Smart Energy

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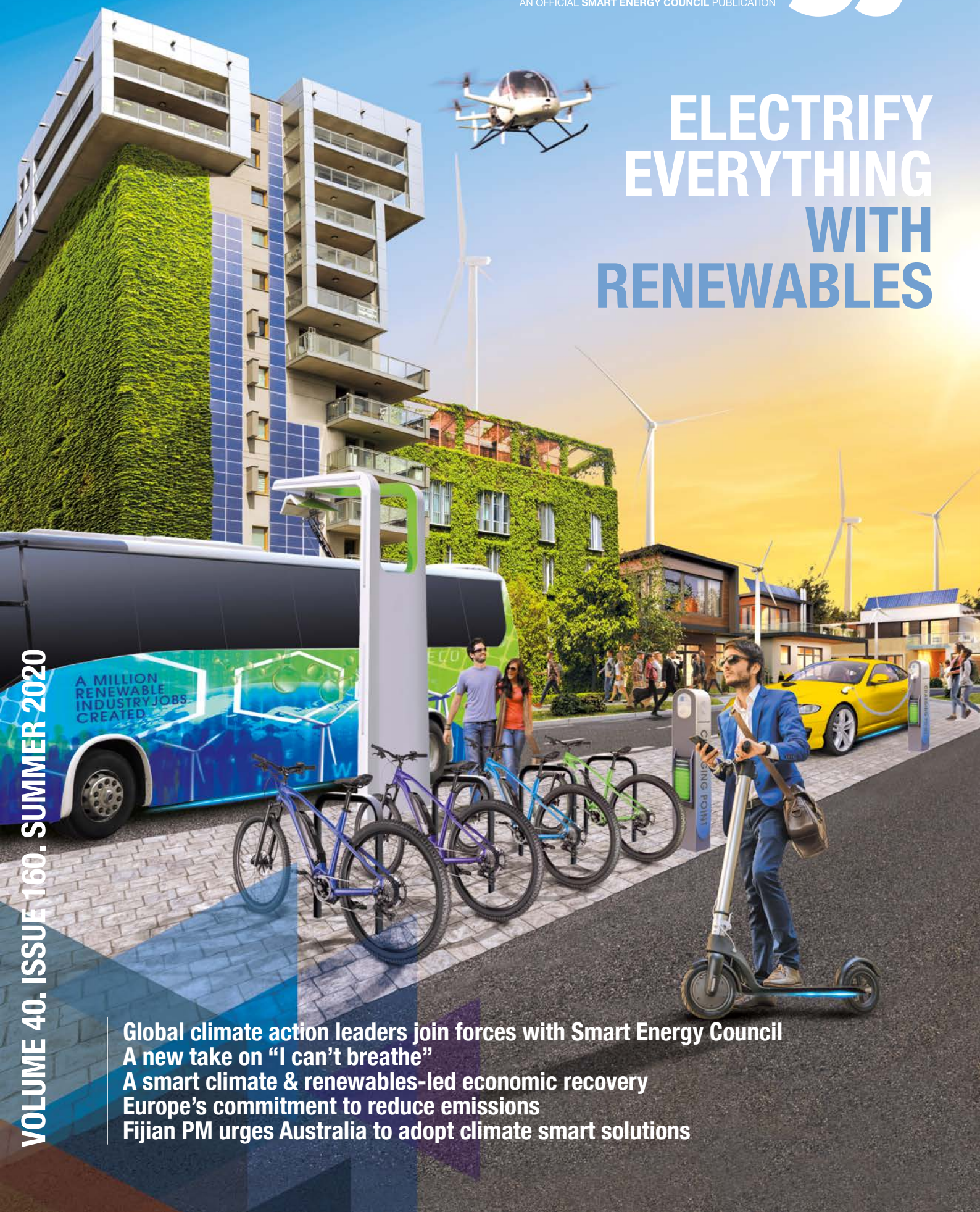

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VOLUME 40. ISSUE 160. SUMMER 2020

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Europe's commitment to reduce emissions
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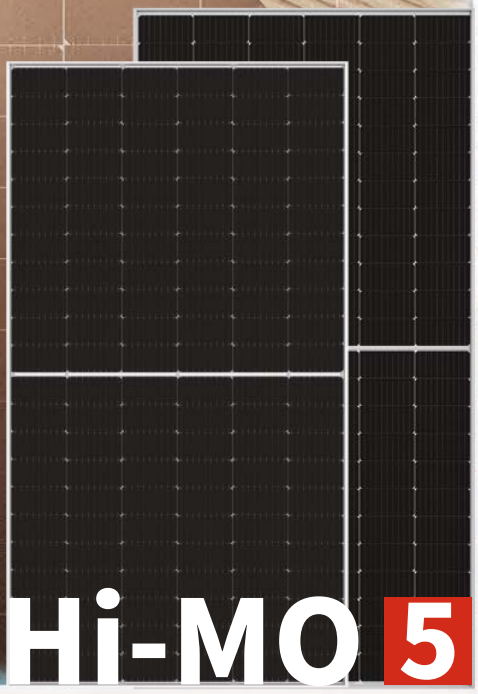

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From public and private transport to buildings and heavy industry… electrify everything with renewables

SMART ENERGY COUNCIL

GLOBAL VIEWS AND ACTIONS

INDUSTRY ROUND-UP

INNOVATORS, PRODUCTS & SERVICES

Welcome

John Grimes, Chief Executive Smart Energy Council

WHEN IT COMES TO ENERGY AND CLIMATE POLICY, the Biden win in the US will have significant consequences for Australia.

The US provided cover for our own outrageous climate denial and inaction. Suddenly Australia is exposed internationally.

Europe is acting, the UK is acting, North Asia is acting, and now the US goes from international laggard to international leader.

Contrast that with Australia's work to hold back the tide of anti-coal sentiment globally. With the UK 100 per cent out of coal by late 2024, and the US now committed to being out of coal by 2035, that battle is lost.

Globally the conversation has shifted from shutting down coal, to imposing 'carbon tariffs' on imported goods.

That means if your steel, glass, cement, chemicals and agricultural products are made with fossil fuels, they will be taxed on import at a higher rate than those with embedded clean energy.

The problem is Australia's leaders are not even prepared to admit there is a problem, and to the extent that they do, our targets and actions are woefully inadequate in response.

That might be fine when the biggest consequence is quelling a climate denying rebellion on your own backbench.

It is quite another when it threatens to bring down great swathes of the Australian economy.

Right now, Australia is the deer in the headlights.

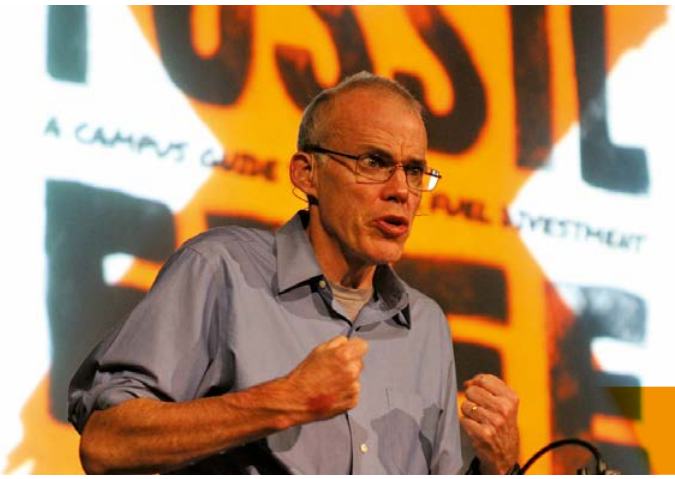
We used to have a rhino standing between us and oncoming traffic.

Now we are on our own.

In my view

THE US ELECTIONS don't seem to have done much to clarify the climate picture: on the one hand, exit polls showed 70 per cent of Americans "favoured more government support for green and renewable energy," but on the other hand the Senate they elected will block any big moves towards low-carbon infrastructure.

A President Biden – which will happen if all the votes are counted – can get America back in the Paris climate accords, but he'll lack the votes to ratchet up America's ambition levels with sweeping infrastructure proposals – which means, I'd guess, that the pressure will be off other recalcitrant nations.



None of that is even close to ideal. Yes, we're headed in the right direction: eventually, economics alone, without a shred of government policy, would get us to a clean energy economy. But 'eventually' is the problem: as we know by now, catching up with physics and chemistry requires that we move much with enormous speed. This will be the crucial decade, and it's not beginning well.

So activists will be searching hard for other levers to push.

The most obvious is our financial system – it's a necessary part of the fossil fuel empire, providing the ready cash that allows the industry to go on expanding climate be damned.

Activists have gotten steadily better at understanding its intricacies and bending its practices. Full disclosure: I began 2020 getting arrested in the lobby of the JP Morgan Chase bank branch nearest the U.S. capitol at the start of the StopTheMoneyPipeline campaign – by October the financial giant, biggest fossil fuel lender on earth, had promised it would become 'Paris-aligned'.

It will take lots more pressure, but it's pressure worth applying: unlike governments, financial institutions can move quickly, and their edicts are global.

Australian activists have been at the forefront of this work, learning important lessons throughout the Adani campaign; now that knowledge is spreading.

We don't know if we can move fast enough to materially slow climate change; we know we have to try.

Bill McKibben is founder of environmental group 350.org, a New Yorker columnist and author of 'End Of Nature'. He is credited by US President-elect Joe Biden as a key thinker, influencer and advisor

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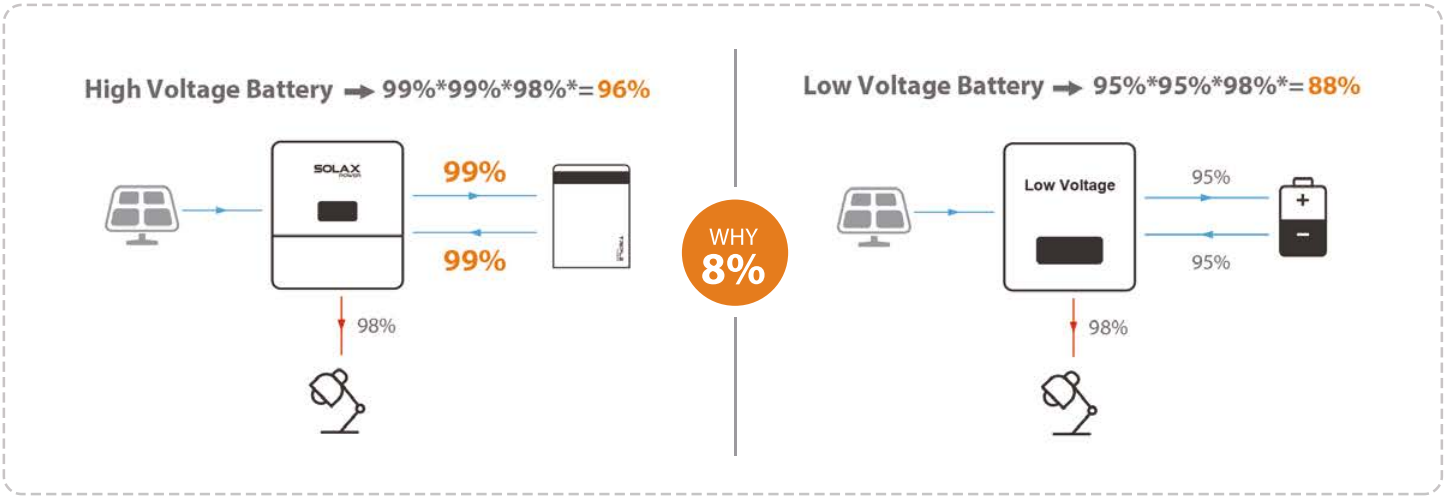

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NSW ENERGY SUPERPOWER: NOW WE'RE TALKING NSW Energy Minister Matt Kean has unveiled the state's new energy plan that will attract $32 billion in new private investment and deliver 12GW of new renewable energy capacity with an additional 2GW of storage capacity by 2030. The NSW Electricity Infrastructure Roadmap plan will see the development of renewable energy zones with wind, solar and energy storage projects as the state transitions from coal-fired power.

The plan described as the most ambitious in the nation will generate more than 9000 jobs (and net gain of 23,600 between 2032 and 2037) and $1.5 billion in lease payments for regional landowners for wind and solar farms, while driving down electricity costs for households and business, earning NSW a spot in the top 10 lowest OECD electricity prices.

Minister Matt Kean also says the plan is expected to reduce emissions from NSW's electricity sector by around half, with an equivalent reduction of around 90 million tonnes of carbon dioxide emissions annually by 2030.

The giant leap forward is both symbolic and significant: acceptance (of the need to tackle emissions with renewables) over denial (of climate change), and bodes well for Australia's decarbonised future.

AUSTRALIA'S CASEY RESEARCH STATION in Antarctica houses an imposing 105-panel 30kW vertical array on its north side that will provide one tenth of the facility's total electricity demand and reduce reliance on diesel generators. Why vertical? At the very low latitudes the sun typically doesn't rise much above the horizon, so more sunshine lands on the wall than roof. A wind deflector sits down the length of the array to reduce the impact of high winds during blizzards which the installation team battled along with temperatures as low as -7°C. The system's solar panels were sourced from Germany's Aleo Solar and the inverters from Austria-based Fronius.

STAYING ON THE VERTICAL energy network provider WINconnect has completed installation of vertical solar panels for Melbourne-based residential development Harbour One. The SunMan eArc system comprises 87 solar panels and is estimated to generate 32,000kWh a year, the equivalent of powering 11 (of the 330) apartments off grid and offsetting 27 tonnes of carbon emissions annually. The lightweight solar panels weighing approximately 8kg each were glued to the vertical louvred surface on the Harbour One rooftop. In a strong vote of confidence in the technology, the CEFC recently invested $9.6 million in Sunman.

CLEANCO QUEENSLAND AND FRENCH DEVELOPER NEOEN have signed a new PPA for 110MW of wind energy which will be part of the larger 157MW wind farm at the Kaban Green Power Hub near Ravenshoe, south-west of Cairns. The plant will generate 457GWh of clean energy each year for Powerlink Queensland's transmission network.

A LEAD EPC CONTRACTOR has been appointed for the commencement of the first stage of the 720MW (AC) New England Solar Farm and battery project being developed near Uralla by leading renewable energy developer UPC/AC Renewables Australia. The solar farm and battery project will be built in two stages, the first 400MW (AC) stage and the 33/330 kilovolt substation will be installed by Elecnor on the northern section of the site.

AGGREKO AND GOLD FIELDS have completed the installation of the renewable energy microgrids for the Granny Smith gold mine in Western Australia, touted one of the world's largest.

The new hybrid power system, which has been integrated with the existing gas fired power station, is powered by more than 20,000 solar panels and supported by a 2MW/1MWh battery system. The power solution will reduce fuel consumption at the mine by 10-13 per cent.

IKEA AUSTRALIA is on a mission to transform stores into clean energy power stations with the installation of Australia's largest grid-connected microgrid at IKEA Australia. The project is being run with Planet Ark Power, the South Australian Government, SA Power Networks and Epic Energy.

AUDI AUSTRALIA is committing to 100 per cent renewable energy as a business from 2021, accredited through GreenPower and primarily sourced from the Capital Wind Farm precinct near Canberra. The timing coincides with Audi's first electric vehicles in Australia: the Audi e-tron and e-tron Sportback. Audi aspires to 30 electrified models by 2025.

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* Minimum total volume to be considered: 50 kWp

TECH GIANT APPLE is ramping up investment in Australian renewable energy projects in line with company efforts to eliminate its carbon footprint by 2030 and help prevent catastrophic climate change.

BP HAS ANNOUNCED it will increase investments in low-emission businesses tenfold to $US5 billion a year over the next decade, while shrinking its oil and gas production by 40 per cent.

STEPPING UP CLIMATE-SMART ACTIONS AROUND THE WORLD

CHINA has announced its bid to achieve carbon neutrality before 2060 following a peak in emissions by 2030, and will be increasing its spending on green technologies over the next five years.

Giant leaps are no stranger: the country recently saw the connection of the Huanghe Hydropower Development's 2.2GW solar plant to the grid. Located in the remote and arid Qinghai, the project also features 202.8MW/MWh of storage. Chinese inverter manufacturer Sungrow supplied all the inverters for the plant.

JAPAN has stated its ambition to become carbon neutral by 2050, with Prime Minister Yoshihide Suga saying "I declare we will aim to realise a decarbonised society… responding to climate change is no longer a constraint on economic growth… taking assertive measures against climate change will lead to changes in industrial structure and the economy that will bring about growth."

THE EU also proposes carbon neutrality by 2050 and is allocating economy recovery funds to green projects (read more on pages 12 & 13).

Meanwhile **NEW ZEALAND** aspires to achieve 100 per cent renewable energy by 2030 with re-elected Prime Minister Jacinda Ardern planning to electrify transport and industry, invest in green hydrogen and other new technologies, and inject an additional $70 million into pumped hydro storage.

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RECYCLED CONTENT RENEWABLE ENERGY FOREST MANAGEMENT CHLORINE FREE MANAGEMENT SYSTEMS CARBON NEUTRAL CERTIFICATION AUSTRALIAN MADE

PROMINENT PERSONALITIES

FORMER ACT ENERGY MINISTER SIMON CORBELL who is a Patron of the Smarter Energy Council has been hired by Macquarie Capital, John Laing and more than a dozen other major institutional investors to steer the newly launched Clean Energy Investor Group (CEIG). The focus will be on lobbying state and federal governments and promotion of policies in a bid to encourage long-term investment in renewable energy, and attracting global institutional investment in greening the grid.

ACT GREENS LEADER SHANE RATTENBURY has been appointed ACT Attorney-General, and will also hold responsibility for water, energy and emissions reduction. Both Shane and Simon give generously of their time and wisdom at Smart Energy Council seminars.

IN MID-NOVEMBER Federal Member for Warringah Zali Steggall tabled the Climate Change Bill, calling for a bipartisan approach to legislate climate action and Net Zero Emissions by 2050. The move complements the Green Recovery website with information on how businesses can slash power bills and emissions.

www.climateactnow.com.au

John Grimes and Independent MP Zali Steggall at Parliament House

MELBOURNE BASED LEADSUN is delivering the world's largest SMART solar street lighting projects in the USA, with more than 10,000 solar-powered lights to be installed across America's first 'futuristic cities' over the next few years. Leadsun holds the international patent for engineering the world's first all-in-one solar street light.

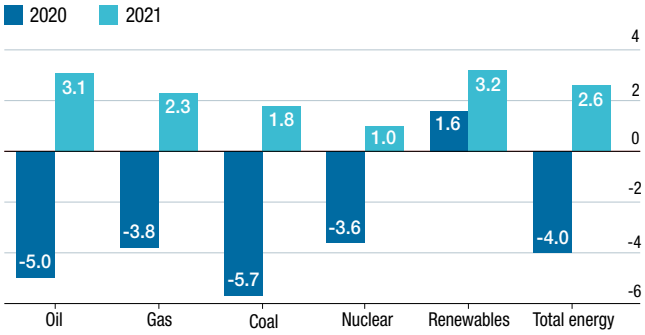
Matt Pollard, Leadsun Managing Director

DURING THE SEPTEMBER QUARTER large-scale wind and solar farms and rooftop PV generated 26 per cent of Australia's electricity needs. Coal power still dominates the energy mix at 65.5 per cent but hit a record low in September.

The Economist Intelligence Unit forecasts demand for oil and gas will recover only partially from the 2020 slump and that solar and wind combined will record the strongest growth among all sources in 2021, while coal consumption will be weak. Climate-friendly approaches to economic growth will dominate, the EIU says, but not everywhere.

Going greener

(change in global energy consumption by source; %)



Source: The Economist Intelligence Unit

BIG NEWS, MASSIVE BATTERY In less than 14 months Victoria will be home to the Biggest Battery in the Southern Hemisphere with a 300MW lithium-ion battery installed on the fringe of Geelong at the Moorabool Terminal Station in time for the 2021-22 summer. French developer Neoen which is backing a number of large-scale high-profile projects in Australia will pay for construction of the Tesla battery, as well as ongoing operation and maintenance. The Big Battery will reserve a portion of its capacity to increase the power flow through the Victoria-New South Wales Interconnector by up to 250MW and reduce the chances of unscheduled power outages over the peak summer months.

Victorian Minister for Energy, Environment and Climate Change Lily D'Ambrosio said "The big battery will help protect our network in summer, create jobs and drive down energy prices – as well as support our recovery from the coronavirus pandemic."

Analysis reveals every $1 invested in the battery will deliver more than $2 in benefits to Victorian households and businesses through lower power prices. The behemoth battery will also make an important contribution to Victoria's renewable energy target of 40 per cent by 2025 and 50 per cent by 2030. The state is already on track to meet its 25 per cent target by the end of 2020.

THE WINDS OF CHANGE

Pressure is mounting on Australia as more nations commit to carbon emissions reductions targets and strategies to hasten the transition to renewable energy with electrification of all sectors.

THE PAST FEW MONTHS have seen a wave wash over the world that will translate into greater action to tackle the climate emergency. Among the most significant, the commitment by China for zero carbon emissions by 2060, Japan's 2050 zero emissions target, the commitment by the incoming Biden Administration for sweeping energy changes across the US, and the call by European Commission President Ursula von der Leyen to up the ante on Europe's carbon emissions reductions from 40 per cent to 55 per cent from 1990s levels by 2030.

The UK has been vocal in its move to embrace a range of renewable technologies to meet the goal of net zero emissions by 2050 and "build back greener" through a green industrial revolution that will phase out petrol and diesel cars, possibly by 2030, while delivering thousands of jobs. And Prime Minister Boris Johnson, who is hosting next year's UN climate conference, has signalled he wants Australia to commit to bolder action on climate change.

Another noteworthy event is the re-election of Jacinda Arden in New Zealand who has doubled down on the island nation's zero emission targets, to the delight of Fiji's leader.

Closer to home the re-election of Queensland Labor premier Annastacia Palaszczuk and ACT's Labor-Greens Government delivers greater certainty around climate friendly policies for the foreseeable future, despite the lack of direction from the nation's capital.

Momentum can also be seen right across the business sector with broad consensus for net zero emissions among business groups, the mighty (and ever growing) RE100 collective, the National Farmers Federation and Farmers for Climate Auction, investors and lenders including BlackRock, APRA, ASIC, the Reserve Bank and others mindful of climate risk to assets.

ANZ is divesting its coal interests (a move slammed by Coalition ministers!), and NAB which currently has about $700 million worth of thermal coal assets plans to reduce that figure to $350 million by 2028, and to $0 by 2035 in order to manage risk as the bank "tilts itself much, much towards renewables."

The community has rallied in big numbers behind former prime minister Kevin Rudd's petition for a royal commission into the Murdoch media monopoly and climate denying NewsCorp that backs Australia's pro-fossil fuel government. With more than half a million signatures, it's taken top billing as Australia's largest ever e-petition. A sign of the times, and of discontent?

The clock is ticking down to next year's UN climate conference, but some even bigger forces are at work, and now all eyes now on the United States whose incoming Democratic commander-in-chief has made clear his mission is to steer America and "build back better".

Liberty and democracy

On January 21 2021, the day after President-elect Joe Biden's inauguration he intends re-signing the Paris climate accord. Within just one month that will take effect. On February 20 the world applauds and breathes a sigh of relief, while holding hope for more.

In all Biden has earmarked $US2 trillion over four years on climate-friendly actions including major incentives for electric cars, zero-emissions public transport and the roll out 500,000 electric vehicle charging stations on highways. The Build Back Better plan will help decarbonise the electricity sector by 2035 through massive wind and solar projects and building 1.5 million sustainable homes and housing units, with a commitment to strike net-zero carbon emissions by 2050.

Can Biden deliver? A hostile, climate sceptic Republican-controlled Senate could well scuttle plans for the ambitious agenda that is light years from the incumbent Administration's direction that would pump an additional 1.8 billion tonnes of greenhouse gases into the atmosphere before 2035 in the country already responsible for around 15 per cent of global emissions.

Under Biden's rule the US will usher in carbon tariffs on imported goods from nations failing to rein in emissions. It's a move that will send ripples across the globe. Already a barrage of questions has been lobbed at Australian policy makers about domestic emissions reductions targets, or the glaring lack thereof, and Australia is looking increasingly like a pariah on the world stage.

Out in the cold

The disconnect from reality is manifest in the fossil fuel, gas-led economic recovery and a climate denying government talking up its Technology Investment Roadmap. A plan to pump $18 billion of Commonwealth taxpayer investments into hydrogen, carbon capture and storage, soil carbon, storage options and 'low-carbon' steel and aluminium production.

The Roadmap has received widespread criticism. Not only does the 'map' fail to set out a timetable for results but it also proposes costly unproven carbon capture and storage technologies and debases clean energy agencies the CEFC and ARENA by facilitating polluting gas assets.

As Simon Holmes à Court states, the best way to improve CCS, "a colossal failure that's already gobbled up a fortune in government handout", is to redeploy the money into energy storage.

The ANU's Frank Jotzo commented the plan would drive down Australia's greenhouse gas emissions in the long run, but "we are not facing a modest long-term problem, [in climate change] we have an immediate large-scale problem."

Together with Tony Wood of the Grattan Institute Jotzo says a carbon pricing mechanism, such as a carbon tax or incentives paid for clean industry providers, would significantly speed up the transition, along with incentives to remove coal from the energy mix.

And for his part former PM Malcolm Turnbull called the Coalition's direction that favours a gas led recovery a load of "political piffle".

(See page 20 for Mark Diesendorf's commentary on the flawed technology roadmap.)

A black hole

Australia is a country without a goal for carbon neutrality by 2050 or any intermediate, short-term targets; a land devoid of renewable energy policy and where emissions are rising, a nation without an electric vehicle strategy and whose government refuses to listen to science, ignores warning signs and panders to vested interests to the detriment of the health and safety of its population.

As Turnbull told ABC: "The Americans are going to be taking a leading position, globally, on climate action once again. Biden has flagged that this is going to be part of America's international trade agenda, as well as the Europeans. Now, we have the opportunity in Australia to be a clean energy superpower... this is the time to pivot."

It is indeed time for a political reset.

Cue Zali Steggall's Climate Change Bill. Tabled on November 9 with a strong statement signed by 100 organisations including the Carbon Market Institute, Climate Council, Smart Energy Council, Electric Vehicle Council, ACF, ETU, Climate Works, Atlassian, IGCC, Future Super, Tesla and WWF. It's a line in the sand.

Climate smart actions

"The Climate Change (Adaptation and Mitigation) Bill 2020 is a sensible national response to the challenge of climate change. The core pillar is of a net zero target by 2050 (with the ability to be ratcheted up in line with the most recent science)," the document reads.

"Climate change is a threat to Australia, with immediate and accelerating impacts to our environment, economy and way of life… the pandemic has been a prelude to the kind of disruption that climate change will entail over the coming years but has also offered the prospect of recovering in a sustainable way."

Independent MP Zali Steggall declared "We must ensure that Australia has a comprehensive bipartisan law to address the challenge of our times. If we get this right, we can ensure a safe and prosperous future for all."

The Climate Change Bill complements the ALP's proposal for a new agency Rewiring the Nation Corporation to pump $20 billion into Australia's transmission network in a nod to the path mapped out in AEMO's Integrated System Plan.

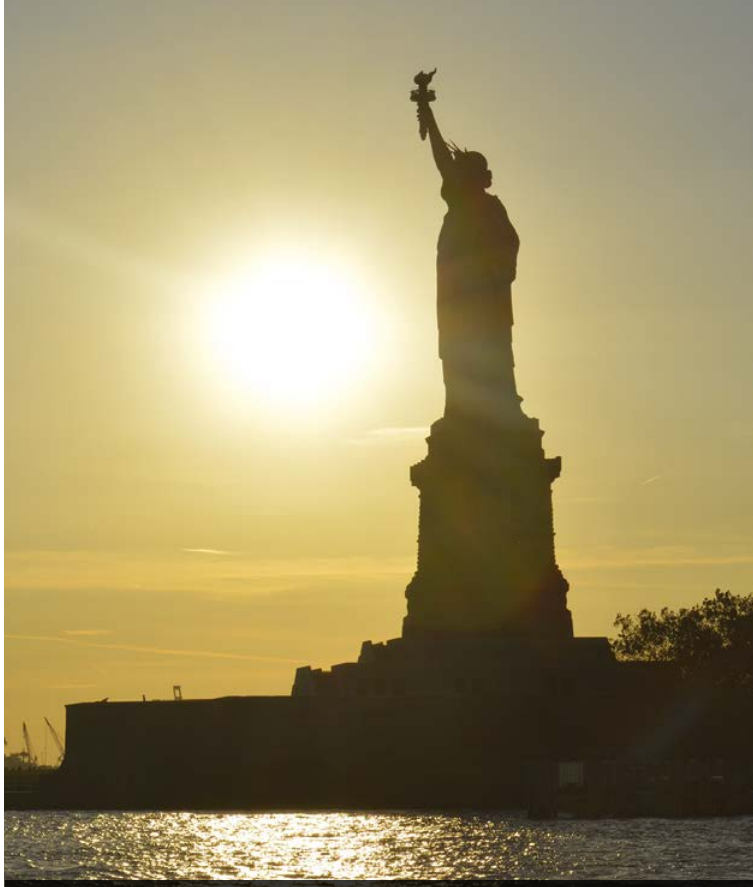
"It would be the missing link needed to unlock Australia's renewable potential, and would, for the first time, provide Federal Government support for a process that is already supported by all the states and territories," said John Grimes.

He also strongly backs the NSW Government's recently announced Electricity Infrastructure Roadmap for zero carbon by 2050 that "puts New South Wales streets ahead in the drive towards a smart energy future".

Key elements of the NSW plan include two Renewable Energy Zones, 12GW of renewable energy and 2GW of energy storage by 2030; grants for pumped hydro projects; and commitments to speed up critical energy infrastructure in key parts of the State.

"This is a roadmap for the ages… it's great news for New South Wales' regional communities and a real fillip for the State's economy," John Grimes said. "Smart energy saves money and creates jobs, these Renewable Energy Zones will create 6,300 construction jobs and 2,800 ongoing jobs and will cut power bills for families by $130 each and every year. Small businesses can expect their power bills to fall by an average $430 every year.

"With all Australian State and Territory Governments, the incoming Biden Administration, Japan, South Korea and the European Union all committing to net zero carbon by 2050, it is now well past time for the Morrison government to get on board that journey."



Americans have voted for a change of leadership that will deliver decisive actions to mitigate emissions and tackle climate change. It's a win not just for Americans but also the planet and future inhabitants.

A wake-up call to Australia: The Smart Energy Council's Global Smart Energy Summit heard from a number of influential global leaders who are promoting climate friendly policies and actions. See the following pages covering some of the key messages including those of Fiji's Prime Minister and prominent environmentalists Bill McKibben and Jeffery Sachs.

Snapshot of community sentiment

The Australia Institute's latest *Climate of the Nation* report found that 74 per cent of respondents remain concerned about climate change, and 80 per cent believe climate change impacts are now being felt.

The number of Australians who think we are experiencing the impacts of climate change 'a lot' has increased from 33 per cent in 2016 to 48 per cent in 2020.

Australians are nonplussed by the Morrison government's "gas-led recovery", almost six in ten surveyed said the recovery should be powered by renewables. Just 12 per cent favour gas.

UNITED CALLS TO **BUILD BACK BETTER**

Thanks to the virtual doors operated by Zoom, the Smart Energy Council welcomed listeners from as far afield as Zambia, Panama, Paris and the Philippines to the Global Smart Energy Summit. The event proved distance is no barrier to a meeting of minds and consensus over actions to support a climate-smart economic recovery.

IN LATE SEPTEMBER 50 eminent speakers from 18 countries came together to thrash out two pressing issues: How does the world build back better and create jobs while taking the pressure off climate change? It's a picture that is already unfolding and it comes at a time, said John Grimes, in which technology has "leapfrogged us into a better cheaper cleaner future in manufacturing, agriculture, construction and transportation". Way to go. And a long way to go, but momentum continues and among those leading the charge is the European Union.

A number of key influential figures were on hand to inform the 5000 people from seven continents tuned in to the Global Smart Energy Summit, among them **Stefaan Vergote of the European Commission** who played a key role in the development of the historic European Green Deal that commits Europe to climate neutrality by 2050 underpinned by Climate Law.

A broad-ranging investment strategy has been mapped out that includes a European and economy-wide greenhouse gas emissions reductions target of at least 55 per cent (on 1990 figures) by 2030. There is widespread consensus that EU's response to address the economic fallout from COVID offers the opportunity to accelerate investments in the clean energy transition.

"The importance of listening to scientists – that's what COVID taught us," Stefaan Vergote said, adding the EU economy grew by 62 per cent when emissions declined 25 per cent. Result!

Walburga Hemetsberger of Solar Power Europe agreed the COVID recovery provides a unique position to recover and EU solar generation capacity is anticipated to rise sharply after the pandemic ridden year and thereafter at 12 to 13 per cent in the medium rise scenario. By 2050, she said, renewable power will be the dominant source of electricity generation in the region, possibly as much as 63 per cent.

"A 100 per cent renewable energy system is the most cost-efficient means of attaining climate neutrality by 2050," she said, adding EU's 2021 to 2023 recovery plan to counter the impact of the pandemic included a multimillion dollar fund to boost green energy.

Speaking from Paris was **Laura Williamson of think tank REN21** which has clocked a

The European Commission has mapped out a broad-ranging investment strategy that includes a European and economy-wide greenhouse gas emissions reductions target of at least 55 per cent (on 1990 figures) by 2030

IMAGE BY DIMITRIS VETSIKAS FROM PIXABAY

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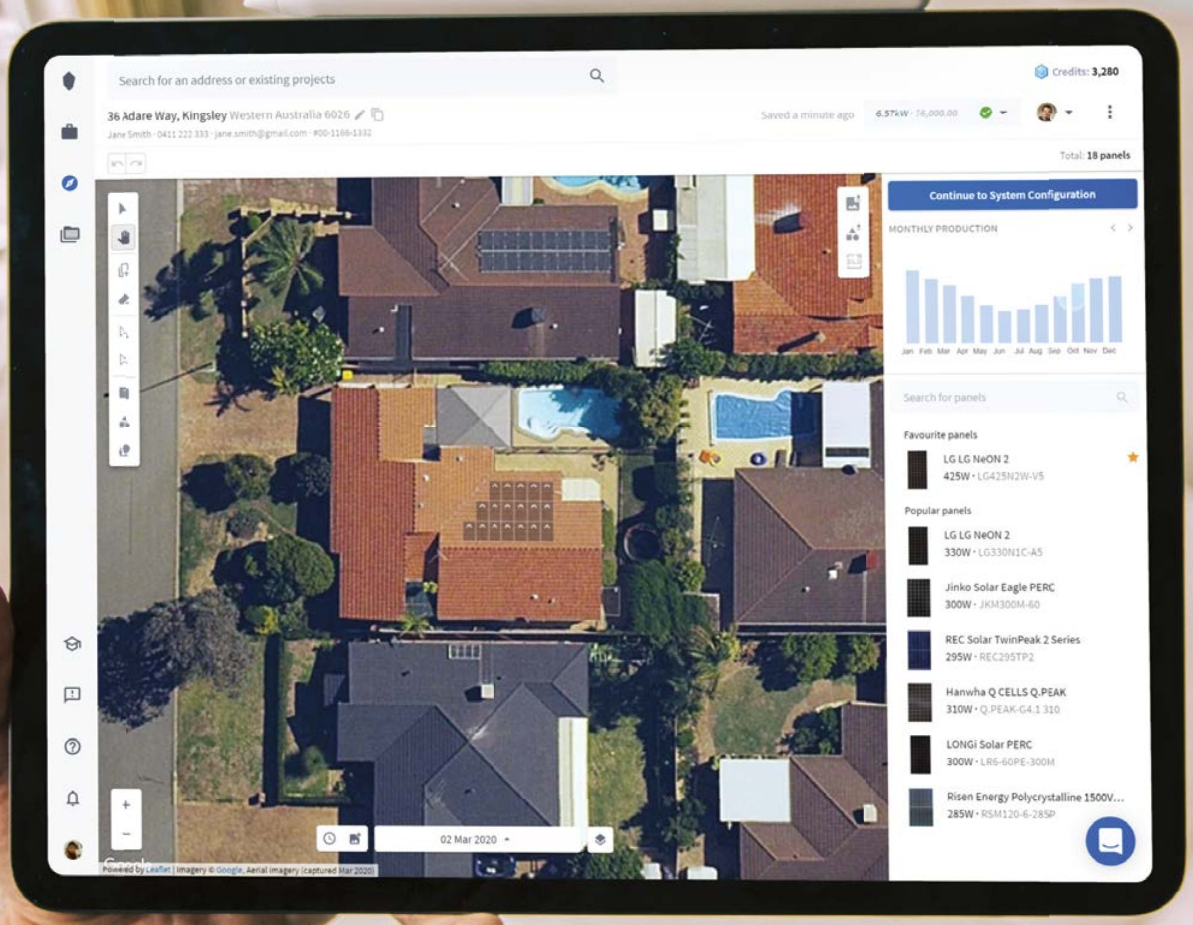

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record 200GW of additional renewable capacity in 2019, the majority solar (115GW) and wind; and more than fossil fuel and nuclear combined. However G20 countries are committing US$151 billion to fossil fuels against US$89 billion to renewables after the pandemic, according to energy policy tracker.org, with China, India, the US, Indonesia, Russia, Mexico and Australia among the culprits.

The Summit also heard from **Stefan Schurig, Secretary General, Foundations Platform F20** which comprises 60 philanthropic organisations across globe. "A great challenge lies ahead with the COVID crisis; as a human species we are undergoing a new binary experience that connects us and climate change threatens us with extinction of biodiversity. Our goal is to make us less vulnerable and more resilient.

"You need clear trajectories, roadmaps and targets to show leadership and allow investment," he said, referring Summit listeners to **www.oneearth.uts.edu.au**

Sam Kimmins Global Head, RE100 lauded the growth in RE100 membership from the APAC region and the role of Australia's banks in leading the charge. "People are buying renewables at scale, corporate PPA activity has risen strongly – it makes business sense," he said.

"In a fair market Australia should be out-competing Europe in renewable electricity, and this presents a huge investment opportunity."

Kwasi Kwarteng UK Minister for Business, Energy & Clean Growth stated there was never a more important time to direct investments into clean sectors to accelerate climate adaptation mitigating finance.

In the UK much of the drive comes from the electorate, and coal which today generates just two per cent of the kingdom's electricity will be phased out by 2024. Offshore wind in UK which was greeted with scepticism 10 years ago is "remarkable and a good case study of what we've got right". Next the rollout of EVs and $3 billion in green homes grants, and from 2030 the brakes are on the sales of petrol-driven cars in the UK.

An ebullient British PM was seen on TV hailing UK's success in wind power. He was one of the early sceptics ("did not believe wind could blow the skin off rice pudding") now turned fan.

Reaching across the political divide

Britain's Lord Deben says we must control climate change

If only Australia could duplicate the UK's spirit of bipartisanship over climate change. It was the UK's Labour Party that originally proposed the *Climate Change Act* that later gained the support of the Conservative party, **Lord Deben** told the Global Smart Energy Summit.

"It became a cross party agreement, and the first thing was to decarbonise electricity supply at a time the UK had almost no renewables, just a small amount of nuclear power but mainly coal and gas. Now renewable energy is dominant, and the UK has pioneered offshore wind," said the Chairman, UK Committee on Climate Change.

On a more profound note Lord Deben who is variously described as 'renaissance man, Thatcherite turned green' added "Climate change is a

Offshore wind energy in the UK and Europe has been widely accepted after initial scepticism

IMAGE BY ENRIQUELOPEZGARRE FROM PIXABAY

symptom of the way we have treated the world. We are supposed to be stewards not rapists. The Australian government quite frankly does not control the agenda, the climate does. We humans have caused climate change and we have to control it."

Australia remains as divided as ever, and former prime minister **Malcolm Turnbull** who fell victim to the ongoing and bruising 'climate wars' joined forces at the Global Summit with **UN Climate envoy Mark Carney** who flagged the very real prospect of the European Union implementing tariffs on high carbon products. The US too could join the 'carbon club' by punishing countries that don't cut emissions fast enough.

Carbon taxed Australian exports would be hit hard, from the production and output of steel to aluminium, cement, glass and other products, unless we take full advantage of the abundant natural resources and establish low carbon intensive industries.

"Of all the time bombs ticking away none is more dangerous than climate policy"

"We are in the happy position that technology has allowed us cheaper electricity from renewables and storage and lower emission electricity at the same time," Turnbull said.

"We have the opportunity to put aside all the arguments about what we are prepared to pay to save the planet but ideological policies on the right and in the media persist. All that is lacking is political will and a reining in of vested interests."

He characterised the Coalition's approach to a gas-led recovery as "bonkers as it's a transitional fuel, and we run the real risk [of] funding what will become, inevitably, stranded assets. Some people are trying to persuade the government to spend literally billions and billions of dollars to pay for infrastructure to, in effect, subsidise gas," he said.

Gas has an important role as a peaker (for fast switch on) but there is not a bonanza of cheap gas in Australia, and we need to take into account that the cheapest form of new energy generation is renewables and storage.

The Australian Energy Market Operator's Integrated System Plan spells out how by 2030 when significant investment in new dispatchable capacity is needed, the advantage could shift to batteries as costs reduce.

Specifically: for gas-powered generation to remain a competitive investment as battery costs reduce (to $922/kW by 2030), gas prices need to be as low as $4/GJ in the long run, while charging costs need to remain relatively high at $30/MWh.

Turnbull said even in 2019-20, four-hour batteries would have been able to charge at an average price below $30/MWh in all regions except New South Wales.

"Trend is your friend," Turnbull said. The government is better off investing in renewable technologies not pouring money into a transitional fuel.

Worryingly, one significant global investor revealed they would not be investing in Australia due to the political uncertainty, and now regards China as a more attractive and stable environment for investment.

China's net-zero emission target by 2060 will only boost investment in renewables around the world, he said. "The task of getting China, the world's largest burner of coal, to net zero emissions by 2060 might seem impossible but if any country can do it it's China with its authoritarian

IMAGE BY LESUN LIU FROM PIXABAY.

Shanghai at night. Zero emissions by 2060 might seem a stretch but if any country can do it it's China, says Malcolm Turnbull

system and ability to turn things around and mobilise capital and people without peer."

Mark Carney told the Summit it is "hard to overemphasise just how much financiers are factoring in climate change into the mainstream, there is lots of money for renewable's and a huge focus on companies in the energy chain and where they are at in the transition."

There will be expectations on banks, funds, asset managers, and pension and superannuation providers to communicate their policies to investors.

"Governments need to recognise that there is a transition and it's coming and some fuels that are important today will be less important over time and consider how to manage that and then consider what is on the rise and assess competitive advantages," Carney told the Summit.

World leading sustainability professional **Jeffrey Sachs** followed up with some sobering messages on decarbonisation and cleaning the power sector. The trajectory is accelerating with EVs and needs to be followed with all-electric larger trucks, heating commercial and residential buildings and beyond – ocean shipping and aviation.

The Director, Centre for Sustainable Development Columbia University cited some problems in the industrial transition but these are far from comparable to the ambition of reaching the moon in an eight year period. Or sequencing the human genome.

"There are no profound technological or economic barriers to decarbonisation and we have the solutions. It is just the politics of fossil fuels in ten or so countries – Russia, Saudi Arabia, the US, Iran, China, India, Australia, Indonesia and Canada – that are holding us back. They represent 90 per cent of the difficulty."

"The ability of just a few people to damage the world"

"The drama is the politics of existing incumbent fossil fuel companies that make money, employ people and keep regions going and don't want to go out of business despite the better, safer alternative path for the planet.

"Some newspapers spout '[Fossil fuels are] not so bad, there are no alternatives… they are unaffordable', but it's ridiculous – fatuous propaganda. The Murdoch media empire is the last bastion of this."

The climate damage is so great and the opportunities so good for the zero carbon alternatives and Australia has so many solutions for a green hydrogen economy and other clever things, it is happening but not fast enough, he said because of the destructive influence of US President Trump, we have Exxon Mobil, we have gas-prone Putin and confusion.

"The ability of just a few people to damage the world is unfortunate and part of human history. The politics has to be different, if Joe Biden is elected US President, by 2050 the US will have phased out of fossil fuels. The world will start to look different and we'll work on specific timelines." he said six weeks before the election.

"Then we have a clear shot to a solution."

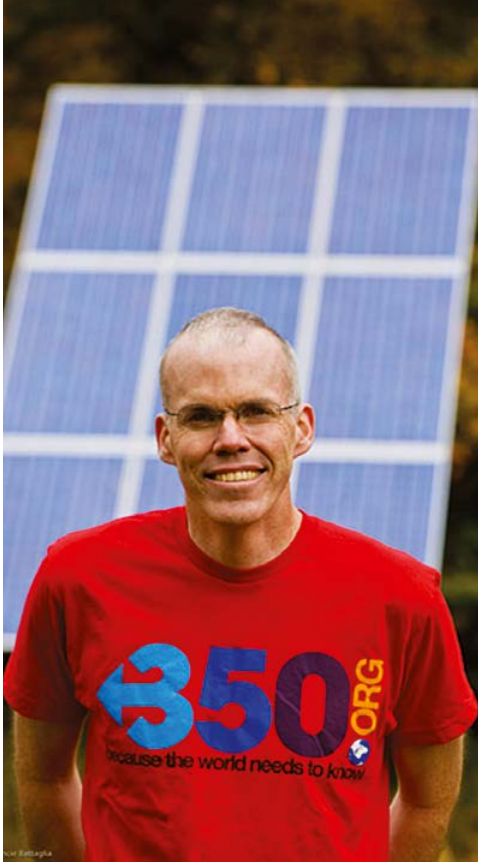
Sachs concluded his powerful address by complimenting Australia on its management of one other crisis – the pandemic.

Also speaking from the US and concurring with Sachs, environmentalist **Bill McKibben** did not hold back on blaming the conduct of the powerful and deceptive fossil fuel sector for the climate disaster, saying the US and Australia face the same far right and vested interests to stop action on climate change.

"It's a fight about money and power. Money translates to political power," he said. "The fossil fuel industry has huge amounts of money and they are good at using it for buying political power – the only way for the small and many to stand up to the mighty and few is to build movements, and they are having an effect."

"I can't breathe"

The founder of environmental group 350.org and a man credited by President-elect Joe Biden as a key thinker, influencer and advisor says there is "No longer any room for delay".



Bill McKibben, founder of environmental group 350.org and highly influential on the world environmental stage

In a note of guarded optimism the author of the 1989 book *End of Nature* told the Global Summit we are in a "moment of extraordinary convergence where we might be going in the right direction".

"This year's most important quote came from George Floyd before he was murdered when he said 'I can't breathe'.

"I think that is the watchword for this year… people cannot breathe due to wildfire smoke, due to the nearby coal-fired power plant, or because it's just gotten too damned hot," he said, condemning the time taken to start the transition that "we knew we needed to make" that has extended the damage.

However in recent weeks four of the world's five biggest economies – China, Japan, the EU and California – have made big bold climate pledges to move toward a more rapid renewables future. Prominent global investor BlackRock's announcement to take climate change seriously in all its investment decisions was another significant turning point, he said.

"It's a big moment. No more false starts or half measures. From now everything counts. We are in a race against time. The pace of climate change is no longer in doubt, even the predictions 30 years ago were conservative – the scale of change we see daily is frightening and almost beyond belief."

The options in industry to replace coal are tremendous, and "No country on earth is more blessed with renewables resources than Australia, that is plain to see, and it should be relatively easy to make the transition, to stop pouring carbon into the air. "These are not magic silver bullet solutions, we already have it – solar panels – that you can shoot sunlight at glass and generate power is a miracle and what we should be adopting with all the speed that we can, we need to aim for 80 per cent by 2030. That is the hard target.

"We can't win the fight over the next ten years, but we can lose the fight over the next ten years," he warned.

"If we have not made huge strides over the next decade it won't wait 'til 2045 – we will have wrecked the climate system, all the work has to come now. "

Bill McKibben is not wrong.

Some nations are more vulnerable than others; the low-lying islands of Fiji have been struck by a series of devastating winds and cyclones in recent years, and the outlook remains fraught.

"The need for smart solutions has never been so glaringly apparent"

In a profound speech that captured widespread mainstream media attention, **Prime Minister of Fiji Frank Bainimarama** presented the Pacific perspective and its struggle with the dual crises of a crippling pandemic and a warming planet.

"Fijians in the tourism sector, the tour guides, diving instructors, cab drivers, can't work from home. These are those same people struggling with rising sea levels, their homes are also threatened," he said painting a bleak picture of an otherwise island paradise.

Fijians, heavily dependent on tourism, have suffered from the COVID-19 travel freeze and are on the front line of the climate emergency

IMAGE BY CHRISTOPHE DUMORTIER FROM PIXABAY

"Global warming poses a far greater existential threat than COVID-19 and we need smart solutions."

Emissions reductions targets are "life or death deadlines, backed by science", he said, contrasting Australia and New Zealand's climate change policies, the latter pledging 100 per cent of energy from renewable sources by 2030.

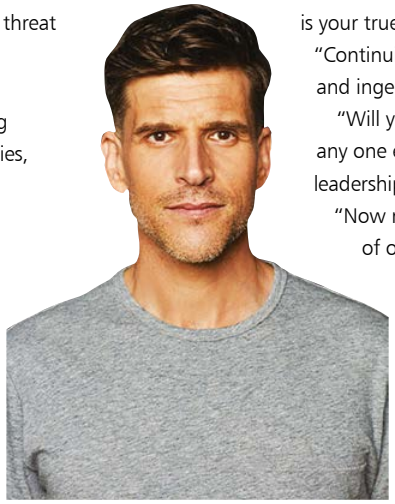
"Zero emissions are decades away, the climate challenge is a crisis like no other, it is more insidious and pressing, and impacts will worsen. Intergenerational problems won't be solved with short sightedness."

Fiji recognised the threat and was first to endorse the Paris Climate Agreement. Australia is a laggard but it need not be so.

"So I ask Australia, and all highly developed nations of the world – what is your true competitive advantage?" Mr Bainimarama asked: "Continuing to rely on fossil fuels? Or tapping into the innovation and ingenuity of your people?

"Will you lead or will you follow? The stakes are greater than any one economy. The survival of our planet depends on your leadership. Fight for a cleaner, smarter energy future.

"Now more than ever smart solutions are needed for the survival of our people and our planet," the Prime Minister said in a moving address that was widely reported across all media. "It's in your hands."



Media personality Osher Günsberg, a staunch conservationist

Across the wires

Media personality **Osher Günsberg** and **Atlassian's Mike Cannon-Brookes** rounded up the Summit with a balance of levity and gravity.

It turns out that Osher – most famously known as the poker faced rose guy on *The Bachelor* (oh how we

New world (and energy) order

Numerous interesting observations were delivered at the Smart Energy Global Summit in late September. Here we paraphrase more of the key messages:

- **John Grimes, Smart Energy Council:** "Nations are taking positive action. The UK – the home of the industrial revolution – will be out of coal in four years; Europe is world leader in clean energy and jobs; China is slashing carbon emission this decade; and should Biden defeat the incumbent the US will ramp up to 100 per cent renewable energy in 15 years and unlock trillions of dollars of investment."
- **Audrey Zibelman, Australian Energy Market Operator:** "The speed of the power system's transition from coal to renewables and storage and decentralisation with rooftop solar; coal sits at 63 per cent today, 52 per cent by 2030 and 25 per cent by 2040. Large scale variable renewables that sit at 18 per cent today will rise to 50 per cent by 2050.
  "And the trajectory for distributed PV rises from 8 to 15 then 17 per cent. Today, a rooftop PV panel is installed every 6.5 minutes. In all providing 10.6GW capacity which is around 9 per cent of total electricity capacity. "The fact that [coal] generators will retire is not policy, they will go. We need to plan ahead for replacement. Forget the political noise, things are happening really fast on a technical level."
- **Tim Reed, Business Council of Australia** committed to a fair, prosperous, outward looking nation; the lack of energy and climate policy is retarding the growth of Australian industry; how to revitalise and decarbonise the economy at same time
- **Sam Muraki, Green Ammonia Consortium:** Green hydrogen is fundamental to the positioning of Australia as an energy superpower; Japan will be a huge green ammonia customer but the Saudis or North America may move in first and the cost of Australia not acting is criminal.
- **Nicky Ison, WWF-Australia:** Australia can be an exporting superpower but we may miss our moment in time; we need to "look beyond boundaries" toward 700 per cent renewable energy.
- Noting that since 2008 solar efficiency has increased by six per cent yet the price has reduced 22 times ("build something at scale and it gets cheaper to build"), eminent solar scientist **Professor Martin Green:** The price of solar is declining making it more widely accessible and solving the climate crisis and economic crisis.
- **Wayne Smith, Smart Energy Council:** "No Australian has done more to tackle climate change globally than Professor Martin Green through his extraordinary contribution to the global solar industry"
- **Prof Warwick McKibbin, ANU:** We need a carbon price to deliver innovation and put us in a position of competition and allow an accurate pricing of commodities. A carbon asset and liability mechanism encourages investment innovation through clear goals and pathway… and sends signals to reduce emissions and better spending by households.
- **John Hewson:** The pandemic provides the opportunity to reset the economy; deal with the COVID economy and structural issues simultaneously.
- **Alex Hewitt, Asian Renewable Energy Hub**: 15GW large-scale solar and wind; 1,600 wind turbines, 78sq km solar panels, 14GW electrolysers, 1.8 MTPA H2 production and export over $4b per annum "this is Australia not just talking but doing". We need scale and urgency, scale means cheaper (ammonia, green hydrogen) and will force decarbonisation to where it needs to be.
- **Dr Jemma Green, Power Ledger:** "Cannot wait to walk into the new world, collectively we can change the energy of our world". In Australia's two-sided market we need interoperability of all household appliances including pool pumps and washing machines;devices need to talk to each other with AI choosing the best tariff.
- **Emma Herd, Investor Group on Climate Change:** Climate change now presents a systemic risk to the economy and if we don't manage it with a swift decarbonisation strategy we will see increasing impacts that are more expensive to address down the track. Decarbonisation trends will become defining investment themes in coming years, we need to manage risk. Carbon risk profile needs to be considered in all decisions including buying a car. Investors want large long-term investment providing for jobs and social outcome and reduced exposure to carbon risk eg energy efficiency and clean tech opportunities.
- **Webinar chat line:** "The Australian government is a cabal for the fossil fuel industry"; "The first role of government is to protect its citizens"; and *"This Global Smart Energy Summit is a wokefest."*

have misjudged the man) – is a staunch conservationist who, along with **Dan Ilic** of podcast *A Rational Fear* is driving climate conversations at all opportunities, the Global Smart Energy Summit included.

Meantime for his part Mike Cannon-Brookes, because he can, has invested billions of dollars in sustainability initiatives and large projects that make a difference. He's also in the lucky position (his words) that when he speaks his mind people, and that includes politicians, listen and learn about opportunities and his material vision of the future.

Blessed not just with ample financial resources but courage of conviction, he said: "The curse of people in technology is that we see what will happen ten, twenty years down the track, we live in a world of constant disruption. And the nexus of science and technology economics is a really important point to communicate.

Coal, he said, "operates on 1980 economics".

In three short years the tech billionaire has become pivotal to the renewables-led environment, and warns that Australia stands at enormous risk of being overlooked by the international investment community. This, despite housing the finance and talent, engineering project management, electricians, all the expertise and resources required and the need to get people back to work in massive numbers in the COVID-impacted world.

"If we are not clever we will be left out of the extraordinary global opportunity ahead of us," he said.

"We cannot turn up with a technology roadmap in a year's time at COP26 and expect any respect on the international stage when it comes to climate emissions."

He reinforced his deep belief in modular technologies including solar panels and batteries that can scale up and "will always win once they reach the point of scale as it makes them cheaper.

"Economics drives things, if we fully understood this we would not build any more fossil fuel plants because in 20 years it won't makes sense."

Ending the Summit on a positive note, Cannon-Brookes commented on the "awesome" work of the states in advancing renewables saying Australia is generally moving in the right directions, however federally controlled aspects need to be fast tracked along with transmission and infrastructure developments.

All Global Smart Energy Summit sessions can be heard and seen in full at www.smartenergy.org.au

References

Netflix *Kiss the Ground*
Bill McKibben *New Yorker* weekly column
Marian Wilkinson *The Carbon Club*
Dan Ilic Podcasts *A Rational Fear*
Malcolm Turnbull autobiography *A Bigger Picture*
Warwick McKibbin regular commentator on ABC

The Smart Energy Council acknowledges the generous support of the Lord Mayor's Charitable Foundation for the Global Smart Energy Summit.

COUNTING THE NUMBERS

AUSTRALIAN ENERGY GENERATION 2019/20

COAL	68.39%	135.92TWh
GAS	8.04%	15.98TWh
WIND	7.53%	17.97TWh
UTILITY SCALE SOLAR	2.93%	5.82TWh
ROOFTOP SOLAR	5.95%	11.82TWh
BATTERY STORAGE	0.04%	0.07TWh
HYDRO	7.12%	14.15TWh
TOTAL		**198.73TWh**

Source: AEMO

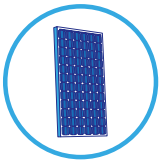
AEMO's ISP states fast tracking to **94%** renewables by 2049 would save $40 billion. 'Do nothing' and we will reach **74%** by 2049

UN reports that global emissions must drop **7.6%** every year for 10 years to avoid catastrophic climate change

Australian emissions rose **0.3%** in 2019, missing the target by **7.9%**

New solar and wind farm capacity in Australia in first half 2020 = **514MW**, one-fifth of the **2,525MW** installed in first half of 2018

COMPARATIVE BUILDING COSTS

NEW COAL PLANT	NEW GAS PLANT	NEW SOLAR PLANT
		
$114MWh	$86MWh	$28MWh

SHINING THE LIGHT ON SOLAR

Cost of new solar panels has dropped **90-95%** in a decade

In 2019 countries added **118GW** new solar capacity = **45%** new electricity generation

Over past decade global solar generation capacity rose 15-fold to **651GW**

140-178GW of new solar is anticipated to be built in 2022

Source: Bloomberg New Energy Finance which tracked global growth of renewables at 67% of new build in 2019, fossil fuel plants at 25%

SMART ENERGY COUNCIL
SOLAR, STORAGE, SMART ENERGY

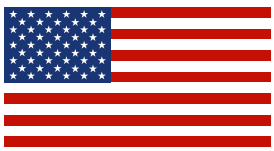
OVERVIEW AND OVERSEAS MOMENTUM

REMINDER: to limit global warming to **1.5°C** (from 1990 base level) CO_2 emissions need to fall **45%** by **2030** and the world emissions must reach **net zero** by **2050**

EU plans to boost renewable energy share to **38–40%** of gross final consumption

European Commission is raising its greenhouse gas emissions reduction target from **40%** to **55%** by **2030** as a stepping stone to 2050 climate neutrality goal

A Democrat-led US aspires to...



Carbon-free US energy by **2035**

US becoming a **net zero** emitter by **2050** (with carbon emitted by industry, transport or other sources balanced out by removing equivalent amount from atmosphere)

Transportation revolution electric vehicles and trains

Development of **1.5 million** sustainable homes and housing units

Climate change **tariffs** on nations not reducing emissions, and ...

Help to contain global temperatures

Supporting installers

We bridge the gap between solar installers, customer expectations and the evolving energy market.

Mondo is combining over 100 years of history with significant investment in home-grown technology to provide energy services across Australia.

We're working with installers to build a future where companies of all sizes are powered by the sun and empowered with the information they need to make the right choices about their energy.

From Network Connections and Virtual Power Plants to Metering and Advisory Services, Mondo is working towards a bright future with solar installers.

Working towards a bright future.

mondo.com.au/installers

IMAGE BY BARNEY ELO FROM PIXABAY

ANGUS TAYLOR'S TECH ROADMAP IS FUNDAMENTALLY FLAWED – RENEWABLES ARE DOABLE ALMOST EVERYWHERE

By Mark Diesendorf

THE MORRISON GOVERNMENT has revealed the five low-emissions technologies it will prioritise for investment. The so called 'technology roadmap' offers scant support for renewable energy, for reasons that do not stand up to scrutiny.

The technologies at the centre of the roadmap are:

- clean hydrogen
- energy storage
- low-carbon steel and aluminium
- carbon capture and storage, and
- soil carbon.

Federal energy minister Angus Taylor said proven technologies such as solar and wind "are not the focus of the roadmap".

Taylor has sought to justify the government's lack of support for renewable energy. This includes saying two-thirds of Australia's emissions now are produced "outside the electricity grid" – implying renewable energy has little role to play beyond the power sector. But I believe that claim is misleading.

Renewables are versatile

The graph below, based on official data, shows the sources of Australia's greenhouse gas emissions in 2018. It reveals 82% of the national total stems from energy emissions. This does not just include electricity generation, but non-electrical heating, transport, and emissions from extracting, moving and using fossil fuels (or fugitive emissions).

Almost all these emissions can be avoided by renewable energy, such as by:

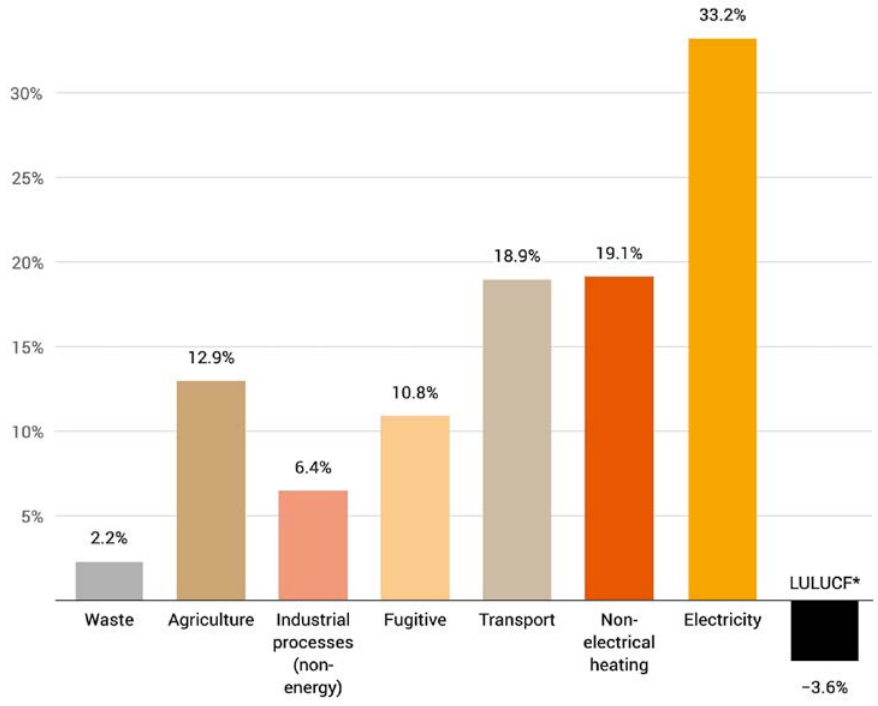
- using electric heat pumps (such as reverse cycle air conditioners), solar hot water, and geothermal and solar thermal for heating
- replacing gas and coal with renewable energy for heating in industrial processes, and
- a transition to electric vehicles plus cycling and walking.

Technologies to support these uses are already commercially available.

Renewable electricity cannot directly replace fossil fuel use in activities such as air and sea

Australia's emissions in 2018

Percentage share of annual emissions, by sector, for the year from December 2017 to 2018.



** Land use, land-use change, and forestry (LULUCF). Overall emission figures given, less LULUCF, total 99.9% due to rounding*

Source: Department of Industry, Science, Energy and Resources

SMART ENERGY COUNCIL

The government's latest energy plans are a failure of logic says Mark Diesendorf

IMAGE BY DPEXCEL FROM PIXABAY

transport, and industrial processes such as steel-making. But with a bit of development, it can be used to produce 'green' hydrogen and ammonia, which promise to decarbonise those areas.

Hydrogen is not the emissions reduction panacea Taylor seems to suggest it is. However, together with energy efficiency, green hydrogen could substitute for Australia's non-energy industrial emissions (6.4 per cent) together with those from air and sea transport (about 5 per cent).

Hydrogen: a Trojan horse?

The roadmap prioritises 'clean' hydrogen. This does not just refer to hydrogen produced using renewables – the government says hydrogen can be produced cleanly with coal and gas if resulting carbon is captured and stored. In fact, the plan claims fossil fuel-derived hydrogen "might be the lowest cost clean production methods in the short-term".

Carbon capture and storage is an expensive, energy-wasting technology. Despite federal governments having spent more than A$1.3 billion on the technology, a commercially viable plant has not come to fruition.

The government will also establish Australia's first regional hydrogen hub, at a cost of A$70 million, to "scale-up demand and take advantage of the advancements in this low emissions, high powered source of energy".

Almost all the proposed locations are close to coal mines or gas field, suggesting the government is preparing to wager big on hydrogen from fossil fuels.

In fact, the government's plans on hydrogen (and associated steel and aluminium production), as well as carbon capture, may all lock in fossil fuel use for decades. This outcome is completely at odds with what's needed to address the climate emergency.

Renewable energy: a market failure

The Morrison government says solar panels and wind farms "are now clearly commercially viable and have graduated from the need for government subsidies". The roadmap classifies renewables as mature technologies, giving them low priority.

The government intends only to invest in such mature technologies "where there is a clear market failure, like a shortage of dispatchable generation, or where these investments secure jobs in key industries."

But an existing market failure means the future of wind and solar farms is by no means assured. Congestion on transmission lines is limiting renewables growth. More infrastructure is urgently needed to connect renewable energy to the grid, and transmit it where required.

Federal funding is also needed urgently to help the states create renewable energy zones, as recommended by the Australian Energy Market Operator (AEMO). These areas would involve the coordinated development of grid infrastructure, such as transmission lines, in places with big renewable energy potential.

Yet the government package doesn't prioritise these essential measures – and markets will not build them.

Reason to hope

Amid the economic downturn brought on by COVID-19, there were high hopes the Morrison government would invest in a green-led recovery. While its roadmap contains a few bright spots, such as a focus on energy storage, overall it is not the emissions-busting plan Australia needed.

But there is reason for hope. In the absence of federal government leadership on emissions reduction, others are stepping up with ideas. The *Million Jobs Plan*, for example, envisages investment in zero-emissions technologies that could create more than a million new jobs in Australia over five years. The plan, by think tank Beyond Zero Emissions, has been backed by Atlassian co-founder Mike Cannon-Brookes and senior business leaders. Other groups have proposed similarly promising plans.

The government's latest energy plans are a failure of logic. An economic recovery that moves Australia far beyond fossil fuels is the way forward environmentally, socially and economically.

Mark Diesendorf is Honorary Associate Professor, UNSW.

IMAGE BY SKEEZE FROM PIXABAY

Renewable electricity cannot directly replace fossil fuel use in activities such as air and sea transport, and industrial processes such as steel-making. But with a bit of development, it can be used to produce 'green' hydrogen and ammonia, which promise to decarbonise those areas.

BUILDING A BRIGHTER TOMORROW: A CALL TO ACTION

Two days of industry insights and an exhibition hall showcasing products and services successfully delivered in front of more than three thousand delegates taking social distancing to new highs… through a virtual platform. The consensus: a pandemic will neither divide nor slow the industry, communication remains strong and the industry is as united as ever.

THE SMART ENERGY CONFERENCE & EXHIBITION 2020 delivered a vision of a world in which solar energy and battery storage, green hydrogen, Virtual Power Plants and smart emerging technologies rule the day. All that's lacking are rational climate focused policies. Add that into the mix and you set the foundation for Australia's transformation into a renewable energy superpower.

Among the hopes and fears, criticism and optimism that characterised the day was a central bug-bear: the general political impasse on climate and emissions (John Hewson: "Global governments are yet to accept the magnitude and urgency of climate change and Australia is a particular laggard") despite an abundance of solutions and opportunities. To say nothing of moral imperatives.

Conservationist David Spratt declared the first duty of government is to protect the people: their health, safety and well-being and management of high-end risks where the threat may be catastrophic or existential.

"Instead we find ourselves in Disaster Alley, witnessing the demise of coral reefs, increased intensity of bushfires, a long-term dry trend across south-east Australia and in the case of NSW the driest spell on record, the weather too hot for cattle to breed or rivers to flow.

"We are unleashing hell on Australia with catastrophic wildfires ravaging the landscape. Now we are facing a situation where forests will not have time to recover between fires" said the research director of the Breakthrough National Centre for Climate Restoration.

"And we are on a warming path of 3-5°C at current commitments. At 4°C rain falls by half in Australia and wheat yields fall to zero."

At two degrees warming one billion people need rehoming due to rising sea levels, he said. Three degrees warming is catastrophic, leading to desertification of 30 per cent of land and persistent deadly winds.

"At the current rate of 1.2°C warming we have already passed critical thresholds, now we are headed toward 1.5°C warmer by 2030 regardless of the mitigation path and 2°C by mid-century without actions way beyond anything currently being contemplated.

"Can we, as we have done in response to COVID, act on climate recognising that it too is an emergency-level threat?

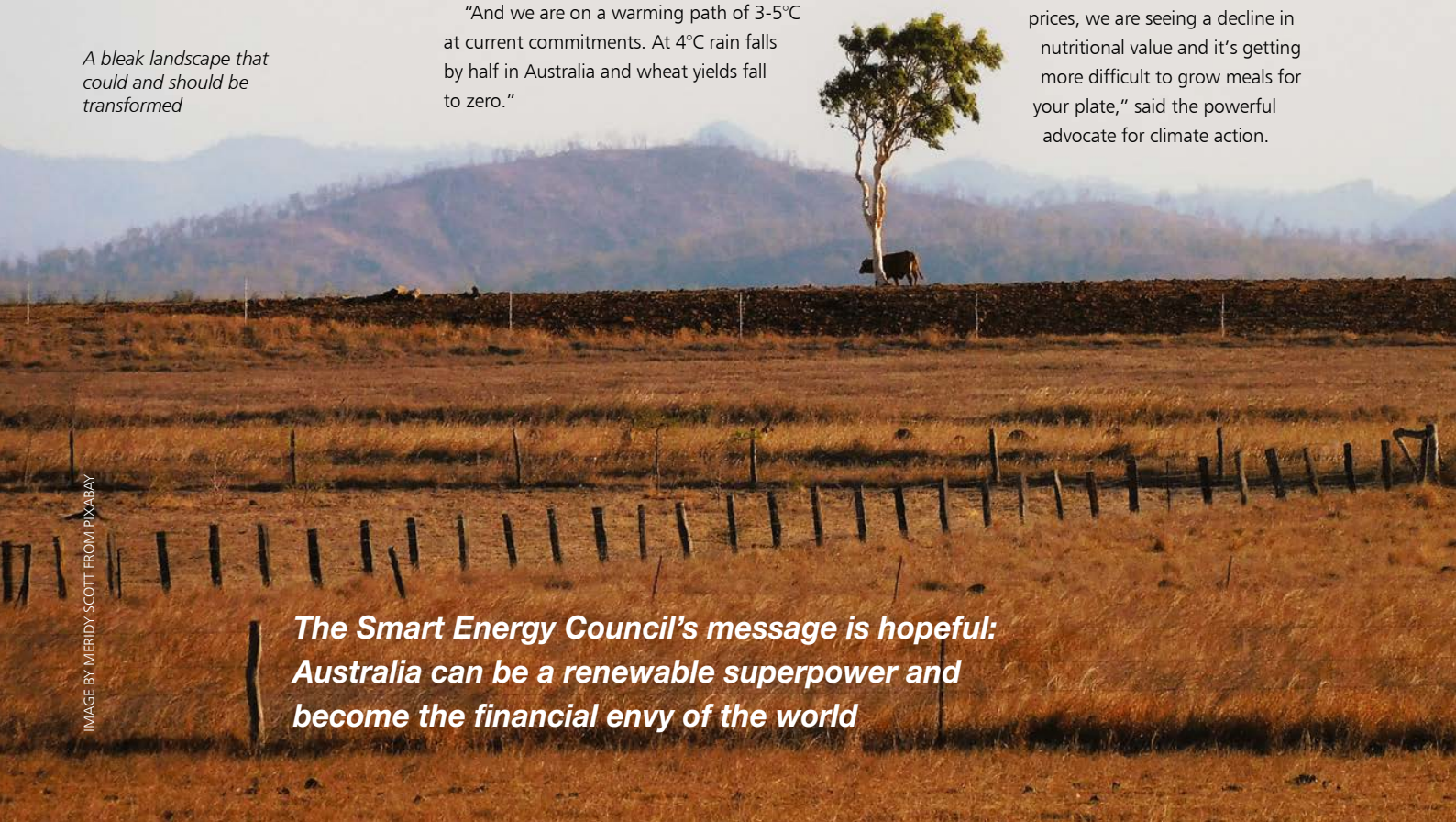
"The question is whether we have the capacity to acknowledge rather than deny the reality of the climate crisis as it exists in its full, existential form, and act accordingly," said the co-author of *Climate Code Red: The Case for Emergency Action.*

Mercury rising

Spratt's dire and dramatic image of water shortages hampering food production and nutrition have been experienced first-hand by agri-ecologist **Anika Molesworth** whose family farm in rural NSW has struggled mightily during the long-term drought.

She delivered a searing portrayal of scorching hot summers rendering life stressful and dangerous and in which water evaporates, vegetation dies off and livestock become infertile.

"Climate change gives us instability. Torrential rain drowns cattle and increases food prices, we are seeing a decline in nutritional value and it's getting more difficult to grow meals for your plate," said the powerful advocate for climate action.



A bleak landscape that could and should be transformed

IMAGE BY MERIDY SCOTT FROM PIXABAY

The Smart Energy Council's message is hopeful: Australia can be a renewable superpower and become the financial envy of the world

"The world is facing big challenges… how are we to feed a rapidly growing global population if we do not act on climate change now? I'm just one of many voices crying out in rural Australia… many are demanding a clean energy revolution that is good for people and planet."

Molesworth is an inspirational and passionate voice calling for a regional transition program that involves renewables microgrids and a smarter, more diverse and decentralised economy to shore up regional resilience and provide a series of new job opportunities.

"Climate change brings us the ability to reimagine things and do them better through innovation," she said. "But we need to set targets and pathways to take away our fear of what will be lost."

The prospect of significant job creation brought about by a society-wide shift is at the core of work undertaken by think-tank Beyond Zero Emissions in its widely lauded Million Jobs plan.

"Any plan that does not put renewables at the heart is un-investible" said **Eytan Lenko** who commented on the strong interest in the 3GW NSW renewable energy zone that attracted funding in the region of $30 billion and up to 27GW and "sent a strong message to the federal government that decarbonisation is the way to go".

"Private investors are interested in renewable energy and the return that will be generated, we need to back the trends that are happening to hasten it such as moving from analog to digital and to modular, cost effective technology."

He cited the EU's $400 billion in carbon abatement-related commitments and clean energy roll-outs in South Korea, the UK and beyond, and the multi-billion dollar scale of global investment in hydrogen developments.

A society driven by renewable energy

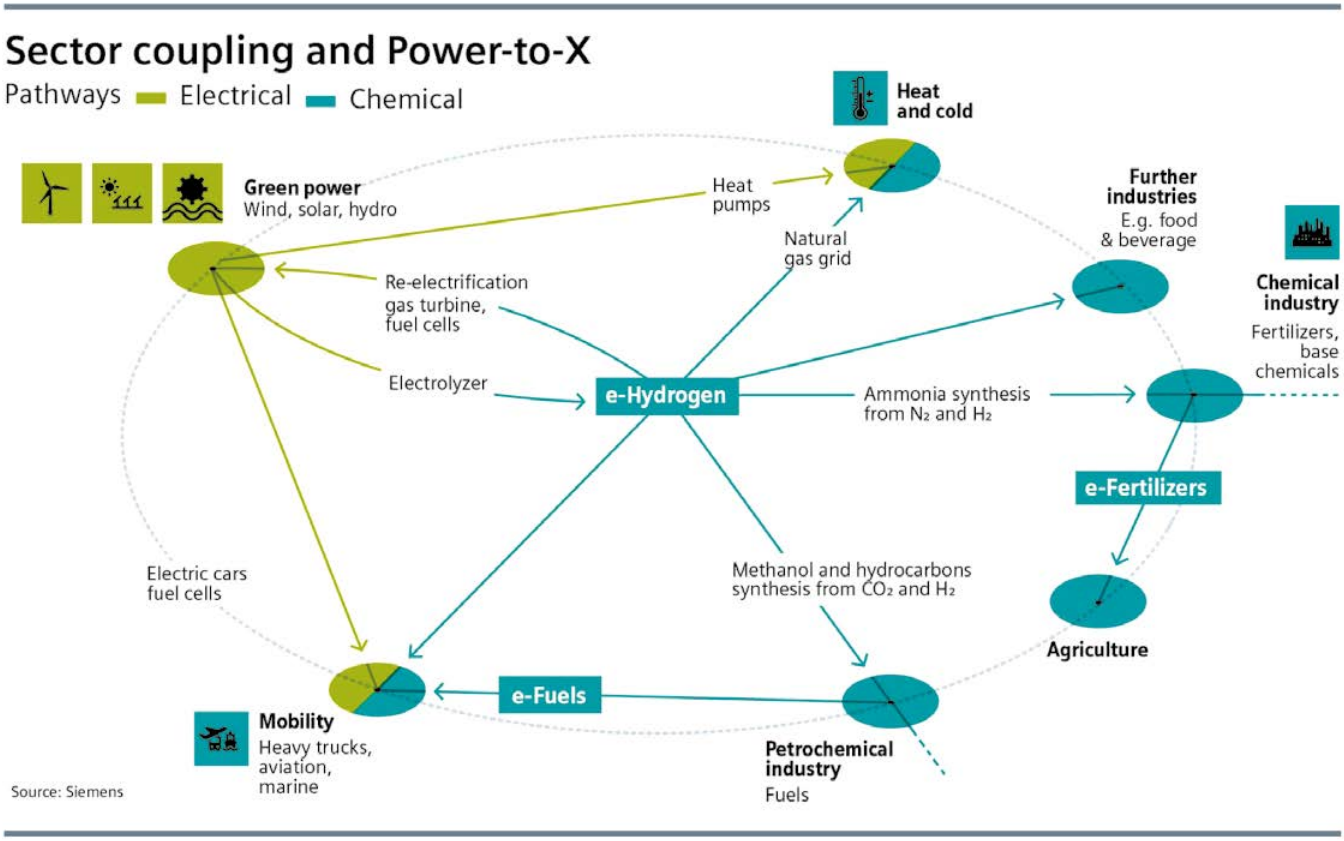
Lenko outlined the scope for 1.8 million 'green' jobs for Australians in a system-wide transition that takes in building retrofits and affordable housing, electrification of transport, manufacturing and mining, land regeneration, waste recycling and more, along with all the training, education, and research supporting all the initiatives.

(Read more about Eytan Lenko's BZE Million Jobs plan in Winter *Smart Energy* magazine.)

It's a vision that lies before us, but a sobering reminder from Bloomberg New Energy Finance that just eight per cent of global electricity derives from solar and wind power today and emissions are yet to see dramatic reductions.

Seen through the lens of economics, the numbers clearly favour renewables, new build renewable energy is cheaper than new fossil fuel plants and "This is an important tipping point in the decarbonisation story and decarbonising power markets."

It's a message however that has fallen on deaf ears in Australia. "Tragically Australia is falling far behind and the Morrison government



is ignoring calls from big business and miners, insurers, super funds exiting climate investments and state governments to commit to net zero emissions and decarbonise electricity," former Liberal leader **John Hewson** said.

His recommendation: a transition pathway and national commitments, key steps being low carbon by 2050, the end of fossil fuel subsidies, closure of coal power stations and no new gas generation.

Citing high levels of air pollution from vehicle emissions alone the Smart Energy Council patron singled out the significant opportunity for the government to move forward not just in energy but in transport, agriculture, energy efficient building codes and more.

"Sector by sector transitions would underpin a decarbonised society," Professor Hewson said. It would also provide a panacea to the economic wreckage caused by the pandemic. If ever there was an opportunity…

Shadow Climate Change Minister Mark Butler remarked on Australia's run-down manufacturing and supply lines and widespread job insecurity.

"But on the brighter side the pandemic has highlighted our strengths in the public health of society, our research capabilities, and elements of the political system that have been lacking, namely the importance of a consensus during crisis by 'reaching across the aisle' and developing bipartisan activities.

"The question is whether there is a political will to take us out of recession, the deepest since 1931, and make inroads into the fight against climate change," he said, and "This is the critical decade to reduce emissions."

"Once we shift from health to national economic recovery we need as many voices as possible speaking in favour of a renewables-led recovery," said Butler. "Ultimately the Prime Minister will take a pragmatic path that is best to him."

What's best for the nation should also be a decisive factor and before us lies the very real prospect of becoming a superpower, a nation that, **Oliver Yates** pointed out, is one that can collect natural resources in large volume faster and cheaper than others. Opportunity knocks.

Australia: renewable energy exporting superpower

We could be the ultimate sustainable superpower, our solar and wind resources are massive, world leading, we can produce more energy more cheaply than any other country on the planet.

"We have a natural sustainable advantage for cheap energy and will never run out of availability, it is a natural asset that we should be exploiting. It will make all industrial processes cheaper," Yates said.

"Australia should be home to low carbon heavy industry; building new heavy industry and chemical facilities that are green power consuming and embed that power into low carbon exports."

Electricity is everything – from it you can power transport, the production of natural gas, plastic, paint, ammonia for fertiliser and liquid fuels which is all the feed for chemical stocks.

"This just starts our superpower status," he said displaying Siemens' 'power to X' sector coupling concept.

"We can make electricity cheaper than others, therefore hydrogen cheaper than others, therefore everything else cheaper than others… we have an enormous opportunity that will benefit all Australians through jobs and business for clever Australians

"Why are we not doing it? Why so hard?" he asked in a heartfelt address and by which time the webinar chat function had warped into overdrive with calls of 'hear hear'.

"We have to disrupt team fossil – totally, fully and finally. It is blatant grotesque and unhealthy," Oliver Yates said. "The time is now, fossil fuels

can't compete against renewables, we need to unlock Australian resources to become an energy superpower, the opportunities are massive, the disruption will be profound.

"We need a government with open eyes that sees the potential of renewable energy. A Team Clean."

Climate smart

Hope comes in the form of **Independent MP Zali Steggall** who proposes a clean energy-led recovery and is tabling a Climate Change Bill that calls for national bipartisan policy with a target of net-zero emissions by 2050 and that locks in five-year emission reduction budgets and places emphasis on clean technologies.

The proposal includes an independent, expert-based Climate Change Commission and blocking loss-making ventures undertaken by ARENA and CEFC.

"The duty of government is to address known (and future) risks," Steggall said, noting Europe's inking in of a seven year budget that channels half a trillion euros into climate smart actions including solar power, EVs, energy efficiency, retrofit batteries, green hydrogen and more.

"The pandemic provides massive disruption and we need long-term solutions and economic stimulus to get back, it is an opportunity to set in place a new way of doing things such as a society geared toward zero net emissions economy, which could unlock enormous developments," she said.

"Public building design and energy efficiency retrofits, maximising investment in clean technologies, developing industries and helping fossil fuel-focused regions transition to renewables.

"But we need federal government policies to get us there.

"A climate smart stimulus is what I propose. We need to build back better by putting renewable energy at the heart of the economy."

Steggall agrees that communities can bring about change by being engaged and active and urged more citizens to pressure their MPs by getting engaged and active.

www.Climateactnow.com.au

The Smart Energy Conference featured 68 speakers; all session recordings can be seen and heard at www.smartenergy.org.au

A wander through the Exhibition Hall

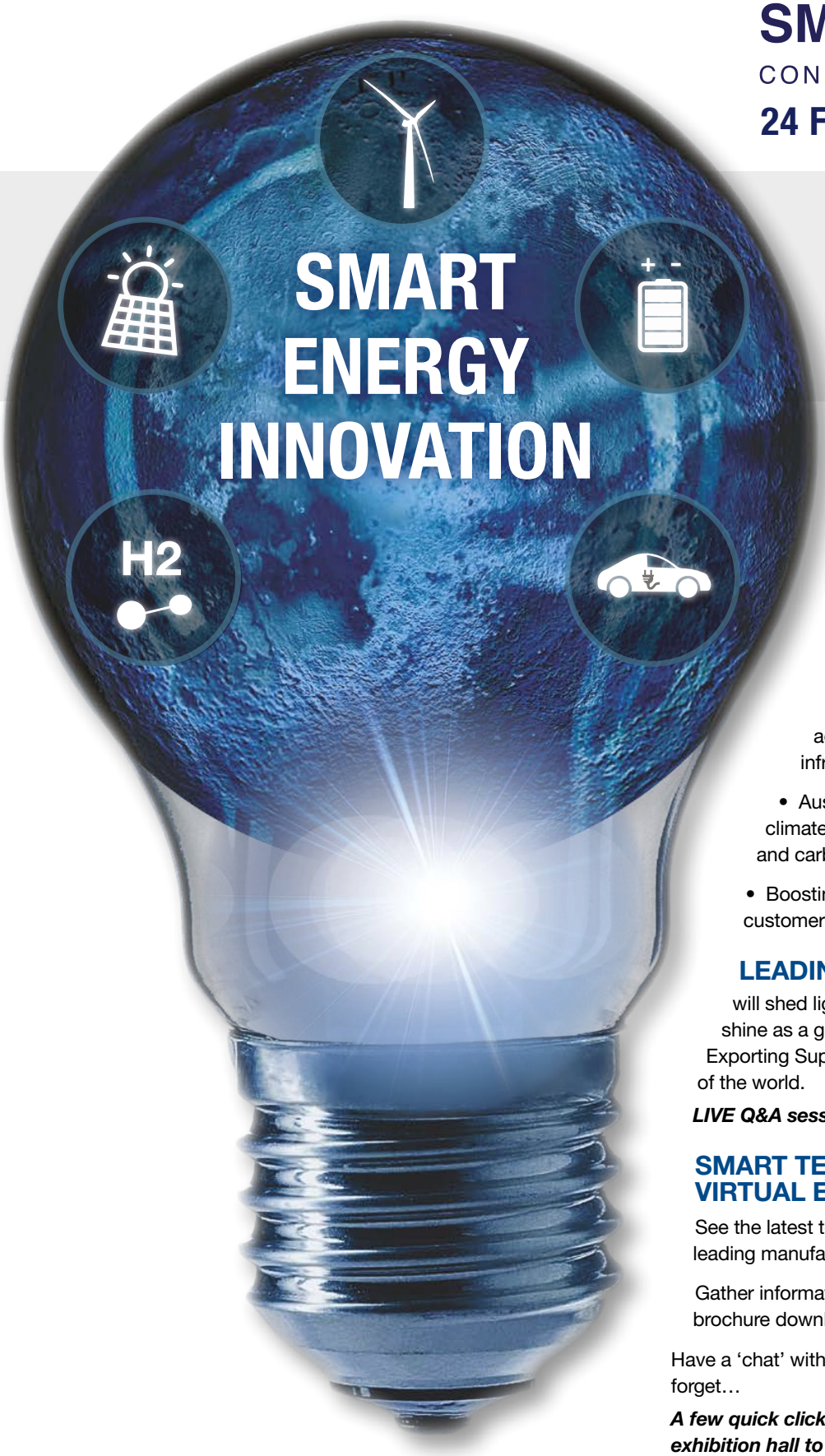
The Smart Energy Conference and Exhibition recorded an audience of 6,142 over the 10 sessions and a record attendance of 22,000 visits to the 35 exhibitors' virtual booths packed with leading companies showcasing their products and services. Channels included videos, chats, data sheets and the very popular 'swag bag': soft copies of brochures.

Virtual conference goers listed all the benefits: the ease of visiting the exhibition halls and joining speaker sessions without having to walk 'hundreds of metres'; no need to scramble for a car parking spot or worry about train and plane timetables; no travel or accommodation costs; and no paper waste. In a word: highly convenient and an event ideally tailored for the low carbon industry.

The annual Smart Energy Conference and Exhibition will deliver the same benefits through a similar format on Wednesday 24 February 2021.

SMART ENERGY ON SHOW 2021

SMART ENERGY
CONFERENCE & EXHIBITION
24 Feb 2021 | 3D VIRTUAL



POSITIONING AUSTRALIA AS A RENEWABLE ENERGY POWERHOUSE AND EXPORTING SUPER POWER

The virtual conference will cover smart energy policy and solutions including storage, DER and VPPs; hydrogen developments; and Professional Development sessions.

TOPICAL ISSUES

- Emerging trends in PV and storage battery uptake, green hydrogen, VPPs, electrifying the vehicle fleet, solar cell advances, and addressing network and infrastructure issues.
- Australian and international approaches to climate change, emissions policies and targets, and carbon-laden exports.
- Boosting market potential: how to win customers and improve sales performance.

LEADING INFLUENTIAL FIGURES

will shed light on all the reasons why Australia can shine as a global Renewable Energy Powerhouse and Exporting Super Power and become the financial envy of the world.

LIVE Q&A sessions at conference events

SMART TECHNOLOGY IN THE VIRTUAL EXHIBITION HALL

See the latest technology and products on offer from leading manufacturers and innovators.

Gather information through videos and ‘swag bag’ brochure downloads.

Have a ‘chat’ with booth representatives, and don’t forget…

A few quick clicks transport you to and from the exhibition hall to live conference sessions

EXHIBITORS – *reach your target market*

Want to participate as a partner and create your own customised virtual stand?

- Plenty of opportunities with simple, fast booth setup
- Display a range of documents and videos on your booth
- Add banners and the 'chat' function for real-time conversations with customers

***** No travel Involved, no stand construction cost or time constraints *****

PARTNERSHIPS – *opportunities at a glance*

- **Titanium** – 3 available
- **Platinum** – 4 available
- **Gold** – 6 available

Some of the benefits: Email marketing to 20,000+ industry professionals; social media marketing; logo and hyperlinks on event website; logo on event banner (during and after the event); opportunity to participate in the conference session; and featured article in *Smart Energy* magazine

OTHER OPPORTUNITIES

- **Networking lounge partner** – prominent display of company logo
- **Session partner** – prominent display of company logo
- **Gamification partner** (available for exhibitors only)

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OUR PARTNERS

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HYDROGEN AUSTRALIA
A DIVISION OF THE SMART ENERGY COUNCIL

ACT Renewables HUB

SMART ENERGY TRAINING CENTRE

"Smart solar and storage businesses are competing hard to gain and maintain market share. We all need to innovate and continue to sell and that means reaching the thousands of installers from right across the country via the Smart Energy's virtual exhibition. It's the most effective and efficient way to reach target audiences. Don't miss out on this smart business development opportunity at the start of 2021."

JOHN GRIMES, CEO, Smart Energy Council

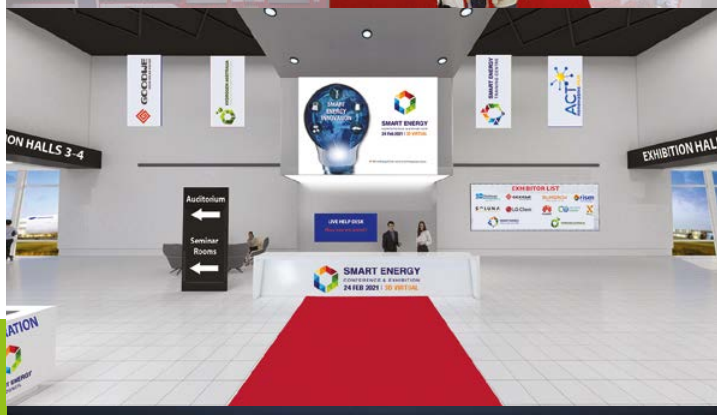
#SmartEnergyVirtual | www.smartenergyexpo.org.au

FEEDBACK FROM THE SEPTEMBER 2020 VIRTUAL EVENT

"This was a fantastic event with strong buy-in from industry to bring a solid amount of information to the wider solar community. Everyone was willing to connect, network and offer knowledge into where the solar industry is heading."

"Like a new dawn shining a light on the future of renewable energy."

"Thanks again to the team at the Smart Energy Council, I know my membership fees are a worthwhile contribution to an outstanding organisation."



GREEN HYDROGEN

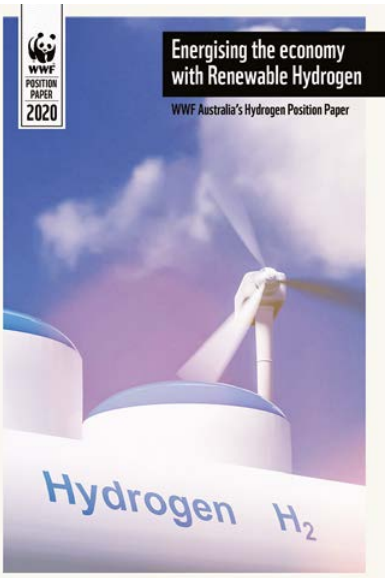
Widespread consensus exists over the need to ratchet up Australia's activities in green hydrogen to stay ahead of the game and claim its rightful place as a powerhouse. Developments are afoot: local investments in hydrogen technologies tally around $36 billion and around 35 significant hydrogen projects are earmarked or underway. But how fast can they be delivered and what policies offer support?

WWF-AUSTRALIA RECENTLY RELEASED

Energising the Economy with Renewable Hydrogen, explaining Australia's ability to play a leading role in the global renewable hydrogen industry. Hydrogen Australia was among the leading players in renewable hydrogen endorsing the findings.

The paper details the extent of exports, job creation, and trade partnerships that would arise from investment into renewable hydrogen, enabling Australia to snare a significant portion of the potential $700 billion a year industry.

"But our experts are sending a clear message: we must act now," Nicky Ison said. "Countries in Europe and Asia are currently gaining an edge, aided by support from their governments.



"To grow the scale needed to bring renewable hydrogen down the cost curve, we should start with decarbonising the existing hydrogen industry.

"Hydrogen is already an established industry and currently used globally to manufacture fertiliser, explosives and other chemicals and commodities and accounts for 1 per cent of global carbon pollution."

The WWF has been advocating for the acceleration of renewable hydrogen as part of its Renewable Recovery campaign, including the development of Hydrogen Hubs, as recently announced by the Federal Government. *www.wwf.org.au*

THE FEDERAL GOVERNMENT'S

2020 Technology Investment Roadmap has listed "clean" hydrogen and energy storage investment as priorities and reiterated the goal to deliver clean hydrogen under $2 per kilogram.

Funding will be provided for research and development into hydrogen-related technologies and infrastructure and a directive issued to the CEFC to allocate $300 million in funding for hydrogen technology development.

The government has pledged $70 million for a hydrogen hub and will encourage investment from private sector industry and state governments for the establishment of an export hub as part of a $1.9 billion plan to focus on "future technologies" to reduce emissions.

PUTTING THE SPOTLIGHT ON HYDROGEN

In late September GFG Alliance's Sanjeev Gupta cast hydrogen and steel as "a marriage made in heaven" that provides the best catalyst for a carbon-free future.

Airing his candid views in a News Corp publication he wrote "I'm excited about hydrogen's potential because I'm planning on using an enormous amount of it. Hydrogen is going to revolutionise the steel industry and in return, steel can be the key enabler for hydrogen and help to drive its widespread adoption."

He says the new, green industrial revolution is "going to happen more quickly than most anticipate – and a decarbonised steel industry is going to be its foundation". Gupta went on to explain how hydrogen can replace coking coal as a reducing agent to produce sponge iron, emitting water rather than carbon. The billionaire industrialist has already devoted significant resources to drive transformations in Greensteel at the Whyalla Steelworks in South Australia.

Data suggests global demand for steel will double in three decades, and currently it accounts for nine per cent of carbon dioxide emissions.

"This revolution will happen – it is just a question of where. Australia's opportunity to be a world leader in hydrogen and green steel is now, but it has to grab it… we need the right policy and financial framework to incentivise investment and joint ventures with technical partners in long-term hydrogen projects," Gupta said.

He noted carbon-based industrial revolutions of past eras have delivered many benefits around the world, but also the legacy of climate change, and said "The next industrial revolution will be based on green hydrogen and it is about to happen."

IMAGE BY MICHI-NORDLICHT FROM PIXABAY

GFG Alliance's Sanjeev Gupta

The audacious 26,000MW (26GW) **ASIAN RENEWABLE ENERGY HUB** near Port Hedland moved one step closer to fruition following the Western Australian government's environmental approval for the first stage of the project: 10GW of wind generation and 5GW of solar generation.

Western Australian Regional Development Minister Alannah MacTiernan said "This development will demonstrate Western Australia's credentials as a world-class investment destination for green energy generation, including the production of exportable commodities like green hydrogen and ammonia and green steel manufacturing."

IMAGE COURTESY ASIAN RENEWABLE ENERGY HUB

The Minister also commented on the plant's significant role in global efforts to decarbonise the economy and "put Western Australia on the map as a major contributor to lowering global carbon emissions" saying "Interest in renewable hydrogen is rapidly accelerating and our government is moving to position WA as a world leader in hydrogen production."

The WA Government recently pledged $22 million for the state's renewable hydrogen industry and has fast tracked the its Renewable Hydrogen Strategy targets.

"Investing in renewable hydrogen and bringing forward our targets sends a clear message to the industry that we are serious about Western Australia being powered by clean energy," Minister MacTiernan said.

Staying in the west, Arrowsmith's $350 million green hydrogen project earmarked for north of Perth has nudged closer to reality through a partnership with international energy services provider Petrofac. Up to 25 tonnes of green hydrogen will be produced daily by tapping into solar and wind resources, and eventually scaling up to export liquid hydrogen to Asia Pacific. All being well, the Arrowsmith Plant will flick the switch in late 2022.

KOREAN VEHICLE MAKER HYUNDAI is among many nations regarding Australia as a potential hydrogen powerhouse. During the launch of the Hyundai Xcient hydrogen fuel cell truck, VP Dr Sae Hoon Kim said "In the future we have to use all renewables… I think Australia can provide all the energy for the world. A recent study found buying hydrogen from Australia and shipping it to Korea would still be cheaper than producing it locally in Korea.

"Australia will have the cheapest hydrogen in the world, the cost of diesel fuels will go up and hydrogen will come down, regardless of local regulations or legislation," says Hyundai.


The Hyundai Xcient hydrogen fuel cell truck (IMAGE COURTESY HYUNDAI)

Looking up in the skies in 2035 could reveal the future shape of aviation, with **AIRBUS WORKING ON A ZERO-EMISSION HYDROGEN-FUELLED AIRCRAFT** or ZEROe. Three aircraft prototypes are under consideration that will be powered by hydrogen combustion through modified gas-turbine engines with liquid hydrogen used as fuel for combustion with oxygen.

However the drawbacks include the relatively high energy density fuel, amount of refuelling infrastructure and limitations on distance covered, according to University of Sydney Professor Rico Merkert, who says the technology would better suit short-haul flights up to 4000 kilometres rather than major international flights.

GLOBAL ENERGY VENTURES is commencing the development phase of the world's first compressed hydrogen transport ship, with a storage capacity of up to 2,000 tonnes (23 million m^3) of compressed hydrogen.

GEV's compressed hydrogen vessel is touted to be "very competitive against other marine transport options as you don't need all the liquefaction capex (as you do if you're transporting liquified hydrogen)".

The ship would drop in at the proposed Hydrogen Hubs for production and export to the country's major energy trading partners across the Asia Pacific region.

GEV will focus on Australian export projects, with several projects advancing through pilot phases and now looking to export markets.

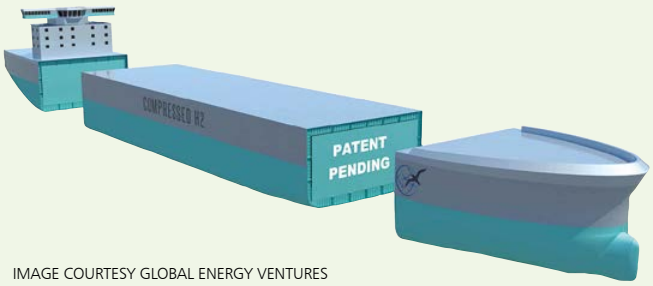


IMAGE COURTESY GLOBAL ENERGY VENTURES

HUNGRY FOR HYDROGEN Germany regards Australia as well placed to be a potential supplier of vast quantities of green hydrogen at "very low cost by global standards" in the country's bid to phase out its use of coal, decarbonise heavy industry including chemical and steel, and achieve net zero emissions by 2050.

The hydrogen would be shipped in a fleet of environmentally friendly tankers.

Germany anticipates that by 2030 hydrogen demand will come in at 1000TWh annually, or about 3 million tonnes, of which 85 per cent will be imported.

Australia is described as having "excellent conditions for the cost-effective production of green hydrogen" and would enable Germany to wean itself off its reliance on coal that represented nearly 30 per cent of energy generation.

SPAIN'S HYDROGEN ROADMAP includes manufacturing plants with a capacity to generate between 300 to 600MW of hydrogen from renewables by 2024, ramping up to 4GW by 2030. The EU has set a target of 40 gigawatts by 2030.

SWEDEN RECENTLY FLICKED THE SWITCH on the world's first green steel plant, with Prime Minister Stefan Lofven declaring "Steel has built Sweden, and steel has built our welfare system. But steel, or rather the manufacture of steel, also threatens our way of life."

A government owned utility is supplying renewable electricity to the plant which is used to produce zero emissions hydrogen used in the steel manufacturing process. The plant is run by government-private enterprise consortium Hybrit.

"[We] are laying the foundations that will enable the Swedish steel industry to be entirely fossil and carbon dioxide free in 20 years," Lofven said, adding "steel is jobs".

SMART ENERGY COUNCIL
SOLAR, STORAGE, SMART ENERGY

About us

The Smart Energy Council is the peak body of the smart energy sector in Australia. We are a not for profit, membership-based organisation with over 1,200 members nationwide, consisting of companies and individuals operating in this rapidly expanding industry.

HYDROGEN AUSTRALIA
A DIVISION OF THE SMART ENERGY COUNCIL

We are passionate and independent. Our deep understanding of and connections with our members and industry ensures that we deliver results for the smart energy industry and the community.

Support the driving force of Smart Energy

The Smart Energy Council:

- Fights hard for smart energy policy
- Provides actionable market intelligence
- Creates valuable networking and introductions
- Delivers high quality training and professional development
- Promotes your business and brand

We represent companies across the Smart Energy spectrum including: solar, solar hot water, storage, energy management, electric vehicles, hydro, wind energy, hydro, bioenergy, ocean energy, geothermal, hydrogen, co- and tri-generation and hybrid and enabling technologies.

We also represent smart energy customers and consumers and provide expert advice to governments and the public.

As the national voice for smart energy the Council is committed to high-quality, long-term smart energy solutions for all Australians.

"The Smart Energy Council has the key people, experience, demonstrated effectiveness, and industry and government network and relationships, to rate as one of the top industry bodies in Australia and globally."

– John Hewson, Former Liberal Party leader, financial and economic expert

Become a Member Today

Don't sit on the sidelines. Become a Member and play an active role in driving industry quality, safety, and smart national energy policy.

For further information please contact:

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Learn more **smartenergy.org.au**

PASSING THE BATON AT GREENBANK ENVIRONMENTAL

More than 15 years ago Fiona O'Hehir founded one of Australia's first renewable energy trading companies, Greenbank Environmental. From get go Greenbank has maintained a major market position as one of the nation's top ten clean energy certificate traders. How do they do it?

PROMINENT TRADER GREENBANK ENVIRONMENTAL needs little by way of introduction. During its 15 years of business, mother and daughter team of Fiona and Ria O'Hehir have maintained a cracking pace and gained a solid reputation.

Together they have driven the business from a small consultancy firm to the prominent certificate aggregation and trading business it is today.

As we will find out, much of the success has been built by staying ahead of the game, and the story starts back in 2005 when residential rooftop PV was only being adopted by pioneers, and large-scale renewables were a rare commodity. But the time felt right for long-term conservationist Fiona O'Hehir to launch a business.

"It was not an easy start, we were scratching around for a while," she said, "And as some will recall, back in 2005 the Renewable Energy Target just featured large scale (renewable energy) generation certificates. It was not until 2011 when the scheme was split in two that small scale certificates were introduced, and it created even further uncertainty and volatility."

Fiona was first to wrap her head around all the facets of STCs and quickly caught on to the societal and environmental benefits that would flow.

In her words: "The rebate scheme that includes creation to sale or surrender of certificates for liability is somewhat perplexing, and in the early days no one was bridging the gap. I went on an educational campaign that lasted months explaining what it all meant to industry. And we set up a series of systems to ensure that transactions could be processed as smoothly as possible."

The rooftop solar boom took off in 2011 and it's been a roller coaster ride since.

"The industry has transitioned from 21 days to just 24 hours payment terms, and technology and software has boomed. Also the increase in the Federal Solar Credits rebate and policy changes implementing the solar multiplier made things more competitive."

By keeping a finger on the pulse of industry changes, Fiona and Ria O'Hehir have steered continued growth at Greenbank Environmental which remains one of Australia's largest traders

To stay ahead of the game GBE developed its own internal software and platforms to navigate the often complex and changing compliance requirements including the Solar Panel Validation Scheme.

Ria explained "As an agent we need to ensure certificates are true and correct at any one time, and we need the right communications strategy to educate industry. I'd say our progressive compliance processes have allowed us to maintain our leadership position."

As office manager and head trader for the renewable energy, energy efficiency and carbon/emission reduction fund markets she's overseen the development of these and other Greenbank tools and models that forecast short- and long-term market trends.

Changing of the guard

Now, with time marching on, long-term solar stalwart Fiona is stepping down to allow Ria to take over the reins, and it's come about during a tumultuous time for society in general.

Luckily Ria's is a positive experience in lockdown Melbourne, allowing her to reconnect with her young children while shoring up business procedures and relations with suppliers.

"We have been able to become more productive, engaged, efficient and refine the services we provide. And in the process GBE's market share has increased and customers are more satisfied," she said.

"This will ultimately make us a stronger and better company in a post-COVID world. We strive to provide the best customer service as we want them to have a good experience.

"If that is the case the rest of it is easy!"

And she's optimistic about the future, saying "solar will soar and be around a long time and renewable energy will always be on the agenda".

One of Ria's goals is to put her experience and knowledge to good use by implementing a trading and price trading toolbox combined with audience friendly presentations on market trends and forces.

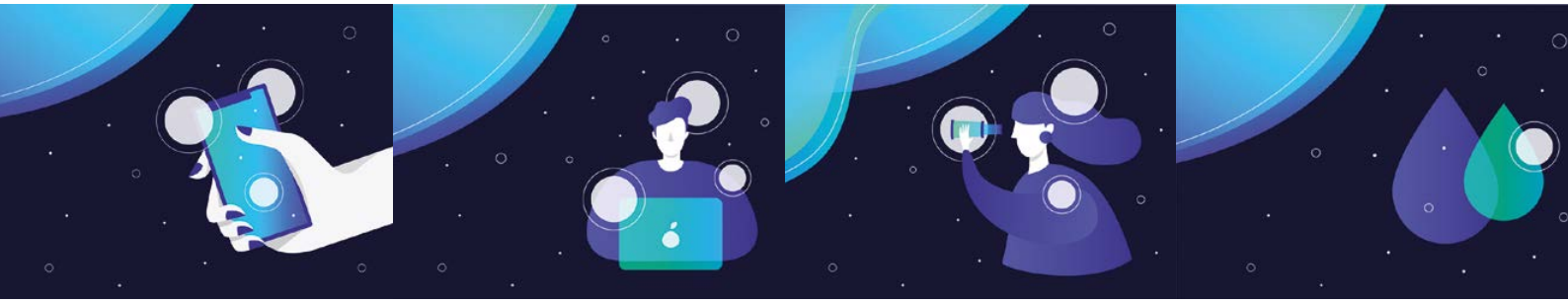
A help desk too is on the drawing board with advisories on different state requirements, licences and rules.

Greener pastures

Meantime Fiona is enjoying a cleaner greener life on an off-grid solar powered Victorian farm, part of which is a Trust for Nature land convenant in line with her strong principles.

It's a much-needed recharge, after the rocky ride of recent years during which Fiona's commitment was pivotal to maintaining industry momentum and upholding its integrity.

Several years ago a dark shadow was cast over the industry when it was discovered that more than 2,500



The fresh new look of GBE is a celebration of business longevity, the new website and updated app.

non-genuine solar panels had been installed across NSW and Queensland, resulting in the solar company involved going into administration.

Greenbank was left holding the liability and, at considerable expense to the business, replaced all of the non-genuine solar panels so that the households and businesses got what they paid for.

Industry reputation was salvaged, and the incident laid the foundations for the Solar Panel Validation Scheme. (With more red tape and paperwork.)

The business has also weathered the vagaries of six prime ministers, most of whom have been less than supportive of renewable energy.

An ardent solar supporter

Fiona played a pivotal role in the national campaign to Save Solar and the Renewable Energy Target when it was under attack from the Coalition government headed by fossil fuel aficionado Tony Abbott.

"From 2010 solar became a political football," she said. "There is no dispute, everyone likes solar however we wax and wane between policy paralysis or the government making decisions overnight without industry consultation and with perverse outcomes they have not considered.

"I was proud about the recovery after the Save Solar campaign, it involved lots of coordination and commitment to drive home the message that we were not just going to walk away."

Fiona's contributions to Australia's solar industry were acknowledged by the Smart Energy Council back in 2016 when she was inducted into the Australian Solar Hall of Fame.

John Grimes of the Smart Energy Council acknowledges the extent of Fiona's support, saying her commitment to the industry had been exceptional. "Fiona underestimates how much she has helped shape the industry," he said. "She has been a long-term staunch supporter in campaigns during the tough times the industry was under threat. She has been fearless and vocal standing up for what was right for the solar industry, and her legacy lives on.

"The industry as a collective owes Fiona O'Hehir a vote of thanks, and I'm among those commending her courage and conviction."

But like many in the industry, and as shown in the ABC *4 Corners* documentary, the emotional toll of successive governments to make a landing on sensible policy takes its toll, say Fiona.

"I have spent half my life focusing on climate change and greenhouse gas emissions, and it's frustrating not being able to get a constructive policy on carbon emissions or decarbonisation, the LNP is determined to hold us back.

Commit to the cause

"We desperately need to secure commitment to a reasonable climate outcome. It's not just about solar, that is only part of it, it's about driving responsible environmental approach overall. But I like to think things are now starting to crank up a bit with more people from all walks of life questioning the direction of the political parties and the decisions they make," she said.

"It's called scrutiny, and it's well overdue. Environmental imperatives have never been more urgent, commonsense aimed at tackling twenty-first century problems must prevail over the outdated and ideological beliefs of the absolute minority who hold vested interests and far too much power.

"We know we have all the solutions, what's holding us back?"

Fiona said Ria can't wait to take the business to the next level, and here's to a successful future in 2021 and beyond for everyone.

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PV MARKET MOVEMENTS AND TRENDS

The year 2020 has delivered enormous upheaval across all sections of society. But are we a resilient bunch or what. Adaptable too: Australians have voted with their wallets for solar and invested mightily in rooftop PV. Industry analysts are spruiking a continuation of the popularity of PV and saying the industry outlook for 2021 remains positive.

IMAGE BY ALBRECHT FIETZ FROM PIXABAY

NOTHING BETTER DEMONSTRATES the widespread community support for renewables than the uptake of rooftop PV. And a look at the first nine months of this year reveals that Australia's harsh lockdown measures to combat the pandemic has only strengthened demand for PV.

Installed PV capacity for the year to the end of September was 2,111MW, an impressive 42 per cent greater than the same time last year (1.5MW).

Commercial PV is tracking 14 per cent higher, according to Green Energy Markets. During September the commercial PV market registered 1,277 systems, up 11 per cent from August and 14 per cent above its year-to-date average.

Queensland registered the highest number of commercial systems (373) and NSW the highest level of commercial installed capacity (12MW).

Demand for solar water heating sits at 34 per cent above the 12-month monthly average, with small scale technology certificates (STCs) representing 7,520 SWH systems submitted in September (the highest since September 2011), 10 per cent above August figures and 34 per cent above the 12-month monthly average. (The STC spot price opened September at $38.15 and, after peaking at $39.00 on 23 September, closed the month at $38.40.)

Turning to the residential market and during September 2020 PV installations were 29 per cent greater than that of September 2019. STCs representing 30,036 residential PV systems and 208MW of residential installed capacity were submitted, similar to August figures.

However Victoria recorded a significant monthly decrease, registering a 47 per cent decline on the January to July 2020 average, following the tighter lockdown restrictions that kicked in on August 4.

Green Energy Trading noted that for the first time since late 2013, South Australia overtook Victoria's installation rate; meantime NSW steamed ahead, registering more than 10,000 residential systems in September, its highest monthly number under the scheme to date.

Victoria falls

The extent of the decline was mapped by SunWiz in the chart below. In all Victoria dropped 31MW in installations from August to September, from the state's high of 60MW in July.

During the lull, Victoria's monthly installations of 32MW matched that of less populous South Australia and Western Australia, while installation capacity in New South Wales and Queensland reached 84MW and 67MW respectively.

Victoria's restrictions were only eased from late October, and a rush on demand is anticipated on the back of the Solar Homes rebate. As **Warwick Johnston of SunWiz** said "Backed up jobs will likely skyrocket Victoria's total kWh capacity at the end of the year or well into 2021."

In all 250MW of new solar PV capacity was installed on rooftops from August to September.

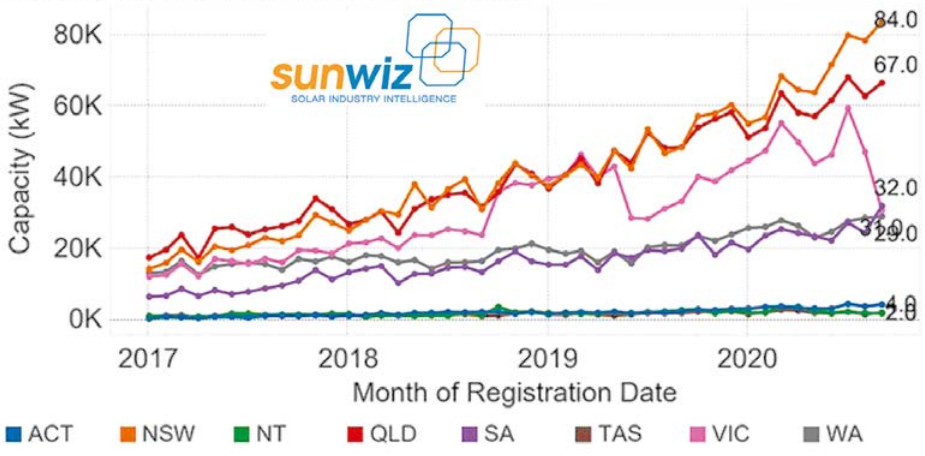
"To date, this year has set a new record, with more PV installed so far than in the first nine months of any previous year. In fact, the national solar capacity installed at the end of September has gone up so much that it has nearly eclipsed the 2019 full-year, 12 month total," Warwick Johnston reported.

"Not even a global health pandemic can fully slow down the rapid growth of the Australian PV industry."

Month-over-month growth rate of the Australian PV market for the past years reveals the installed capacity has been steadily increasing at around 3 per cent year over year, peaking at 3.4 per cent in 2017.

2020 has seen a combined annual growth rate of 2.9 per cent through the first nine months of the year. The large dip in the middle of this past year can largely be attributed to COVID-19. Warwick

Capacity installed each month by state



said, which dampened growth in May before rebounding as people worked from home and became more "self-sufficient on their garden and on their roof.

"With people getting used to working from home, this is a trend that may continue."

Warwick listed all the compelling reasons for homeowners to continue investing in rooftop PV in the short term to year's end:

- More time spent at home, increased electricity costs
- Solar panels are 'recession-proof" and provide financial security
- Stimulus checks from federal and state governments may be on the way
- PV solar panels continue to be a strong investment for homeowners looking to achieve financial security with an investment in home energy. With more people spending time at home, money that is ordinarily spent at restaurants is now showing up in increased electric bills.

And among the influencing factors as we near 2021:

- The CER-led government review (findings, recommendations, and political direction)
- Uptake of batteries, as influenced by state programs
- New PV restrictions from market over-saturation
- New markets opening including apartments, rentals, EV coupling

Of these, the CER review of the industry is sure to bring some interesting findings and recommendations, he said. "Depending on the study's recommendations, short term demand for solar PVs could increase during political lag periods if subsidies were proposed to be lowered or eliminated.

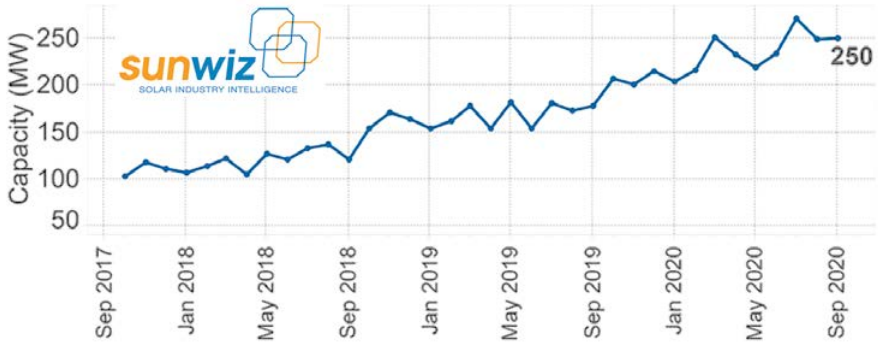
SunWiz does not anticipate that the market will drop anytime soon but cautions global and national restrictions may impact installation capacity.

"Moving forward, 2021 is likely to see domestic market growth in both PV solar batteries and electric vehicles (EV) and although volumes will likely stay low for now, as these items become cheaper and easier to access, they are nearly guaranteed to be followed with increased PV capacity for support," Warwick says.

A worst-case scenario would see the Australian PV market flatline during 2021, but he strongly believes that this will not be the case. "More likely, we hope to see another continued year of nearly 3 per cent month over month growth."

This year compared to the same time in previous years

Capacity installed each month nationally



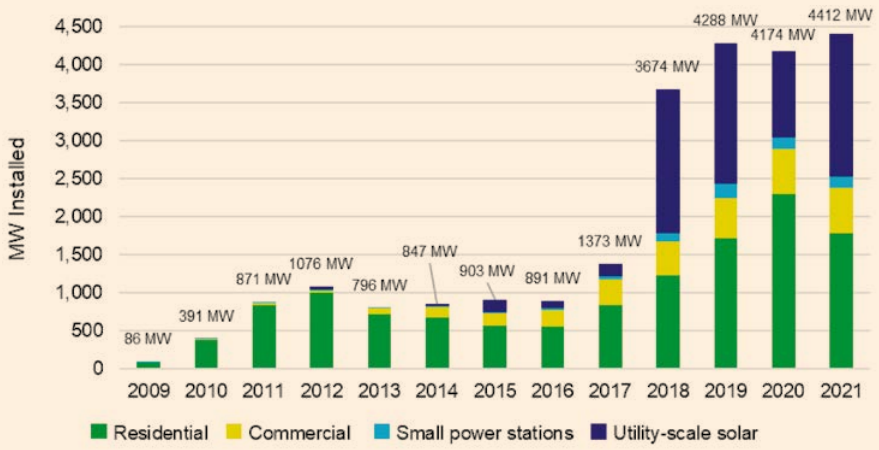
For his part, **Ric Brazzale of Green Energy Trading** believes wholesale prices in the middle of the day will drop dramatically which will reduce the attractiveness of PV and that new residential PV systems installations will slow.

The commercial market will maintain its pace, he said, and the replacement market grow over time. Demand for storage batteries will rise from later this year based on economics and their increasingly important role supporting PV economics and as a demand reduction measure.

Ric also said the top end of the market – large scale PV – will fall over time in line with reduction in the wholesale prices and large-scale certificates.

Ric Brazzale estimates that by the end of 2021, Australian solar capacity will reach 23.8 GW as seen in the chart below.

2019 was a record year – 23.8GW of solar by end 2021



PV market segments are based on size of installation as follows: RESIDENTIAL – systems installed up to and including 15kW in size; COMMERCIAL – systems installed between 15kW and 100kW; SMALL POWER STATIONS – systems above 100kW that need to be registered as power stations under the Renewable Energy Target; UTILITY-SCALE – systems installed greater than 5MW (AC) in size

The numbers have it

An overview of highlights presented in the most recent Clean Energy Regulator's Quarterly Carbon Market Report (issued earlier this year) reveal:

- 6.3GW of total renewable energy capacity is expected to be delivered this year, matching the record set in 2019
- The previous estimate of 2.7GW of rooftop solar PV for 2020 is now likely to be exceeded and reach 2.9GW of installations
- Capacity of large-scale renewable projects is expected to reach 3.4GW for the calendar year 2020
- As previously reported, by mid-year small-scale rooftop solar PV installations tallied 677MW, a 41 per cent increase on the installed capacity for the same time in 2019, and
- Total emissions reduction from the Renewable Energy Target and Emissions Reduction Fund is expected to be approximately 54 million tonnes CO_2-e in 2020, compared to 48 million tonnes delivered in 2019.

Impact on operational demand

Market analyst Cornwall Insights Australia contrasts the changes in operational demand in 2014 to 2020 along the eastern seaboard/NEM, highlighting a pronounced dip between 8am to 4pm

Between 12 and 1pm on October 11, 2020, solar power provided 100 per cent of South Australia's energy demand, a first in Australia and for any major jurisdiction globally.

Cornwall Insights said other regions across Australia are likewise recording notable changes to their demand shape as a result of rooftop solar growth.

In Queensland the average middle of the day (11am to 1pm) demand is ~126MW lower than it was FY14 (despite the 2015 commencement of one of the world's largest LNG export industries); however average demand during the evening peak (6 to 8pm) is in 2020 ~910MW greater than in FY14.

Middle of the day demand in New South Wales is down ~780MW on FY14 levels while evening peak demand has increased by an average ~270MW.

In South Australia middle of the day demand has dropped by an average of ~375MW on FY14 levels.

Commenting on findings Lumi Adisa, Lead Consultant – Market Analysis and Business Development at Cornwall Insight Australia said the midday output from rooftop solar in Queensland is now greater than the increased demand from the LNG export industry.

"The fact that the situation flips a few hours later with average demand during the evening peak now greater in FY20 emphasises the increasing ramp (>1GW) and flexibility requirements in the region," she said. "And Victoria's operational demand through the day has dropped significantly on FY14 levels, largely driven by industrial closures such as the Point Henry Smelter. However, as in other regions, reduced demand in the middle of the day exceeds the drop seen outside sunshine hours due to rooftop solar growth."

She explains most of the supply impacts of the changes have been seen in thermal generation, especially black coal in recent years. Over the past two years, output from black coal in Queensland has dropped by an average of 1.1GW between 11am and 1pm.

"We have seen similar reductions in coal generation in NSW and to a lesser extent Victoria. As rooftop solar continues to play a big role in the National Energy Market's evolution, increasing flexibility requirements are expected to remain a feature of this two-sided market transition."

What a difference a decade (or two) makes

In all, 10 gigawatts of solar power sits on Australian roofs, around 5 per cent of national generation.

Australia has come a long way since 2008 to its status today as world number one for rooftop PV per capita.

"Back in 2008 there were just 7,000 solar PV systems on Australian households, today there are more than 2.4 million households which means that around one in five are now benefitting from solar power," Smart Energy Council's John Grimes said.

"Significantly, since 2008 the price of PV modules has declined a staggering 94 per cent.

"World renowned Australian Professor Martin Green, who has been pivotal in a series of significant advances in PV cell technologies, charts the wholesale cost of a watt of solar PV at $6.50 in 2008 dropping to just 21 cents per watt today. He now predicts a 'credible trajectory' to 10 cents," he said.

Putting that in perspective, scientific advances driving cost efficiencies have made PV more affordable for millions around the world, John Grimes said.

"As someone succinctly put it, 'No other Australian has done more to tackle climate change globally than Professor Martin Green through his extraordinary contribution to the global solar industry'."

It is estimated that by 2032, when Australia's largest coal generator of 2.9 gigawatts is decommissioned, rooftop solar PV will have reached a staggering 30 gigawatts.

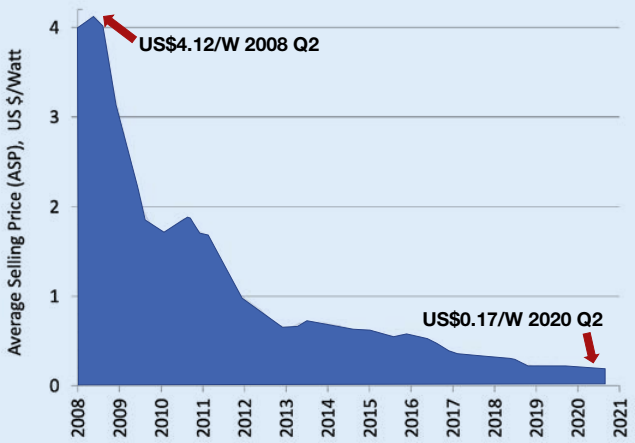


Chart courtesy Professor Martin Green

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AUSTRALIAN ROOFTOP SOLAR SEGMENT NEEDS TECHNICAL AND INDUSTRIAL SUPPORT TO ACCELERATE GROWTH BEYOND 12GW

LONGi says the future for rooftop solar installations in Australia is very bright as the market accelerates into 2021. Robust supply chains and new technology uniquely adapted for the Australian market will drive growth in system yields and volume of installations.

ABOVE: Stephen Zhang, Managing Director of LONGi Solar Australia

BELOW: 100kW Hi-MO modules for a project by Greenultimate Pty Ltd

ROOFTOP SOLAR IN AUSTRALIA is in a rapid deployment phase. In 2020 the rate of installation is increasing exponentially and the energy yield of systems is growing at a similar pace.

As of June 2020, Australia had surpassed 2.5 million rooftop solar installations, with a combined capacity of 11.8 gigawatts.

Greater module efficiency needed to meet market demand

More than 50 per cent of residential rooftop installations are between 6 and 7kW in size. However 2020 has seen significant growth in the proportion of even larger sized residential rooftops, with SunWiz founder Warwick Johnston noting "we are now seeing 13.2kW systems going into residential applications."

Although incentives are decreasing, solar rooftops are now being optimised for greater self-consumption with the advent of more affordable and suitably sized home battery systems. Similarly, price declines of systems are encouraging more households to maximise their rooftop potential with larger systems.

Commercial customers are also looking to increase the power output of their rooftops to hedge against rising energy prices and to provide energy security.

One Stop Warehouse, one of the largest national solar distributors in Australia, agrees that module efficiency through greater technology and not through larger form factors is essential for the market.

"For rooftop installations there is always a trade-off between power class and weight," commented Andy Cheng, Marketing Director, "The LONGi Hi-MO 4, 370W module is in the sweet spot at the moment, perfectly maximising a typical 6.6kW install to maximise typical rooftop power output."

Key benefits of a local presence

The solar industry needs a robust and reliable supply chain to meet current and future demand for rooftop solar. In 2019, LONGi Solar Australia was created to better support and enhance Australian installers' access to world beating solar technology and long-term product reliability.

Since late 2019 the locally based team, headquartered in Sydney, but with warehouses, distribution and technical support available Australia-wide, have been supporting Australian installers by providing top quality mono-silicon solar panels that have high yields and long-term performance.

Since LONGi opened its subsidiary in Australia, the team has worked hard to ensure that the best technology is available as soon as possible.

"We selected LONGi modules to distribute because of their exclusive focus on mono technology and the fact that LONGi were first to market as mono wafer manufacturers 10 years ago," notes Andy Cheng, "The LONGi Australia team ensured that we were one of the first to receive 370W product in April 2020, four to five months before other brands had a similar product."

Module size for solar rooftops

Technical efficiency is critical but installers in 2020 and beyond need to be more aware of the form factor of the modules that they are specifying. Size, weight, connectivity and mounting options, are becoming increasingly important factors in a solar installation to maximise system yield.

LONGi Solar Australia has partnered with leading distributors including Austra Energy, BayWa r.e, Krannich, Sol-Distribution, Solar Juice and One Stop Warehouse, to bring installers and commercial end-users the best solar technology for their installations Australia wide.

"We have worked hard to listen to the market and package LONGi's leading mono wafer technology into products that Australian installers need for their rooftop projects," notes Stephen Zhang, Managing Director, LONGi Solar Australia.

"Our local technical team looks at every aspect of installs and influences module design accordingly to ensure the most appropriate product is available."

Andy Cheng agrees, saying "LONGi has shown a strong consideration of what makes a rooftop installation in Australia successful by creating modules that meet customer demands to maximise their STCs and available roof space."

With dedicated market suppliers like LONGi and One Stop Warehouse, Australia's solar market will be able to reach its full potential.

www.longi-solar.com.au
www.onestopwarehouse.com.au

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SMART ENERGY COUNCIL

AlphaESS IS ROLLING OUT

The VERY FIRST singular 30kW HYBRID OFFGRID ESS Solution

IMAGINE THIS: YOU'RE STAYING at your weekend cabin and enjoying a few beers with your mates, everyone is having a great evening. Then diesel supplies run dry, the generator cuts out, and you're left sitting in the dark. You may wonder, is there anything else that can help when the diesel generator fails?

YES! AlphaESS H30 energy storage solution is here to save the day!

Many times, AlphaESS has been asked the same question:

"Do you guys sell anything off-grid but smaller than your 50kW system?"

Well, now our answer is YES!

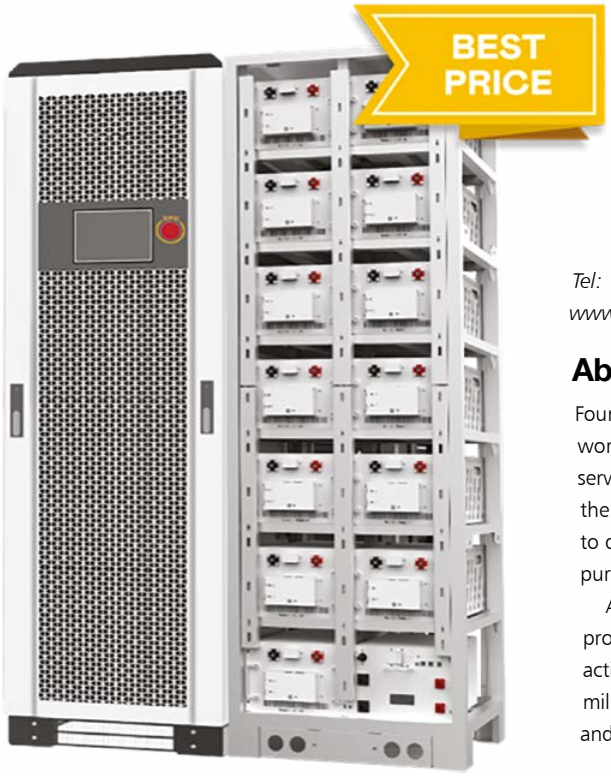
AlphaESS is pleased to present the very first singular 30kW hybrid off-grid energy storage solution!

Why does H30 stand out? Because it is the most cost-effective solution to replace the diesel generator.

According to market research, the typical generators designed for households are configured at 22kVa-34kVa. This is also a perfect size for off-grid properties and facilities. However, there is no lithium substitution available for people who prefer renewables.

Now with H30, AlphaESS supports those who want to embrace the renewable future.

H30 can be connected to PV panels and the diesel generator simultaneously; additional inverters are not necessary. Furthermore, H30 was designed as a singular system with neat deployment. Unlike other products that feature multiple systems and occupy the entire garage, H30 is a relatively compact, stylish unit.



Function highlight

- **Off-grid Capability**

H30 works perfectly with PV panels in off-grid areas. If you have already purchased a diesel generator, simply use it as a backup power. But here is a tip: you probably will never use it.

- **Phase System**

Unbalanced 3 phase load can be connected to the H30, maximum 10kW for each phase.

- **Hassle free System**

1. AlphaESS guarantees to get you a neat deployment and a pleasant installation experience.
2. Cut the red tape and you know who to call in case you need help.

- **PV connection capability**

H30 can handle up to 60kW PV power, which will provide enough power to supply your load and at the same time, charge your battery.

- **Battery Capacity**

8.1kWh modular
64.8 ~ 2106kWh capacity selection available

- **Flexible location**

Outdoor/indoor installation available

- **Warranty Options**

a) 5 years product warranty + 10 years performance warranty

b) 10 years warranty

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Tel: 0402 500 520
Tel: 1300 968 933 (and press '2' for sales)
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About AlphaESS

Founded in 2012, AlphaESS is one of the world's leading energy storage solution and service providers. The company specialises in the residential and commercial market, aiming to deliver the most cost-effective and fit-for-purpose solutions.

AlphaESS has more than 10 subsidiaries providing local services and 40000+ systems actively running in over 50 countries, enabling millions of people to live with reliable, accessible and clean energy.

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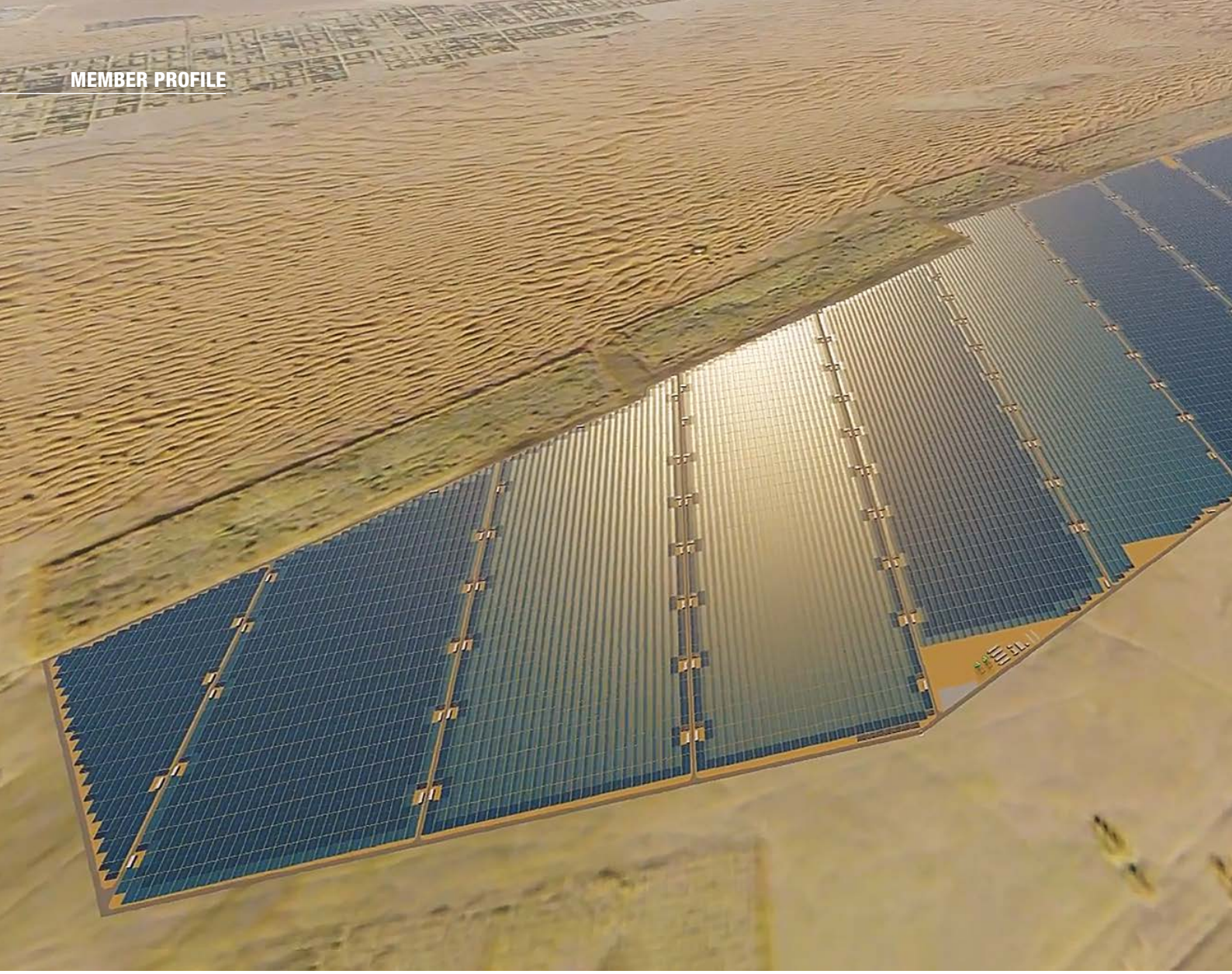

COVERING ALL MARKET OPPORTUNITIES: JinkoSolar

The pandemic might have caused a temporary slowdown but business is on the up and up for module maker JinkoSolar which is confident of gaining a greater slice of the solar PV market.

JINKOSOLAR CAN LAY CLAIM to many firsts, among them the first module manufacturer to join RE100 that brings together the world's most influential companies committed to power all their operations with 100 per cent renewable energy by 2025.

The goal comes with a tangible plan: JinkoSolar's drawing board includes the development of new factories in renewable-rich regions to facilitate green electricity sources, investing more in onsite solar and deploying solar and storage projects on all suitable rooftops. These sit among a host of other efforts to drive long-term sustainability, according to JinkoSolar ROA&ANZ General Manager Anita Li.

The timing is suitable, as the company bounces back from the pandemic that caused a "small sequential decline" in the JinkoSolar scorecard which saw a record year for shipments in 2019 before the virus took hold.

Despite the bumpy start to this year the module shipment guidance of 18GW to 20GW during 2020 remains the same for the company that has an integrated annual capacity of 20GW for mono wafers, 11GW for solar cells, and 25GW for solar modules.

Module shipments, Li reported, hit a record high of 3,411MW, an increase of 12.3 per cent from 3,037MW in the first quarter of 2019 and total revenues increased by 25.1 per cent from the first quarter of 2019.

"Since most of the projects scheduled for 2020 have been

Anita Li says JinkoSolar is looking forward to a productive 2021 as utility scale solar plans take shape after this year's pandemic pause

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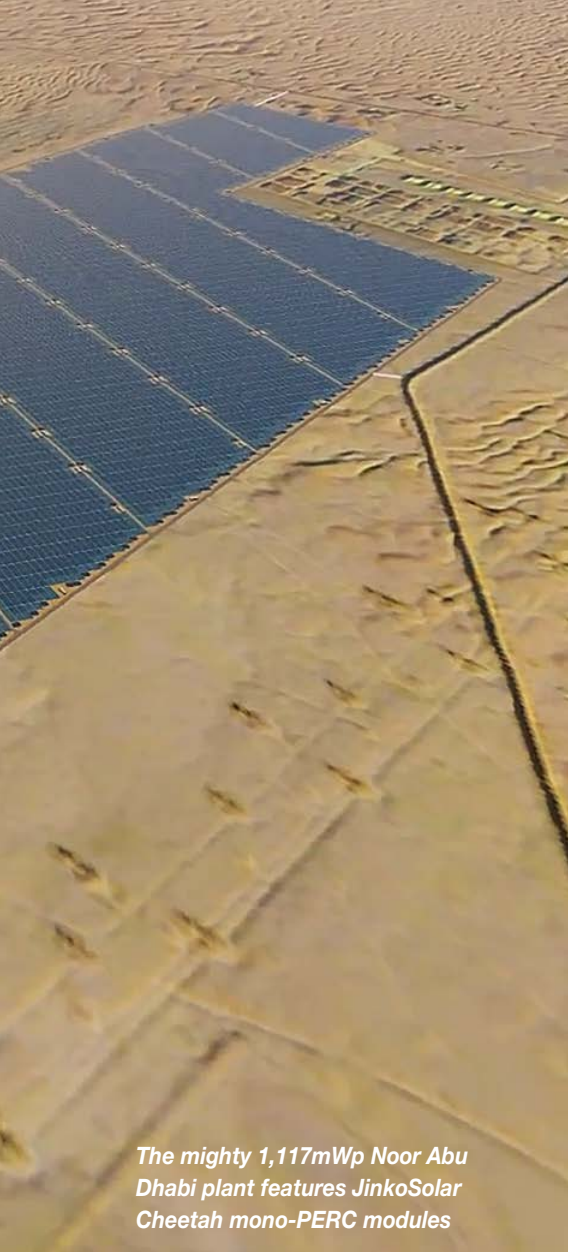


The mighty 1,117mWp Noor Abu Dhabi plant features JinkoSolar Cheetah mono-PERC modules

postponed to 2021 due to the pandemic, our outlook for next year is quite optimistic as even though the virus has delayed most of our projects, we are confident of recover lost ground during 2021, and that's because of our successful geographic-diversification strategy," she said, citing the company's 30 service centres and 14 subsidiaries covering operations in more than 100 countries.

Within Australia the pandemic has hit project financing of large-scale projects and that, coupled with grid connection constraints, has caused large-scale projects to flatline, however JinkoSolar is optimistic of a turnaround.

"We forecast that there will be an improvement in 2021, and, with Australia's pipeline of more than 60GW in the market, it goes without saying that utility sector will have a remarkable growth," Li told *Smart Energy*.

Large scale, big reach

JinkoSolar stands poised for action on the back of its credentials in several utility scale projects in recent years, among them the flagship 1,117mWp Noor Abu Dhabi Project. The Cheetah panels deliver a peak power output of up to 410Wp and an efficiency of 20.38 per cent, which at the time of bid submission was the highest-performing commercially mass-produced module in the market. When the behemoth power plant started its commercial operations, it was the world's largest PV project and delivered a very competitive tariff of $2.42 cents/kWh.

"With Australia's pipeline of more than 60GW in the market, it goes without saying that the utility sector will undertake remarkable growth."

Another milestone achievement lies in the 300MW Qinghai Ultra High Voltage Demonstration Plant in China, the first ground mounted utility project applying Tiger panels with Tiling Ribbon technology whose modules boast a 20.4 per cent module efficiency and a power output of 475Wp.

Closer to home is the 120MW Bomen Solar Farm near Wagga in NSW that was energised in March 2020 and in which JinkoSolar deployed Swan bifacial modules with the transparent backsheet that can reach up to 25 per cent energy gain from the rear side, and a power output of 500/540W from front and rear sides.

The $180 million farm with 310,000 solar panels farm provides power to fellow RE100 member Westpac under a 10-year PPA, enabling the bank to achieve 35 per cent of its commitment to 100 per cent renewables by 2025.

Electricity from the Bomen Solar Farm is being combined with output from a Glen Innes wind farm and a community-owned solar scheme near Nowra to supply the City of Sydney in a deal Mayor Clover Moore describes the "biggest standalone renewables commitment for an Australian council".

The company is now looking to extend its share of large scale projects on the back of the recently introduced Tiger Pro series whose success lies in the use of several technologies, Anita Li explained, such as Tiling Ribbon technology, half-cell and multi busbars, which combined contribute to achieve a power output of 585W and a conversion efficiency of 21.4 per cent.

She added Tiger Pro's strategic design is highly compatible with both inverters and mounting systems, rendering it particularly feasible in terms of installation and logistics, thanks to extensive research and analysis in to optimum module output, efficiency, power density and compatibility, as per "the main metrics to build up the most competitive panel".

Commercial and residential markets

Australia's demand for PV in the commercial and industrial sector keeps increasing, particularly in Victoria, Li said, and JinkoSolar anticipates 2020 to be the peak year for the commercial sector. "In the long term, we believe it will increase by almost 50 per cent, especially over the coming five years.

JinkoSolar lays claim to almost 25 per cent market share in Australia's solar rooftop market and anticipates it will be able to push that out to 35 per cent on the strength of the N-type technology that comes with a 20-year product warranty and module efficiency reaching up to 24.79 per cent cell efficiency.

The evolving market

Referencing this year's 25-year PPA for the 2-GW Al Dhafra Solar PV project in Abu Dhabi that set a record low price of 1.35 cents/kWh, Anita Li said "This big achievement demonstrates the fact that solar energy is heading towards grid parity, and when its price reaches nearly zero there will be no more excuses for governments to acknowledge that a transition to renewable energy is not possible.

Staying on disruption, Li observes the tendency towards localisation and "anti-globalisation" now being witnessed due to the spread of COVID-19. "Every company will have to shift from global to local production, from global to local supply chain, to adapt quickly to the measures aimed at reducing international mobility, she said.

Another shift can be seen in the prevalence of smart buildings. "Across the globe buildings account for 30-40 per cent of total emissions, but what if they could supply more than 30 per cent of the energy demand? The answer is building-integrated solar.

"Thanks to BIPV, buildings will be completely independent, producing by themselves the amount of energy that they consume. Hence, BIPV will enable the realisation of productive, healthy and net zero buildings," she said.

That sounds like a neat fit with more in the corporate sector commiting to renewables and the increasing number of RE100 subscribers.

www.jinkosolar.com

FOX TAKES THE STAGE

Australia's trail-blazing solar industry remains a focus for many of the world's leading solar manufacturers. When launching a new product or when pioneering new technologies, Australia remains the destination of choice, and Fox ESS is no exception.

FOX, A NEW MARKET ENTRANT with an impressive pedigree, has chosen the Australian market as the springboard for the global launch of an exciting range of new PV and energy storage solutions.

Fox was founded in August 2019 by its CEO and Founder Michael Zhu as a subsidiary of Tsingshan Group.

Tsingshan Group is a Fortune 500 company with annual sales revenues in 2019 of $US37.6 billion. It is the world's largest stainless-steel manufacturer and operates the world's largest nickel mining and production hub in Indonesia, and now, the company is aggressively stepping into position for the energy transition.

The strategic metal nickel forms the common denominator of stainless steel and lithium-ion manufacturing. Most of the world's nickel output is consumed by the stainless steel industry, but new energy applications, such as electric vehicles and battery storage, are fast becoming key markets for the precious metal. Tsingshan Group has mastered the nickel supply chain.

The company has made major investments in Qingmei Energy Materials, a producer of lithium NCM battery materials, and Ruipu Energy, a manufacturer of both NCM and LFP (lithium iron phosphate) batteries.

Tsinghan Group's latest investment is Fox, a new company specialising in the development, production and distribution of distributed generation products and solutions for the residential PV and ESS market and the commercial solar and storage market.

The company's battery factory in Wenzhou, China has a production capacity of 3GW and is completely automated. The cells produced from this factory will be used by Fox in their next generation Energy Storage Systems, completing the vertically integrated supply chain, all the way from the nickel mines in Indonesia to the Fox production lines.

Fox can tap into the deep supply chain of Tsingshan Group to provide advanced solar plus storage solutions to its customers around the world. Company founder and CEO Michael Zhu has previously spearheaded the international expansion at Samil Power and SolaX, turning both into formidable global brands in the solar industry. In the process Zhu put together an experienced team of business developers and sales executives in a wide range of key PV markets, including Asia, Europe, Australia and the Americas.

This network will grow the global footprint of Fox, and the combination of Tsingshan Group and Fox will quickly deliver an inverter and ESS powerhouse, first in the residential sector and later expanding into commercial and industrial applications.

At the heart of the Fox operation is the advanced R&D centre in Wuxi, where hundreds of engineers and technicians work tirelessly to perfect products and ensure that Fox is at the forefront of solar inverter and energy storage product developments.

The team consists of some of the foremost experts in the fields of solar inverter and energy storage technology, including many with experience working for leading manufacturers.

At a time when many inverter and storage solution manufacturers are scaling back production and downsizing their workforce and short-term ambitions, Fox is forging ahead, recruiting new talent to its R&D team.

R&D

The Fox R&D department is focused on developing products tailored to the needs of the market based on extensive research and customer feedback. Great effort was made to source feedback and opinions from a variety of sources, including installers, distributors and the end customer; market research that has fed directly into product development.

One issue that was identified was the inherent vulnerability of inverter capacitors and the impact on product longevity. Fox has tackled this issue in two ways. First, by reducing heat stress thanks to a pioneering heat sink design, using 'star' shaped cooling fins, allowing for two-way flow of air to a heat sink with a greatly increased surface area resulting in 30 per cent faster cooling of the inverter than with traditional heat sink designs.

In addition, another factor impacting on capacitor lifespan is their capacity to store charge during each cycle, and Fox has scaled up the number of capacitors, decreasing the amount of charge stored and prolonging the lifespan of the inverter.

Robust market growth

In the past five years, Australia's installed capacity has increased dramatically. According to SunWiz, in 2019 there was a record increase of 2.132GW of installed PV capacity comprising system sizes less than 100kW.

This means that the PV volume installed in Australia has increased three-fold since 2016 and by more than seven times than in 2010.

Cumulatively, this figure comes to almost 10GW of rooftop solar across the country.

This level of generation capacity can lead to other complications as a result of Australia's ageing grid infrastructure. One solution is energy storage. Fox has designed ALL-IN-ONE storage systems which will support this next step towards grid integrity.

Fox storage systems

The Fox all-in-one range offers maximum flexibility and choice. There are two variants – the Elite and Ultra; offering different casing size and storage capacity options so that the customer can tailor the system to their specific energy needs, and ensure that it fits perfectly within their home.

Each variant is available as both a hybrid – with DC inverter, charge controller and batteries built-in; and as an AC-coupled solution for a retrofit installation alongside an existing string inverter.

Fox offers battery modules in three sizes – 2.3, 2.6 and 2.9kWh; and batteries can be installed in series to increase storage capacity to suit the needs of the customer.

Fox provides high-voltage batteries with its all-in-one products – this ensures high round trip efficiency and performance, charge and discharge efficiencies are up to 97 per cent.

In addition, installing the modular batteries in series can increase the rate of continuous charge/discharge up to 5kW, greater than the rate of charge available from other leading battery storage solutions.

Fox offers a true all-in-one solution – incorporating the inverter/charger, batteries and all fuse protections and connection terminals. However, unlike other systems, the batteries are packaged separately, and are installed inside the cabinet on site. This ensures that the main casing is light enough to be installed by a single technician.

The product is also IP65 rated, so can be installed in outdoor areas for maximum flexibility and is also available with an EPS option, providing emergency power during a grid outage.

All system components, including the batteries, are designed, developed and manufactured by Fox. This ensures total hardware and software compatibility and allows for warranties that are fully integrated.

There is one aftersales point of contact, providing the customer and installer with the best possible aftersales service and total peace of mind.

www.fox-ess.com

CONNECTING THE DOTS...

Now in its eleventh year of trading, earthconnect has delivered more than 43MW of solar energy solutions and clocked up a number of significant achievements.

FOR MORE THAN A DECADE the team at Australian owned and operated earthconnect has been providing solar energy EPC solutions to the commercial, industrial and large-scale sectors of the renewable energy market both locally and internationally.

By mid-year earthconnect has notched up some big numbers: 13.5MW in commercial PV projects; 8.0MW solar farm (Asia) install, 17.1MW in residential installation, and 25,000 litres in commercial solar thermal projects.

Project Manager Darcy Haines says an additional 6MW of commercial roof mount solar projects are currently in various stages of feasibility, with a development application currently before a local council and the NSW Joint Regional Planning Panel for the next solar farm project sized at 7.85MW DC, 5MW AC.

In late 2019 earthconnect struck a landmark when it was able to fully commission the 5MW Hunter Solar Farm, enabling the project to move into the final phase of revenue service.

It presented several challenges, Darcy Haines said, most significantly satisfying the design criteria set by local council and flood mitigation stipulation. "The solar farm is constructed in an area which is a recognised flood zone so we were faced with minimum AHD (Australian Height Datum) challenges in order to ensure that the solar panels were mounted above the set 1 in 100 year flood event for that region at 52m AHD," she explained.

"This ensured that floating debris being carried by flood waters wouldn't impact and damage the array, causing equipment to break free, and further increase the risk of persons or property being impacted by water-borne hazards."

A major project objective was to ensure the site was left in a better condition than when it commenced, so the team incorporated a Vegetation Management Plan that included planting of new native flora.

Another stellar example can be found in the 310.6kW solar energy system earthconnect completed for the University of Newcastle that will provide approximately 452.6MWh of renewable energy annually and an estimated reduction in CO_2 emissions of 484,282kg. The system is integrated with the University's Energy Management System and equipped with Solar Analytics Monitoring services to ensure optimum performance.

"Aside from our megawatt projects, our small business unit continues to deliver ~100kW solar systems to our smaller commercial clients," she told *Smart Energy.*

In Darcy's view there is only so much that C&I energy consumers can do to reduce their energy bills through tariff rate negotiations and improvements in production processes and energy efficiency, so it makes sense to provide surety for their businesses from exposure to increasing energy costs by generating their own energy from the sun from their rooftops.

Asked about industry developments she said "Over the years the most obvious improvements which we all have witnessed is the yield per square metre of solar panels driven by technological improvements in cell construction, efficiencies and the manner in which cells are interconnected, and the generation density for a given solar project.

"It wasn't all that long ago that we were seeing 145w/m^2, now it's closer to 265w/m^2.

She commented that should policies change and government incentives encourage individuals, SMEs and C&I customers to invest in their own futures through solar energy generation, Australia will have a far better chance of achieving its renewable energy targets as well as stimulating the economy through investment in renewables.

But for earthconnect, the forward order book is looking bright.

To help showcase its abilities the earth connect team recently updated the business website and produced Capabilities statements for Ground Mount and Roof Mount systems.

https://earthconnect-australia.com/

earthconnect ground mounted services include accurate predictions using power system modelling tools that compare yields for individual sites and includes comprehensive information to precisely evaluate feasibility for grid connect hybrid and stand-alone solar systems

earthconnect specialises in turnkey solar energy solutions, which are coupled with operation and maintenance programs complete with back office monitoring, to ensure that solar energy solutions are performing as initially designed.

Services are listed as follows:

- Commercial projects – engineer, design, procure, install, test, commission, monitor, maintain, turnkey solution provider.
- Residential projects – domestic grid connect/ hybrid/off grid engineer, design, procure, install, test, commission, monitor, maintain, turnkey solution provider.
- Special projects – solar thermal solutions, energy efficiency consultancy, micro grid solutions, commercial hybrid solutions, remote monitoring stations, cogeneration/trigeneration technology, project services provider, project management consultants.

1300 274 448 (BRIGHTE) | customersupport@brighte.com.au | brighte.com.au/smartenergy

*Source: Study conducted by Deloitte Access Economics in August 2019

IN LATE SEPTEMBER the world's largest companies, including Johnson & Johnson, Unilever, Walmart and Astra Zeneca, came together virtually as part of Climate Week 2020.

Discussions centred on global opportunities for change, innovation and scalable solutions to contain global warming while delivering greater prosperity for all.

LONGi Founder and President Li Zhenguo (pictured) was a keynote speaker, and the only business leader representing a Chinese company and major PV manufacturer.

He shared his vision on how solar technology is helping the world address climate change and reiterated LONGi's commitment to making clean energy more affordable and accessible with progressive technology and cost reductions.

"The value of solar energy is still underestimated" Li said, explaining LONGi's commitment to reducing the 'Levelized Cost of Energy' of PV power generation and making solar power cheaper and more accessible to the masses. Li also shared 'Solar for Solar', LONGi's commitment to using clean energy to produce clean energy products.

In its commitment to clean, renewable energy and to the RE100 initiative, LONGi has pledged to achieve 100 per cent renewable electricity use for its global operations by 2028 and is encouraging supply chain partners and customers to deliver on the RE100 initiative together.

www.longi-solar.com.au

SONNEN HAS LAUNCHED a new home energy rewards program which provides financial incentives to eligible sonnenBatterie owners. The program rewards owners who provide access to their battery to enable sonnen to support the stability of the energy grid.

Existing or new sonnenBatterie customers located in the National Electricity Market who register for sonnenConnect will receive up to $41 per month depending on their location. To be eligible, they will need to have a sonnenBatterie that has at least 4kWh capacity, are not on a sonnenFlat energy plan or connected to a Virtual Power Plant program.

sonnenConnect customers will continue to receive a feed-in tariff for any unused energy that is exported to the grid from their energy retailer.

Nathan Dunn, CEO of sonnen Asia Pacific said, "Australia is the first country in the world we've chosen to launch sonnenConnect. With the growing uptake of rooftop solar and home batteries globally, utilities are recognising the importance of home batteries in Frequency Control Ancillary Services or what is known as demand response, to stabilise the grid when there is a surge in the demand for electricity."

"Through sonnenConnect, we are rewarding customers who are providing us access to their sonnenBatterie when needed for demand response. sonnenConnect provides our home battery owners with an additional revenue stream which allows them to continue to receive a feed-in tariff from their energy retailer," Nathan explained. "Not only will they enjoy being energy independent, sonnenBatterie owners are working together as a community to stabilise the energy grid that connects millions of homeowners in the National Electricity Market."

https://sonnen.com.au/connect/

FRONIUS FAREWELLS GALVO As installers will know, the Fronius Galvo was the first SnapINverter to be delivered to Australia, initiating a wave of popularity encompassing the Primo, Symo and Eco range.

Although the topology of inverters moved to transformerless based, the Galvo continued to find a home in Australia, most commonly used as a replacement inverter where a like-for-like product was required to maintain consumers' feed-in tariffs.

Recent changes to many DNSPs volt-var requirements have seen the use of the Galvo further limited, leading to Fronius Australia's decision to cease production of the unit.

The move frees up production capacity for Primo, Symo, Eco and the new GEN24 Plus range of products to meet the ever-increasing demand for inverters in Australia.

Note: Fronius Australia continues to hold limited local stock of the Galvo-series, and expects to see the product remain available for up to six months, subject to demand.

www.fronius.com/en

ACCOLADE The SENEC.Home V3 Hybrid battery is an ABA100 Winner for New Product Innovation in the Australian Brand Awards 2020, which recognise innovative consumer products that offer a point of difference from their competitors.

SENEC established itself in the Australian market just three years ago, following a decade of success in its native Germany. The company has earmarked Australia "one of the world's fastest growing storage markets", as a key focus with plans to become a household name.

To date more than 40,000 SENEC battery systems have been installed worldwide, facilitating peer-to-peer trading, EV recharging and cloud technology. *https://senec.com/au*

Information, views and technical details on this page supplied by Smart Energy Council Member

Australian-owned and operated solar battery installer **SUNBANK SOLAR** has launched its new Solar + Battery Members Plan which is designed to help Australian homeowners maximise profit potential when selling solar energy and increase solar battery performance.

The energy plan, which they say will become the world's largest virtual power plant by the end of 2021, will help with grid stability and set up to absorb the excess energy in the grid.

The ability to sell excess energy back to the grid when tariffs are at their highest is facilitated via an exclusive CSIRO-developed intelligent energy management software program. *https://mysunbank.com.au/*

MADE IN GIPPSLAND Trentleck is one the largest companies in Australia suppling high-quality Australian made solar panel mounting kits. The kits are manufactured locally using 100 per cent Australian steel and marine grade stainless steel to prevent dissimilar metal contact.

The company which installs solar power systems, wind turbine power systems, hydro generators and solar hot water systems in the Gippsland area and further afield recently joined the Smart Energy Council. *https://trentleck.com/*

Established Austrian PV module maker **ENERGETICA PV GROUP** which will launch in Australia in 2021 has appointed **PROSUN** as its exclusive distributor.

Energetica's modules are credited by the Austrian Institute of Technology as carrying a global leading performance warranty of 96.3 per cent to measured real-life performance after 25 years.

The company founded in Austria in 1995 has been expanding over the past two decades and in 2018 took over Solarworld Germany's PV Laboratory. Just last year Energetica invested in brand new fully automated equipment for the assembly of PV modules to build a completely new state-of-the-art production facility in Austria.

Capacity of the award-winning plant now sits at 550MW with substantial expansion plans during the next four years.

The concept around the production is built on protecting the environment, chief executive Rene Battistutti says. The factory is constructed from wooden materials and the company fleet comprises Tesla electric cars.

The entire electricity supply is self-produced from Energetica's modules installed on the rooftops, and biomass and hydropower plants on the property are also contributing to climate-neutral production. The company boasts its own adjacent railway connection to transport materials by train, which is powered by climate-neutral sources.

"The vision and philosophy behind the company's development and progress is to care about environmental impact in everything the company does and to zero down CO_2 emissions in the production process," Rene Battistutti says.

Smart Energy Council is pleased to welcome Energetica Group as a Platinum Member. *www.energetica-pv.com/en*

IN A DEAL designed to accelerate the energy revolution, Australian energy-tech software business Evergen has confirmed clean energy investor Providence Asset Group will become a major new shareholder, joining current backers AMP Capital and Artesian. The latest move will see an additional $3 million invested into Evergen.

As part of the deal, Evergen has also been appointed global software partner on all LAVO™ and H2Store hydrogen batteries in a bid to maximise performance and allow Virtual Power Plant enablement (alongside more traditional lithium batteries). H2Store batteries will be deployed on Providence solar farms in coming years, and Evergen's software will optimise these into VPPs with utilities to maximise benefits for the communities.

Ben Hutt, CEO and Managing Director of Evergen (pictured) said, "We've been waiting for hydrogen batteries… it's still early for this technology, and current lithium ion batteries will be essential for many years to come, but in the long-term hydrogen can be better for the environment." *www.evergen.com.au*

NEXTRACKER'S solar tracker technology, NX Horizon™ has been chosen for Australia's largest solar farm, Neoen's 460 megawatt-peak installation at the Western Downs Green Power Hub. The solar trackers are touted as enhancing solar generation by 19-32 per cent compared to fixed solar installations, and testing in independent labs found NX Horizon delivered up to 1-2 per cent additional yield in bifacial applications compared to other traditional one-in-portrait trackers.

A gain of 1.5 per cent would deliver over 15GWh annually at the Western Downs Green Power Hub, the milestone project due to begin in 2021 and that builds upon Nextracker's existing portfolio of four gigawatts in Australia and 40 gigawatts worldwide.

Under one of the country's most substantial power purchase agreements to date, 80 per cent of the project was contracted to Queensland owned CleanCo to help it reach its target of one gigawatt of newly installed renewable energy by 2025 and a broader target of 50 per cent renewable electricity by 2030.

Nextracker can be found in some of the largest power plants in the world including the 838MW plant in Villanueva, Mexico and was used at the first utility-scale plant in Australia, the Moree solar farm in NSW built in 2015. *www.nextracker.com*

Information, views and technical details on this page supplied by Smart Energy Council Member

THE PRECARIOUS PATH OF HUMANKIND

Widespread calls to reduce fossil fuels and speed up renewables

"Our careless use of fossil fuels has set us on the greatest and most urgent challenges we have ever faced. If we do make the transition to renewables at the lighting speed required, humankind will ever look back on this generation with gratitude."

Nonagenarian naturalist David Attenborough: *A life on our planet* (book and Netflix documentary)

The failure to act urgently to reduce greenhouse gases would be "a brutal act of injustice toward the poor and future generations". A "radical energy transition" is needed to stay within the 1.5°C limit and avoid catastrophic effects if we crossed that threshold.

Pope Francis

"We now have to move extraordinarily fast and compress progress of many decades into one decade mostly because the fossil fuel industry has lied and misled for so long and effectively and kept us from making progress. We do not need a bridge to a renewable future, the renewable future is there."

Also

"People look at coal as Australia's bad export but by far the most dangerous is Rupert Murdoch. When historians write how the planet became discombobulated that will be a big chapter. It's still playing out."

Bill McKibben, founder of environmental group 350.org

"The key predictors of success in facing crises are acknowledgment rather than denial of a crisis's reality, acceptance of responsibility to take action; honest self-appraisal, plus the presence or absence of a shared national identity."

Geographer and anthropologist Jarod Diamond in *Upheaval: How nations cope with crisis and change*

"Climate change is a defining factor in companies' long-term prospects."

Larry Fink of global investment behemoth BlackRock

"142 globally significant financial institutions have formal coal exit policies. Fossil fuels are a wealth hazard."

Tim Buckley of IEEFA talking at Smart Energy Council's Global Summit

"Emission reductions targets are life or death deadlines backed by science."

Frank Bainimarama Fijian Prime Minister

"If the world returns to pre-COVID energy consumption growth in 2021 the global carbon 'budget' for 1.5 degrees will be reached before 2030, possibly as early as 2024 according to some modelling."

Mark Diesendorf

"The world is on an unsustainable path and its carbon budget is running out… demand for oil and gas will be increasingly challenged."

BP chief executive Bernard Looney, from BP 2020 Energy Outlook. The 111-year-old company aims to be a net-zero emitter by 2050

VIRTUAL POWER FOR REAL BENEFITS

UK based Social Energy is bringing its AI-powered energy storage virtual power plant to Australia and spreading the word about optimising solar battery systems for greater household financial return.

SOCIAL ENERGY IS ON A MISSION to flip opinions about 'costly' residential storage by offering households with solar panels and battery storage an energy plan that's effectively managed through their virtual power plant and shortens the payback time. In a nutshell, they are breaking down financial barriers by providing an offer that they say is too good to refuse.

The company which has already clocked up 6,000 system connections in England, Scotland and Wales says conditions down under favour solar and battery storage, and it's not just about the longer sunnier days.

The market, they say, is "massively under-served" and they are poised to fill the gap.

The mission starts with Social Energy explaining how its Hub – the technology that connects the Energy Bank to the Social Energy Cloud VPP – monitors customer energy usage and makes informed decisions about how and when to store, manage and distribute solar energy to generate revenue and reduce electricity bills.

The system that reacts in sub-seconds, with the onboard metering technology that is designed to work with in-home internet effectively maximises solar usage and delivers "market-leading" solar export tariffs.

"Our AI technology is fuelled by high resolution in-home data - 600 million data points per home each year, stemming from 12 data sources, ranging from weather and climate data through to individual household activity," said Mark Sinclair Williams.

"As a result, we're able to create probabilistic forecasts with 90 per cent confidence, enabling us to make financially advantageous decisions to benefit our customers."

A spin-off is the balancing of electricity grids across the country.

In future, he said, the AI will optimise air conditioning, electric vehicles, hot water tanks, pool pumps and more. One big incentive for customers is the prospect of a 40¢/kWh feed-in tariff that is capped at a 'fair usage' policy of 300kWh per quarter. After that a second-tier tariff is paid at a typical market rate for any remaining export, the result being an electricity bill that, for the average NSW-based customer using 6,000kWh and generating 8,000kWh of solar per year, could be close to zero, if not negative.

"Our 40¢ feed-in tariff is the big stand out, and we're able to deliver competitive import tariffs by being a vertically integrated business, combining battery storage, grid trading hardware, AI-powered VPP software and energy retail in one place, meaning there aren't multiple businesses wanting a slice of the pie," Mark said.

Chris Parratt (right) who is well known to many in the industry has joined the team at Social Energy. Cricket fans will recognise the high profile chap on the left who is a Social Energy shareholder

Balancing the budget

Australian subsidies are favourable, for example, the Empowering Homes Programme in NSW offers solar and battery customers an interest-free loan for installations that will entice many more to invest in solar and battery storage, he said.

"Finance packages, government grants and loans mean some homeowners could receive a lower total bill for their system and new electricity bill than they're paying right now for their electricity alone.

"A finance package that's paid over eight years, combined with a significant electricity saving of around $2000 per year, means some customers will be cash positive from day one and all through their eight year finance term – after which they will enjoy a low, zero or in some cases negative electricity bill."

Social Energy has teamed with Duracell Energy Bank 2 with a capacity up to 15kWh that is suitable for outdoor installations.

Gaining ground

To help spread the news, Social Energy is importing some of the "battle-hardened marketing techniques" used in UK including a network of retailers and installers, paid leads and direct response marketing, and plans to engage in PR activity and brand marketing. Look out too for the large scale ATL [above the line, grandiose scale] advertising.

Talking of grand plans, Mark said although the residential market promises the greatest potential for growth, the team is keeping an eye on the commercial market which is a neat fit with the longer-term business strategy. And by the end of 2020 SE will be trading as an energy retailer

"Global expansion is also on the cards. At present, we are looking at a roadmap to launch our business in Japan, Germany and US."

Sounds like the team has its work cut out.

A wealth of information including indicative pricing fact sheets with supply charges and state tariffs can be found at www.social.energy

THE ACT HUB: AHEAD OF THE CURVE

The Hub continues to drive a dynamic program of events designed to place the nation's capital at the forefront of advances in the greater renewable energy sector. Here we look at recent activities.

ACT Renewables HUB

Connecting industry, sharing knowledge, and building business opportunities through collaboration.

THE SMART ENERGY VIRTUAL CONFERENCE & EXHIBITION in early September was the perfect podium for the Hub to shine the light on its offerings and services.

That it did in spectacular fashion: of the 36 virtual booths, the ACT Renewables Hub booth was the most visited, scoring a total of 906 visits.

And booth visitors were clearly impressed, awarding the ACT Renewables Hub Booth 8 out of 10, and commenting on the "inspiring and insightful" collection of contents on show.

"This was an extraordinary result which bodes well for the future of the ACT Renewables Hub," said Alethia Barceinas who manages the ACT Hub and organised all the digital content including videos.

"This event allowed us to reach the masses and enabled us to emphasise the key objective of facilitating inbound investment advocating for the ACT as an ideal headquarters of choice," Alethia said.

For his part, ACT Minister for Climate Change and Sustainability Shane Rattenbury opened the *Hydrogen: Market Update* session on Day 2 of the virtual conference that attracted 3,500 delegates and was one of the most successful to date.

Capital advances

Four weeks later, in early October, the ACT Hub staged the follow-up event "How to make ACT the renewable energy capital".

Among the inspiring addresses by industry innovators was that of Lachlan Blackhall, Entrepreneurial Fellow and Head, Battery Storage and Grid Integration Program at the Australian National University.

Lachlan outlined the climate change challenges faced by society and the commitment to zero emissions by 2050 by all states – a vital common, cross-border ambition that recognises the urgent need to steer away from fossil fuels to avoid worsening climate change.

All due credit to the ACT, he said, which led one of the globe's earliest and largest roll-outs of battery storage through the ACT's Next Gen program that taps into the complementary nature of batteries and rooftop generated solar power.

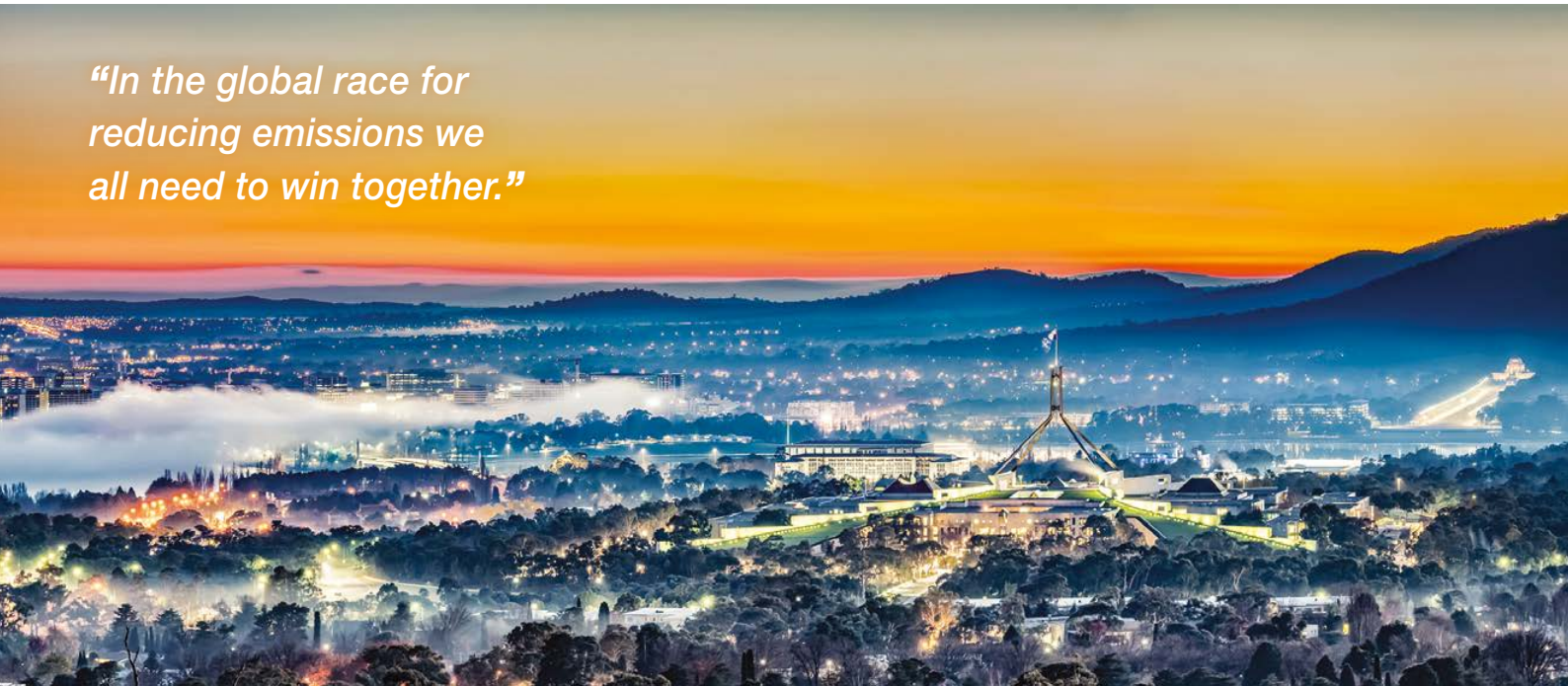
Now a third of the way toward completion, the program proudly represents one of the world's largest VPPs and cements the pioneering position of the ACT in renewables.

Referencing bushfires, prevalence of smoke and danger to infrastructure, Lachlan stressed the need for greater resilience in systems and combining forces to control assets, with a nod to the complexity of energy systems through regulations, policies and incumbents.

Greater resilience can be achieved through innovation, he said, and among the opportunities are 'all electric' town centres, the elimination of gas from the network and extensive use of renewables-powered electricity.

Webinar participants also heard from Rosemary Barnes, Business Owner, renewable energy, composite materials design and manufacturing expert who contrasted the industry dynamics playing out in Europe versus Australia.

"In Europe, masters and other students who are seeking real world experience find the culture among some big engineering companies stifling, so they are instead getting into hardware start-



ups, a trend that is driving the boom on the continent" she said, "and this promises great scope for innovative renewable technologies."

Clusters of progressive hardware-focused companies can be found in Sweden, Germany, Spain, the Netherlands and Portugal, many of which show a great deal of promise in innovation in storage, EV charging, wave energy, new wind and new solar such as in building materials, and addressing food waste and also market and business models advances.

Risks versus opportunities could be addressed she said, through unemployment insurance for start-ups.

CEO of the Canberra Innovation Network Petr Adamek, who manages a team of ten and counts among their corporate partners the CSIRO, Optus, PwC and businesses in the energy sector, emphasised the need for greater leadership and recognition of 'visionary early adopters'.

The global impact stemming from Canberra's innovation sector through specialisation and collaboration is acknowledged, he said, but "In the global race for reducing emissions we all need to win together."

Never a truer maxim.

Petr presented a graph displaying the linkages between innovation driven entrepreneurial systems, enterprises and more, emphasising that "Collective impact of the agenda and purpose over individual gain" must be at fore.

He concurred with Smart Energy chief executive John Grimes' suggestion of industry players staging a 'gladiatorial' style contest for young entrepreneurs to increase the speed of great ideas. It's already taking place he said through the zero-emission hackathon, whose winners progress incubation to the next level.

John Grimes wrapped up the webinar suggesting industry make a more concerted effort to pre-empt changes that may occur down the track with AEMO and other rule makers forming the landscape.

He commented too on the low levels of energy efficiency in Australian buildings, and the "deep capability in local networks and world class technical knowledge arising from ANU, which places the ACT in a strong position".

The Hub of activity

The ACT Renewables Hub's program of activities is managed by Alethia Barceinas who continues to bolster the profile of the ACT Renewables Hub Group through LinkedIn and various social media platforms with weekly updates and regular new content,

NEXT EVENT: December 7, How to Make ACT the Renewable Hydrogen Capital?

Did you know? You can gain a 'two for one' membership deal with the ACT Hub and Smart Energy Council's joint membership deal.

ACT Renewables Hub: Want to know more?

For more information about the range of resources available through the ACT Renewables Hub contact Manager Alethia Barceinas on 0452 414 070 or alethia@smartenergy.org.au www.actrenewableshub.org.au

A SLICE OF SOLAR ACTION IN THE SUNNY PACIFIC

Smart Energy regularly reports on the progress of Its Time Foundation school solar projects that are transforming education and lifting prospects for students in the Pacific region. All the installations are the result of hundreds of hours spent fundraising, and also thanks to the generosity of equipment suppliers. Now Its Time founder Rob Edwards has launched Solar Business Partnerships to extend the reach and drive more installations. Here he explains what it's all about.

MANY PACIFIC ISLAND SCHOOLS struggle due to lack of electricity supplies or rely on dirty diesel generators they can barely afford to run a couple of hours per day. The school kids have little chance of a modern education; however for the past ten years the Its Time Foundation has stepped in and built 20 solar PV systems. They not only provide clean, free energy for lighting and computers but also transform the kids education and prospects.

The solar systems replace the emissions-intense diesel generators which the schoolkids feel great about, and the money saved on diesel frees up cash flow to buy the computers. A win win!

After carefully choosing the most deserving schools in remote Fiji, I go about raising funds which is a tough game, but made easier by the generous support of our loyal and long term equipment sponsors Clenergy, Simliphi, Outback, Yingli and others.

Executing projects involves considerable logistics, in some cases loading equipment on 4-wheel drives then a 16-hour ferry trip followed by a long bumpy drive to the school. Installations often include complete wiring of the school and teachers' homes in the school precinct.

When we complete a project, I have come to realise there is a high moment and a low moment, in quick succession.

The high: The community is elated when we flick the switch and the school has power, there is celebration and feasting.

The low: I wave goodbye from the small outboard boat or ute and think "Okay, we've spent the money, now to start climbing a new fundraising mountain and do it again."

Highs and lows were delivered in a different and somewhat crushing form earlier this year.

In March we had secured the support of Rotary for some funding and I was invited to be keynote conference speaker and offered complimentary exhibition space in front of 800 delegates from 120 Rotary clubs. I was confident this would result in enough funds for

Over the past decade Its Time Foundation has equipped 20 schools in the Pacific with solar power thanks to the generosity of equipment partners and individual donors. The foundation is now inviting solar businesses to make a real difference in kids' lives through the Business Partners program. www.iitime.org/partners

five school solar projects. Concurrently, out of the blue, a super yacht owner contacted me saying he was keen to fund two schools and then visit the projects as part of the September family holiday.

I was looking at the happy prospect of securing seven more solar installations in a short time – more than a third of what I had achieved over ten years!

However, with COVID taking hold the conference was cancelled at the last minute, and soon after the yacht owner pulled out due to pandemic-induced travel restrictions.

Utterly heart breaking for me as well as schools in the Pacific.

Even in non-COVID times fundraising is a bit of a lonely grind, and I have been considering ways to ensure the continuation of the foundation and its good work, and the goodwill that flows to our close neighbours in the Pacific.

I was talking with friend and long-term Its Time supporter Mario Guzzi, Co-founder of mountings specialist Clenergy. We pondered whether industry players would consider Its Time as an on-going corporate social responsibility partner by contributing a small amount from each job or sale, say $20, for each 5kW system they install.

Twenty dollars in multiples would really help us transform the landscape.

Coincidentally Queensland installer Sam Gardel, who I know well, phoned me with a similar idea, suggesting installers donate a fraction of a cent per watt they install resulting in more schools in the Pacific getting solar.

In turn Its Time could provide all donors with material, such as photos of solar systems they helped get off the ground, to proudly share with customers and staff.

The Its Time Foundation Business Partners Program

This led me to launch the *Its Time Foundation Business Partners Program* www.iitime.org/partners/ on 1 November.

The *Its Time Foundation Business Partners Program* is a simple yet highly effective way for like-minded small and large operators to make a significant difference. And it's not only good for kids – quality CSR programs are good for business.

If you want to make a difference and to share this with customers, we'd love to have you on board.

Please visit www.iitime.org/partners/ for more information and welcome to the fold!

Smart Energy Council CORPORATE MEMBERS

For full listing of Smart Energy Council Members see **www.smartenergy.org.au**

PLATINUM MEMBERS

GOLD MEMBERS

SILVER MEMBERS

BRONZE MEMBERS

- Aus Solar Energy Group
- Aztech Solar
- B and R Enclosures
- Clean Technology Partners
- Crystal Solar Energy
- Ecoult
- Emerging Energy Solutions
- Energy Ease
- Freshwater Group
- Future X Group
- global-roam
- Icon Water
- IQ Energy
- Master Instruments
- Off-Grid Energy Australia
- Q-Cells Australia
- RETA (WA)
- Revolusun Power
- Royal Automobile Association of SA
- Solar Choice
- SolarHub
- Solar Wholesalers
- Solargain
- Solastor
- SuperGreen Solutions
- Velocity Energy
- Victron Energy B.V.
- WINAICO Australia
- X-Elio
- Zeromow
- Znshine

BECOME A MEMBER TODAY **smartenergy.org.au**

Warm Welcome

The Smart Energy Council would like to welcome the following new members:

SMART ENERGY COUNCIL
SOLAR, STORAGE, SMART ENERGY

PLATINUM MEMBERS

Instyle Solar — instylesolar.com

Energizer HOMEPOWER — energizerhomepower.com

energetica PHOTOVOLTAIC INDUSTRIES — www.energetica-pv.com

GOLD MEMBERS

Institute for Energy Economics and Financial Analysis IEEFA.org — ieefa.org

Dyness — dyness-tech.com.cn

TITANIUM PARTNERS

Alpha·ESS — alpha-ess.com

1 STOP Warehouse — Be Clean, Be Green — onestopwarehouse.com.au

powering tomorrow Growatt — growatt.com

If you would like to speak to any of these companies or find out more about membership with the Smart Energy Council please contact Luke Shavak, Australia & International Sales Manager on 0499 345 013 or email luke@smartenergy.org.au

SMART ENERGY COUNCIL
CALENDAR OF EVENTS 2020/2021

SMART ENERGY COUNCIL

DECEMBER 2020

1 — INSTALLER ROADSHOW (V)

7 — ACT WEBINAR + HYDROGEN AUSTRALIA
How to make ACT the Renewable Hydrogen Capital?

10 — WEBINAR 1

16 — UTILITY SCALE WEBINAR
5/5 Large Scale Webinar Series

JANUARY 2021

30 — ACT WEBINAR
A spotlight on the Local Network and its Global Opportunities

FEBRUARY

2 — MANUFACTURER'S TOUR (V)
Inaugural Manufacturer's Tour

3 — NSW SMART ENERGY SMART TRANSPORT SUMMIT
Renewables, EVs, NSW policy

9 — WEBINAR + MEMBERS MEETING
Market Update on DER requirements

18 — WEBINAR 2
Exclusive Webinar Opportunity

24 — SMART ENERGY CONFERENCE & EXHIBITION (V)
Annual Conference

25 — ACT WEBINAR
Next Gen Market Update – Is it the right time to buy a battery?

MARCH

11 — LARGE SCALE WEBINAR

23 — WEBINAR 3
Exclusive Webinar Opportunity

25 — ACT WEBINAR
Smart Suburbs – Smart Energy for building or renovation projects

APRIL

13 — H2 WEBINAR
Hydrogen Technology and Market Fundamentals

15 — ACT WEBINAR
Zero Emissions Transport Capital

20 — FOCUS ON QLD (V)

22 — WEBINAR 4
Exclusive Webinar Opportunity

29 — EUROPEAN SHOWCASE
Smart Energy: Innovation in Europe and America

MAY

4 — INSTALLER ROADSHOW (V)
First Installer Roadshow for 2021

13 — WEBINAR 5
Exclusive Webinar Opportunity

20 — VIRTUAL POWER PLANTS WEBINAR

26 — ACT MARKET OPPORTUNITIES
Reverse Pitching

JUNE

3 — HYDROGEN EVENT
Focus on technology utilised at the Olympics

8 — FOCUS ON VIC

17 — WEBINAR 6
Exclusive Webinar Opportunity

22 — MARKET UPDATE + MEMBERS ONLY MEETING
Member advocacy update

Explore our events & webinars:
www.smartenergy.org.au

SMART ENERGY COUNCIL | HYDROGEN AUSTRALIA | ACT Renewables HUB

SOLAR INDUSTRY Positive Quality™

THE SMART ENERGY COUNCIL'S Positive Quality™ program sets rigorous standards that ensure manufacturers who achieve and maintain high standards are singled out and recognised.

Prominent panel maker **JinkoSolar** meets those high standards and proudly displays the Positive Quality™ logo, a symbol of manufacturing excellence, which sends a signal of confidence to consumers.

Participating manufacturers are fully recognised, consumers enjoy peace of mind and the industry's reputation is strengthened, delivering **Positive Quality™** for all. Australian consumers and businesses can have confidence in the quality of the solar panels they are installing by looking out for the **Positive Quality™**.

The Smart Energy Council developed the program because the generic appearance of panels makes it difficult to determine good from bad,

unless an identification mark denotes otherwise. A logo that signifies superior quality.

The **Positive Quality™** program admits and endorses manufacturers that are independently tested and verified through plant visits. The initial assessment consists of a company's entire manufacturing processes undergoing independent and intensive inspection and testing.

This is carried out by the Smart Energy Council's specially appointed **Positive Quality™** specialists in a three step process: Certification check and compliance with IEC and Australian standards; Factory inspection with a 60-point check; and a Product quality check: appearance, IV, EL, Hi-Pot, and leakage current.

Positive Quality™ participants' premises are then inspected at random every 12 weeks to ensure the continuity of those high standards. All solar PV manufacturers of high quality can participate.

***** JinkoSolar has been recognised as Top Performer in PVEL/DNV GL 2020 PV Module Reliability Scorecard for the sixth consecutive year.*****

Contact Positive Quality™ Manager Luke Shavak on 0499 345 013, email luke@smartenergy.org.au or visit www.smartenergy.org.au

SUMMER advertising content

ADVERTISER	PAGE	WEB ADDRESS
AlphaESS Australia	7	www.alpha-ess.com
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Jet Charge	53	www.jetcharge.com.au
Kuga Electrical	17	www.13kuga.com.au
LONGi Solar	Inside front cover	www.longi-solar.com.au
Mondo	19	www.mondo.com.au/installers
NRG Renewable Group	23	www.facebook.com/groups/awisegroup
Pylon	11	https://pylon.solar/smartenergy
REC	5	www.recgroup.com
RedEarth	Inside back cover	www.redearth.energy
S-Rack Australia	30	www.s-rack.com.au
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