

Renewables Continue to Break Records Despite COVID-19 Impacts

May 2020 Saw New Record Low Solar Tariffs





Executive Summary

Even as the global economy has been locked down by the COVID-19 pandemic, May 2020 saw the renewable energy and storage sectors continue to achieve new record-breaking milestones. Stranded asset risks for the coal-fired power sector continue to grow as a result, sending global capital fleeing for the exits.

In May 2020:

- A global record-low solar tariff of just US\$13.50 per megawatt hour (MWh) was awarded in Abu Dhabi. This was 13% below the previous record low set in January 2020 in Qatar at US\$15.60/MWh.
- The New Mexico Public Regulation Commission (NMPRC) approved a 100MW of solar generation and 50MW of dispatchable battery storage for about US\$30/MWh.
- California awarded seven projects totalling 770MW of battery storage.
- Siemens Gamesa announced its proposed launch of a new record 14MW offshore wind turbine, for commercial deployment in 2024.
- In Australia, the Queensland government's CleanCo awarded a 400MW solar contract to Neoen.
- Two mega-renewable hydrogen projects were reported in China. GD Power Development Co. plans to build a US\$2bn project with up to 2GW of renewables capacity in northern Inner Mongolia. Utility Beijing Jingneng Power Co. plans a US\$3bn project with capacity of 5GW.
- Six new or tightened coal exit policies were announced by globally significant financial institutions, taking the 2020 to-date tally to 37 announcements.

Renewable Energy Milestones Continue

Solar	Storage	Power	Hydrogen
			
\$13.50/MWh Abu Dhabi, May 2020	770MW California May 2020	106 days U.S. renewables out-generate coal, through May	20MW projects in Netherlands, Canada

- BlackRock completed its thermal coal miner divestment in May 2020 and put KEPCO on notice over the Korean utility's plans to continue investing in new coal-power plants.
- The European Union announced a record [green recovery stimulus](#) in May 2020, including €91bn a year for home energy efficiency and green heating, €25bn of renewable energy, €20bn for clean cars over two years, plus €60bn for zero-emissions trains. Corporate and financial sector momentum for decarbonisation is building globally.

The hype of hydrogen continues to build, with a record number of ever-larger renewable hydrogen electrolyser projects being announced. A decade ago, most projects were smaller than 0.2MW. Over the last three years, several projects were in the range of 1-5MW, with the largest at 6MW. This year has seen a 10MW project commissioned in Japan, while a 20MW project has commenced construction in Canada. Press reports suggest China is developing projects that will dwarf these installations.

With a 20% year-on-year decline in solar module costs to just US\$0.17-0.20/watt, and collapsing global interest rates, there is no sign that solar deflation will slow anytime soon. And with China announcing a record number of solar manufacturing capacity expansions, economies of scale continue to combine with technology improvements to drive this trend.

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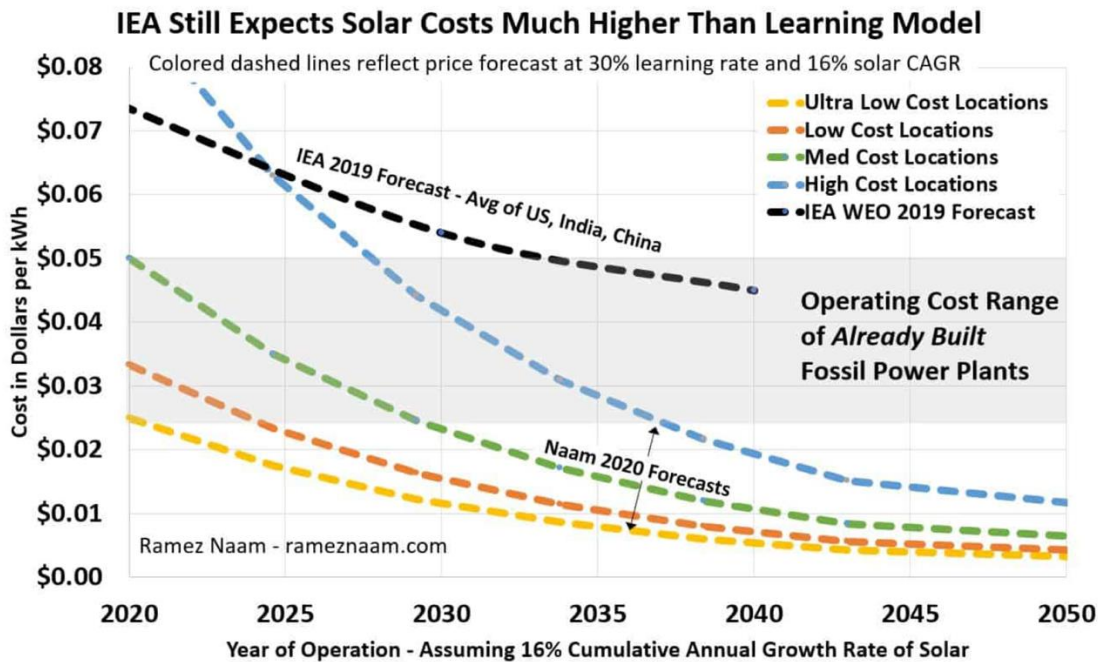
Renewable Energy Deflation Is Ongoing

Since we founded this global energy-finance thinktank in 2013, IEEFA has consistently illustrated the ongoing deflationary trend in renewable energy, and more recently in battery costs. The ongoing rate of technology-driven cost declines has surprised all, even extreme optimists like us. IEEFA expects double-digit annual deflation to continue over the coming decade.

Consistent with energy technology thought leaders such as [Michael Liebreich](#), IEEFA expects zero emissions variable renewable energy (VRE) generation costs to be near zero by 2030-2040 in many high quality resource areas globally (ranging from Arizona to Spain, Rajasthan, and North Queensland), hence the rush to commercialise and upscale pumped-hydro storage (PHS), lithium-ion batteries and Power-to-X conversion (converting VRE into zero-emissions ammonia, aluminium, or hydrogen – refer Section 3). This also underpins IEEFA’s work to identify stranded asset risks in the thermal power generation sector, along with associated coal mining, port and rail infrastructure.

IEEFA also expects the International Energy Agency (IEA) to continue to be surprised every year over the coming decade at the speed of ongoing technology-driven deflation and hence the rate of uptake of renewable energy, electric vehicles and battery storage, as it has been for the past decade, every year without fail. For a detailed analysis of this, we reference [Ramez Naam](#).

Figure 1.1: Solar Deflation is Set to Continue

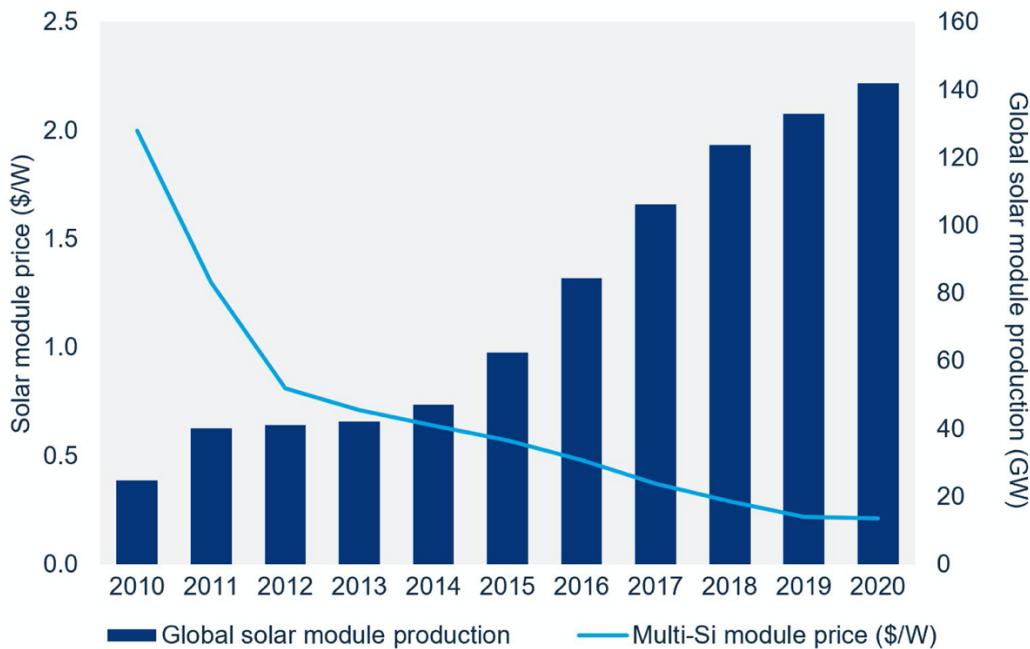


Source: *Solar’s Future is Insanely Cheap (2020)*.

Solar Modules of Just US17-20c/Watt

The idea of solar deflation has been well documented over the last decade. In a dynamic similar to Moore’s Law of silicon semiconductor chips,¹ ongoing technology enhancements, combined with a manufacturing scale today that was undreamt of only a decade ago, means that the cost of a solar module is just US17-20c/watt, down over 90% versus US\$2.00/w in 2010.

Figure 1.2: Double-Digit Annual Solar Deflation Continues



Source: GTM, Woodmac.²

For many years commentators like the IEA have ignored this trend, and consistently forecast ~4% annual deflation of solar costs over the coming decade, with this ‘conservative’ error compounded by estimates of the average current year starting tariffs at double the actual experience.³

¹ Moore’s law is the observation that the number of transistors in a dense integrated circuit (IC) doubles about every two years. Moore’s law is an observation and projection of a historical trend. It is an empirical relationship and not a physical or natural law.

² GTM. [Solar Technology Got Cheaper and Better in the 2010s. Now What?](#) 17 December 2019.

³ The World Energy Outlook 2018. Page 296, Figure 7.14 estimated the US solar LCOE at US\$100/MWh and in India at US\$80/MWh. IEEFA estimated the then Indian LCOE of solar at US\$30/MWh (Rs2.50/kWh at Rs66/US\$ to give a US\$40/MW year 1 tariff, reduced by a zero inflation indexation locked in for 25 years in a market of 5% annual inflation). US solar PPAs reached a record low of [US\\$24/MWh zero indexation](#), as awarded by Berkshire Hathaway’s Nevada Power in June 2018, a [quarter](#) of the average the IEA used.

Last month, Bank of America published a report highlighting that solar module spot prices reached US17-20c/w in May 2020, down 20% year-on-year. Prices are half the US30-40c/w of just two years ago.

Figure 1.3: Multi Module Spot Prices – May 2020

Multi-Si Module - \$/watt						
	PV IN - Multi	PV ET - Multi non-China (270W)	PV ET - High Eff Multi non-China (280W)	PV IL - Multi non-China (275W)	PV ET - Multi in China* (270W)	PV ET - High Eff Multi in China* (275W)
Spot Price (\$/watt)	0.17	0.19	0.20	0.18	0.20	0.20
Weekly Change	-1.72%	-2.12%	0.00%	-1.61%	0.11%	0.11%
Monthly Change	-3.39%	-8.42%	-4.76%	-5.67%	-5.77%	-6.35%
2Q20 Change (Apr - May)	-4.74%	-9.24%	-6.76%	-7.34%	-8.14%	-9.77%
YTD Change	-10.00%	-6.57%	-4.76%	-11.17%	-14.66%	-15.10%
Annual Change	-19.72%	-17.78%	-13.04%	-16.06%	-19.42%	-23.73%

Price as of 05/20/2020 // *Quotes in China converted from RMB to USD through currency rate on price date

Source: Bank of America Global Research,⁴ PV Insights, PV Energy Trend, PV Infolink.

Whereas a 1-2GW solar module manufacturing plant was world-scale two years ago, China is announcing plants of 5-10GW capacity in 2020,⁵ showing the dramatic scale advances that are being implemented now.

We note that COVID-19 has also seen interest rates in global developed markets collapse. For example, the U.S. 10-year Treasury rate started 2019 at 2.7%; 18 months later rates are at a multi-decade low of 0.7%, down 70%. These fixed rates can be locked in for the long term.

For solar, the tariff required is a direct function of the solar resource, the capital cost of installation, and the required rate of return for debt. With dramatic falls in the capital cost of solar and dramatic falls in the cost of funding, the two most important inputs into the solar tariff have fallen hugely relative to even two years ago. IEEFA draws a conclusion completely at odds with what the IEA is saying, notably that COVID-19 is a setback for the inevitable technology-driven trends of deflationary renewables. We see increased stranded thermal asset risks.⁶

On the ongoing gains in economies of scale, we note that in May 2020 Siemens Gamesa announced its proposed launch of a new record 14MW offshore wind turbine, for commercial deployment in 2024.⁷ This is 20% bigger than GE's 12MW Haliade-X giant launched in 2018. It was based on the expectation of 14-15MW turbines that Ørsted and EnBW tendered in for a zero-subsidy offshore wind project

⁴ Bank of America Global Research. Julien Dumoulin-Smith. "Solar Flash: State of the panel market – ASP degradation on near-term demand". 27 May 2020.

⁵ PV-Tech. Mark Osborne. [Solar manufacturing expansion plans for Q1 2020 top 500GW in unprecedented record](#). 5 April 2020.

⁶ CNBC. [IEA says the coronavirus crisis has set in motion the largest drop of global energy investment in history](#). 27 May 2020.

⁷ Bloomberg Green. [Battle Over World's Biggest Wind Turbine Is Heating Up](#). 19 May 2020.

in Germany in April 2017. At the time the financial markets were sceptical this could be achieved.⁸

Wind turbines are generally in the 2-3MW range today, double to treble the 1MW average a decade ago.

Solar Energy and Storage Records Continue to Be Set, and Then Smashed, Repeatedly

Abu Dhabi: Another Record Low Solar Tender

April 2020 saw the Emirates Water and Electricity Company (EWEC) award a 1.5GW solar tender to French energy group EDF and Chinese solar company JinkoPower. The consortium offered AED0.0497/kWh (US\$13.50/MWh) for the power generated at Al Dhafra, Abu Dhabi.⁹

This result is 13% below a January 2020 800MW solar award by the Qatar General Electricity and Water Corp (Kahramaa) at a then record low of QAR0.0571/kWh (US\$15.60/MWh) to Total and Marubeni Corp.¹⁰

New Mexico: U.S. Another Record Low Solar + Storage

May 2020 saw the New Mexico Public Regulation Commission approve two El Paso Electric solar PPA projects. The first will add 100MW of solar for US\$15/MWh, while the second will add 100MW of solar and 50MW of dispatchable battery storage for under US\$30/MWh (reported separately as US\$20.99/MWh + \$5.46/kW capacity charge), including a monthly capacity charge for the storage component.¹¹

California: U.S. Another Record Battery Storage Tender

May 2020 saw Southern California Edison (SCE) sign seven contracts for 770MW of battery-based energy storage to replace ageing fossil gas plants. NextEra Energy will build the three largest projects –two of 115MW/460MWh each and the third a 230MW/920MWh project to be connected to NextEra's 250MW McCoy solar farm. NextEra is separately building a 250MW/1GWh battery project co-located with its 250MW Sonoran Energy Solar Center in Arizona. LS Power will build a 100MW/400MWh Gateway 1-2 battery system in San Diego County. Southern Power will build two facilities (Garland, 88MW and Tranquillity, 72MW) and TerraGen Power will build the Sanborn 50MW battery.¹²

⁸ OffshoreWIND.biz. [Will Offshore Wind Zero-Subsidy Bids Become the 'Norm'?](#) 5 November 2018.

⁹ PV Magazine. [Abu Dhabi's 1.5 GW tender draws world record low solar bid of \\$0.0135/kWh.](#) 28 April 2020.

¹⁰ PV Magazine. [Qatar's 800 MW tender draws world record solar power price of \\$0.01567/kWh.](#) 23 January 2020.

¹¹ PV Magazine. [Record low solar PPAs in the Southwest mean 'carbon capture is not going to save coal plants'.](#) 28 May 2020.

¹² GTM. [SCE Contracts Huge Storage Portfolio to Replace Gas Plants.](#) 1 May 2020.

India: A 400MW Round-the-Clock Renewables Tender at Rs2.90/kWh

May 2020 saw the Solar Energy Corporation of India (SECI) award a 400MW Round-the-Clock renewables tender to Renew Power at Rs2.90/kWh (US\$38.50/MWh), with a 3% annual escalation (unusual in Indian renewable tenders).¹³

Renewable Energy Momentum Continues to Build *Stranded Asset Risks for Coal Continue to Rise*

U.S. Renewable Energy Overtakes Coal

This year has seen renewable energy generation consistently exceed coal-fired power generation in the U.S.¹⁴ And in April 2020, coal reached a historic low market share of just 15%. Coal consumption in the U.S. power sector is down 25.2% year-on-year year-to-date in 2020,¹⁵ an acceleration of the consistent trend over the last decade. So far in 2020, the closure of another 13 U.S. coal-fired power plants has been announced.¹⁶ NextEra Energy CEO James Robo in 2019 predicted coal's use would cease in the U.S. electricity market entirely by 2030.¹⁷

In India, Coal Has Worn 100% of the COVID-19 Demand Destruction

In the first six weeks of the new financial year in India (starting April 1, 2020), Indian electricity demand has declined by 40 terawatt hours (TWh), down 22% year-on-year (yoy). Coal-fired power generation declined by the same 40TWh amount, meaning the average coal-fired power plant utilisation has fallen to just 40% to-date in FY2020/21, down from the decade low of 55% in FY2019/20. The national lockdown across India has highlighted another key financial risk of coal in power generation; coal is the high marginal cost source of supply. India has a must-run status for renewable energy, but even under a merit-order system, the outcome would be same, i.e. renewables have a zero marginal cost.

India's Coal Minister Pralhad Joshi is working to cease all discretionary thermal coal imports in 2020/21¹⁸ as record coal stockpiles across the country are reached.¹⁹

April 2020 saw 2GW of solar awarded at a [record low US\\$33/MWh](#) zero indexation.

¹³ Mercom. [ReNew Power Wins SECI's 400MW RTC Renewable Tender at ₹2.90/kWh](#). 8 May 2020.

¹⁴ The Hill. [Renewable energy topped coal in US for 40 days straight](#). 5 May 2020.

¹⁵ EIA. [Weekly Coal Production](#). 28 May 2020.

¹⁶ E&E News. [Coal's Decline Continues with 13 Plant Closures Announced in 2020](#). 27 May 2020.

¹⁷ NextEra Energy. [Investor Presentations](#). 30 September 2019.

¹⁸ Economic Times. [Thermal coal imports for blending to be eliminated in 2020-21](#). 25 May 2020.

¹⁹ IEEFA update: [India's coal-fired power plant stockpiles reach record levels even as electricity demand weakens](#). 20 March 2020.

Australian Renewable Penetration Reached 26.1% in April 2020

The national lock-down across Australia saw electricity demand down just 1.3% yoy in April 2020 to 15.5TWh. Renewable energy penetration was the second highest on record at 26.1% (just shy of the 26.8% in November 2019²⁰), up dramatically from the 20.5% renewables share in April 2019. Despite the hype of certain political parties, the National Electricity Market grid system handled this in its stride, and widespread blackouts failed to materialise. Coal-fired power generation was 10.4TWh, down 8.4% yoy, and consistent with the merit order effect, wore more than 100% of the demand decline.

In May 2020 the NSW government called for expressions of interest in developing its proposed 3,000MW renewable energy zone (REZ) in the central south-west²¹, a key step in its [Net Zero Plan Stage I: 2020-2030](#) launched in April 2020.

May 2020 also saw the Queensland government's CleanCo award a 400MW solar contract to Neoen in the south-west,²² building on the [1GW of wind infrastructure](#) awarded in April 2020 to Acciona of Spain.

Despite the policy chaos created by the Federal Government of Australia, investment pressure for energy transition is building.

Final Investment Decisions for Coal Hit a Decade Low in 2019

The IEA's World Energy Investment 2020 highlights findings that final investment decisions for new coal-fired power plants globally hit a decade low of 18GW in 2019, down more than 75% from the level of new commitments evident in the first half of the decade. With coal plant closures globally averaging 35GW annually over 2015-2019, and global coal-fired power plant utilisation rates hitting a decade low in 2019, global coal use in the power sector could well have peaked back in 2018.²³

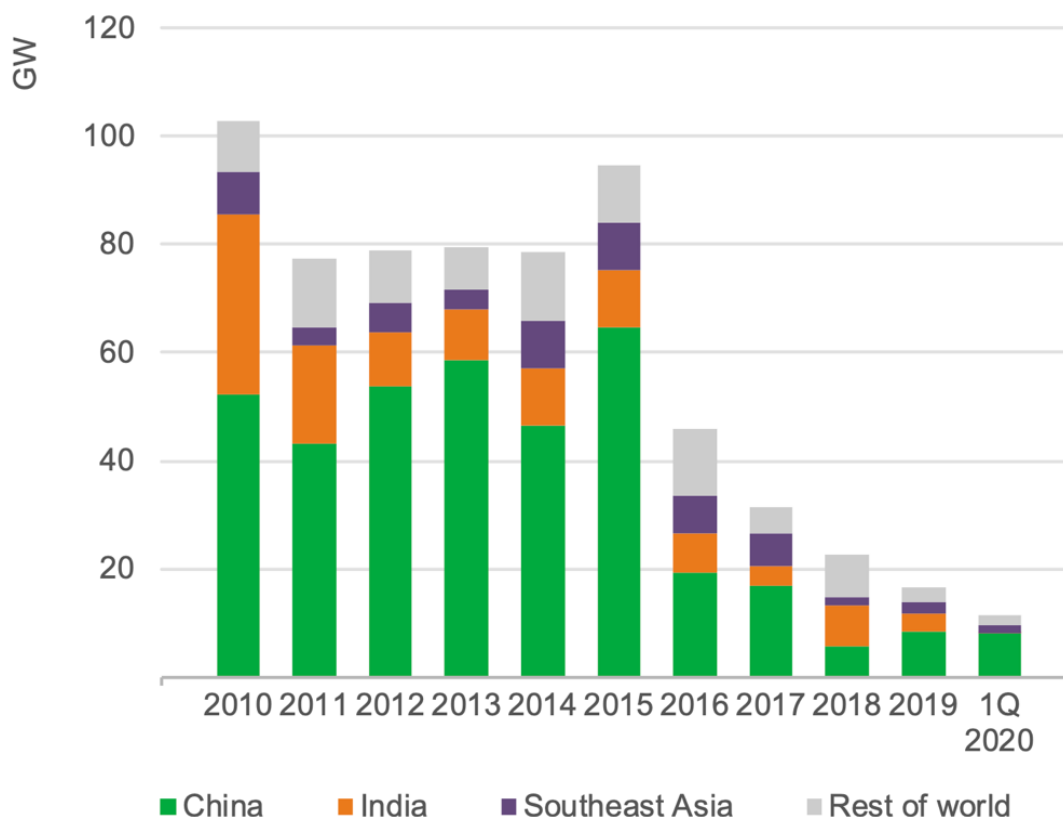
²⁰ [OpenNEM](#)

²¹ [AFR. NSW to kick-start renewable energy investment](#). 27 May 2020.

²² [RenewEconomy. Australia's largest solar farm set for construction after Neoen wins deal with CleanCo](#). 6 May 2020.

²³ [Ember. 2020 Global Electricity Review](#). April 2020.

Figure 2.1: Coal-fired Power Plant Final Investment Decisions



Source: IEA World Energy Investment 2020.

Dealing With Renewable Energy Intermittency

The ever-lower cost of variable renewable energy has driven penetration in myriad electricity markets as varied as Germany, California, Tamil Nadu and South Australia.²⁴ All the industry's perceived upper limits to VRE grid integration have been repeatedly breached. Whereas a 5% or 10% engineering limit was articulated a decade ago, now the talk has lifted to 20% or 30%, but again with these limits now regularly exceeded.

Year-to-date May 2020 has seen renewable energy generate 56.5% of [German electricity consumption](#) (43.2% from VRE) while [South Australia](#) has generated 58% (all VRE). California sourced 48.6% from renewables last year, 19.9% from VRE.

Global electricity leader NextEra Energy has shifted the discussion to how to manage the decarbonisation of the last 20-25% of electricity supply, suggesting coal will exit entirely by 2030. That means the first 80% of consumption in the U.S. will

²⁴ IEEFA India: Grid, storage, policy, and regulation: Areas of new focus to meet India's ambitious renewable energy targets. September 2019.

most likely come equally from wind and solar by 2050.²⁵ Consistent with this, California in 2018 legislated a zero-emissions target of 100% by 2045.²⁶

IEEFA expects technology development over the coming three decades to provide a multitude of solutions to grid balancing, likely to include pumped hydro storage, gas-peakers, batteries, [Power-to-X](#), demand response management (DRM) as well as interstate and even international grid connectivity.

Renewable Hydrogen Pilots Are Accelerating

With ever lower costs of VRE, particularly solar, the ability to store rather than curtail electricity at a time of production excess will become key to driving deep decarbonisation of both electricity markets and also the harder to decarbonise heavy industry applications such as steel and aluminium.

Green hydrogen is flavour of the year in 2020, with not a week going by without another demonstration project being announced in Belgium, China, South Korea, California, or Australia. Long a clear proponent of energy system decarbonisation, Kobad Bhavnagri of Bloomberg NEF has tried to weed out the hype of press releases to provide a realistic assessment of the likely trajectory out to 2050.²⁷

May 2020 saw the IEA publish a renewable hydrogen update²⁸ highlighting the significant upscaling of renewable hydrogen electrolyzers, one of the keys to ever-higher grid integration of low-cost but variable renewable energy (VRE).

A decade ago, most projects were smaller than 0.2MW. Over the last three years, several projects were in the range of 1-5MW, with the largest at 6MW.

In March 2020 the Japanese government's New Energy and Industrial Technology Development Organisation, industrial gases company Iwatani Corporation and Tohoku Electric Power, commissioned a 10MW hydrogen project in Fukushima.²⁹

January 2020 saw a consortium led by Nouryon and Gasunie win a €11m European grant for a 20MW hydrogen facility at Delfzijl in the Netherlands.³⁰

Air Liquide moved forward in April 2020 with construction of a 20MW hydro-electricity powered renewable hydrogen project in in Bécancour, Québec.³¹

²⁵ [NextEra Energy and NextEra Energy Partners to meet with investors through early October and present at the 2019 Wolfe Research Utilities & Energy Conference](#). 30 September 2019.

²⁶ [The 100 Percent Clean Energy Act of 2018, SB 100](#). State of California 2017-2018 Legislative Session. 10 September 2018.

²⁷ Bloomberg NEF. [Hydrogen Economy Outlook](#). 30 March 2020.

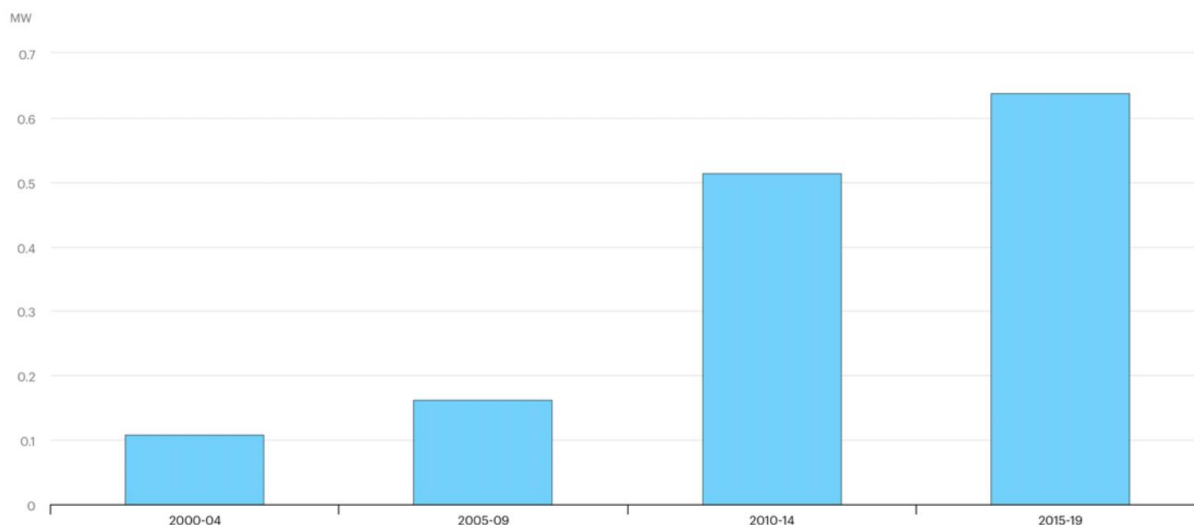
²⁸ IEA. [Batteries and hydrogen technology: keys for a clean energy future](#). 3 May 2020.

²⁹ Energy Storage. [Hydrogen electrolysis using renewable energy begins at 10MW Fukushima plant](#). 20 April 2020.

³⁰ [Nouryon-led consortium wins EU backing for pioneering green hydrogen project](#). 22 January 2020.

³¹ Canadian Consulting Engineer. [Hatch helps develop green hydrogen project in Bécancour, Que.](#) 24 April 2020.

Figure 3.1: Commissioned Capacity of Electrolysers for Hydrogen



Source: IEA World Energy Investment 2020.

April 2020 saw the Los Angeles Department of Water and Power (LADWP) propose a US\$1.9bn project to develop the world's first utility-scale hydrogen power plant as part of its 100% renewables plan. LADWP will oversee the transformation of a 1.9GW coal-fired power plant to one that will run on renewable hydrogen. Mitsubishi Hitachi Power Systems (MHPS) has been awarded the contract to manufacture and service the turbines for the updated plant. When the turbines are put into operation in 2025, they will generate electricity using a mix of 30% hydrogen and 70% fossil gas. By 2045 MHPS will be able to upgrade the turbines to be powered entirely by hydrogen.³²

In May 2020 two mega-renewable hydrogen projects were reported in China. GD Power Development Co. plans to build a US\$2bn project with up to 2GW of renewables capacity in northern Inner Mongolia. Utility Beijing Jingneng Power Co. plans a US\$3bn project with capacity of 5GW. Both plan to produce renewable hydrogen as part of the projects.³³ This follows the April 2020 announcement that [Baofeng Energy](#) Solar Electrolytic Hydrogen Storage and Comprehensive Application Demonstration Project had started construction on a US\$200m solar and renewable hydrogen storage facility.³⁴

Whether it is renewable hydrogen, or renewable ammonia or renewable aluminium, or some other chemical component that facilitates the Power-to-X chemical store of excess VRE, is yet to be determined. But this is likely to allow over-investment in

³² Governing. [America's Largest Municipal Utility Invests in Move from Coal to Hydrogen Power](#). 15 April 2020.

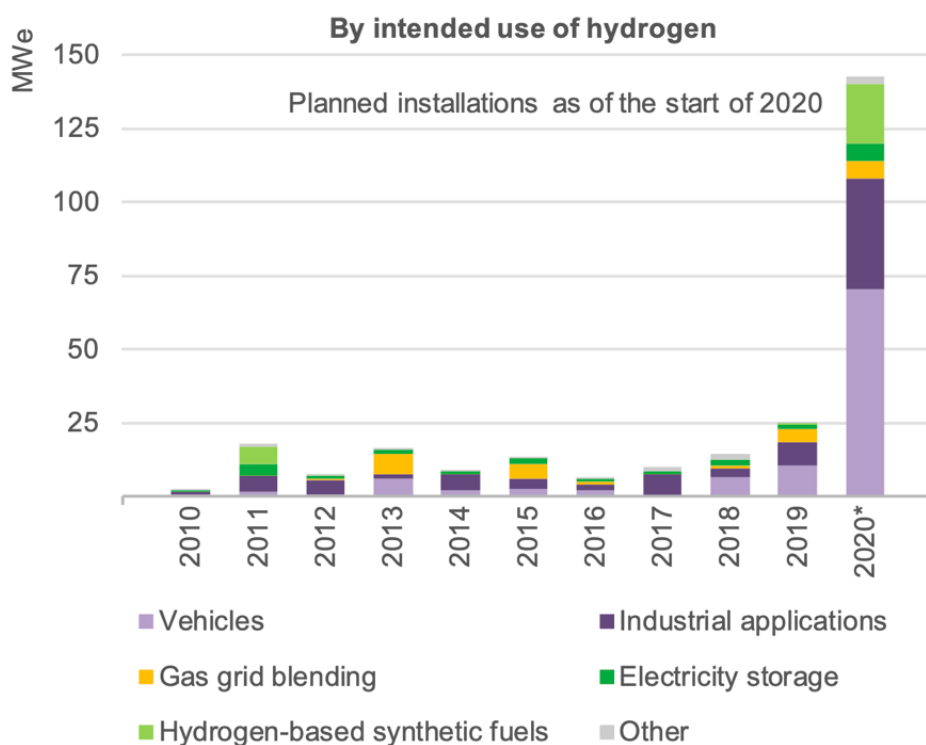
³³ Bloomberg. [China's Great Energy Shift Sets Mega Hybrid Projects in Motion](#). 12 May 2020.

³⁴ Xinhuanet. [Baofeng Energy Builds an Integrated Solar Electrolytic Water and Hydrogen Energy Storage Application Project](#). 20 April 2020.

renewable energy infrastructure, allowing talk of 200% or even 700% renewable energy electricity grid penetration.³⁵

March 2020 saw Tasmania’s government release its new draft [Renewable Energy Action Plan](#) with a world-leading renewable energy target of 200% by 2040.³⁶ This will be supported by a quadrupling of interstate grid connectivity (boosted by the proposed [Marinus Link](#)), PHS (the [Battery of the Nation](#)) and renewable hydrogen, plus a significant expansion in onshore wind projects offering world-leading 50% capacity utilisation rates (thanks to the Bass Straits’ [Roaring Forties](#) winds).

Figure 3.2: Commissioned Capacity of Electrolysers for Hydrogen



Source: IEA World Energy Investment 2020.

Global Finance’s Coal Divestment Accelerates

Despite or maybe in acknowledgement of the global pandemic, April 2020 saw significant global momentum away from thermal coal and coal-fired power generation, a reflection of the rapidly diminishing economic merits and growing understanding that an alignment with the Paris Agreement invariably leaves many coal projects as stranded assets, unable to deliver a viable return over their

³⁵ Renew Economy. [Australia could aim for 700% renewables, ARENA boss](#). 8 October 2019.

³⁶ Renew Economy. [Tasmania unveils action plan to reach 200 per cent renewables](#). 13 May 2020.

proposed design life.³⁷

This trend has continued in May 2020. Coal exclusion, divestment or restriction policies have been introduced or tightened by six globally significant financial institutions, including Westpac³⁸ of Australia, BNP Paribas³⁹ and Natixis⁴⁰ of France, Toho Bank⁴¹ of Japan and Intesa Sanpaolo⁴² of Italy.

Norges Bank⁴³ announced further Norwegian Sovereign Wealth Fund divestments on coal mining and oil & gas exploration firms globally that were not adopting business strategies aligned with the Paris Agreement. New exclusions were announced on “Sasol Ltd, RWE AG, Glencore PLC, AGL Energy Ltd and Anglo American PLC after an assessment against the product-based coal criteria” while: “The Executive Board has also decided to place the companies BHP Group Ltd/BHP Group Plc, Vistra Energy Corp, Enel SpA and Uniper SE on an observation list.”

And in May 2020 BlackRock completed its divestment of thermal coal miners⁴⁴, and put KEPCO on notice for continuing to invest in new coal power plants.⁴⁵

In total, IEEFA has tracked 136 globally significant banks, insurers, and asset managers/asset owners that have implemented substantial formal coal policies. This year has seen 37 new or updated policy statements, double the rate of announcements in 2019.

Figure 4.1: Global Coal Policy Exits (2018-2020)

Total announcements in	2018	2019	2020
Announcements	31	45	37
weeks	52	51	22
Announcements per week	0.6	0.9	1.7

Source: Financial Institutions’ websites, IEEFA calculations.

³⁷ The Age. Bob Carr. [While the world looked the other way, corporate giants abandoned coal](#). 15 May 2020.

³⁸ Westpac. [Climate Change Position Statement and 2023 Action Plan](#). May 2020.

³⁹ BNP Paribas. [BNP Paribas is accelerating its timeframe for a complete coal exit](#). 11 May 2020.

⁴⁰ Natixis Beyond Banking. [Natixis announces withdrawal from shale oil and gas and accelerates its complete exit from the coal industry](#). 18 May 2020.

⁴¹ Toho Bank. [Toho Bank announces investment and loan policy: “No new coal-fired thermal power generation principle”](#). 20 May 2020.

⁴² Intesa Sanpaolo. [Rules for lending operations in the coal sector](#). May 2020.

⁴³ Norges Bank. [Exclusion and observation of coal companies](#). 13 May 2020.

⁴⁴ BlackRock. [Helping our clients invest sustainably](#). May 2020.

⁴⁵ Bloomberg. [BlackRock Warns Korea’s Power Giant on Overseas Coal Plant Push](#). 28 May 2020.

About IEEFA

The Institute for Energy Economics and Financial Analysis (IEEFA) examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

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Tim Buckley, IEEFA's director of energy finance research, Australasia, has over 30 years of financial market experience covering the Australian, Asian and global equity markets from both a buy and sell side perspective. Tim was a top-rated Equity Research Analyst and has covered most sectors of the Australian economy. Tim was a Managing Director, Head of Equity Research at Citigroup for 17 years, as well as co-Managing Director of Arkx Investment Management P/L, a global listed clean energy investment firm that was jointly owned by management and Westpac Banking Group.

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