



Interesting perspective – ‘renewables’ growing but a long route ahead, despite electric car publicity.

Maybe self-driving will pass itself passed the pumps!

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Spot WTI Crude \$US/B	Edmonton Light \$US/B	Spot Henry Hub \$US/MMBtu	Spot AECO \$Cdn/GJ	Spot AECO Basis \$US/MMBtu	Currency \$US/\$Cdn
49.07 ↑	47.23 ↑	2.42 ↑	1.22 ↓	1.41 ↑	0.7825 ↑

Chart Watch

- 6** The Canadian Dollar closed over \$US 0.78
- 11** Cdn Light oil is trading at a narrow differential
- 23** US crude oil stocks fell by 3.2 MMB
- 30** Two rigs were added in the Bakken
- 33** Henry Hub has surged in recent weeks

Energy is a Battlefield

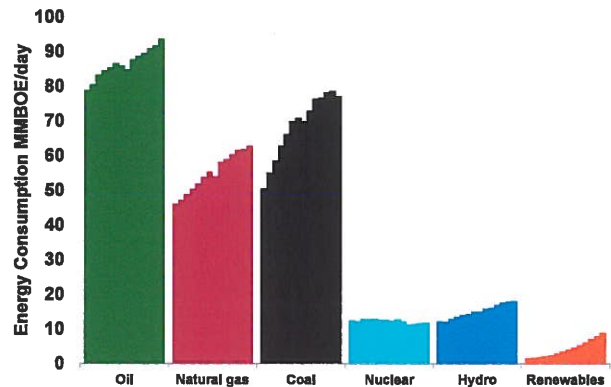
By Peter Tertzakian

The world buys about \$US 3.5 trillion worth of primary energy – coal, oil, natural gas, nukes and renewables – every year. Fighting for every Megajoule supplied to hungry consumers has become the mother of all market share battles.

Renewable energy systems continue to demonstrate impressive wins. Natural gas is also on the front lines, making gains with wind and solar in electrical power markets. Coal, the king of carbon is surrounded, wounded and in retreat. Oil is on a different battlefield altogether, advancing quickly and unchallenged while, nukes and hydro remain largely under the radar.

These are the high-level messages taken from the annual [BP Statistical Review](#), a mandatory read for energy pundits following the upstream energy battlefield. Released last week, the 65-year-old publication always gives a sobering view of the world's voracious energy needs, and how the market share of these six primary energy groups is changing.

Figure 1: World Energy Consumption 2002 to 2015



Source: BP Statistical Review, ARC Financial Corp.

First let's review our needs. Our global appetite for primary energy is enough to make anyone slap their forehead in disbelief: As of 2015, our scaled-up world of seven billion people is gorging on 22 million tonnes of coal, 93 million barrels of oil, 10 billion cubic metres of natural gas, 180,000 kilograms of uranium and millions of hectares of wind farms, solar panels and hydroelectric reservoirs *every single day*.

BP's retrospective numbers show that the world's top-line appetite for primary energy is still growing, albeit at a moderating pace: 1.0% in 2015 instead of 1.1% in 2014. That pullback doesn't sound like much self-discipline in an energy obese world. Candidly, it's not; but 1.0% is noticeably lower than the 2.5% average growth realized between 2000 and 2012. Slower overall demand growth means the fight for

Sources Bloomberg, CAODC, Baker Hughes, EIA, NOAA, CPC, IEA, Natural Resources Canada, Canadian Gas Association, ARC Financial Research
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market share is more competitive and less forgiving.

The 2015 supply data shows that renewables are still on a compounding uptrend growing by about 14% per year since 2000. Because the overall pull for more energy is moderating, most units of energy coming from wind, solar, geothermal or animal dung are now units stolen from one or more of the other energy suppliers, notably the coal producers.

BP's numbers show that coal producers not only lost market share in 2015, their total output shrunk by 1.8% – the first significant contraction in the absence of a financial crisis.

Oil's market share grew in 2015, because it has a lock on transportation. Most of the world's wheels on the road are still turned by 1.3 billion internal combustion engines. And with 50 million new piston-fired machines entering service every year, it's going to be many years before alternatives like electric cars dent the growth market, let alone penetrate the installed base. So it's not surprising that the BP data shows that oil grew by 1.9 MMB/d in 2015. It's cheap, compelling in its utility, and addictive to big-vehicle drivers at bottom of the barrel pricing.

BP's recent Statistical Review highlights that there are significant energy transitions going on; in other words big changes in the supply and use of energy. But "energy transition" is a polite academic buzzword. In the callous world of business it's called a full-on market share battle that's occurring with a heavy cost to energy suppliers.

Over the past few years the battle for market share has cut the price of fossil fuels by half. Coal

and gas producers duke it out for the North American power market at prices that haemorrhage cash from their bank accounts. Corporate casualties are not limited to high-cost laggards. Longstanding industry stalwarts are being taken prisoner and led off to bankruptcy courts. Some American nuclear power plants may also be in danger of closure.

The unit cost of power produced from renewables has fallen too. For example, the average price of a solar panel is down by 75% since 2010. Price reduction is a catalyst for adoption, but that's only the consumer's side of the story. Looking at things from the back of the solar panel, cheap prices have also been a catalyst for shrinking margins and supplier bankruptcy, just like in the world of fossil fuels. An article from Greentech Media indicates that 117 solar companies from 2009 to 2015 have shuttered their doors or been acquired. Add to the list, one of the world's largest solar companies, SunEdison Inc., which filed for Chapter 11 bankruptcy protection this past April. So who says investing in renewable companies is less risky than coal, oil or natural gas? All suppliers are experiencing casualties in this battle.

Recent trends in the BP data should be viewed with caution. How the world's primary energy market shares shift over time will continue to depend on how well each energy supplier is able to engage dynamic environmental, geopolitical, policy, social and technological forces. Going forward, the winners in this battle for market share will also have to know how to manage the most important weapon: Their costs.

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