

Plugging in a Carbon-Free World



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THERE'S NO DENYING COVID-19 HAS CAUSED huge shifts in the energy industry, and it's a very mixed picture: a rise in renewables, volatility in power markets and talk of oil demand having peaked. Could accelerating the push to net zero be COVID-19's silver lining? Enter Electron.

Carbon-free energy requires a grid that can instantly and equitably distribute power from any source to any consumer. Electron is a London-based startup using decentralized technologies to design and build the digital infrastructure for such a grid, a decentralized network more capable of quickly enabling the transition to cheaper, cleaner power.

Electron CEO JOJO HUBBARD tells Brunswick's INEZ BARTRAM VILAR and KIRSTY CAMERON how a boost to the green-energy revolution could be COVID-19's silver lining.

CEO Joanna Hubbard cofounded Electron in 2016 while exploring the idea as a management consultant for McKinsey. In March of last year, Electron secured investment from grid technology firm Kaluza, a business in the OVO group, to accelerate the development of its energy platforms. Electron's goal is a "distributed flexibility marketplace," by coupling of blockchain, trading and energy expertise.

Created in 2008, blockchain offers a secure, decentralized platform for all types of transactions. Most famously, it is used to power bitcoin and other types of digital currency. Electron hopes to use it to allow society's generated energy to be more efficiently directed where it is needed. That would allow homes and other small-output generators to be more active participants and permit the wider adoption of green-energy resources.

The 30-something CEO, universally known as JoJo, talks about the net-zero future and the unexpected boost that future is receiving from the ongoing pandemic. She also shares her recipe for success in a sector dominated by older men.

"You've got to speak the language," she says. "And you've got to know what you're talking about."

Why did you decide to go into the energy technology space?

In the early days of blockchain, everyone thought it would be great for property rights, for registering people, databases and refugees. And those are all fantastic missions. But for me, the single biggest, most important problem of our time, and also the most interesting problem of our time, is how do we move to a zero-carbon system?

To get there, you have to no longer have centralized, large-scale, thermal power generation. Instead, you have a long tail of smaller connected assets—those become the majority—with several parties sharing data.

You've got multiple owners of datasets and multiple owners of markets, and everyone needs to be coordinated. It felt like this distributed operating system was literally the only answer. And yet, no one was doing it.

How did you come to be CEO of Electron?

There were so many new problems being created by this huge growth in energy renewables—problems such as grid constraints and asset connections. I became obsessed with batteries and smart-grid technologies and was considering starting a battery fund and got quite deep into that. But then I realized that there was no route to market for batteries to solve those problems. So for me, the question became how can we fix that?

Then I went to McKinsey and I was doing projects for them for about 12 months and they kind of said, "So it's going really well. What do you want to do?" And I said I'd like to try to answer that question, to work out how to integrate this long tail of energy assets into cost efficient marketplaces.

They gave me time to really dig deep into it, to start my own project. And we came up with a cool idea—essentially that the point of coordination for all this different stuff is a shared-asset identity system for things like batteries and solar panels and wind.

That's what Electron is.

Basically, you've got all these new players in the market, all these new distributed assets. And no one knows where they all are and what they can do. So, we started an identity system. Then many different types of marketplaces can refer to that shared infrastructure system.

For example, a single battery can help balance supply and demand levels at a national or financial level—but, at the same time, it can also help avoid grid congestion for some local community.

We came across blockchain technology while I was there—somebody said, have you looked at this? Then I met my cofounder Paul Ellis, who was an expert in this space and it all came together. We thought, wow, this is such a huge opportunity and no one's doing it.

What does that mean for the energy sector in simple terms?

Let's use broadcasting as an example. You start off with a national broadcaster. There are only three state-run channels—that's all you can watch. Then the independent broadcasters emerge, adding hundreds of channels. Then, suddenly, there's

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self-publishing—YouTube, for instance. Now, not only can you watch videos online, but you can upload your own content, viewed by thousands of people around the world.

That's the kind of renewable revolution we're looking at, with many sources of power and two-way flows.

Has securing investment been a challenge?

Luckily there's a lot of angel funding for this kind of thing. A lot of people in the energy world really care about finding the right answers to the industry's problems.

We secured two strategic partners, TEPCO and Kaluza, owned by OVO Energy. We've working with Kaluza most recently as they are looking to bring people's electric heaters and cars to market and to get more value for their customers. This sort of coordination infrastructure is critical to that, so that was a really neat alliance.

What problems have you come up against from an investment standpoint?

Historically with energy technology, you'd be investing in physical goods, developing solar sites, batteries, hydrogen cells, things like that—infrastructure with a fixed return. That's still a tough market. But it's physical and so, easier to understand the value. There's a history there.

We're building new digital platforms, which are not as tangible. Typically, that's the world of tech VC firms, but they're going, "Energy is hugely complex. And there's huge regulatory risk. Why do I have to understand this really complex market? I can invest in this B2B florist company and there's a \$70 billion marketplace..."

To me, it's obvious that this is the bigger market and it's undergoing huge transformation.

Most energy CEOs are white, male and in their 50s. Has it been a challenge for you as a 32-year-old female CEO?

You really have to learn the language in this industry. You have to work out exactly which question to ask to get the right answer, more so than in other fields. People in this space really know their stuff.

I'm a bit of an anomaly, it's true. That means I get lots of speaking opportunities. I can translate the jargon, but you do wonder whether you're there to translate or because you're female.

Getting out there is a good thing for the industry because we're really trying to build the tools it needs. But if I'm there just because I'm female, it

can be a bad thing for Electron—if I’m doing loads of this “translation” and Electron isn’t seeing any benefit from it.

It’s the same with raising money. Everyone wants a more diverse portfolio, but people still have all the same biases and they question whether, as a woman, you can actually do the job. So, you get all the first meetings, the second meetings. You can waste way more of your time, I find, because they are no more likely to invest. Just more likely to take the meeting.

But as I said, this is a whole industry of people who really care. A lot of these people could have been paid better if they went into finance. I’m proud to be part of the energy sector.

What have been the advantages of launching in the UK?

A lot of American and Australian grid tech companies are coming here to the UK. It is the most amazing test bed for innovation—a really strong fintech culture; a really open regulator; lots of innovation funding; and it’s a really big launch market. Ofgem [the UK’s energy regulator] is very effective at driving down costs and really holding companies to account, which is fantastic for us as we are all about efficiency.

How has COVID-19 pandemic affected the journey to “net zero”?

System change was hard to conceptualize before COVID-19 hit. What it has done with regards to “net zero” is link system vulnerability from disease to system vulnerability for climate change, which has accelerated the urgency and public pressure for mass decarbonization.

We’ve seen decreases in power demand of 10 to 20 percent during the pandemic: Some are saying the lockdown gives us a glimpse into the net-zero future, which I think is right. I hope what this does is accelerate long-term trends toward a green-energy revolution.

What this means, for us, is it brings forward the challenges of mass renewable curtailment and rising grid congestion. It makes our mission even more significant, making sure we have the inertia markets to enable renewables. Renewables are winning, and everyone’s running to catch up.

Another very important facet to this is behavioral change. What COVID-19 has proven to us is that behavioral change is possible, which was absolutely the “missing link”—in the past, the focus has been on Big Tech “getting us there.”

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So yes, for energy at least, there will be a green recovery from COVID-19. Renewables were winning anyway. But we are one of those businesses that will just get propelled forward by COVID-19. We’re infrastructure. That means we follow long-term trends. The level of decarbonization in the grid that happened this year was predicted to happen in 2023, so we’re ahead and we’re already seeing the effects.

During this lockdown period, Electron launched the world’s first local market for excess power. Can you tell us a bit more about that?

In March we launched a local market, the Orkney islands, which, in a nutshell, is delivering real-time trading between renewable generation and local flexibility. This is a world first! Orkney, off the northeastern coast of Scotland, is a really interesting test case, as renewable energy generation often exceeds grid capacity.

What it is, is a market in which renewable generators can pay flexible assets to make space for them on an increasingly congested grid. This means we can bring more low-cost, low-carbon generation into the system and create new revenue opportunities for clean technology operators.

As the change to renewables and greater efficiency becomes more evident and more inevitable, do you have new worries about competition in the space?

It’s funny, people ask this question a lot in the grid-edge space, when really it ought to be far more applicable for stalling or shrinking spaces. That is not what we have here at all. We are still in the early stages of an industry-wide transformation to all renewables, all electric and, as a result, a far greater focus on using grids more efficiently.

Tens of thousands of regional networks, maybe more, need to transform into marketplaces in the next five to 10 years and the most important shift is in mindset and familiarity with this solution.

Our product itself is a multi-market platform as a service that enables many marketplaces, with various market operators, to cooperate and coexist. We want to enable as many players as possible to create value and efficiency, so long as they are proposing a market in which energy asset owners want to take part.

And that’s the great thing about marketplace solutions—you find that out quickly. ♦

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