

LATIN AMERICA & THE CARIBBEAN REGIONAL SUMMARY



About 100 kilometers (60 miles) north of Progreso, Mexico, five small islands stand amidst the largest coral structure in the southern Gulf of Mexico. These images of Arrecife Alacranes—Spanish for “Scorpion Reef”—were acquired on November 5, 2014, by the Operational Land Imager (OLI) on Landsat 8. The top image shows the central part of the reef, while the bottom image shows the rest of the formation.

OVERVIEW

Renewables, non-inclusive of large hydro generation, are at the core of Latin America and the Caribbean’s (LAC) power matrices. The region boasts higher clean energy penetration than any other region assessed on Climatescope. As of year-end 2014, 11% of the 352GW installed in Latin America and the Caribbean (LAC) was represented by biomass, wind, small hydro, solar and geothermal power-generating projects. When large hydro plants are included, over half (56%) of LAC’s matrix is accounted for by non-CO2 emitting power generating sources.

There are several explanations for this high penetration. Perhaps most importantly, the region has exceptional natural resources, which make biomass, geothermal, hydro, solar and wind projects all the more cost competitive. Historically, the region has taken extensive advantage of its hydro and biomass potential but recent years have seen an uptick in wind and solar activity as costs associated with those technologies have dropped. In fact, in several countries in the region, wind and solar projects have reached “grid parity” meaning they are now the best, low-cost option for new generation. In Brazil, for instance, new wind power supply contracts have been signed at rates far below those offered from new natural gas or coal plants. In Chile, corporates have turned to power from solar projects, to access the most affordable energy available.

Renewables growth is also due to rising awareness among governments and planning agencies about the importance of diversifying energy supply sources. This has resulted in more clean energy-friendly policy-making. Of 26 Latin American and Caribbean nations surveyed in *Climatescope*, 10 have adopted targets seeking certain rates of clean energy consumption/generation. In addition, 12 Latin American countries have held or plan to hold “reverse auctions” to sign power delivery contracts with clean energy project developers. The surge of renewables in Central and South America can largely

be attributed to these policies.

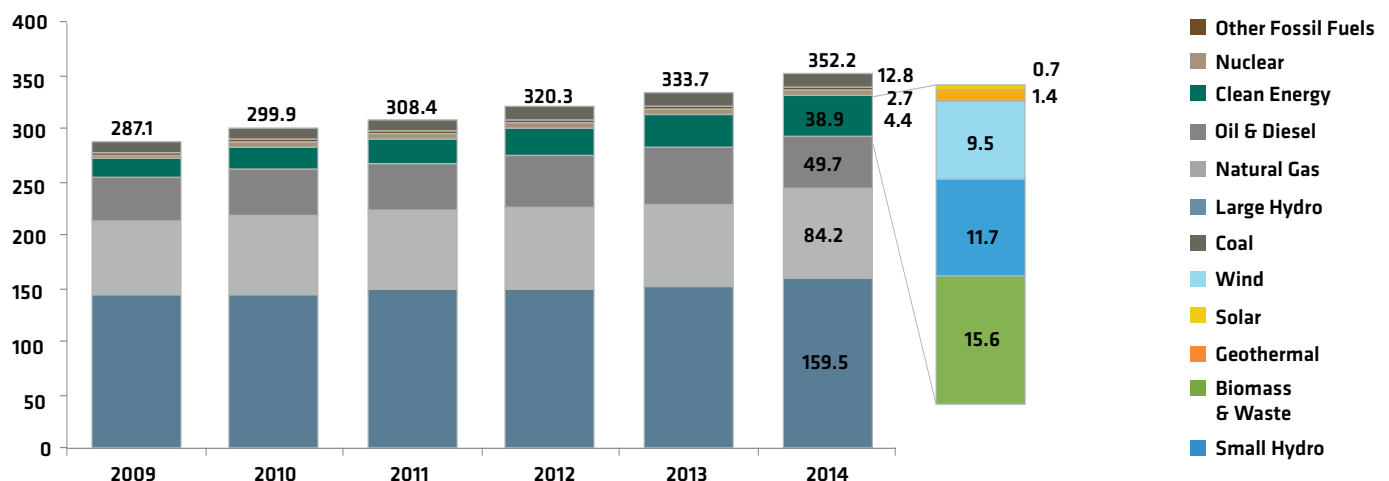
This marks the fourth consecutive year *Climatescope* has analyzed the attractiveness of LAC’s markets for clean energy development and the progress achieved to date has been notable. At the end of 2011, there was 23GW of non-large hydro clean energy capacity installed in the region and much of that had been online for years in the form of small hydro and biomass projects. As of year-end 2014, that number had almost doubled to 39GW, including a larger share of sources such as wind and solar.

Investment has grown as well, albeit somewhat inconsistently. In 2011, the region attracted \$20bn for clean energy projects and in 2014 that totalled \$23bn. There were bumps along the road, however. In 2013, investment was a comparatively smaller \$15.4bn.

The LAC region encompasses two hemispheres and includes a highly heterogeneous set of nations. Unsurprisingly, conditions and opportunities vary widely between countries. Most activity to date has focused on the larger economies, but some smaller countries have also shone. In this year’s Global Climatescope overall ranking, four Latin American countries are in the top 10: Brazil, Chile, Mexico and Uruguay.

In a sense, the appearance of these countries near the top of the table should come as little surprise. Brazil has been a regional leader in renewables development over the past four years and in spite of its economic slowdown, the clean energy sector continues to thrive in the country. Chile has emerged as a solar leader, first with “merchant” projects that do not sign long-term supply contracts, but instead sell their power on the country’s liberalized spot market. The country has more recently held auctions for clean energy to be delivered at individual time blocks when that power is needed most.

INSTALLED POWER CAPACITY AND CLEAN ENERGY CAPACITY BY SECTOR (GW)



Source: Bloomberg New Energy Finance

In Mexico, energy reform is creating new opportunities for private generators and further clean energy build-out. Thanks to its auction system, Uruguay should end 2015 with almost 30% of its installed capacity represented by wind. Finally, Honduras

has implemented a generous feed-in tariff that has driven a rush of developers to build 300MW of solar PV capacity in a country of 8.1m.

ENABLING FRAMEWORK PARAMETER I

Climatescope's Enabling Framework Parameter I assesses what has been deployed in a country (by looking at installed clean capacity and biofuel production levels), mechanisms in place that can facilitate future deployment of renewables (policies and power sector structure) and fundamentals that help size the market (electricity prices, power demand and electrification rate).

The top five scoring countries on this parameter – Uruguay, Brazil, Chile, Nicaragua and Costa Rica – have one major point in common: all have a high penetration of renewables in their matrix. Uruguay comes out tops due to a high policy score and fast growth of new clean energy capacity.

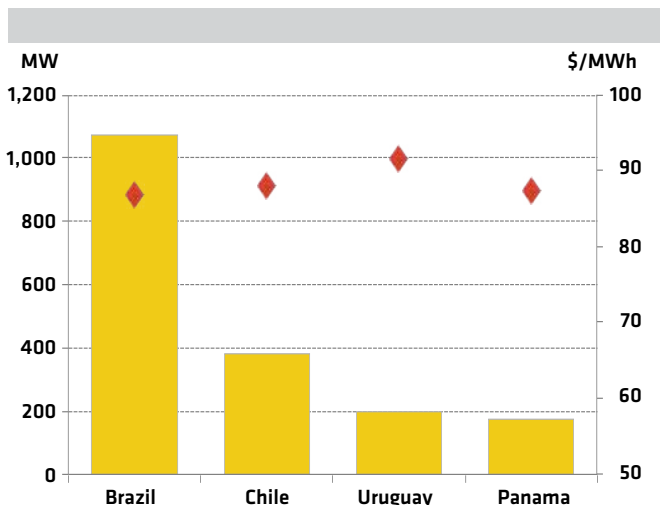
In 2014, Latin American and Caribbean countries did not introduce a particularly large number of new policy mechanisms to support clean energy. However, they did take key steps toward getting policies already on the books implemented. Among the key 2014 policy developments, Mexico continued to finalize its overall energy reform, Colombia published its renewable energy law, and Honduras implemented a feed-in tariff scheme at \$180/MWh which attracted great industry interest. Finally, Brazil, Chile, Jamaica, Panama, and Uruguay all contracted biomass, small hydro, wind and solar projects through reverse auctions for power contracts. In the chart below we highlight examples of auctions held in the past two years, showcasing the prices and contracted capacity. For a complete list of policies, access the policy library available at www.global-climatescope.org.

Stable policy frameworks and standardized contracting mechanisms such as auctions and feed-in tariffs facilitate the deployment of renewables. Last year, a total of 39GW was installed in the region, and 7.7GW of new clean energy capacity was added. Two important milestones were achieved in 2014: solar surpassed the 0.5GW installed mark and wind reached almost 10GW of capacity.

The international oil price collapse was one of the major events buffeting Latin America and the Caribbean's energy sector overall as the benchmark price of Brent crude fell from \$110 to \$57/barrel. The impact was felt most acutely in oil-producing countries Brazil, Ecuador, Mexico and Venezuela, which all generated lower revenues as a result.

Specifically in regard to clean energy, the impact of the oil price drop was relatively muted in Latin America in 2014. Wholesale spot prices for electricity, which can correlate with oil prices (since fossil-fuelled plants typically are the most expensive on the grid), did not fall significantly over the course of the year. The average fell just 5% to \$53/MWh from an average of \$57.8/MWh in 2013. Cheaper oil's impact could be felt more strongly felt in 2015, however, with merchant clean energy projects potentially the most exposed since such projects rely on high spot prices to achieve investor returns.

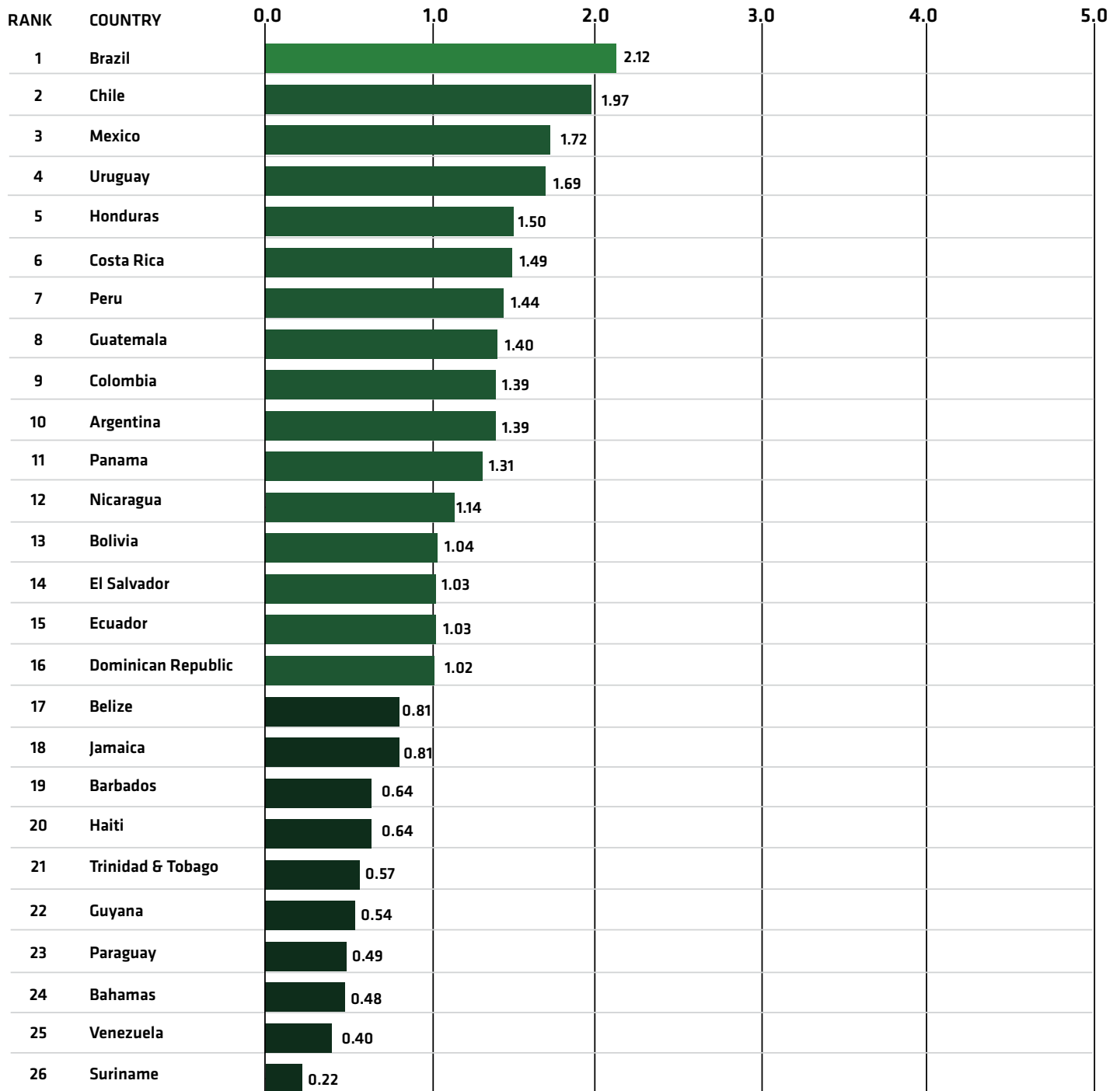
2014 SOLAR AUCTIONS IN LATIN AMERICA, CAPACITY CONTRACTED (MW) AND AVERAGE CONTRACT PRICE (\$/MWh)



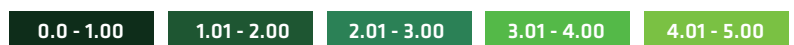
Source: Bloomberg New Energy Finance

Note: In Chile and Panama, capacity is estimated based on the contracted generation (GWh).

2015 Global Climatescope scores
Latin American and Caribbean ranking

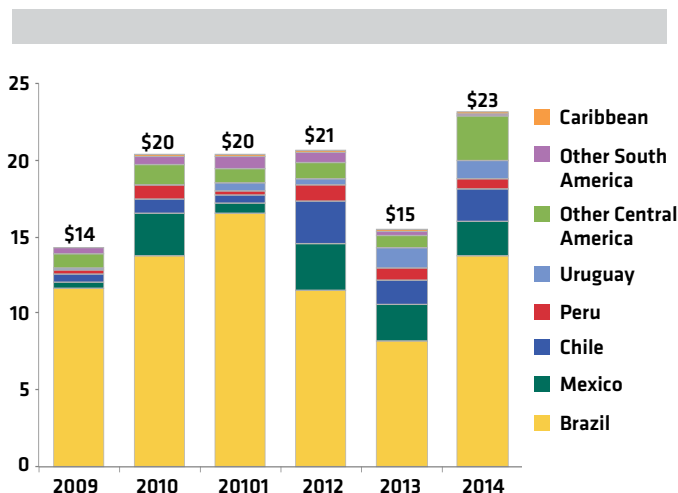


Colors show range for overall score



CLEAN ENERGY INVESTMENT & CLIMATE FINANCING PARAMETER II

LATIN AMERICA AND CARIBBEAN INVESTMENT IN CLEAN ENERGY BY COUNTRY, 2009-2014 (\$bn)



Source: Bloomberg New Energy Finance

The Clean Energy Investment & Climate Financing parameter looks at investment levels to date for large- and small-scale projects, by mapping fund flows to new plants, while also tracking mergers and acquisitions, grants and microfinance activity.

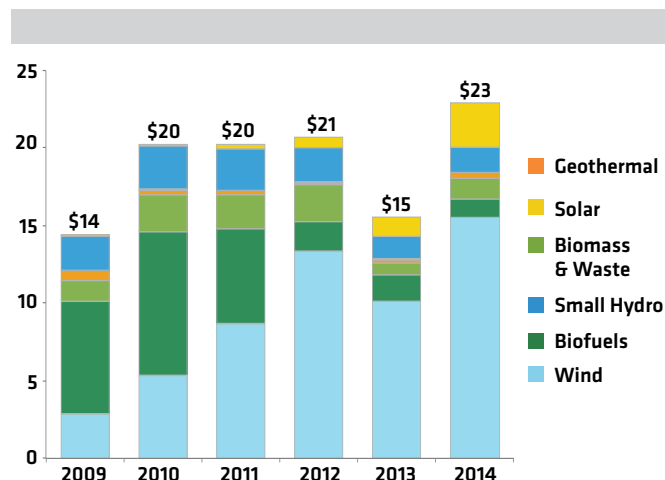
Countries that scored best on this parameter all saw surges of investment in 2014: Honduras, Bolivia, Guatemala, Panama and Chile. In Bolivia's case, the country attracted \$41m, representing a major jump from the \$7m invested in 2013.

Overall in 2014, investment levels across the region for non-large hydro clean energy bounced back, spiking 49% compared to 2013, when \$15bn was deployed. Among the main destinations for investment were: Brazil, which attracted more than half of the funds at \$14bn, along with Mexico (\$2bn) and Chile (\$2bn).

In addition, there was a slew of countries that saw investment-surge disproportionately in 2014. This included Panama (\$839m in 2014, up from \$172m in 2013), Honduras (\$823m vs. \$74m) and Guatemala (\$702m vs. \$84m). In other countries, activity began to slow in 2014 after being particularly brisk in the prior year. Uruguay, for instance, attracted an impressive \$1bn in 2014, though that was slightly down from the year prior. Smaller countries usually see a more intermittent pattern of investment due to the size of their grids.

In terms of technologies supported, the trends seen in 2013 continued into 2014. Wind remains the main clean energy sector in LAC, attracting \$15.5bn in investment with Brazil, Mexico, Panama and Uruguay taking the lion's share of the total. The solar sector attracted a record \$2.8bn in 2014, largely due to PV projects in Chile and Honduras.

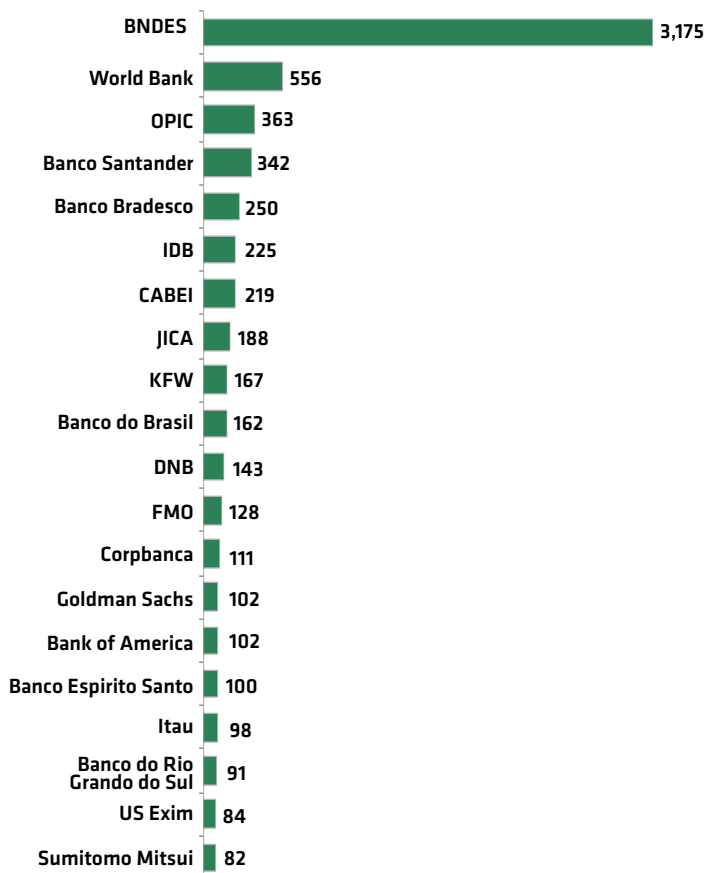
LATIN AMERICA AND CARIBBEAN INVESTMENT IN CLEAN ENERGY BY SECTOR, 2009-2014 (\$bn)



Source: Bloomberg New Energy Finance

Notes: Total investments includes: Asset Finance, Corporate Finance and Venture Capital / Private Equity Commitments.

TOP 20 LATIN AMERICA AND CARIBBEAN CLEAN ENERGY INVESTORS, 2014 (\$m)



Source: Bloomberg New Energy Finance

Climatescope also maps out the sources of funds, classifying investors as local or foreign. Funds coming from local investors rose in 2014, although more modestly than in the prior year, rising to \$5.3bn from \$4.5bn in 2013. In terms of the top 20 clean energy investors in 2014, Brazil's National Development Bank again provided the most and is among the major clean energy investors globally. Other regional development banks

also appeared on the list, including the Central American Bank for Economic Integration. Among the international development banks and agencies, the World Bank, Inter-American Development Bank, Japan International Cooperation Agency and KfW all played important roles. Finally, it is worth noting the participation of private commercial banks such as Spain's Santander, Brazil's Bradesco and Itaú and Chile's CorpBanca.

LOW-CARBON BUSINESS AND CLEAN ENERGY VALUE CHAIN PARAMETER III

The Low-Carbon Business and Clean Energy Value Chain Parameter III examines the types of companies that provide services or manufacturing equipment for the clean energy industry. This parameter also includes a set of off-grid indicators that only applied to Haiti, as the country is the only nation considered 'off-grid' under *Climatescope's* methodology. (For more on how this determination was made, please see the complete *Climatescope* methodology).

As in prior editions of *Climatescope*, the leading countries in this parameter also coincided with some of the largest economies in the region. Brazil and Mexico achieved the highest scores thanks to the size of their economies and renewable energy markets. However, the robustness of Brazil's value chain is also helped by the country's "local-content" rules requiring developers

to use locally-sourced equipment to access Brazil's development bank loans for clean energy projects.

In Mexico, the drivers are somewhat different. While the country does have import tariffs on foreign-made PV equipment, some equipment manufacturers based in the country also seek to export into the US market.

Most of the other countries in the region have developers, engineers and builders present in the six sectors assessed under Parameter III: biofuels, biomass & waste, geothermal, small hydro, solar and wind. In Haiti, where the electrification rate is quite low and most of the population still relies on distributed forms of electricity generation, there is a significant opportunity for small-scale renewable systems. *Climatescope* tracked various companies on the island providing small lighting and energy systems from solar, biomass and mini-hydro.

LATIN AMERICA AND CARIBBEAN SOLAR AND WIND VALUE CHAIN

	SOLAR								WIND								
	Project Development	Engineering	O&M	Polysilicon/ingots	Wafers	Cells	Modules	Inverters	Balance of Plant	Project Development	Engineering	O&M	Turbines	Blades	Gearboxes	Towers	Balance of Plant
Brazil	●	●	●				●	●	●	●	●	●	●	●	●	●	●
Mexico	●					●	●	●	●	●			●		●		
Caribbean	●	●								●	●	●					
Central America (other)	●	●								●	●	●					
South America (other)	●	●	●							●	●	●					

Source: Bloomberg New Energy Finance

GREENHOUSE GAS MANAGEMENT ACTIVITIES PARAMETER IV

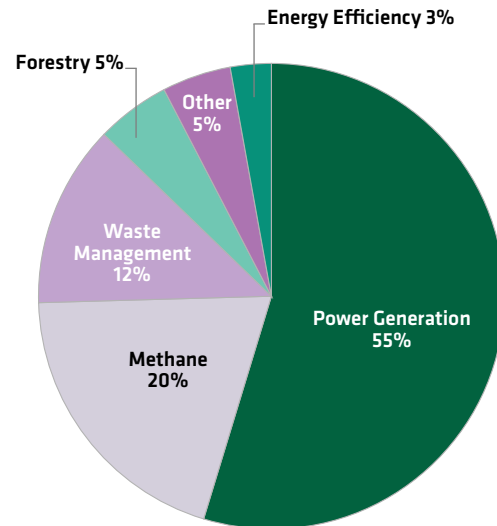
The Greenhouse Gas (GHG) Management Activities Parameter IV examined country-, corporate- and project-level initiatives to reduce GHG emissions by countries. Larger economies typically score best on this parameter as their level of emissions is higher and thus they require more projects to be in place to offset these. In addition, larger countries have a greater number of large corporates operating, including both national and international firms. The top five highest scoring countries on Parameter IV include Brazil, Chile, Mexico, Colombia and Uruguay – the same countries that scored best in last year’s ranking with small changes in positions among them.

ClimateScope recorded eight countries in Latin America and the Caribbean with some form of emission reduction target in place: Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Jamaica, Mexico and Peru.

In Latin America and the Caribbean, there is a total of 1,160 GHG emission reduction projects registered under three standards: Clean Development Mechanism (CDM), Verified Carbon Standard (VCS) and Gold Standard (GS). This number barely increased from the 1,128 registered in 2013. However, there was greater involvement of Nationally Appropriate Mitigation Actions (NAMAs) projects. In 2014, 11 Latin American and Caribbean countries had NAMA projects under preparation or already being implemented, compared to 10 in 2013.

LATIN AMERICA AND CARIBBEAN GREENHOUSE GAS OFFSET PROJECTS BY SECTOR

1,128 GHG projects



Source: UNEP Risoe, Bloomberg New Energy Finance