ICEF ROADMAP

What business needs

Ben Vickers

22 April 2016
WHAT BUSINESSES AND INVESTORS NEED
DIFFERENT GRANULARITY FOR DIFFERENT AUDIENCES

THE IMPACT OF THE PARIS AGREEMENT ON AUSTRALIA
by Kobad Bhavnagri / 07 April 2016

EXECUTIVE SUMMARY

The Paris Agreement has drawn an ambitious roadmap for the eventual decarbonisation of the world economy. If major economies follow the course, Australia will be carried along for the ride. This Research Note discusses how the Paris process could play out, how global movements will affect Australia, what emissions reduction targets to plan for, and what all this means for policy, the power sector and market participants.

- The Paris Agreement has established a process to formalise and coordinate voluntary emissions reductions by nation states. In our view, this pragmatic and flexible bottom-up approach stands a good chance of inspiring fresh waves of national effort on decarbonisation.

- Countries are likely to pledge stronger contributions through time as the business-as-usual (BAU) emissions trajectories of their economies are revised down, in large part due to the continually improving economics of clean energy. This in turn encourages greater deployment, which further drives down costs, creating a reinforcing cycle we dub ‘the carbon-clean energy virtuous circle’.

- In our view, the carbon-clean energy virtuous circle suggests that Australia’s major trading partners could well pledge stronger 2030 emissions reduction commitments at the five-yearly review points in 2020 and 2025. Australia – which is essentially a follower on climate policy – will likely follow suit as it seeks to keep pace with peers and retain its place as a ‘diplomatic middle power’.

- Australia’s current emissions reduction target of 26-28% below 2005 levels by 2030 should thus be regarded as a low-case scenario. Australia’s final 2030 target is likely to be higher and somewhere between this and a high-case scenario of 65-80%, which is Australia’s fair-share of burden to limit warming to 2°C.

- Australia’s current climate policy framework is insufficient to meet the current targets, let alone deeper commitments. Market participants should thus expect a more vigorous policy environment in the years ahead.

BY THE NUMBERS

Current policies fall around 443Mt short of achieving the current 2030 target.

This gap increases to 1,240Mt for a 45% target and 1,855Mt for 63%.
EXECUTIVE SUMMARY

Mexico's first power auction was marked by drama, first in a false-start announcement of the wrong winners then later by producing the lowest subsidy-free solar project contract we have ever seen. The auction contracted 5.4 TWh of clean energy power from wind and solar and another 5.4m clean energy certificates (CEls) at an average price of $47.6/MWh.

- This slide deck accompanies the webinar on Mexico's first power auction. The webinar was held on 12 April 2016.
UPDATES MAKE FOR A BETTER STORY

**HI 2016 SUB-SAHARAN AFRICA MARKET OUTLOOK**

Clean energy investment across sub-Saharan Africa in 2016 reached $5.4bn, topping the preceding year’s total by over $2.8bn. This increase was mainly due to the delayed financial close of winning projects in South Africa’s auction programme. We anticipate continued growth in...

**HI 2016 CHINA MARKET OUTLOOK: AGE OF TRANSFORMATION**

China’s government is trying to shift its energy policy towards providing cleaner and more efficient sources of electricity. Lower industrial output will help the country achieve its climate obligations and facilitate environmental progress. But more ambitious build out...

**HI 2016 AMER LEVELISED COST OF ELECTRICITY UPDATE**

This is the HI 2016 update of our levelised cost of electricity estimates for the Americas (AMER) region. In this iteration, solar continues to close the gap on wind, but cost reductions across all renewable technologies are still overshadowed by tumbling oil and gas prices...

**HI 2016 APAC LEVELISED COST OF ELECTRICITY UPDATE**

Published: 12 Apr 2016
Author: Nick Dunan
### AMERICAS INSTALLED CAPACITY 2012 AND 2040 AND PROJECTED CAPACITY ADDITIONS, BY TECHNOLOGY (GW)

#### 2012
- 1,571GW
  - Fossil Fuels: 24%
  - Nuclear: 4%
  - Solar: 61%
  - Other renewables: 8%

#### 2040
- 2,696GW
  - Fossil Fuels: 27%
  - Nuclear: 26%
  - Solar: 19%
  - Other renewables: 13%
  - Wind: 12%
  - Flexible capacity: 26%

Source: Bloomberg New Energy Finance
CAPITAL INVESTMENT BY REGION AND BY TECHNOLOGY, 2015-40 ($BN REAL)

Source: Bloomberg New Energy Finance
IMPACT OF FLOATING FOUNDATION ON CONVENTIONAL CAPEX BREAKDOWN, 2015 (%)

Note:

Development Turbine nacelle assembly Blades Castings and forgings Drive Train Tower Turbine Other Cables Foundations Substations Installation Turbine Installation Foundations

4% 2% 12% 3% 14% 7% 7% 6% 20% 7% 8% 4% 7%

Capex

Development Wind turbine supply Balance of plant Installation Impacted by floating foundations

Source: Bloomberg New Energy Finance

22 April 2016
Since its inception in 2008, the Future of Energy Summit has featured a unique convergence of the old and the new - traditional players and advanced-energy leaders. It continues to create an environment for making new connections, and serves as a forum to discuss the critical energy issues of today and the next decade. The 2016 Summit was the 9th edition of our Global Future of Energy Summit series. Over two days, we convened senior executives from across the industry to discuss the most important issues in energy.

"Cheap oil, cheap gas, cheap renewables. There is an abundance of supply that we have not had for decades and this is driving intense competition. It also gives us the theme of the 2016 Summit - the Age of Plenty, the Age of Competition." — Michael Liebreich

**AGENDA**
We have structured the agenda to cover the key factors in plenary sessions. These include technological innovation, the changing policy landscape in different regions, and the strategies of energy utilities and power equipment manufacturers. In addition, we also have a series of break-out tracks that enabled more focused discussion to take place on specific topics. These tracks discussed energy demand, energy supply and the Americas. We think of this as the “T” shaped agenda - connecting the dots with cross cutting discussion, as well as diving deep on key issues.
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<th>Type of Insight</th>
<th>Pages</th>
<th>Attachments</th>
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<td>Q&amp;A with EPA administrator Gina McCarthy</td>
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<td>Q&amp;A with Southern Co on power strategy</td>
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<td>11 Apr 2016</td>
<td>Q&amp;A with Porsche on its Mission E Electric Vehicle</td>
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<td>22 Mar 2016</td>
<td>Q&amp;A on Dow's carbon mitigation for Rio Olympics</td>
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<td>08 Mar 2016</td>
<td>Q&amp;A on India’s coal tax hike with energy minister</td>
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<td>16 Mar 2016</td>
<td>Q&amp;A with India’s renewables financing company IIFCL</td>
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<td>29 Feb 2016</td>
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<td>15 Feb 2016</td>
<td>Q&amp;A: LEDs’ role in cutting electricity demand: Philips</td>
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<td>15 Feb 2016</td>
<td>Q&amp;A: Pakistan’s ‘immense potential’</td>
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<td>Ford’s ‘strategic investment’ on electrification: Q&amp;A</td>
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<td>Q&amp;A with Nestle on carbon-cutting innovation</td>
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</table>
MARKET SHARE IN CCS TECHNOLOGIES

Note: The pool of projects considered here includes all projects in our high case forecast in Figure 1.

Source: Bloomberg New Energy Finance
## FUNDS COMMITTED

<table>
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<th>Country</th>
<th>Date</th>
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<td>Enel Cristalândia Wind Portfolio</td>
<td>Asset Finance - New build</td>
<td>Wind</td>
<td>USD 190m</td>
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<td>CPI Lingchuan Fenglingshan Wind Farm Phase I</td>
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<td>06 Apr 2016</td>
<td>Huanghe HydroPower Haixi Wula Chaka Yanhu Wind Farm</td>
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<td>USD 77.2m</td>
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<td>USD 60.52m</td>
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<td>CPFL Renovaveis Campo dos Ventos and Sao Benedito Wind Portfolio Refinancing</td>
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<td>USD 176.4m</td>
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Source: Bloomberg New Energy Finance
HISTORIC AND FUTURE COST OF FLOATING AND CONVENTIONAL FOUNDATIONS, 2005-20 (USDM/MW)

Historic learning rate for floating foundations = 34%

Floating foundation in 2020: $6.02m/MW
Conventional foundation in 2020: $0.74m/MW

Source: Bloomberg New Energy Finance, METI, Statoil

22 April 2016
Note: Values from 2010-2014 are based on BNEF’s annual battery price index. Cumulative production is based on total EVs sold and their respective battery pack size.

Source: Bloomberg New Energy Finance.
What works:

- Being close to investors and close to business
- Having numbers and the names that go with those numbers
- And their phone number
- Giving information in the right format for each audience
- Defining the measures of success, in addition to markets
- Show what people are missing
- Don’t forget business must decide where to put its money
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