

# EMERGING MARKETS ATTRACTIVENESS INDEX

Q4 2018

**WE RANKED 30 KEY  
EMERGING MARKETS  
FOR WIND INVESTORS  
- WHICH WAS NO.1?**

Features the 2018 edition of our annual Emerging Markets Attractiveness Index for wind companies, and deals data.



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# EDITORIAL



By Ilaria Valtimora,  
Associate Editor

**I**t's no secret why investors in wind look at emerging nations. Riskier, higher-growth markets provide them with higher returns compared with those in more established peers.

Many of them offer accelerated economic and population growth; growing power demand; and political commitments to support renewable energy too. But which are most attractive? That's what we have set to find out in this research report.

This is our second Emerging Markets Attractiveness Index (page 8), and in it we have ranked emerging markets based on a series of key economic and political factors, renewable energy policies and wind growth. We've also grown its scope to look at 30 key emerging wind markets for investors, up from 20 last year.

And we gained more insights on this at our Financing Wind Europe conference in London on 1st November. We were joined by experts such as Dana Younger, chief renewable energy specialist at the World Bank's International Finance Corporation. He gave his view on the most attractive emerging markets for wind investors in 2019 and beyond.

One developing country he identified that is set to see a thriving wind market in the next five years is Ethiopia. He said one reason is that the IFC is set to expand its Scaling Solar framework to

wind projects from 2019 and Ethiopia would be the first to benefit. Scaling Solar is a programme set to help African governments – excluding South Africa – support privately-funded solar projects.

The idea is to help governments mitigate risks, such as lack of market scale and limited financing, in order to attract private investments to the wind sector.

As we see in the EMAI, Ethiopia is also among the most ambitious nations for wind in Africa. The country has a goal of 5.2GW of wind capacity by 2020 from the only 324MW currently installed. Achieving this impressive target is set to require private investments of up to \$6bn, and the IFC plans to help with that.

Globally, Asian countries are among the best-performing markets in our EMAI, with China holding onto its position at the top of our ranking for a second year. This is a result of strong investments in renewables in 2017 and a shift from feed-in tariffs to competitive auctions to support onshore and offshore wind.

And we see strong prospects in Latin American nations like Chile and Mexico, where interest from global players including Enel Green Power, Iberdrola and Mainstream Renewable Power is sign of a thriving market.

Finally, new entrants such as Taiwan, Estonia and Lithuania are all intriguing, with projects both onshore and offshore. While most development in emerging markets is happening onshore, we can't underestimate how the growth of offshore wind could help to open up more of these countries to wind.

Finally, as profits in established markets are squeezed, firms will continue to have a pressure to grow globally. And we'll see more competition between politicians in these countries in emerging markets in Africa, Asia, Latin America and eastern Europe to attract those firms' cash. This global fight will only get fiercer. ■

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*Ethiopia is among the most ambitious nations for wind in Africa, with a goal of 5.2GW of wind capacity by 2020.*



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# WIND DATABANK

In this Databank, we have delved into our archive to pick out the key stories from the last quarter, including M&A (table 1), power purchase agreements (table 2) and project finance (table 3).

Key deals include the purchase by Global Infrastructure Partners of a 50% stake in Ørsted's 1.2GW Hornsea 1 for £4.5bn; and the 120MW power purchase agreement that Vattenfall won at the 600MW Kriegers Flak offshore project.

We have tried to be as comprehensive as possible, but we are also keen to hear about any deals we might have missed.

If you have any, please get in touch: [editorial@awordaboutwind.com](mailto:editorial@awordaboutwind.com)

## 1. KEY WIND PROJECT M&A DEALS REPORTED IN Q3 2018

BUYER	SELLER	PROJECT(S)	SIZE (MW)	LOCATION	COMMENT
SSE	Fluor	Seagreen	1,500	UK	SSE buys Fluor's 50% Seagreen stake
NextEra En. Partners	NextEra En. Resources	Wind portfolio	1,400	US	Yieldco strikes \$1.3bn deal with parent
Global Infra. Partners	Ørsted	Hornsea 1	1,200	UK	GIP buys half of Hornsea 1 for £4.5bn
Mitsui	Yushan Energy	Hai Long	1,000	Taiwan	Mitsui acquires 20% of 16W Hai Long
J-Power	Innogy	Triton Knoll	860	UK	J-Power buys 25% of £2.3bn Triton Knoll
Kansai Elec. Power	Innogy	Triton Knoll	860	UK	Kansai buys 16% of £2.3bn Triton Knoll
BluEarth	Intermountain Wind	Wind portfolio	795	US	Canadian developer plots US growth
CGN	Macquarie / GE	Markbygden 1	650	Sweden	China's CGN buys 75% of Markbygden 1
Carlyle Group	Noble Env. Power	Six projects	612	US	Carlyle buys portfolio in New York state
Innergex	TransCanada	Five projects	590	Canada	Innergex buys 62% of portfolio for C\$630m
Dalmore / PIP	EDF Renewables	Wind portfolio	550	UK	Partners buy 49% of portfolio for £701m
Enlight Ren. Energy	Assignia Infra.	Gecama	300	Spain	Israel's Enlight to buy 300MW in Spain
GIG (Macquarie)	SCA / Turinge Energi	Överturingen	235	Sweden	Macquarie's GIG buys 235MW in Sweden
Partners Group	RES / Macquarie	Murra Wurra 1	226	Australia	Partners buys Murra Wurra 1 scheme
Sumitomo	Parkwind	Northwester 2	224	Belgium	Deal for 30% stake in 224MW project
Alliant Energy	Invenergy	Richland	210	US	Alliant agrees to buy 210MW scheme
Susi Partners	Engie	Tonstad	208	Norway	Susi buys 80% of 208MW Norway project
Boralex	Invenergy	Five projects	201	Canada	Boralex buys five schemes for C\$215m
PGGM	EDF Renewables	Glacier's Edge	200	US	PGGM buys half of 200MW wind farm
Skyline Renewables	RES Americas	Hackberry	166	US	Skyline buys 166MW project in Texas
African I.I.M.	G7 Ren. Energies	Roggeveld	147	South Africa	AIIM buys unknown stake of Roggeveld
Pattern / PSP	Pattern Dev.	M. St.-Marguerite	147	Canada	Pattern and PSP jointly acquire scheme
African I.I.M.	Lekela Power	Kangnas	140	South Africa	AIIM buys undisclosed stake of Kangnas
WEC Energy	Invenergy	Bishop Hill 3	132	US	WEC buys 80% of Bishop Hill 3 for \$148m
Arroyo En. Inv.	Pattern Energy	El Arrayán	115	Chile	Pattern completes sale of 70% stake
African I.I.M.	Lekela Power	Perdekraal	110	South Africa	AIIM buys unknown stake of Perdekraal
Greencoast Ren.	Coillte	Four Projects	105	Ireland	Greencoast buys stakes in Irish portfolio
MidAmerican	EDF Renewables	Ivester	91	US	EDF sells 91MW wind project in Iowa
Munich Re	Eolus	Jenåsen	79	Sweden	Munich Re buys 79MW Swedish scheme
ERG	Unnamed	Creag Riabhach	79	UK	ERG buys Scottish wind project for £89m
Temporis Capital	Blue Energy	Blackcraig	69	UK	Temporis buys 69MW Scottish wind farm
Recap Global Inv.	Arise Windpower	Brücklingeberget	45	Sweden	Swiss firm buys 45MW Swedish project
Marguerite Fund	OX2	Brännliden	42	Sweden	Marguerite Fund buys 42MW scheme
BlackRock	Arise Windpower	Enviksberget	37	Sweden	BlackRock buys 37MW wind farm
John Laing	WKN	Two projects	32	France	UK investor buys two French projects



## 2. KEY POWER PURCHASE AGREEMENTS SIGNED IN Q3 2018

BUYER	BUYER TYPE	OWNER	PROJECT	SIZE (MW)	LOCATION	COMMENT
Ørsted	Corporate	Innogy / J-Power / Kansai	Triton Knoll	860	UK	Ørsted buys 100% of the power
Novo Nordisk / Novozymes	Corporate	Vattenfall	Kriegers Flak	600	Denmark	Vattenfall wins 120MW PPA
Three unnamed companies	Corporate	EDP Renewables	Two Projects	405	US	EDPR gains PPAs for full output
Engie	Utility	E.On / Equinor	Arkona	385	Germany	French utility buys full output
Alliant Energy	Utility	NextEra Energy	Four Projects	340	US	Alliant swaps nuclear for wind
Novartis	Corporate	Invenergy	Santa Rita East	300	US	Swiss firm signs 100MW deal
Westar Energy	Utility	NextEra Energy	Soldier Creek	300	US	Westar to sell wind to C&I firms
Norsk Hydro	Corporate	GIG (Macquarie)	Överturingen	235	Sweden	Norsk Hydro agrees 29-year PPA
Toyota	Corporate	YPF Luz	Two projects	222	Argentina	Car maker signs 16MW PPA
Hydro Energi	Corporate	Engie / Susi Partners	Tonstad	208	Norway	Hydro Energi buys full output
Salesforce	Corporate	EDP Renewables	Bright Stalk	205	US	US tech firm to buy full output
Hydro-Québec	Utility	Boralex / Innu communities	Apuiat	200	Canada	Hydro-Québec signs initial deal
Facebook	Corporate	EDP Renewables	Headwaters 2	200	US	Facebook signs up for 139MW
Silicon Valley Clean Energy	Utility	Pattern Development	Duran Mesa	200	US	Californian utility to buy 110MW...
Monterey Bay Comm. Power	Utility	Pattern Development	Duran Mesa	200	US	...and fellow Cali utility 90MW
Unnamed	Utility	EDP Renewables	Broadlands	200	US	EDPR secures 50MW agreement
Comcast	Corporate	Enel Green Power	HillTopper	185	US	US sports giant signs 9MW PPA
Vattenfall	Corporate	Aquila Capital	Kräktorpet	163	Sweden	Swedish utility buys full output
Origin Energy	Utility	Grassroots Ren. Energy	Crudine Ridge	135	Australia	Power planned for Sydney Airport
Apple / Akamai / Etsy / Swiss Re	Corporate	Geronimo Energy	Unnamed	125	US	Group led by Apple buys full output
Flow Power	Utility	Windlab	Lakeland	104	Australia	Flow Power signs 50MW PPA
Google	Corporate	Neoen	Hedet	81	Finland	Part of a three-project agreement
Google	Corporate	WPD	Kuoronkallio	59	Finland	Part of a three-project agreement
Kaiser Permanente	Corporate	NextEra	Unnamed	50	US	US giant signs wind and solar deal
Google	Corporate	CPC	Lakiakangas	50	Finland	Google signs 50MW PPA in Finland
Boston University	Corporate	Engie North America	Unnamed	49	US	Uni signs PPA at Engie scheme
Statkraft	Utility	Various citizen groups	Six Projects	46	Germany	Statkraft signs Germany's first PPA
Mercedes-Benz	Corporate	VSB	Taczalin	45	Poland	Car maker signs Poland's first PPA
Statkraft	Utility	Castledockrell Wind Group	Castledockrell	41	Ireland	Statkraft buys full output in Ireland
VDKL	Corporate	Enercon	Four Projects	11	Germany	Logistics group buys full output
Banco Bilbao Vizcaya Argentaria	Corporate	Enel Green Power	Unnamed	-	Spain	BBVA agrees 80GWh transaction

## 3. KEY WIND PROJECT FINANCE DEALS REPORTED IN Q3 2018

OWNER(S)	PROJECT	SIZE (MW)	DEAL VALUE*	LOCATION	INVESTOR(S)	COMMENT
Innogy/J-Power/Kansai	Triton Knoll	860	€1.5bn	UK	Sumitomo/MUFG/KfW	Triton Knoll secures \$1.75bn financial close
Partners/InfraRed/Deme/GE/Ademe	Merkur	396	€1.5bn	Germany	Group led by DekaBank	Partners-led group concludes refinancing
CIP/Highland Group/Siemens	Veja Mate	402	€1.3bn	Germany	-	Veja Mate owners secure €1.3bn refinancing
Enel Green Power	Five projects	700	€1.2bn	South Africa	Absa/Nedbank/Enel	Enel reaches €1.2bn close in South Africa
BioTherm Energy	Wind and solar assets	284	€431m	South Africa	-	BioTherm reaches \$500m financial close
Akfen Renewable Energy	Wind and solar assets	327	€313m	Turkey	EBRD/KfW/Is Bank	Turkey's Akfen gains funds for 242MW assets
Malakoff Corporation Berhad	Macarthur	420	€312m	Australia	BlackRock-led consortium	Malaysia's Malakoff refinances its 50% stake
Green Investment Group	Överturingen	235	€270m	Sweden	Crédit Agricole, KfW, EKF and others	Macquarie's GIG secures €270m close
EDP Renewables	Two projects	277	€230m	US	-	EDPR wind \$267.5 tax equity for 277MW duo
Palisade Investment Partners	Granville Harbour	112	€175m	Australia	Clean Energy/ANZ/MUFG/Westpac	Palisade reaches financial close for 112MW
Enlight Renewable Energy	Emek HaBakcha	96	€125m	Israel	Bank Hapoliem/Harel/Phoenix	Enlight secures \$145m to build Israeli project
Banks Renewables	Seven projects	224	€92m	UK	Santander/National Australia Bank	Banks secures £82m for refinancing deal
DTEK	Primorskaya	99	€90m	Ukraine	Bayerische Landesbank-led group	Ukraine's DTEK reached €90m close on 99MW
Invis Energy	Unnamed	43	€75m	Ireland	Nord LB/Asper Investment Manager	Invis reaches close on 43MW Irish scheme
Terna Energy	Gopher Creek	158	€56m	US	Copenhagen Infrastructure Partners	Terna wins CIP backing for 158MW in Texas
The Blue Circle/TSV Investments	Dam Nai	40	€39m	Vietnam	-	Vietnamese project achieves \$45m close
Engie	Live Oak	200	-	US	Bank of America Merrill Lynch	Engie wins BAML backing for 200MW in US
Lekela Power	Taiba N'Diaye	159	-	Senegal	OPIC/EKF	Lekela closes on pioneering Senegal project
Luxcara	Eikeland-Steinsland	155	-	Norway	Investors led by Munich Re	Luxcara finances 155MW scheme in Norway
Windlab	Lakeland	104	-	Australia	InfraRed Capital Partners	InfraRed provide 100% equity for Lakeland

\*Transactions converted to € for ease of comparison

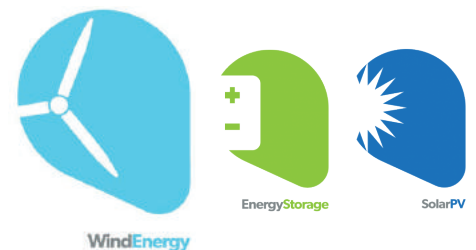
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# CORPORATE M&A DATABANK

In each Finance Quarterly, we cover the most notable corporate M&A deals in wind in the last quarter, and look at some of the most interesting.

**I**t has been another busy quarter for buyouts in the US wind sector. Ørsted grabbed headlines in August as it re-entered the onshore market by buying Lincoln Clean Energy for \$580m; and Starwood picked up GE Capital's energy finance arm too.

However, one big deal that completed with little fanfare was the buyout of three arms of NRG Energy for \$1.35bn by Global Infrastructure Partners. NRG has now been re-named Clearway is focused on finding development projects.

This is as well as the sizeable portfolio that Clearway already owns. It has an

operating portfolio of 2.8GW wind farms, 1.1GW of utility-scale solar, and 300MW of distributed solar. It also has an 8.9GW development pipeline across the sectors, and provides maintenance and management services for 4.1GW.

This gives the newly-named Clearway a strong platform, and the financial clout of GIP to keep growing. In August, GIP said it was bolstering the firm by buying a 4.7GW solar development portfolio from SunPower. We expect to hear a lot more from Clearway in the coming year.

If we've missed your big deal, tell us at [editorial@awordaboutwind.com](mailto:editorial@awordaboutwind.com)

## DEALS DONE: M&A DEALS IN WIND (COMPLETED Q3 2018)

TARGET	BUYER	DEAL VALUE*	COMMENT	TARGET COUNTRY	BUYER COUNTRY
GE Capital energy arm	Starwood Prop. Trust	€2.2bn	Starwood buys GE Capital energy finance arm	US	US
NRG Energy	GIP	€1.2bn	GIP closes \$1.35bn deal for three NRG arms	US	US
Lincoln Clean Energy	Ørsted	€501m	Ørsted re-enters onshore with Lincoln buyout	US	Denmark
Danske Commodities	Equinor	€400m	Equinor buys energy trading firm for €400m	Denmark	Norway
CDPQ	CLP India	€319m	Canada's La Caisse to buy 40% of India's CLP	India	Canada
Stena Renewable	AMF	€70m	Swedish fund buys 35% of Norwegian firm...	Norway	Sweden
Stena Renewable	KLP	€61m	...and Norwegian insurance firm buys 30%	Norway	Norway
Element Power	Statkraft	-	Statkraft buys Element's onshore development arm	UK	Norway
EverPower	Innogy	-	Innogy buys EverPower's 2GW onshore arm	US	Germany
Yushan Energy	Mitsui & Co.	-	Mitsui enters Taiwan by buying 50% of Yushan	Singapore	Japan
Kingspan Env.	SD Group	-	Japan's SD buys turbines arm of UK's Kingspan	UK	Japan
ACWA Power	Public Inv. Fund	-	Saudi wealth fund buys 15.2% of ACWA	Saudi Arabia	Saudi Arabia
Njordr	Norsk Hydro	-	Aluminium giant buys 34% of wind developer	Norway	Norway
WKN	PNE	-	PNE takes full control of WKN with 10.9% stake	Germany	Germany
AM Wind	Brookstone Partners	-	US firm Brookstone acquires Morocco-based AM	Morocco	US
Windfor	Falck Renewables	-	Falck buys Italian wind advisor Windfor	Italy	Italy
Nissan car battery unit	Envision	-	China's Envision buys Nissan's car battery unit	Japan	China
SAE Vind	Statkraft	-	Statkraft buys SAE Vind for onshore growth	Norway	Norway

## FIVE TO WATCH: ONGOING WIND M&A DEALS

TARGET	BIDDER	DEAL VALUE*	COMMENT	TARGET COUNTRY	BIDDER COUNTRY	STAGE
Innogy	E.On	€60bn	Eon and RWE agree €60bn tie-up including Innogy	Germany	Germany	Deal Agreed
EDP	China Three Gorges	€9bn	CTG negotiates €9bn EDP buyout for green push	Portugal	China	Early Stage
Bow Power	Brookfield	€700m	Brookfield in talks to buy Saeta's sister firm Bow	Spain	Canada	Early Stage
Tilt Renewables	Mercury	€400m	Mercury negotiates A\$650m takeover offer	Australia	New Zealand	Early Stage
Polenergia	Kulczyk Investments	€123m	Kulczyk bids to takeover developer Polenergia	Poland	Poland	Early Stage

\*Transactions converted to € for ease of comparison



# EMERGING MARKETS

## ATTRACTIVENESS INDEX 2018

*Developing nations continue to open up exciting opportunities for investors. Ilaria Valtimora ranks 30 of the most interesting*

**T**he trade war between China and the United States continues to make headlines as President Jinping has shown that he's happy to go toe-to-toe with President Trump.

In wind, Chinese manufacturers are gearing up for a fight too. One major talking point at the Global Wind Summit in Hamburg in September was how Chinese firms would soon be able to compete on quality against their European counterparts, not just price; and how strong growth in Asia would help them as Europe struggles.

These growth forecasts and willingness to compete globally are just two reasons why China has held onto its position at the top of our Emerging Markets Attractiveness Index for a second year. It is also helping to drive investors' interest in neighbouring Asian markets.

The statistics don't all make for good reading. Wind installations in China last year were 16% down year-on-year. However, the 19.7GW of new capacity still made it the largest market globally by installations – almost three times larger than Trump's America (7GW). Likewise, investments in renewables in China hit a record \$132.6bn, with an annual 24% increase compared to 2016.

These deals contributed to the Asian superpower's 6.9% economic growth in 2017. The International Monetary Fund is forecasting average GDP growth of



Tough talk: President Trump and President Jinping at G20 Summit

Source: The White House

6.2% in the five years from 2018 to 2022, and this is set to mark a shift from high-speed growth to high-quality growth, where renewables will play a key role.

Wind investors are set to benefit. The government this year announced a shift from feed-in tariffs to competitive auctions for utility-scale onshore and offshore wind farms, which is set to open up the market to foreign players.

The country has also been looking at how to loosen restrictions on foreign investors, in particular by making easier the process for commercial partnerships. These are among the reasons that China has topped our ranking again this year.

But which countries make up the rest of our Emerging Markets Attractiveness Index? This year, we have expanded the index by 50%, and analysed 30 key economies in Europe, Africa, Asia and Latin America based on factors key to investors, including: political and economic stability, ease of doing business, growth and wind potential. Here is our region-by-region rundown:

### Asia

Asian countries are among the best-performing markets for wind's emerging

markets investors this year. China, India and new entry Taiwan have topped our table, mainly because they are driven by strong business policies.

India is set to be the largest growth market for energy by the late 2020s, according to BP's New Energy Outlook report in October. In our index it was the second-fastest country in terms of economic and population growth.

Bottlenecks and administrative hurdles in areas including tax and infrastructure are the big areas for improvement, but the country is looking at ways to facilitate foreign investment and the interest showed by international companies including the Canada Pension Plan Investment Board, Engie and HSBC is a testament of that.

New entrant Taiwan makes it straight into our top five. While the small size of its wind market at present has weighed on its wind growth rating, its offshore auctions and interest showed by investors have made it one of the most attractive emerging markets.

A stable economic and political environment, and ambitious renewable energy goals, have made Thailand an



## OUR TOP 30 EMERGING NATIONS FOR WIND

COUNTRY	STABILITY RATING	COUNTRY GROWTH RATING	WIND GROWTH RATING	EMAI 2018
China	14.73	11.38	18.50	44.60
India	9.54	12.96	13.37	35.88
Chile	17.40	7.42	10.44	35.26
Taiwan	19.18	5.39	9.84	34.41
Mexico	15.84	7.36	10.73	33.93
Turkey	12.60	8.39	11.88	32.87
Estonia	19.36	7.91	5.50	32.77
South Africa	9.34	7.63	15.08	32.05
Lithuania	17.83	4.92	8.66	31.40
Thailand	16.58	7.20	6.95	30.73
Kenya	8.18	16.20	6.35	30.72
Poland	17.17	6.80	6.66	30.63
Vietnam	9.55	11.89	9.06	30.50
Ethiopia	2.64	14.44	12.81	29.90
Uruguay	10.55	7.46	11.71	29.72
Morocco	11.41	9.43	7.90	28.74
Jordan	6.79	11.93	9.67	28.39
Saudi Arabia	12.60	8.61	6.50	27.70
Costa Rica	9.97	9.66	7.82	27.45
Brazil	6.10	5.78	12.91	24.79
Egypt	3.99	10.43	9.69	24.11
Colombia	12.66	6.91	4.50	24.08
Croatia	11.86	4.30	6.66	22.81
Russia	14.11	3.05	5.50	22.66
Tunisia	7.70	6.48	8.40	22.58
Argentina	5.94	8.07	7.97	21.98
Pakistan	3.49	12.26	5.13	20.88
Ghana	4.48	13.07	2.50	20.05
Greece	8.32	3.16	8.38	19.86
Ukraine	7.13	2.54	5.09	14.76

interesting market for investors too. Wind growth has been weak during the last five years, but investment plans by local developers including Wind Energy Holdings make the country one to watch in the coming years.

Turkey also remains an attractive option for wind investors and, with a target to add 16GW of wind capacity by 2030 and a 1.2GW planned offshore wind auction, there is plenty for investors to get stuck into. However, political uncertainty weighs on its outlook.

In the Gulf, Saudi Arabia's plan to add 9.5GW of renewables by 2023 by attracting \$50bn of investment is likely to lure investors in the coming years. The country has been vocal about its ambitions to build wind projects for years, but has made little progress so far to make a start on such plans, and its sluggish approach to solar - where total capacity was only 50MW at the end of 2017 - is another reason to doubt its positive talk. This year's 400MW wind auction is good, but more commitment from the government is needed.

Political risks are big hurdles for wind investors in Jordan and Pakistan too.

## HOW WE RANKED THEM

We came up with the rankings for these 30 emerging markets by combining six indices in these three categories:

**Stability rating:** We analysed the risks of investing in these 30 emerging markets by looking at two well-respected indices:

- Standard & Poor's Sovereign Credit Rating analysis, which gives an indication of the level of risk associated with investing in a particular country.

- The World Bank's Ease of Doing Business analysis, which ranks economies based on how supportive the regulatory regime is for businesses.

We ranked the risks in each of these

studies using a score between one and ten – ten is the least risky and one is the riskiest – and added them together.

This means that the highest risk rating a country could score is 20.

**Country Growth Rating:** We analysed potential growth in electricity demand by looking at the potential rate of growth in the economy and in the population. This gives us an indication of how much growth investors are likely to see in electricity demand from businesses and individuals. This data is from the International Monetary Fund.

This involved comparing the rate of Per Capita GDP over the last five years (2013-2017) with projections for growth over the next five years (2018-2022).

We then rated each of these factors out of ten, with ten being the fastest-growing and one the slowest.

**Wind Growth Rating:** We analysed the potential growth in wind by looking at two factors.

First, we looked at the rate of growth in wind capacity over the last five years, and weighted it using the total population of each country. This gives us an indication of the markets that have seen the fastest growth in wind per capita thus far. We gave each market a score between one and ten, with ten being the fastest-growing. This data came from the Global Wind Energy Council, WindEurope and International Monetary Fund.

Second, we analysed the policies in each country to get a sense of how supportive each is of growth in wind, and assigned a score between one and ten based on that.

**Overall:** We added up the overall scores in these three categories – out of 20 for country risk, out of 20 for country growth, and out of 20 for wind potential – to come up with an overall score out of 60.

## THE POLICY PICTURE

COUNTRY	TARGETS FOR RENEWABLE ENERGY GENERATION
Argentina	20% by 2025
Brazil	24GW of installed wind capacity by 2024
Chile	60% by 2035 and 70% by 2050
China	Annual additions of about 15GW of wind by 2021
Colombia	30% from wind and solar by 2030
Costa Rica	Becoming carbon neutral by 2021
Croatia	20% by 2020
Egypt	20% by 2022 using renewable energies, of which 12% is wind
Estonia	25% by 2020, 50% by 2030
Ethiopia	17GW by 2020, of which 5.2GW of wind
Ghana	10% by 2020
Greece	2.4GW of new renewables by 2020
India	227GW by 2022
Jordan	19GW by 2035, of which 3GW of wind
Kenya	1GW of wind by 2020 and 3GW of wind by 2030
Lithuania	45% by 2030, 100% by 2050
Mexico	25% by 2018, 30% by 2021, and 35% of non-hydro renewables by 2025
Morocco	42% by 2020, including 2GW of wind, and of 52% by 2030
Pakistan	5% by 2030
Poland	15% by 2020
Russia	3.35GW of wind by 2024
Saudi Arabia	9.5GW of renewables by 2023
South Africa	8.1GW of wind by 2030
Taiwan	100% by 2030
Thailand	19GW by 2035, of which 3GW of wind
Tunisia	30% by 2030
Turkey	16GW of wind by 2030
Ukraine	11% by 2020
Uruguay	100% by 2021
Vietnam	800MW of wind by 2020, and 6GW by 2030

### Africa

Our index shows that South Africa is currently the most interesting market for wind investors in Africa. State utility Eskom finally signed 27 outstanding power purchase agreements this year and the government led by Cyril Ramaphosa has committed to add 8.1GW of wind by 2030, which could be a new start for the South African market.

Kenya and Morocco have enjoyed sustained economic and population growth, which are set to drive an increase in energy demand in the coming years. As the saga over transmission for Lake Turkana in Kenya is finally coming to end, it should be easier for developers now to build new projects.

In Morocco, new wind installations have stalled over the past four years, but its strategic location in the European grid and connections to Europe will continue to attract investors.

Ethiopia can count on sustained growth and ambitious wind energy targets of 5.2GW by 2020. These could be too ambitious, given the current 324MW installed, and the country's policies and risk for investors require improvement. However, both are positive indicators.

We find Egypt and Ghana towards the bottom of our ranking, even though both countries enjoy decent economic growth forecasts. The wind market in Egypt has attracted interest from international investors over the last 12 months, but political risks weigh over future investment decisions. Meanwhile, political risks and incentive for businesses to invest weigh on the wind growth potential of Ghana.

Finally, despite a 500MW wind tender this year, political uncertainty is a big concern for investors in Tunisia.

### Latin America

Chile and Mexico feature in our top five and are among the region's most compelling markets, due to their encouraging business environment and wind energy policies.

Both countries were penalised by slow economic growth in the five years from 2013 to 2017, but the International Monetary Fund has forecast a pick up in the economic activity of both countries from this year.

In addition, interest from international investors including Enel Green Power, La Caisse de dépôt et placement du Québec, Iberdrola and Mainstream Renewable Power helped both to secure places in our top five for the second year in a row.

Costa Rica and Uruguay have the most ambitious renewables targets in the list. But, as they are both small markets, the risk is that they would reach saturation quickly – and that is why they occupy middling positions in our final line-up.

Brazil also has good potential for wind investors. The size of the market, attractive wind resources and an ambitious target of 24GW of installed wind capacity by 2024 are key for investors, but weak economic performances and administrative hurdles weigh on the country's performance in our index.

Despite high potential wind output, the previous recession continues to penalise Argentina, and in particular the availability of financing to get new wind projects to financial close.

Finally, one new entry this year is Colombia. The country has huge wind potential, despite its 19MW of installed capacity. Political support is needed to unleash its potential and a 1GW planned renewables auction for 2019 could be a good start.

### Europe

This year, we have also added Europe's emerging markets to the list. These include Estonia and Lithuania, which feature in our top ten, thanks to ambitious goals and recent deals.

Both markets are currently small, but their governments are working on policies to attract investors and end their energy dependence on Russia, so we are likely to hear more about them.

Poland is also working on policies to rekindle investors' confidence after three years of damaging policies, as well as seeking to start growth in its offshore wind market, with companies including Equinor showing their interest. Onshore and offshore wind auctions are due soon, but investors need stronger political commitments.

Political and economic uncertainty also weighs on the performance of Ukraine and Greece, which are at the bottom of our ranking. Greece's slightly higher position is a reflection on the fact that its wind market is slowly awakening, with a 171MW wind auction held in July.

Finally, we have seen the wind market in Russia take off in the last year. This is one of the most unlikely emerging markets we have seen in recent years given its strong reliance on oil revenues, but it has a goal to add 3.35GW of wind by 2024. Political risks remain the main concerns for investors here as, like China, the country is in its own trade war with Trump and the US.

No doubt this will remain a feature of the global economy, and the attractiveness of particular emerging markets, for the rest of Trump's presidential tenure. ■



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A WORD ABOUT WIND

