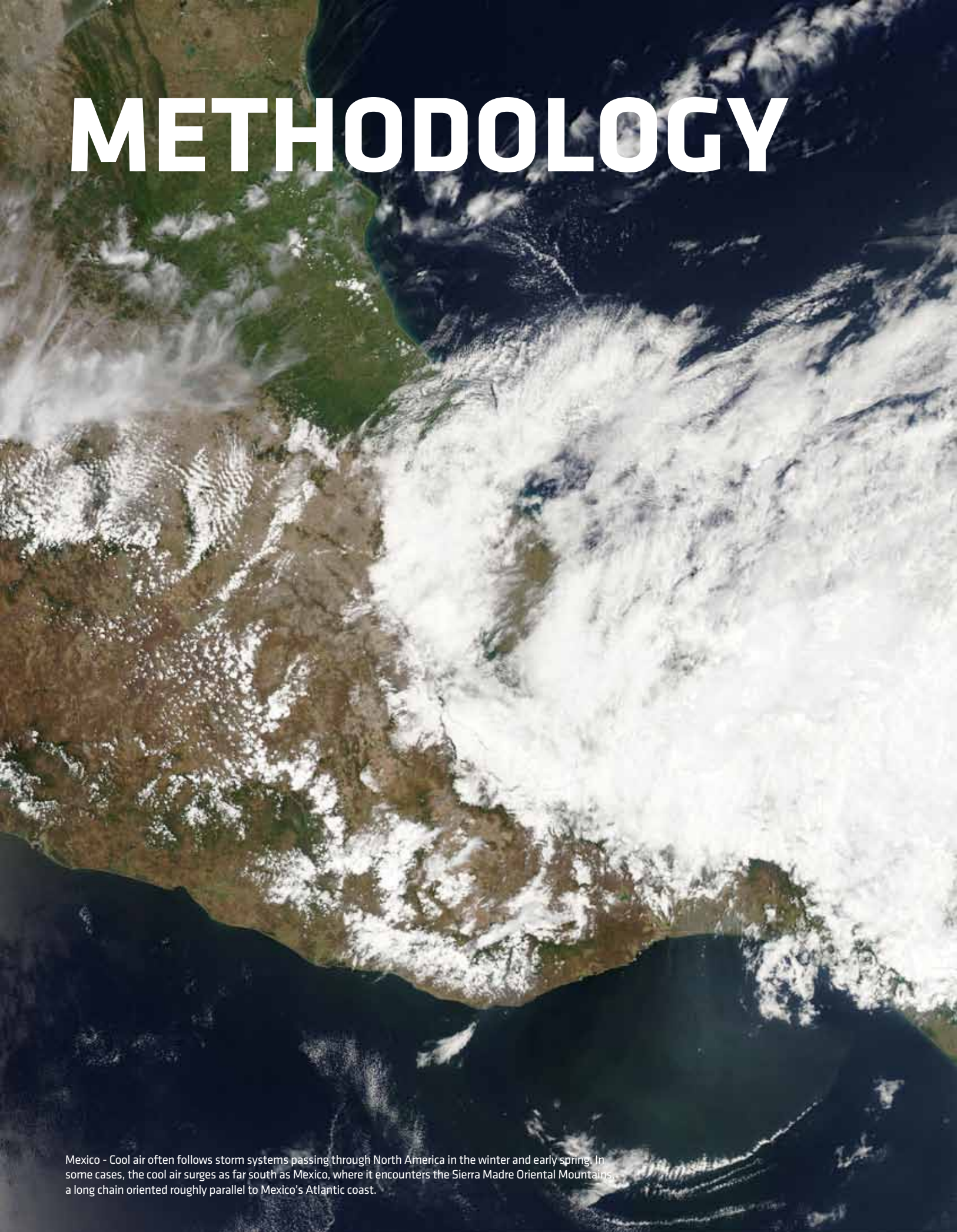
METHODOLOGY



Mexico - Cool air often follows storm systems passing through North America in the winter and early spring. In some cases, the cool air surges as far south as Mexico, where it encounters the Sierra Madre Oriental Mountains, a long chain oriented roughly parallel to Mexico's Atlantic coast.

OVERVIEW

Climatescope seeks to bring quantitative rigor to the basic question of what makes a country attractive for clean energy investment, development, and deployment. It seeks to answer this by collecting as much relevant data as possible, then organizing it in a manner that is both easy to consume and empowers users to gain key insights.

Climatescope ranks countries on their past, present, and future ability to attract investment for clean energy companies and projects. Clean energy is defined as biofuels, biomass & waste, geothermal, solar, wind and small hydro (up to 50MW) – but not large hydro. While a number of *Climatescope* nations have historically embraced large hydro generation to meet local power needs, the study focused exclusively on newer sources of low-carbon generation, both because they are often technologically cutting edge and because they can generally be deployed far faster than large hydro projects, which can take years or even decades to commission. By comparison, wind projects can be sited and erected in as little as two to three years. Utility-scale photovoltaic projects can be constructed in as few as six months and distributed photovoltaic systems can be added to rooftops in a day or less. In short, these technologies are poised to make a near immediate impact on energy supply and access in the developing world. *Climatescope* sought to assess how ready these countries are to embrace them.

In this third edition, the index comprises 55 data inputs or "indicators". Each indicator and the parameter it falls under contribute to a country's overall score but they are not weighted equally (see illustration on pages 32 and 33). Scores range from 0 to a maximum of 5.

All relevant *Climatescope* data is available in aggregated form at www.global-climatescope.org. Questions or comments on the methodology and feedback on data are welcome and should be submitted to climatescope@bloomberg.net.

2014 methodology enhancements

This marks the third year that the *Climatescope* survey has been conducted and the methodology that underpins it has been refined each year. In 2012 and 2013, the research focused exclusively on 26 nations in Latin America and the Caribbean. This year, it was expanded across Africa and Asia to include an additional 29 nations plus 15 Chinese provinces and 10 Indian states. In all, the total number of jurisdictions being surveyed rose from 26 to 80.

A significantly larger, more diverse set of nations inevitably makes quantifying clean energy conditions through data collection all the more challenging. For this year's *Climatescope*, the methodology behind the project has once again been updated, this time primarily to reflect the wider spectrum of countries being assessed. All changes to the methodology were proposed by Bloomberg New Energy Finance with the approval of the committee of funders supporting the project (MIF/IDB, UK DFID, and USAID).

Adjusting the parameter weighting

Climatescope consists of four parameters encompassing 55 data inputs, or indicators, all of which are explained in greater detail in the following pages. The final score a country received under *Climatescope* was determined by a weighted combination of its four parameter scores. For 2014, the weighting of these parameters was adjusted slightly from prior years to the following:

I	Enabling Framework	40%
II	Clean Energy Investment and Climate Financing	30%
III	Low-carbon Business and Clean Energy Value Chains	15%
IV	Greenhouse Gas Management Activities	15%

In the first two years of *Climatescope*, Parameter III was weighted at 10% while Parameter IV was weighted at 20% in a country's final score. This year, it was determined that Parameter III should receive a weighting of 15% to reflect the growing importance of clean energy value chains in developing countries. This decision was made in part to reflect the changing dynamics of the global renewable energy marketplace. Lesser developed nations now account for a substantially larger share of overall investment than they did when *Climatescope* was first launched two years ago. Thus it was determined that how a country participates in clean energy manufacturing and services should receive greater weighting than in prior years.

Conversely, the weighting for Greenhouse Gas Management Activities Parameter IV was reduced to 15% from 20% in prior years. This was intended to reflect the fact that these programs are not major drivers of clean energy growth in most countries today.

The entire *Climatescope* model can be viewed at www.global-climatescope.org where users are encouraged to adjust the parameter weightings according to their priorities and download the aggregate data available.

Accounting for lesser developed nations through a new "off-grid focus" methodology

Climatescope 2014 assessed nations ranging from low income ones to those firmly considered "middle income". The methodology as implemented in years one and two of the project fit well for the nations of LAC, nearly all of which are considered

METHODOLOGY OVERVIEW

I. ENABLING FRAMEWORK — 40%

	On-grid	Off-grid
Policy & Regulation		
Clean Energy Policies	9.6%	6.4%
Power Market Structure	4.8%	4.0%
Distributed Energy Regulatory Framework	0.0%	2.4%
Clean Energy Rural Electrification Programs	0.8%	0.8%
Energy Access Policies	0.0%	1.6%
Policy Barriers	0.8%	0.8%
Clean Energy Penetration		
Clean Energy Installed Capacity	3.2%	3.2%
Growth Rate of Clean Energy Installed Capacity	3.2%	3.2%
Clean Energy Electricity Generation	3.2%	3.2%
Growth Rate of Clean Energy Electricity Generation	3.2%	3.2%
Biofuels Production	1.6%	1.6%
Growth Rate of Biofuels Production	1.6%	1.6%
Price Attractiveness		
Average Retail Electricity Prices	2.0%	0.0%
Average Electricity Spot Prices	2.0%	2.4%
Average Kerosene Prices	0.0%	0.8%
Average Diesel Prices	0.0%	0.8%
Market Size Expectation		
Growth Rate of Power Demand	2.0%	1.2%
Electrification Rate	2.0%	2.4%
Population Using Solid Fuels For Cooking	0.0%	0.4%

II. CLEAN ENERGY INVESTMENT AND CLIMATE FINANCING — 30%

	On-grid	Off-grid
Amount Invested		
Clean Energy Investment	6.8%	8.1%
Growth Rate of Clean Energy Investment	6.8%	5.4%
Fund Sources		
Loans, Grants, Grant Programs	3.0%	3.0%
Local Investment	3.0%	3.0%

Colors show methodology subdivisions and weightings

PARAMETER | WEIGHT | CATEGORY | INDICATOR | ON-GRID NET WEIGHT | OFF-GRID NET WEIGHT

METHODOLOGY OVERVIEW (continued)

Green Microfinance	On-grid	Off-grid
Number of Green Microfinance Institutions (MFIs)	2.1%	2.1%
Green Microloans	1.2%	1.2%
Green Microborrowers	1.2%	1.2%
Average Cost of Green Microdebt	1.0%	1.0%
Cost of Debt		
Average Cost of Debt	2.6%	2.6%
Swap Rate	2.6%	2.6%

III. LOW-CARBON BUSINESS & CLEAN ENERGY VALUE CHAINS — 15 %

Value Chain	On-grid	Off-grid
Financial Institutions in Clean Energy	3.8%	3.0%
Value Chains by Clean Energy Sector	7.5%	3.0%
Distributed Clean Energy Value Chains By Sector	0.0%	3.0%
Clean Energy Service Providers	3.8%	3.0%
Distributed Clean Energy Service Providers	0.0%	3.0%

IV. GREENHOUSE GAS MANAGEMENT ACTIVITIES — 15 %

Carbon Offsets	On-grid	Off-grid
Historic Activity	3.0%	3.0%
Clean Development Mechanism (CDM) Risk	1.5%	1.5%
Future Potential	1.5%	1.5%
Carbon Policy		
Greenhouse Gas (GHG) Emission Reduction Targets	1.9%	1.9%
Country Registry	1.1%	1.1%
Market-Based Instruments	0.4%	0.4%
PMR & NAMA Commitments	1.1%	1.1%
Corporate Awareness		
GHG Global Reporting Initiatives	0.8%	0.8%
Principles of Responsible Investment	0.8%	0.8%
Energy Efficiency Initiatives	0.8%	0.8%
Emission Reduction Policies	0.8%	0.8%
Environmentally Focused Business Training	0.8%	0.8%
Environmentally Focused Think Tanks	0.8%	0.8%

middle income. But less developed nations face substantially different energy challenges, often related to improving basic energy access.

In light of this, *Climatescope* 2014 incorporates a special, augmented "off-grid focus" methodology that includes seven additional indicators, with weightings adjusted in the model accordingly. These additional indicators were taken into account alongside the other "on-grid" indicators for a sub-set of 23 Climatescope nations: 18 in Africa, one in LAC, and four in Asia. The goal was to level the playing field so that all countries could be compared in the fairest possible manner against one another in a single 55-country list. In addition, users of Climatescope can examine the specific off-grid focus indicators in detail if they choose and compare in isolation the 23 nations that were assessed using this methodology. Among the goals of this augmentation to the methodology was to allow countries at very different levels of development to be compared to each other on relatively level ground. However, users at www.global-climatescope.org may examine these 23 nations on their own if they choose – or the other 32 nations.

To determine which countries would be assessed using the off-grid focus methodology, we devised an initial 0-5 scoring system. Five factors contributed different weightings to this score; those that scored a 2.5 or higher were considered "off-grid focus countries". Each factor involved a simply binary question that was used to generate individual scores.

Factor	Question	Criteria/score	Data source
Electrification rate	What percentage of a country's population is not currently connected to the power grid?	A country with a low enough proportion connected received a score of 2.	International Energy Agency
Number of national power outages	How many power outages did the country experience in the most recent year for which there is complete data?	A country with a sufficiently large enough number of outages scored 1.	World Bank
Duration of outages	What was the average length of time a typical grid outage lasted?	A country where outages lasted sufficient durations scored 1.	World Bank
Power transmission losses	What are the typical line losses?	A country where transmission losses exceeded a certain threshold scored 0.5.	World Bank
Human Development Index	How is the country classified in the UNDP's HDI?	A country classified "Low Development" scored 0.5.	UNDP

Source: Climatescope 2014

The off-grid focus methodology's additional indicators were specifically designed in consultation with outside experts to assess conditions in developing nations. These indicators fell under Climatescope's first three parameters but had no impact on Greenhouse Gas Management Activities Parameter IV. They were:

- Distributed energy regulatory frameworks: How well does a country's local market structure facilitate off-grid or small-scale development of projects?

- Energy access policies: What local policies exist specifically to spur off-grid activity?

- Average local kerosene and diesel prices: How high are these prices and how attractive do they make potential alternative (cleaner) sources of generation?

- Population using solid fuels for cooking: How many citizens would potentially value alternative fuel sources to cook?

- Distributed clean energy value chains: What local battery banks, mini-wind equipment makers, mini-photovoltaic systems providers, and other similar types of players exist in-country?

- Distributed clean energy service providers: What local developers, pay-as-you go facilitators, insurance providers, and others are in-country?

Other changes

Climatescope 2014 contains three other, relatively minor methodology adjustments from prior years:

- Enabling Framework Parameter I – A new indicator was added to take into account "policy barriers" that potentially limit the deployment of clean energy. In particular, we assessed all countries' import duties on clean energy equipment.

- Enabling Framework Parameter I – Two additional questions were added for use in the survey to derive the power sector indicator score. These questions were added to give the survey a bit further nuance.

• Clean Energy Investment Parameter II – Average cost of debt indicator reflects inter-bank interest rates. In the past, a survey was conducted to assess the cost of debt of renewable projects. Given the new array of countries and limited financed projects in some markets, the inter-bank interest rate was used as a proxy.

• Clean Energy and Low-Carbon Business Value Chains Parameter III – The value chain segments were streamlined, eliminating a few that were relatively extraneous. In particular, a few categories from the geothermal value chain were rationalized. Also, impact funds were added to the financial institutions indicator.

The entire *Climatescope* methodology can be accessed at www.global-climatescope.org.