Solar PV opportunities and policy barriers
The Top Ten stories of The Great Transition
Top ten stories about climate-change threat and energy-transition opportunity in the post Paris world

1. Policymakers are getting serious
2. Civil society has awoken in critical mass
3. Regulators are beginning to regulate
4. Disruption is moving faster than most think
5. Utilities are racing to escape a death spiral
6. Divestment from incumbency has become a snowball
7. Investor engagement with incumbency threatens most capex
8. The shale boom is going bust
9. The oil and gas industry will soon be in a death spiral too
10. The legal system is fast becoming a driver for transition
Price of a solar panel per W

$101

2 MW

Global solar installed

>64 GW

...meaning the solar story is about be become even more impressive
Price of a solar panel per W

$101

Global solar installed

>64 GW

Forty years
“Jeremy’s front-line chronicle of events in energy and climate is fascinating”

Richard Branson, Virgin

“I can’t recommend this highly enough...it comes across as a thriller.”

Sami Grover, Treehugger.com

“Daringly funny, starkly terrifying, poetic, personal and intensely urgent”

Josh Fox, Emmy-winning film director

Free download: www.jeremyleggett.net

Book orders: on amazon, blurb – all £ to SolarAid
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30th Nov 2015

The Paris Climate Summit, COP21

3 possible outcome scenarios:

• No signal
• Contested signal
• Clear signal
Clear signal: Act de Triumph
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The vital role of sub-national actors

e.g. 1,000 cities committed to 100% renewable energy
The vital role of sub-national actors

*E.g.* >50 corporations committed to 100% renewable energy
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The “carbon bubble” of “unburnable carbon” can lead to “stranded assets”
“Climate change is the biggest issue for the future”

Stranded assets: “..investors must be given the data to “invest accordingly”

Mark Carney
Governor
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Apple wants to start mass producing electric cars as soon as 2020.
“In 50 years, when we ship off the last barrel of petrol, we will not be sad. I promise you, my brothers and sisters, we will be celebrating.”

Crown Prince Shaikh Mohammad Bin Zayed Al Nahyan
Abu Dhabi
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All major EU utilities aligned behind GdF Suez

Business model:
Gas can do everything

Renewables policy:
End all subsidies

Top fracking prospect:
UK

Gerard Mestrallet, CEO, GDF Suez
World Energy Congress, October 2013
The fall of fossil fuels and the rise of renewables

Bloomberg NEF projections
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July 2012

The origin of the divestment movement

Unburnable Carbon – Are the world’s financial markets carrying a carbon bubble?
e.g. 1,000 cities commit to 100% renewable energy

The vital role of non-state actors as of September 22nd 2015: 400 institutions worth $2.6 trillion

as of December 2015: >500 institutions worth $3.4 trillion
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Warning of wasted capital and stranded assets

Capital flows in the top 200 public oil, gas, and coal companies

Second report

19th Apr 2013
Big Oil struggles to justify soaring project costs

Total spend by the 3 companies in 2013: $120bn
About what US spent (in constant $) to put a man on the moon

Source: Wall Street Journal
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“Shale Drillers Feast on Junk Debt to Stay on Treadmill”

“Is the U.S. Shale Boom Going Bust?”

22nd Apr 2014
$108

© Hughes GSR Inc, 2014
(data from Drillinginfo, February, 2014)
It will take more than an oil rally to restart the US shale boom

"They weren’t just cutting skin deep. They were cutting into the meat and then pretty quickly into the bone."

Allen Gilmer, CEO Drilling Info

"It’s not really like just turning on the light switch."

Bill Thomas, chief executive EOG Resources

Source: Baker Hughes data in the Oil & Gas Journal
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Fossil fuels still have c 80% share of primary energy in 2035

Little change in annual demand growth, or oil and gas share

*Includes biofuels

2016 Energy Outlook Base case
Oil majors’ business model is under increasing pressure: FT

“Nightfall is coming”

Morgan Stanley: 19 of 230 projects realistic. $400bn expected to be cut.
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“Hague climate change judgment could inspire a global civil movement.”

24th Jun 2015
California to investigate whether Exxon Mobil lied about climate-change risks
Conclusions

• Paris will change everything, absent WW3 scenarios, including current bankability issues for solar

• On climate change, “Things are coming together just as things are falling apart”

• Expect energy-transition acceleration due to mutual renforcement of emerging megatrends

• Opportunities and threats are everywhere, fast-paced

• First and fast movers (going with the trends) best placed to be rewarded in the rapidly changing markets

• The key questions about The Great Transition are mostly about timing
Thank you

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