



CROW Newsletter

Making a noise about climate change

August and a bit, 2021

In BREAKING news:

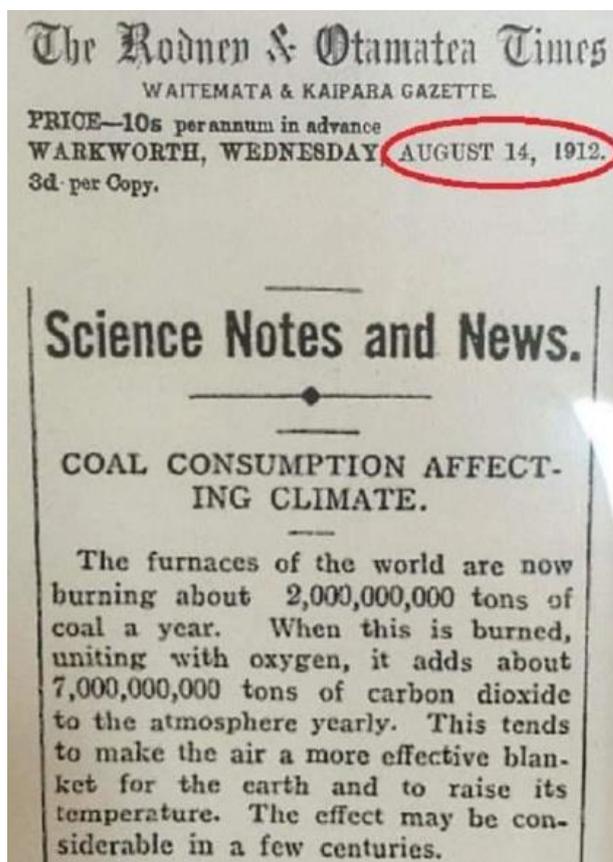
Discovered this floating around the intertubes.

Well we all knew this – assuming, that is, that the headline refers to CROW members.

New Study Finds That Crows
Are So Intelligent They
Understand the Concept of
net Zero by 2050

By Madeleine Muzdakis on July 21, 2021

In more BREAKING news:



The IPCC report – so much needs to be said. More links to facts and commentary

Earth has warmed 1.09°C since pre-industrial times and many changes such as sea-level rise and glacier melt are now virtually irreversible, according to the most sobering report yet by the Intergovernmental Panel on Climate Change (IPCC).

The report also found escape from human-caused climate change is no longer possible. Climate change is now affecting every continent, region and ocean on Earth, and every facet of the weather.

[The most comprehensive climate report for almost a decade shows we can navigate a narrow path and avoid climate catastrophe, but only through immediate and deep cuts to our greenhouse gas emissions.](#)

[This is the most sobering report card yet on climate change and Earth's future. Here's what you need to know](#)

[IPCC report shows 'possible loss of entire countries within the century'](#)

Local news

Proposed major infrastructure for Riverina/Wagga

Spark Renewables, part of the listed network investment company Spark Infrastructure, is proposing a massive 2.5GW wind, solar and battery storage hub in south west NSW, in the heart of a planned renewable energy zone.

The Dinawan Energy Hub and the direct investment in wind, solar and battery storage is part of a major shift into renewables and storage for the network investor, which owns half shares in local networks in Victoria and South Australia and a 15 per cent stake in NSW transmission company Transgrid.

Spark has already made one big investment in renewables, [building and owning the 100MW Bomen solar farm near Wagga Wagga](#) . But the proposed Dinawan hub takes the push into

renewable generation to another scale.



The new hub will be located half way between Coleambally and Jerilderie and along the route of the recently [committed Project EnergyConnect inter-connector](#), which will be built by Transgrid and ElectraNet and will run between Robertstown in South Australia and Wagga Wagga in NSW.

Spark also notes that its Dinawan hub is strategically positioned near the proposed Humelink and VNI West (KerangLink) interconnectors, which Transgrid is also likely to build.

SCIENCE AND TECHNOLOGY

[Hydrogen storage batteries – Australian tech – massive applications](#)

(H/T Dennis Lambert)

A novel project in Australia aims to harness the sun's energy in two different ways: by storing it and by using it to produce green hydrogen.

Dozens of solar farms in the country's south-eastern region are slated to use "[hydrogen batteries](#)" in coming years. The dual-purpose devices can fit inside of shipping containers and pack a bounty of technologies: lithium batteries, electrolyzers, fuel cells, and canisters of a hydrogen-metal compound. Operators can use the systems to store energy from solar panels and deliver power to the grid during cloudy days or at night. Or, they can supply the green hydrogen to other industries, such as cargo shipping and steel production.

At least that's the vision Alan Yu and his partners share. Yu is CEO of [Lavo](#), the Sydney-based company that makes [hydrogen storage systems](#) for utility and residential markets. He's also co-founder of the investment firm [Providence Asset Group](#), which is developing solar power projects in the states of Victoria and New South Wales.

Here's how it works: Solar panels feed electricity into the unit and charge a 5 kilowatt-hour lithium battery. Once the battery is fully charged, any additional electricity runs through an electrolyzer, which splits water into hydrogen and oxygen. The oxygen is released into the air, while the hydrogen flows into the metal canisters. Inside the red-

top tubes, hydrogen is stored in a solid form by combining it with a fibrous metal alloy made from common minerals.



Lavo began testing its first prototype at the research center last year. That unit is smaller than the ones that will operate at solar farms; instead of a shipping container, it's about the size of a double-door refrigerator. The technology firm has started marketing its more compact version for use in homes and businesses. With a storage capacity of about 40 kilowatt-hours, it purportedly stores three times as much energy as [Tesla's Powerwall 2](#). As the company fills orders for the fridge-sized systems, it will also be developing the larger hydrogen batteries to roll out alongside solar farms in south-eastern Australia.

[Just how extreme is this extreme weather - in the coldest inhabited part of the planet](#)

A heatwave in one of the world's coldest regions has sparked forest fires and threatened the Siberian city of Yakutsk with an "airpocalypse" of thick toxic smoke, atmospheric monitoring services have reported.

High levels of particulate matter and possibly also chemicals including ozone, benzene and hydrogen cyanide are thought likely to make this one of the world's worst ever air pollution events.

Last week Sakha's emergencies ministry said more than 250 fires were burning across 5,720 sq km – an area about twice the size of Luxembourg. Based on satellite observations, the European Union's [Copernicus Atmosphere Monitoring Service](#) reported that forest fires in the Sakha Republic have released 65 megatonnes of carbon since 1 June, which is well above the average for 2003-2020.

And, in a comment that sadly reflects Australian response to the 2019 fires, a local official says:

"Little by little, people are beginning to understand that the climate is really changing, and the consequences are really catastrophic. But the majority of society and the majority of politicians are still very far from understanding the real scale of the problem."

[More hydrogen news – Major green hydrogen plant for NSW to open next year.](#)

Thanks to infrastructure company Jemena and gas company Coregas, NSW is set to have its first major green hydrogen hub open as soon as early next year.

Jemena said starting in early 2022, it will produce and supply green hydrogen from its Western Sydney plant for industrial and transport applications. It will be the first large-scale refuelling operation in the state, and one of only a handful of stations in the nation.

The massive renewable energy project will convert solar and wind power into hydrogen gas, and as well as providing a refuelling hub for vehicles, will also be able to provide enough power for 250 homes via a 500kW electrolyser.

Jemena says the project is able to store as much energy as eight million powerwall batteries and will come at a cost of \$15 million dollars. If the five-year project is successful, it will look to roll out hydrogen across its existing gas network which will cover the majority of NSW.

The project is co-funded by the Australian Renewable Energy Agency (ARENA), and will help the NSW government reach its 'Stage 1 Net Zero' plan to cut emissions by 35 per cent (from 2005 levels) before 2030.

First fossil fuel free steel

Sweden's [SSAB](#) says it has "produced the world's first fossil-free steel" and has started delivering it to the Volvo Group, its first customer.

The news represents the latest development for the Hybrit project, which was set up in 2016 and is owned by SSAB, energy firm Vattenfall and LKAB, a mining and minerals group. Both Vattenfall and LKAB are owned by the Swedish state. The idea underpinning Hybrit is to use "100% fossil-free hydrogen" rather than coal and coke in steel production.

In an announcement on Wednesday, SSAB called the trial delivery "an important step on the way to a completely fossil-free value chain for iron- and steelmaking."

Looking ahead, the goal is to develop the technology so it can be demonstrated at an industrial scale. It's hoped this could happen as early as 2026.

"The first fossil-free steel in the world is not only a breakthrough for SSAB, it represents proof that it's possible to make the transition and significantly reduce the global carbon footprint of the steel industry," Martin Lindqvist, SSAB's president and CEO, said.

Can carbon dioxide capture contribute to 1.5 degree target?

Researchers at the Paul Scherrer Institute PSI and ETH Zurich have released [a new study](#) investigating to what extent direct capture of carbon dioxide (CO₂) from the ambient air can help to effectively remove greenhouse gases from the atmosphere. The findings were impressive with some estimates stating up to 97% of greenhouse gas emissions could be captured.

The scientists investigated a total of five different configurations for capturing CO₂ from the air at eight different locations around the world: Chile, Greece, Jordan, Mexico, Spain, Iceland, Norway, and Switzerland.

These measures do not forego the need to reduce emissions but are rather an alternative to use while decreasing emissions.

"The technologies for CO₂ capture are merely [complementary to an overall decarbonization](#) strategy – that is, for the reduction of CO₂ emissions – and cannot replace it," stressed Christian Bauer, a scientist at the Laboratory for Energy Systems Analysis and a co-author of the study.

Bauer added that they could aid in achieving the goals defined in the Paris Agreement on climate change especially in circumstances where emissions cannot be avoided such as in agriculture.

Study finds green roofs make solar panels more efficient

Two identical office buildings side by side in Sydney's Barangaroo provided a perfect opportunity for solar energy researchers to test a long-held hunch.

Would surrounding rooftop solar panels with green plants make them more efficient?

The answer, as it turned out, was yes.

The study was led by Peter Irga from the University of Technology Sydney and funded by the City of Sydney Council. "For the first time we had the opportunity to compare these two buildings against each other," Dr Irga said.

And the results?

- Study finds solar panels work better when they're not too hot
- Over eight months, the roof with greenery generated an additional \$2,595 worth of renewable energy

POLITICS AND POLICY

"Coal Keeper", Angus Taylor's latest attack on renewables.

[As the world battles to slash carbon emissions, Australia considers paying dirty coal stations to stay open longer](#)

[Advice](#) to the ministers on the electricity market redesign, released on Thursday, includes a recommendation for a mechanism formally known as the Physical Retailer Reliability Obligation (PRRO).

It would mean electricity generators are paid not only for the actual electricity they produce, which is the case now, but also for having the capacity to scale up electricity generation when needed.

See more at [Independent advice to ESB was strongly against Taylor’s favoured “Coalkeeper” subsidy](#)

“The energy industry – including fossil fuel generators, networks, renewable energy companies and technology groups – have been nearly unanimous in their condemnation of the PRRO, saying it would do little apart from keeping coal in the system for longer than needed, and adding costs and complexity.”

We are ahead of the pack again – it’s just the wrong pack

No wonder the fossil fuel companies love Australia and its compliant politicians.

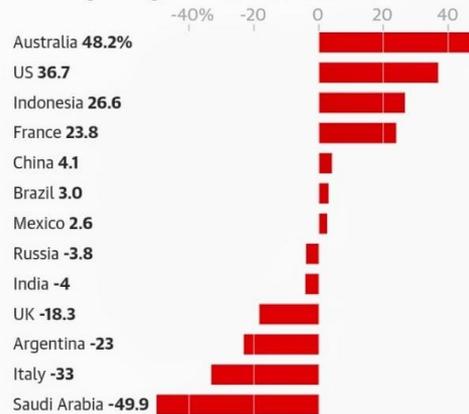
When you are making money hand over fist from fossil fuels, it just makes sense to make as much as possible, and to extract as much government assistance as possible before the whole Ponzi scheme goes bust.

Just be sure to sell off the defunct gas wells and the destroyed coalmine landscape before you have to pay for their rehabilitation. That, as always, is a job for public money.

And, just in case you might think that this is old news (2015 = 2019), [this](#):

Australia and US increased fossil fuel subsidies since 2015

Percentage change between 2015 and 2019



Guardian graphic | Source: BloombergNEF

“Fossil fuel subsidies cost Australians a staggering \$10.3 billion in FY 2020-21 with one Commonwealth tax break alone (\$7.84 billion) exceeding the \$7.82 billion spent on the Australian Army, according to research released today by The Australia Institute.”

[Multi-day iron-air batteries reach commercialization](#)

Solar and wind power have variability in their productive hours, as multi-day weather events can impact output. Therefore, multi-day storage that is cost effective is important in grid reliability.

Boston startup Form Energy developed technology to address this need, [revealing recently](#) the chemistry behind their iron-air batteries. The company said its iron-air batteries can deliver renewables-sourced electricity for 100 hours at system costs competitive with conventional power plants. At full-scale production, Form Energy said the modules would deliver electricity at tenth the cost of lithium-ion batteries.

The iron-air battery is composed of cells filled with thousands of iron pellets that are exposed to air and create rust. The oxygen is then removed, reverting the rust to iron. Controlling this process allows the battery to be charged and discharged.