Global overview

Bryony Collins

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CLIMATESCOPE 2016
WWW.GLOBAL-CLIMATESCOPE.ORG
WHAT IS CLIMATESCOPE?

- An index ranking emerging economies on their investment environments for clean energy
- Online tool and public data resource
- Readership: investors, energy professionals, policymakers, general public

www.global-climatescope.org
CLIMATESCOPE COUNTRY COVERAGE
2012 TO 2017

26 Latin American & Caribbean nations
19 sub-Saharan Africa nations
3 Middle-East nations
10 Asian countries
13 Central Asia and Eastern Europe countries

Since 2012
Since 2014
Since 2016
Starting 2017

Financed by the UK government
71 Countries for 2017
## CLIMATESCOPE 2015 AFRICA – TOP 10

<table>
<thead>
<tr>
<th>REGIONAL RANK</th>
<th>GLOBAL RANK</th>
<th>COUNTRY</th>
<th>GLOBAL SCORE</th>
<th>TREND</th>
<th>SCORE RANGE</th>
<th>GRID</th>
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<tbody>
<tr>
<td>01</td>
<td>04</td>
<td>South Africa</td>
<td>1.91</td>
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<tr>
<td>02</td>
<td>06</td>
<td>Kenya</td>
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<td>07</td>
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<td>Ethiopia</td>
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<td>08</td>
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<td>Ghana</td>
<td>1.07</td>
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<tr>
<td>09</td>
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<td>Malawi</td>
<td>1.01</td>
<td></td>
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<tr>
<td>10</td>
<td>34</td>
<td>Zambia</td>
<td>0.99</td>
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**ANNUAL CLEAN ENERGY INVESTMENT, CLIMATESCOPE VS OECD COUNTRIES ($BN), 2011-2015**

Climatescope countries attract more investment in clean energy than OECD in 2015

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<tr>
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<tbody>
<tr>
<td><strong>Biomass</strong></td>
<td>20.8</td>
<td>42.6</td>
<td>30.9</td>
<td>47.2</td>
<td>34.1</td>
<td>46.4</td>
<td>50.2</td>
<td>71.8</td>
<td>73.3</td>
<td>71.8</td>
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<tr>
<td><strong>Other</strong></td>
<td>87.0</td>
<td>95.9</td>
<td>97.6</td>
<td>153.8</td>
<td>139.0</td>
<td>146.1</td>
<td>154.1</td>
<td>153.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Small Hydro</strong></td>
<td>42.6</td>
<td>95.9</td>
<td>97.6</td>
<td>153.8</td>
<td>139.0</td>
<td>146.1</td>
<td>154.1</td>
<td>153.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Wind</strong></td>
<td>95.9</td>
<td>153.8</td>
<td>139.0</td>
<td>146.1</td>
<td>154.1</td>
<td>153.7</td>
<td></td>
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<td></td>
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<tr>
<td><strong>Solar</strong></td>
<td>95.9</td>
<td>153.8</td>
<td>139.0</td>
<td>146.1</td>
<td>154.1</td>
<td>153.7</td>
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Note: Climatescope and OECD countries account for more than 95% of global new clean energy investment over 2011-2015. Climatescope figures include three new MENA states added in Climatescope 2016. Projects smaller than 1MW are not included. Chile and Mexico are included in both OECD and Climatescope.

Source: Climatescope 2016
NEW INVESTMENT IN CLEAN ENERGY IN SUB-SAHARAN AFRICA 2004-16 ($MILLIONS)

South Africa makes up 74% of clean energy investment in sub-Saharan Africa since 2012
58% of new clean energy investment in sub-Saharan Africa in 2015 was in solar
Off-grid and mini grid solutions are on the rise particularly in East Africa

Note: Total values include estimates for undisclosed deals. Includes corporate and government R&D, and spending for digital energy and energy storage projects.

Source: Bloomberg New Energy Finance
CLIMATESCOPE CURRENT PARAMETERS

I – ENABLING FRAMEWORK
- Renewable energy policy, power sector structure and regulation, clean energy capacity, price dynamics, demand
- 40% of final score

II – FINANCING & INVESTMENT
- Clean energy investment, VC/PE investments, loans, grants, financing cost
- 30% of final score

III – VALUE CHAINS
- Financial organisations, renewable energy technology specific and service companies
- 15% of the score

IV – GHG MANAGEMENT
- NDC -type, -coverage, -ambition long term decarbonisation strategy, domestic climate laws and regulations, corporate action
- 15% of the score

50/192 INDICATORS/SUB-INDICATORS FEED INTO THESE 4 PARAMETERS
WHERE COUNTRIES ARE INVESTMENT READY...

**Stable government** with institutional strength and good public finances

**Supportive policy** for renewable energy – feed-in tariffs, auctions, RECs, tax reductions, grants, loan guarantees

A growing power demand and **openness to IPPs** (no state monopoly) – 23% of generation, 2013-2015 in SSA

**Financially sound offtakers**, including state utility if sole offtaker

**Power prices** – stable and equitable

**Commercial investors in country** – active in project financing, development and collaboration

**Local expertise** for renewable energy – project management, manufacturing, construction, operation.

**Effective grid management** – to accommodate additional renewable energy

**Land agreement** – clear, fair and equitable

Openness to self-use projects and **distributed energy** – pay as you go possible
AUCTIONS FOR SOLAR POWER

Chile - $29/MWh

Zambia - $60/MWh

UAE - $24/MWh

Denmark - $34/MWh (offshore wind)

Mexico - $27/MWh

Chile - $29/MWh
BARRIERS TO CLEAN ENERGY BUILD

Curtailment - insufficient transmission infrastructure

Wind energy curtailed in China - 17% on average in 2016 as wind generation reached 300TWh

Payment delays

Policy barriers

Cumulative Share of solar and wind of total installed capacity

China

Uruguay

2010 11 12 13 14 15

3.1% 4.7% 5.7% 7.3% 9.0% 11.4%

1.5% 1.6% 1.8% 1.9% 13.0% 22.7%
OFF-GRID OPPORTUNITIES

- $276m invested in off-grid companies in 2015
- People living off the grid spend annually on lighting and charging
- Sector could be a $3.1bn 2020: BNEF
- BIG NAMES: EDF, Investec, Off Electric, BBOX, Mobisol

Megawatts of Installed Generation Capacity per Million Inhabitants, 2015

<table>
<thead>
<tr>
<th>Region</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>592</td>
</tr>
<tr>
<td>Asia</td>
<td>492</td>
</tr>
<tr>
<td>Climatescope</td>
<td>452</td>
</tr>
<tr>
<td>Middle East</td>
<td>411</td>
</tr>
<tr>
<td>Africa</td>
<td>117</td>
</tr>
</tbody>
</table>

Estimated Number of Households Using Small-Scale Solar Systems, (millions), 2015

<table>
<thead>
<tr>
<th>Region</th>
<th>Households (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>8.1</td>
</tr>
<tr>
<td>Other SSA</td>
<td>3.2</td>
</tr>
<tr>
<td>Kenya</td>
<td>2.7</td>
</tr>
<tr>
<td>Tanzania</td>
<td>2.5</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>2.0</td>
</tr>
<tr>
<td>Other Asia</td>
<td>0.4</td>
</tr>
<tr>
<td>Nigeria</td>
<td>0.3</td>
</tr>
</tbody>
</table>
Cameroon has seen an average annual growth of 3.6% in its economy over the last decade. It has a relatively high electrification rate of 46% nationally. The government aims to increase this to 75% nationally by 2030, reaching 3GW of overall power capacity by 2020 in the process.

The country has the third largest hydropower potential on the continent, estimated at 26GW, of which 723MW has been developed: accounting for 57% of total installed capacity. Thermal capacity accounts for the rest, including a 215MW gas power plant. The long term Energy Sector Development Plan and the Rural Electrification Master Plan have the goal to electrify 660 localities through grid extension and the development of mini-grids.

Cameroon was one of the first countries in Africa to open its energy sector to private investment. The Electricity Law of 1996 resulted in the entry of AES as a majority shareholder of Sonel, the national utility, in 2001. The company obtained a 20-year transmission and distribution concession and owns most of the existing generation capacity. In 2014 Sonel was acquired by Acta, the British private equity fund, and rebranded as Enaco.

The law of 1996 made possible the involvement of independent power producers. As a result, the Dibamba Power Development Company and the Kribi Power Development Company commissioned an 88MW heavy fuel oil power station and a 215MW gas power station in 2011 and 2013, respectively. Both companies were controlled by AES and acquired in 2014 by Global. Also under the law, a number of agencies were constituted including the Rural Electrification Agency (ARE), created in 1999, the Electric Sector Regulation Agency (ARSEL), which sets electricity tariffs, and the Electricity Development Corporation (EDC), created in 2006 with the mandate to develop, own and operate hydropower assets.

A new phase of reform in the power sector started in 2011, with the promulgation of a new electricity law.

Sources: http://global-climatescope.org/en/country/cameroon/#/details
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Energy Smart Technologies
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Carbon and RECs

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EMEA Service
Applied Research
Events and Workshops

Unique analysis, tools and data for decision-makers driving change in the energy system

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