

INSIGHTS

For the Mainstream Investor

WEEK ENDING DECEMBER 8, 2017 EDITION 223



CHANGES IN WORLD ENERGY

Lessons from 2017

The International Energy Agency (IEA) identified four themes in the global energy system this year. In its [World Energy Outlook: 2017](#) it noted the rapid deployment and declining costs of clean energy technologies. Coal continued its decline with the lead being taken-up by natural gas and a rapid rise in renewables and energy efficiency. Through to 2040, the IEA expects 'renewables to capture two-thirds of global investment in power plants'.

Secondly, the Agency notes the growing electrification of energy. It comments that the electricity makes inroads supplying heat and mobility alongside its traditional areas. Thirdly, it makes mention of the 'more services-orientated economy and a cleaner energy mix in China'. Finally, the resilience of shale gas and oil in the USA is analyzed. It states that 'expansion on this scale is having wide-ranging impacts within North America'. And for those heralding the end of oil, the report warns 'the world's consumers are not yet ready to say goodbye to the era of oil'.

SUSTAINABLE START-UPS

Innovative approaches to climate change

[Mashable](#) and UBS have identified a number of [start-ups](#) that are proposing to tackle climate change with innovative concepts. They range from fairly simple but ambitious ideas, to the more technologically challenging. [BioEngineering](#) are aiming to plant a billion trees a year. The difference is that they will be using drones to achieve this. Initially topography and soil type are examined and if appropriate, seedpods can be sown and then progress logged by drones. More technologically challenging is the ambition of [Solar Roadways](#) which aims to mass produce solar panels that can act as paths and roads. Furthermore, the glass panels contain LED lights and signage. In the rapidly developing area of battery technology, [Ambri](#) is developing a 'liquid metal battery', the size of a ten meter shipping container. The battery will release power when renewable sources are no longer generating, making them of particular interest in areas detached from the main grid.

THIS WEEK IN NUMBERS

135.7

million people will be in need of humanitarian aid in 2018, predicts the UN

122

degrees F (50C) would be the average temperature on land if the oceans stopped absorbing heat. Presently the average surface temperature is 59F (15C)

35

countries have not signed the Ottawa Convention, which bans landmines, although 162 nations are signatories

25

countries have been listed in the EU's tax-haven blacklist. Some countries have already promised to reform – Guam, Marshall Islands, Panama & Samoa

5

countries are the source for over half the plastic polluting the oceans – China, Indonesia, Philippines, Sri Lanka and Vietnam

2

Chinese banks – Industrial & Commercial Bank of China and China Construction Bank – have stated that they will not be financing the proposed Carmichael mine in Queensland, Australia

2

spills per day from fracking were caused by fracking in the states of Colorado, Pennsylvania, New Mexico and North Dakota

1

million people died from HIV-related causes in 2016 says WHO

TERM OF THE WEEK

'The unretired'

Those that are reportedly retired and subsequently recommence paid employment or begin full-time work following partial retirement.

INFOGRAPHIC OF THE WEEK

Power Reactors Decommissioning Status



Note:
SAFSTOR = deferred dismantling
DECON = immediate dismantling

Source: [US NRC](#)

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Sustainable Insight
CAPITAL MANAGEMENT

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MEGA BATTERIES

Australia leads

In last week's [Insights](#), we briefly mentioned the world's largest battery which could power 30,000 homes. This lithium-ion energy [storage](#) system was turned on by Tesla in South Australia. The facility is fed by wind power and is the [largest](#) grid scale battery in the world (100MW/129 MWh). The project came about when very high winds caused the area's grid to fail when over 20 transmission towers collapsed. Interestingly, the power failures were [blamed](#) on an over-reliance on renewables, which the Australian Energy Market Operator denied. This is where Elon Musk entered the debate, claiming that he could solve the problem in 100 days by installing a massive grid-scale battery. Now it's up and working.

GOOD NEWS

China has launched a 230 foot long all-electric cargo ship. It carries 1,000 lithium-ion [batteries](#) which will allow it to transport 2,200 tons of cargo 50 miles on a single charge. Recharging the battery takes 2 hours. The ship will emit no carbon emissions and will have cheaper fuel costs.

BAD NEWS

There is a possibility of [more dangerous](#) and frequent droughts in California as global warming stops rainfall reaching the state. Researchers identified a link between Arctic sea-ice loss and the building-up of high ridges of atmospheric pressure.

MORE BAD NEWS

The Pentagon withdrew [from plans](#) to ban the use of certain cluster bombs. The US military has decided that cluster munitions 'remain a vital military capability in the tougher war-fighting environment ahead of us'. More than 100 countries have signed the Convention on Cluster Munitions which prohibits their use, transfer and stockpiling. The USA is not a signatory.

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ELECTRIC CARS VS. THE REST

The cost of EVs

A [study](#) in Applied Energy, which examined the cost of running different types of cars – electric, hybrid, petrol and diesel – in different countries, found that although hybrid and electric vehicles were environmentally superior, their low take-up was too small to make a significant difference. It was clear that there is a clear connection between historic hybrid electric vehicles' total cost of ownership and market share. Particularly significant was the [finding](#) that electric cars are already cheaper to own and run than petrol and diesel ones in the UK, the US and Japan.

But [problems](#) with infrastructure remain. Although chargers can be found in car parks and workplaces, on long-distance routes they remain scarce. [BNEF](#) is more negative about the competitive positioning of electric vehicles. It [warns](#) that 'battery prices need to drop by more than half' before they are competitive against the internal combustion engine.

DID YOU SEE?

The Society of Automotive Engineers has released a [wireless](#) charging standard (SAE J2954). This specification supports wireless charging that delivers 11 kilowatts of power. Note that a normal power outlet offers 3 or 4 kW. However, there is a Tesla wall charger, essentially a dual pack, that offers 22 kW.

WE'RE WATCHING

A [hybrid aircraft](#) is on the way. A partnership between Airbus, Rolls-Royce and Siemens is developing E-Fan X, a hybrid aircraft which will initially replace one of its gas turbine engines with an electric motor. If tests go well, a second electric motor will be introduced.

READING LIST



Global Humanitarian Overview 2018 – UNOCHA

Great news for the Arctic and the Antarctic – Greenpeace



The world will mourn its lost happiness in 2018 – The Economist

LISTENING LIST



CEOs and society – The Economist

Republican voters not in denial about climate change – Scientific American

A huge investment firm is urging companies to disclose climate risks – Yale Climate Connections

WATCH LIST



Formula E car versus a cheetah – Think Progress

BELIEVE IT OR NOT

A recent study suggests that companies should recruit CEOs with daughters. Why? Because they are more equitable in their treatment of women. [READ MORE](#)