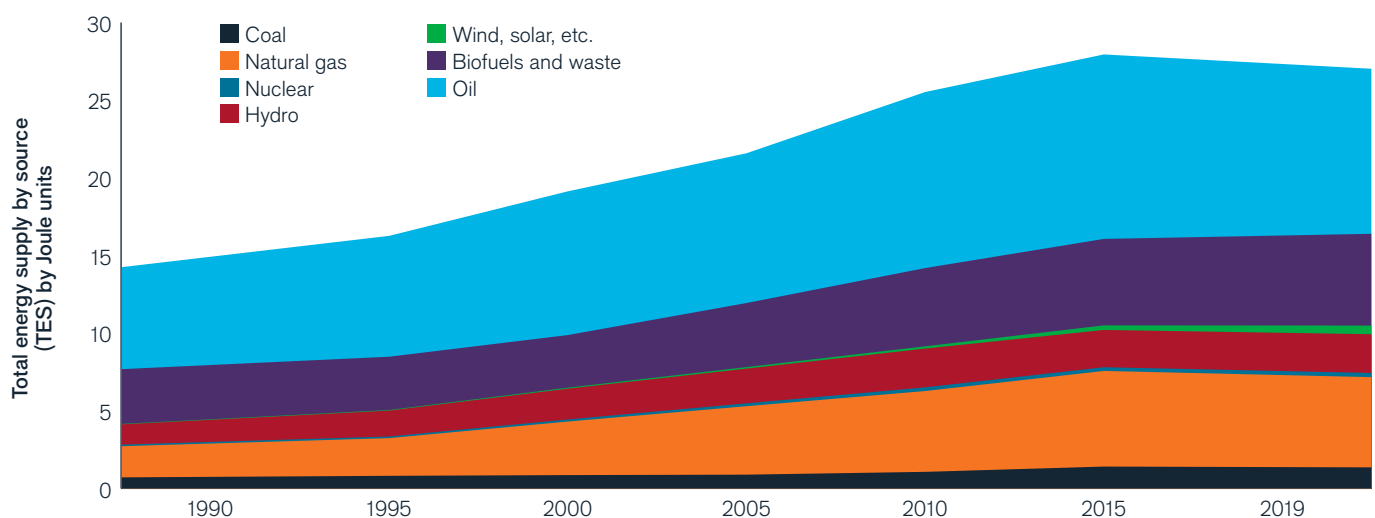
19.04

The Janus Henderson Emerging Index for the region stands at 19.04 as of the end of 2021.

In several instances across the region, the natural resource endowments of countries have been already tapped to significant effect to generate renewable power. Solar and wind projects are established at scale in countries such as Brazil, Chile and Uruguay. Long-standing efforts to generate electricity via hydro-electric power plants – often as part of a directed national industrial strategy, as in Paraguay – further contribute to the non-fossil fuel sources of electricity in the region. Finally, biomass is a source of renewable power which several countries, large and small, have directed significant resource towards, especially in Central America and in Brazil.

Further investment in renewable energy capacity generation is also underway in the region, building on legacy projects and expanding into new capacity. According to the latest International Energy Agency forecast, total renewable energy gigawatt production across the region will rise 34% in the next five years, from 278 at the end of 2020 to 374 by the end of 2026.

Source: Renewables 2021 IEA report.



Source: IEA

Economic drivers of renewable energy generation

While several of the countries in the region have focused their recent efforts at decarbonisation through the lens of the Paris agreement, it is important to note that for many countries the focus on renewable energy generation is nothing new.

The energy crises of the 1970s, for example, were a catalyst for significant ethanol production in Brazil. Fast economic growth rates in more recent decades, with their correlation to higher fossil fuel demand and thus rising import costs, have also driven net oil importing countries such as Uruguay and Guatemala to diversify their energy sources. And countries such as Brazil and Paraguay have a long-standing commitment to generating electricity via hydro-electric power generation.

Hydropower alone contributes 45% of Latin America's electricity generation today, and has the potential to increase further according to a recent IEA report (Climate Impacts on Latin American Hydro Power, January 2021.) However ironically, the impact of climate change could negatively affect hydropower generation, given the uncertainty brought by changes in rainfall and melting glaciers attributed to climate change. This has in part help shift the focus of future investments in renewable energy towards other sources such as wind and solar.

An underappreciated feature of the region's decarbonisation efforts is the leadership role several smaller – and often poorer countries – have in producing a significant amount of their energy from renewables. This has sometimes been the result of significant multilateral assistance, and at others a result of long-term strategic plans meant to improve economic resilience. It also sadly reflects however, that several small countries have low energy capacity generation overall – and the high percentage of renewables as part of the mix should not, in the case of countries like Haiti, detract from further efforts to provide reliable energy resources to a greater proportion of the population.

34%

Total renewable energy gigawatt production across the region will rise 34% in the next five years

TOP 5 COUNTRIES WITH HIGHEST RENEWABLE AS PERCENTAGE OF TOTAL ENERGY FINAL CONSUMPTION

Country	TEFC% as of
Haiti	76.2
Guatemala	64.1
Uruguay	60.7
Paraguay	59.2
Honduras	50.1

Source: International Renewable Energy Association, Q3 2021

Janus Henderson Perspective

'When it comes to financing the decarbonisation initiatives, we believe sovereigns have a large role to play; countries can raise debt at lower levels and help establish a reference rate for other entities. It's also important to differentiate between will and ability to decarbonise the economy – developing nations need support, which could of course come from multilateral grants but also take the form of technology transfers or other non-financial means. In some instances, loss leaders may need to be introduced first to help 'break ground' on key initiatives that are truly innovative. At this first stage, we believe that fixed income may have a limited role to play in funding innovation, but when technologies and local efforts are more advanced, fixed income can certainly bridge the funding gap.'

Jennifer James
Portfolio manager

Policy backdrop since Paris agreement and impact on bridging the financing gap

The goals of the Paris agreement have been incorporated into national policy goals in several countries in the region, with some significant exceptions as well as stops and starts, particularly since the beginning of the Covid 19 pandemic.

Adherence, at least in principle, to the net zero 2050 goal is consistent across most of the region's largest countries, with the notable exceptions of Mexico and Venezuela. And in a further example of the perhaps unexpected leadership role of smaller countries, Suriname already has claimed net zero achievement for several years – driven, it must be said, by the dense forest cover of its surface area acting as a carbon sink, rather than significant renewable energy capacity.

As we will cover in the next section however, the broad net zero commitments have not translated in significant use of climate related capital market financing instruments to date. Though there are some limiting factors in terms of overall depth of local capital markets, the net zero framework can be said to be currently a necessary signal of policy intent, but not yet a sufficient condition for at scale financing from financial markets for decarbonisation initiatives.

45%

Hydropower alone
contributes 45% of Latin
America's electricity
generation today

Bridging the financing gap

The need for a supportive policy backdrop is crucial to help provide investors with the confidence required to support private sector financed projects. We have analysed cumulative climate bond issuance across the region by both total nominal bond issuance and weighted by the issuing country's population size. The top 5 countries in each respective case are as follows:

TOP 5 COUNTRIES, CLIMATE BOND ISSUANCE, UNWEIGHTED

Country	Climate bond issuance (m)	Net Zero by 2050
Chile	9,000	Yes
Brazil	8,700	Yes
Mexico	3,800	No
Argentina	735	Yes
Colombia	684	Yes

TOP 5 COUNTRIES, CLIMATE BOND ISSUANCE, WEIGHTED BY PERCENTAGE OF TOTAL REGIONAL POPULATION

Country	Weighted climate bond (m)
Brazil	2,792.2
Mexico	739.8
Chile	259.8
Colombia	52.6
Argentina	50.4

Source: Climate Bond Initiative, Q4 2021

The scale of issuance so far, at \$45 billion in absolute terms from 11 countries, is small for the region relative to the overall size of the global climate bond market, which now stands at over \$1 trillion. Limited issuance has been driven by three main factors

- Lack of leadership issuance from the sovereign borrowers in the region, which hinders broader adoption of the climate bonds from corporate issuers. Only Chile has issued sovereign green bonds to date (though we should note countries like Mexico and Ecuador have issued related, sovereign sustainability bonds.)
- 'Bankability of projects' – though several large scale projects are now underway in countries like Chile and Colombia, and more are coming online as mentioned earlier, the investable project pool remains limited for now relative to other regions of the world, particularly in Asia.
- Foreign direct investment has been a partially mitigating factor – several large scale renewable energy projects, such as the vast solar farms in the Atacama desert in Chile, have been largely funded by corporate sponsors from the developed markets with significant balance sheet resources and better relative credit ratings than the domestic market players.

COUNTRY CASE STUDIES

- ▶ Chile
- ▶ Brazil
- ▶ Mexico

Chile

Chile stands out in the region given its mix of natural resource endowment maximisation (via solar and wind resources), clear and ambitious policy framework, and substantial use of capital markets financing to accelerate the transition to renewable energy generation.

"Part of Chile's decarbonisation plan is based in the unique opportunity that Chile has, as we are a country rich in renewable energy as we have one of the best solar installations in the north of Chile and strong winds in the south of our country, leading us to have more than 2,000 gigawatts in renewable electricity production potential as we have mapped the sites where it's competitive to develop renewable energy. To understand the magnitude of our renewable potential, this is equal to more than 80 times the current start capacity of Chile."

Energy Under Secretary Francisco Javier Lopez at Janus Henderson event in Glasgow, November 2021

Category	Result	Ranking
TEFC Rank in region, population weighted	N/A	9th rank of 40
Net Zero Target	Committed to reach Net Zero emissions by 2050	N/A
Cumulative climate bond issuance and rank in region, population weighted	\$9bn	3rd rank of 11 countries that have issued climate bonds

Sources: International Renewable Energy Agency, NDC statement, Climate Bond Initiative

Brazil

As the most populous country in the region, Brazil has been able to use its scale and historical investment in hydro electric power and biofuels to help mitigate its fossil fuel consumption. Fast economic growth in the early part of the 21st century, however, saw greater fossil fuel production and consumption, with still significant gaps in domestic energy efficiency. The policy environment has not been stable, both macro-economically and directionally in terms of government priorities – but despite this, the sheer scale of the Brazilian market has meant significant capital markets financing has been able to help further finance the energy transition. This will be vital to ensure Brazil can sustain its path towards net zero via both diversifying sources of renewable energy – given changing weather patterns’ impact on hydropower generation – and greater energy efficiency.

“While Brazil has one of the greatest shares of renewable energy in the world, this is coming under threat, as changing weather patterns and increasing demand place stress on the electricity system.”

IEA Report ‘E4 Country Profile: Energy Efficiency in Brazil’ – February 2021

Data	Weighted result	Ranking
TEFC Rank in region, population weighted	N/A	1st rank of 40
Net Zero Target	Committed to reach Net Zero emissions by 2050	N/A
Cumulative climate bond issuance and rank in region, population weighted	\$8.7 billion	1st rank of 11 countries that have issued climate bonds

Sources: International Renewable Energy Agency, NDC statement, Climate Bond Initiative

Mexico

Mexico has made some significant moves in recent years that have contributed significantly to its decarbonisation efforts. Although it only joined in the International Energy Agency in 2018 – the first Latin American country to do so – it had previously launched several policy initiatives that have long-term impact. In the transport sector, for example, Mexico introduced fuel efficiency standards for passenger cars in 2013, with the fuel efficiency of the country’s passenger car fleet now on a par with the global average.

More recently however, the current government’s attempts to pass significant energy reform laws – involving constitutional reform – have dominated the policy discussions and potentially slowed the potential for more significant initiatives. Resolution of the reform efforts is currently expected in 2022, and will be crucial to determine the scale of future decarbonisation efforts.

Data	Weighted result	Ranking
TEFC Rank in region, population weighted	N/A	3rd rank of 40
Net Zero Target	N/A	N/A
Cumulative climate bond issuance and rank in region, population weighted	\$3.8bn	2nd rank of 11 countries that have issued climate bonds

Sources: International Renewable Energy Agency, NDC statement, Climate Bond initiative

The Janus Henderson Emerging Markets investment team focuses its approach on three compelling, underlying drivers of company performance

EMERGING MARKET INVESTING THEMES

Outsourcing

Physical and digital supply chains have globalised and fragmented, and it is often emerging markets companies that have built the key competencies sitting at the heart of these supply networks.

Convergence

A long-term shift in incomes can lead to a convergence with more developed economies in the choices and demands that consumers make. For forward-looking emerging market companies this provides a key driver of growth and profitability.

Innovation

We believe conditions are ripe for an explosion in emerging market-led innovation, driven by digitalised economies, large domestic populations, and a new era of policy support. Emerging market companies are playing a prominent role in shaping this next wave.

Within the context of Latin America's decarbonisation initiatives, we have found several companies whose business strategies combine one or more of the factors above, putting them at the forefront of regional decarbonisation efforts as well as reinforcing their investment merits.

Antofagasta – Chile

Antofagasta is a leading Chilean copper producer, whose investment fundamentals are underpinned by its exposure to a recovery in copper prices as well as several embedded growth options they have in their portfolio.

Janus Henderson also recognises the leading role the company has taken in decarbonising its operations, as part of an overall ESG strategy for the entire group. Antofagasta plans, for example, to source 100% of its energy requirement in operations from renewables in 2022. This is a remarkable achievement in and of itself, but also underscores the innovative approach Antofagasta is taking given the ongoing changes in the Chilean renewable energy mix. According to the IEA, hydropower production was down 32% year on year as of September 2021, given the impact of a severe drought which caused dams and water levels to drop to historic lows. As highlighted earlier in the report, however, both solar and wind production have been growing in importance in Chile, and their output increased in the same year on year period, respectively by 46.0% and 24.5% – highlighting the growing importance of those two energy sources for companies like Antofagasta, as well as its ability to adapt to changing supplier dynamics.¹

Aeris – Brazil

Aeris is a Brazilian wind turbine blade manufacturer strategically located in the North East of the country. Only founded in 2010, they have already established a solid reputation for manufacturing excellence worldwide, and supply global wind turbine manufacturers such as Vestas, Acciona and General Electric.

Aeris' recognised manufacturing process benefits from access to important local port facilities from where it can more easily export its product globally. It has delivered over 3,000 mw of energy equipment since its founding (as of end 2020) and is not only helping diversify the regional economy's employment mix towards renewable power technologies, but also is reinvesting significant amounts of capital and resources in safety and social measures that benefit the local community and its workforce.

This family-backed company has displayed long-term thinking in building its operational capacity. Such long-term industrial planning will be necessary as Brazil continues its journey away from dependence on less predictable hydro power, fossil fuels and biofuels, which represent over 80 percent of its energy mix.²

Aeris is also an example of a company in a strategic sector backed by the IEA as part of its sustainable recovery plan post Covid for 2021-2023. With a public-private energy mix assumed to be 30%-70%, the IEA and the IMF jointly estimate that investment of USD 1 trillion a year in such sectors 'would boost economic growth by an average of 1.1 percentage points a year, saving or creating 9 million jobs a year and making 2019 the definitive peak in global emissions, ensuring the world stays on track to reach long-term climate goals, including the Paris Agreement.'³

Whether or not those optimistic plans come to pass, Aeris, in Janus Henderson's view, has been extremely well positioned to grow sustainably for the long-term given its proven industrial excellence and the backdrop of further investment into renewable power generation.

46%

Both solar and wind production have been growing in importance in Chile, and their output increased in the same year on year period, respectively by 46.0% and 24.5%

\$1 TRILLION

Investment of USD 1 trillion a year in such sectors 'would boost economic growth by an average of 1.1 percentage points

¹ Source: IEA Monthly Statistics, January 2022.

² Source: IEA

³ Source: IEA Clean Energy Transition Programme 2020 Annual Report.

CALL TO ACTION FOR MEXICO, CENTRAL AMERICA AND THE CARIBBEAN, AND LATIN AMERICA



This report has summarised the regional backdrop in decarbonisation trends, and also provided some case study evidence at both the national and corporate level. The evidence is mixed: while some long-standing policies have enabled the region to have some significant renewable resources already, limited policy ambitions and small private sector financing have curtailed faster progress on decarbonisation to date.

For further progress to be made on decarbonisation, Janus Henderson recommends that all actors in the region, across both the public and private sector, consider the following additional measures across the three main dimensions of our analysis – renewable energy production, policy frameworks, and capital market issuance



Capitalise on falling costs of renewable energy production

to accelerate decarbonisation: while regional efforts are not insignificant, they have often relied on capital intensive hydropower. The falling cost curves of wind and solar power generation should be exploited more fully going forward across the region whenever natural conditions allow



Enhance coordination of regional policy frameworks:

providing more consistent rules and regulations across several countries, on issues from technical standards to regulations of carbon intensive activities, could act as a catalyst for more rapid decarbonisation. This would enhance the substance of net zero by 2050 commitments at a pan-regional level. Such consistent frameworks would be more likely in our view to encourage domestic capital formation and attract foreign investment supporting decarbonisation across the region.



Accelerate the use of capital market tools such as green bonds, tapping into the growing pool of dedicated assets with an explicit mandate to investment in a manner consistent with sustainability principles and climate focused investments.

We hope you have enjoyed learning more about the decarbonisation trends underway in the region, and look forward to discussing other emerging market regions with you in future reports.

FOR MORE INFORMATION, PLEASE VISIT [JANUSHENDERSON.COM](https://www.janushenderson.com)

Janus Henderson
— INVESTORS —

Important Information

For use by institutional, professional investors and financial intermediaries only and not for retail or public use.

The views presented are as of the date published. They are for information purposes only and should not be used or construed as investment, legal or tax advice, or as an offer to sell, a solicitation of an offer to buy, or a recommendation to buy, sell or hold any security, investment strategy or market sector. Nothing in this material shall be deemed to be a direct or indirect provision of investment management services specific to any client requirement. Opinions and examples are meant as an illustration of broader themes, are not an indication of trading intent, are subject to change and may not reflect the views of others in the organization. It is not intended to indicate or imply that any illustration/example mentioned is now or was ever held in any portfolio. No forecasts can be guaranteed and there is no guarantee that the information supplied is complete or timely, nor are there any warranties with regard to the results obtained from its use. Janus Henderson is the source of data unless otherwise indicated, and has reasonable belief to rely on information and data sources from third parties. **Past performance is no guarantee of future results. Investing involves risk, including the possible loss of principal and fluctuation of value.**

Not all products or services are available in all jurisdictions. This material or information contained in it may be restricted by law, and may not be reproduced or referred to without express written permission or used in any jurisdiction or circumstance in which its use would be unlawful. Janus Henderson is not responsible for any unlawful distribution of this material to any third parties, in whole or in part. The contents have not been approved or endorsed by any regulatory agency.

Issued in (a) **Singapore** by Janus Henderson Investors (Singapore) Limited (Co. registration no. 199700782N) licensed and regulated by the Monetary Authority of Singapore. (b) **Hong Kong** by Janus Henderson Investors Hong Kong Limited, licensed and regulated by the Securities and Futures Commission. (c) **Taiwan** R.O.C by Janus Henderson Investors Taiwan Limited (independently operated), Suite 45 A-1, Taipei 101 Tower, No. 7, Sec. 5, Xin Yi Road, Taipei (110) Tel: (02) 8101-1001. Approved SICE licence number 023, issued in 2018 by Financial Supervisory Commission. (d) **South Korea** by Janus Henderson Investors (Singapore) Limited only to Qualified Professional Investors (as defined in the Financial Investment Services and Capital Market Act and its sub-regulations). **For Other Countries in Asia:** This material is provided for your information purposes only and must not be distributed to other persons or redistributed. This material is issued for Institutional Investors only (or professional/sophisticated/qualified investors as such term may apply in local jurisdictions). We may record telephone calls for our mutual protection, to improve customer service and for regulatory record keeping purposes.

Janus Henderson is a trademark of Janus Henderson Group plc or one of its subsidiaries. © Janus Henderson Group plc.