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GREEN INSIDER

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Welcome

By Dominic Wall, Managing Director
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Welcome to the Autumn edition of the Green Insider, this is the fifth edition of our quarterly newsletter. This year is our tenth anniversary as a business. It has certainly proven to be an eventful year. Whilst we have aimed to avoid a direct discussion of COVID-19, it is a recurring feature of many of the articles in this edition. The influence of the virus has been curious for the green energy and technology space. On one hand there has been a short term impact in relation to new capacity installations, yet on the other hand there has been optimism that the change to lifestyles has awakened more sustainable attitudes in the wider population. Above all we hope that you have and will remain healthy and safe at this time.

As with previous editions we have included a mixture of geographic and technology/sub sector specific articles. This edition includes debut articles from Sean Goldenberg our new MD for our Orlando office, which tackles energy storage in the US, and Liam Thomson who joins our disruptive technology team in the UK. Liam looks at the situation in cybersecurity for smart grids. Other contributions include a look at hydropower's role in China's BRI scheme, mega projects in Australia, PPAs & Green Finance in Europe, circular design in solar technology, flow batteries vs Lithium Ion, the French solar space and a look at New York's latest renewable energy solicitation.

As always, we are keen to hear back people's thoughts about the articles in this edition and also any suggestions on future articles,

Yours Sincerely,

Dominic Wall
Managing Director

Australia: An Energy Powerhouse?

By Tim Hall, Head of Renewables APAC, tim@greenrecruitmentcompany.com

Rise of the Mega Project

Since it first set a mandatory target for renewable energy in 2001, Australia's efforts on renewable energy have been both impressive and aggressive. This includes increasing its target in 2010 and hitting its 2020 target a year early in 2019. A curious facet of renewables in Australia is that its role in the energy mix is much more politically polarising than in other developed countries. Historically the Abbott federal government watered down targets and closed support mechanisms in the 2010s and a similar situation is emerging under the current Morrison government. Some of the optimism that occurred with the achieving of the 2020 targets has cooled as a lack of a federal strategy has placed the onus on states to pick up the slack on renewables. A curious exception however has been the increasing trend towards incredibly large renewables projects in Australia.

An Energy Exporter

"We can choose a future where we export more products and outsource fewer jobs" is a quote from a Barack Obama at the Democratic National Convention 2012. Half a world away and eight years later, the sentiment has an uncanny resonance with the emergence of two mega projects in Australia: The Sun Cable and the Asian Renewable Energy Hub. Both projects are focused on exporting energy to Asia. In the case of the Sun Cable scheme, lauded by the Energy Minister Angus Taylor, "Australia has long been a world leader in energy exports. As technologies change, we can capitalize on our strengths in renewables to continue to lead the world in energy exports." The scale and ambition of both projects is impressive:

The Sun Cable

The Sun Cable or as it is more formally known, Australia-ASEAN Power Link (AAPL), is looking to combine what could be the largest solar farm in the world, with the world's largest battery and utilise the largest transmission system (some 4,500km) to export clean energy from Australia to Singapore and Indonesia. With project costs estimated between \$14bn-\$20bn, the scheme is likely to net \$2bn worth of exports per annum. It will account for 20% of Singapore's energy use once in place.

Asian Renewable Energy Hub

Moving to Western Australia, we come across another major energy export project: the Asian Renewable Energy Hub (AREH). The project has received approval from the Western Australian Environmental Protection Agency, covers an area of over 6,500km² and will play host to around 15GW of solar and wind capacity. Whilst the scheme will provide energy to consumers in the Pilbara region, it will also feature a green hydrogen

facility that will be exporting to Asia. It is expected to generate 40TWh of clean electricity per year with an estimated life span of at least 50 years. These two projects alone will help to cement Australia's status as a top tier energy exporter.

Keeping the Home Fires Burning

If Australia is leading a charge on renewable energy for external export, their domestic position is a little less clear cut. The Snowy 2.0 pumped hydro project will become the largest committed green energy project in Australia, but the scheme has attracted significant criticism in relation to its environmental and economic credentials. Based on the Australian Energy Market Operator (AEMO)'s recently published 2020 Integrated System Plan for the National Electricity Market, several critics suggest that Snowy 2.0 may not recover its outlay. Perhaps instead the recently approved Bass Strait Cable, which would enable the Battery of the Nation project connecting hydro resources in Tasmania to the mainland, can help restore faith in hydro energy solutions in Australia. Although some questions still remain over who will foot the \$3.5bn cost of the cable, there are grounds for optimism that a solution can be found. If question marks over costs are dogging the domestic hydro market, a more recent development has left a few more of renewable energy's advocates scratching their heads. The government seems to be bucking global trends by looking into providing stimulus to the natural gas sector – this announcement, coinciding with upcoming decisions to be made on the controversial Narrabri gas project in New South Wales, is likely to alarm many.

Concluding thoughts

It would be easy for outside observers to take a cynical view of Australia as an energy powerhouse. The dichotomy of highly organised and ambitious export focused projects versus awkward domestic schemes and a possible natural gas resurgence is confusing to say the least. In some respects, the current focus is too economic and lacks empathy with environmental goals. It may also serve to isolate Australia. Ross Garnaut, a prominent economist, recently spoke on the Clean Energy Council's Australian Clean Energy Summit Webinar Series. He was particularly interested in what a Biden victory in the US election in November could mean for Australia. Garnaut's view was that Australia could end up in the "Naughty Corner" and that a Biden presidency might put significant pressure on Australia, as the US pick up a greater leadership role on sustainability. This is a big "If", as you would struggle to write off Trump (after all he overcame huge odds the first time around) but it does point to a live risk that Australia could find itself out of step with global energy opinion very easily and suddenly.

Australia & South East Asia Jobs

General Manager - Operations

Location: Singapore / Philippines / Vietnam

Salary: Depending on Experience

Contact: Tim Hall – tim@greenrecruitmentcompany.com

Fantastic opportunity to lead the operations of a top international solar PV and wind IPP in the APAC region.

The company have an asset pipeline of over 10GW globally and are seeking an experienced renewable energy professional who has a background in the delivery of utility scale renewable energy projects in the APAC region and over 5 year's senior leadership experience.

The General Manager – Operations will be a vital part of the organisation's APAC operations, providing a strong strategic direction to operational processes to implement the required commercial solutions. You will be a strong negotiator and influencer and have great relationship management skills. You will manage a small team and be the main point of contact for internal reporting lines in the region.



Project Development – Senior Manager

Location: Victoria, Australia

Salary: Depending on Experience

Contact: Tim Hall – tim@greenrecruitmentcompany.com

An Australian wind developer are seeking a Senior Manager to lead their project development team in the development of wind projects across Australia. The company are one of the most successful developers in Australia, having operated in the region for over 15 years and having secured planning permission for several wind and solar PV farms during this period.

With over 2GW of projects either in construction or operational, this company are seeking to expand their portfolio by hiring a Senior Manager to lead a team of two experienced developers. You will have a strong background in wind project development in Australia, primarily in the planning stages. You will have detailed knowledge of the Victorian planning scheme and in EES. You will also have experience or ambitions to lead a small team and provide vital leadership experience for a close-knit organisation.

Land Acquisition Manager**Location:** Melbourne / Sydney/ Brisbane**Salary:** Depending on Experience**Contact:** Tim Hall – tim@greenrecruitmentcompany.com

An international renewable energy IPP are seeking a Land Acquisition Manager to lead the negotiation and securing of property rights for renewable energy developments across Australia. This is a market leading company who specialise in large scale wind, solar PV and battery storage projects internationally. With a long track record in Australia and established offices in Melbourne and Sydney, this is a great opportunity for a property professional to gain further exposure in an impressive organisation.

As Land Acquisition Manager, you will have strong familiarity with property law and documentation in Australia and knowledge and a track record working on renewable energy projects. You will be able to build relationships, negotiate and influence rural landowners, whilst simultaneously collaborating with internal teams in Australia and internationally.

**Senior Development Manager****Location:** Melbourne**Salary:** Depending on Experience**Contact:** Tim Hall – tim@greenrecruitmentcompany.com

This is an exciting prospect to build the development portfolio of a Melbourne based, international IPP across solar PV, onshore wind, and battery storage projects.

With a 10GW global pipeline, this company are seeking an experienced renewable energy developer to help them win their first projects Australia. You will have a proven track record in developing greenfield projects at a senior level in Australia in either solar PV or onshore wind.

As Senior Development Manager, you will be responsible for a variety of development activities including identifying new project development opportunities, securing land tenure, obtaining consents and community consultation and stakeholder management.

Making the Connection – Energy Storage in the US

By Sean Goldenberg, Managing Director, Orlando
s.goldenberg@greenrecruitmentcompany.com

Getting beyond the “Magnificent Seven”

According to the International Energy Agency (IEA) in 2019 Germany (0.5GW), China (0.5GW) and South Korea (0.6GW) all deployed more energy storage capacity than the US (0.4GW). In fact, only seven states have adopted policies with energy storage mandates, targets and goals; New York, New Jersey, California, Nevada, Massachusetts, Oregon and Virginia. It is possible to add an eighth player in the form of Texas which has become a major energy storage market just through deployments without a target. It is clear that local philosophies are the dominant factors in determining whether a state has an energy storage plan – in California urgency was derived from the disastrous wildfires of 2019, with grid resilience becoming a hot topic for the state. Whilst it's clear that the states that have policies are performing well, there is a missed opportunity for the wider US energy market in not developing a more top-level approach for energy storage.



A lack of a joined-up approach is already laying the seeds of future issues. An obvious topic is around the role of energy storage – already there are several different approaches being taken; in California, the Independent Systems Operator is conducting its own review into ownership, ERCOT in Texas is considering defining storage as a separate entity from generation and load, whilst the Midwest Independent Systems Operator has asked federal regulators to designate storage as an alternative to transmission. The danger is that any would be energy storage operator could be tied up in several very different bureaucratic regimes, reducing efficiency and delaying deployment. Its time go beyond the “magnificent seven” and adopt a more strategic approach to energy storage.

What is the rush?

There are two good reasons why the time is right for a better strategy for managing energy storage in the US.

Its common challenge for governments around the world to struggle to keep pace with technology, just ask Google, Apple, Facebook, and Amazon, but there is a different problem (with similar roots) developing for energy storage. Energy storage has gone from being an expensive technology that has struggled to explain itself to investors, to a highly attractive niche investment. Simply put there is a window of opportunity to maximize investments to the sector which will be great for jobs, the economy and overall grid resilience.

The second reason is more of a *fait accompli*. Energy storage is coming whether people like it or not. This August (2020) the US Energy Storage Association (ESA) released some interesting research. Having

“ENERGY STORAGE HAS GONE FROM BEING AN EXPENSIVE TECHNOLOGY THAT HAS STRUGGLED TO EXPLAIN ITSELF TO INVESTORS, TO A HIGHLY ATTRACTIVE NICHE INVESTMENT.”

looked at installed and proposed utility scale hybrid power plant projects in the US, they found that 28% of solar plants included energy storage as well as for 5% of wind energy projects. The percentages may sound low, but they account for 113GW of renewable energy projects. That is a big enough number to keep you awake at night.

The benefits of promoting energy storage

Energy storage enjoys many intrinsic benefits, its flexibility, and ability to integrate distributed energy, solar and wind alongside its track record in improving grid efficiency make it attractive as an asset. Environmentally it helps reduce the need for “peaker” plants and their pollution impact.

What is the next step?

The single biggest challenge is removing barriers to interconnection. Some positive steps have already been made here, the Interstate Renewable Energy Council (IREC) initiated a project in April which will last three years. The project is called Building a Technically Reliable Interconnection Evolution for Storage (BATRIES). It aims to help create common standards via tool kit that can be applied across the different state regulations and product designs. Importantly the project will also include an emphasis on training and outreach which should help accelerate the success of the initiative.

US Jobs

Senior Project Manager

Location: Dallas, TX

Sector: Solar & Storage

Salary: \$ Competitive, DOE

Contact: Sean Goldenberg - s.goldenberg@greenrecruitmentcompany.com

Come join the leading developer and operator of renewable energy projects in North America.

The client has a confirmed pipeline of over 2GW of early and late stage solar and energy storage development projects

The Senior Project Manager, Renewable Energy will be focused leading late stage development assets through design, vendor selection, contracting and construction. The ideal candidate will collaborate with the Development and Finance teams to finance and deliver high quality, cost effective renewable energy projects.

Controls Engineer

Location: Philadelphia, PA

Sector: Hydro

Salary: \$ Competitive, DOE

Contact: Sean Goldenberg - s.goldenberg@greenrecruitmentcompany.com

The leading player in the hydro controls market supporting all models of hydropower governors. Rapid growth has led to multiple vacancies across technical engineering and project management

The Controls Engineer will be responsible for both the design of new control systems and applications, and interfacing with existing control and hydraulic systems



Commissioning Manager

Location: Tennessee/Remote

Sector: Solar

Salary: \$ Competitive, DOE

Contact: Sean Goldenberg - s.goldenberg@greenrecruitmentcompany.com

Great opportunity to harness your creative energy and join a business with a strong pipeline. A community solar subsidiary focusing on community solar up to 20MW is experiencing exciting growth.

The Commissioning Manager will be filling a management and support role with a broad scope of responsibilities ranging from electrical testing to reviewing contract language

Construction Project Lead**Location:** California**Sector:** Onshore Wind**Salary:** \$ Competitive, DOE**Contact:** Sean Goldenberg - s.goldenberg@greenrecruitmentcompany.com

Come join the leader in renewable energy maintenance. This company leads the pack as the fastest growing company in the sector and has multiple vacancies across their project teams.

The Construction Project Lead manages, coordinates, and supervises utility scale wind plant construction activities.

Senior Director – Solar Owners Engineering & EPC**Location:** North Carolina**Sector:** Solar PV**Salary:** \$ Competitive, DOE**Contact:** Harry Davies – harry.davies@greenrecruitmentcompany.com

This is a unique opportunity to join a successful international renewable energy developer, operator, and EPC with core interests in Solar PV. They are currently developing a 1.8 GW portfolio across Europe and The United States. The position is for a Senior Director to join the Management team with a focus on Project Execution, Construction Activity, Supply Chain and Procurement as well as Investor reporting and advisory for EPC services.

Investment Manager – M&A**Location:** New York**Sector:** Solar PV**Salary:** \$ Competitive, DOE**Contact:** Harry Davies – harry.davies@greenrecruitmentcompany.com

TGRC are working with an International Renewable Energy IPP who have been rapidly expanding their US offering over the last three years. With 31 MW of projects under construction in Massachusetts and an additional portfolio representing 50MW of secured sites, the business is looking for an experienced Investment Manager to join a team that expects to double in size over the next three years. The successful candidate will have extensive transaction experience in Solar and or Wind technologies and will be responsible for originating, structuring, and executing acquisition or divestment opportunities and the financing of projects across North America.

Project Developer**Location:** New York State**Sector:** Solar PV**Salary:** \$ Competitive, DOE**Contact:** Harry Davies – harry.davies@greenrecruitmentcompany.com

TGRC have partnered with a Global Turnkey Renewable Energy business specialising in Solar PV deployment. The company have interests in various locations including, South America, North America, Asia, Europe, and Africa. They are growing their business in New York State and are looking for a Solar Project Developer to lead on all Development for Origination and Acquisition of Commercial Scale Solar Assets. This position will also offer the successful candidate the opportunity to support with project delivery, financing and asset sale for projects throughout the USA.

The Empire State Strikes Back – New York’s ambitious renewable energy plans

By Harry Davies, Director, Americas, harry.davies@greenrecruitmentcompany.com

A Challenging Year

2020 has been a bruising year for many across the globe and few places were harder hit than New York. It is testament to both the character of the state and its governor, Andrew Cuomo, that instead of being distracted by its leadership role in US green energy that it has instead gone on the attack against climate change. A new clean energy solicitation is seeking to add 4GW of renewable energy capacity, following up on last year’s solicitation that awarded 1.7GW of renewable energy capacity. Supporters of offshore wind will be pleased that this year’s solicitation includes 2.5GW for the sector, firmly supporting the state’s plan to achieve 9GW of offshore wind by 2035. Once these projects are complete it will be the emissions equivalent of removing 300,000 cars from the streets of the state.

Whilst the scale of the solicitation is impressive, it also aligns with New York’s Green New Deal. The solicitation targets a positive mix of economic development, job creation and environmental justice. It is anticipated that around 2,000 short term and long term jobs will be created by the solicitation. The emphasis on infrastructure to support the new renewable energy capacity also shows good foresight where investment in port facilities should help avoid the sort of interconnection problems that have dogged other schemes elsewhere.

Since 2018, New York has awarded 67 large scale renewable energy projects, the most of any state. This article will aim to provide an overview of progress on two of the different technologies deployed, offshore wind and solar.

Offshore Wind

Last year saw the first offshore wind awards for New York totalling 1.7GW across two projects; Empire Wind and Sunrise Wind.

Located 14 miles from Jones Beach State Park, Empire Wind will have a capacity of 816MW and is expected to be in operation by 2024. The project is being developed by Equinor Wind US LLC. Sunrise Wind is located 30 miles to the east of Long Island and will be the larger of the two schemes with a capacity of 880MW. The scheme is being developed by Sunrise Wind LLC (a joint venture of Ørsted A/S and Eversource Energy). In addition to these schemes there is a smaller 130MW scheme being developed by Long Island Power Authority (LIPA) known as the Southfork Wind Farm. If

the current solicitation achieves its aim then the state will be half way to its offshore wind target.

A recent report by the Brattle Group suggests that if the schemes are integrated into a multi-user transmission system it could save \$500m and reduce environmental impacts and risks. With some schemes a long way out from the New York cost, a planned transmission approach could reduce cabling by an impressive 660 miles. There are good reasons to think the report will be acted upon given the carbon reduction focus of the solicitation.

“SINCE 2018, NEW YORK HAS AWARDED 67 LARGE SCALE RENEWABLE ENERGY PROJECTS, THE MOST OF ANY STATE.”

Solar

Solar sits behind hydro and wind energy as an energy source for New York. The new solicitation has identified 17 large scale solar projects for support of which two will feature energy storage elements. Whilst solar may be the junior partner in the state’s energy mix, it will become a more visible presence as the new sites will be in nearly every region of the state. Albany will receive three schemes of roughly 20MW each whilst the Garnet Energy Center in central New York will play host to 200MW of Solar PV and 20MW of energy storage.

Future improvements

It’s clear that New York has doubled down on hitting its green goals. Its commitment to offshore wind is impressive and offers a great path to large scale renewable energy adoption. There are two areas for future development that will hopefully feature in future projects. The first would be a welcome expansion of energy storage for future schemes. New York has good grid reliability, but it does seem underserved with energy storage options. The second challenge focuses on waste. Unlike in several West Coast cities there is no mandate for residents in New York City to separate their food and yard scraps – as a result 1 million tons of organic waste go to landfill each year. A future focus on diverting this waste to a composting program would significantly burnish the already impressive sustainability credentials of New York.

Is Hydropower the secret winner of the Belt and Road Initiative?

By Qihan Geng, Regional Partner APAC, qihan@greenrecruitmentcompany.com

One Belt, One Road and Several Dams

When it comes to renewable energy, there are few areas where China is not a dominant player, even in areas such as Offshore Wind where countries like the UK and Germany hold a lead, China will soon overtake them in capacity. However, whilst many renewable energy advocates focus on solar and wind energy, one area that China holds a significant dominance in is hydropower. China is home to some 87,000 dams and has a hydroelectricity capacity estimated between 500GW-600GW making it the country's second largest source of energy. Its hydropower capacity is double second placed Brazil. It is logical that with such a national competence in hydropower, that it would be a core part of the ambitious renewable energy strategy of the Belt and Road Initiative (BRI). This article will provide a survey of the use of hydropower in the BRI.

Giving a "dam" about the Environment

Hydropower has a complicated relationship with the rest of the renewable energy space. The environmental impact of setting up a dam and the destruction of animal habitats is well attested. Outside of China many countries have hydropower as a legacy of time periods where such impacts were not considered, despite this, the contribution of hydropower to most countries' (that have it) grid is significant. Countries such as Norway, Iceland and Costa Rica all have significant hydroelectric capacity. The result is that whilst hydropower is clean energy, it is not consistently viewed as such. In California, hydropower is not considered a clean energy source and there are moves to try and demolish four existing dams on the Klamath River (this would be the largest dam removal project in US history).

Three reasons why hydropower is gaining traction in the BRI

Given the controversy surrounding hydropower there are at least 10 schemes that are part of the BRI. Its useful to understand the reasons behind supporting hydropower as part of the scheme:

- The energy context in Asia: only one scheme is outside Asia and that is the Karuma Hydropower Project in Uganda. Although hydropower requires a strong upfront investment it offers cheap electricity and good income for developing countries. Equally important is the challenges that many Asian countries have in decarbonising, using hydropower to move away from coal for many in Asia feels like a price worth paying.

- The domestic challenge: China has the largest hydropower sector in the world, but the home market is saturated and demand for large dams is slowing down. There is clearly a benefit in refocusing these firms overseas. There is also more likely to be a longer term relationship on the maintenance of hydro assets which would satisfy some of the wider objectives of BRI.
- Irrigation and water control: in several countries, hydropower has been linked to flood prevention and improved irrigation schemes.

What are the key projects?

The table below highlights the key projects included under BRI:

- Lower Sesan Two Hydropower Dam (Cambodia)
- Karuma Hydropower Project (Uganda)
- Nurek Hydropower Rehabilitation Project, Phase I (Tajikistan)
- Tarbela 5 Hydropower Extension Project (Pakistan)
- Nenskra Hydropower Plant (Georgia)
- Suki Kinari Hydropower Project (Pakistan)
- Gilgit KIU Hydropower (Pakistan)
- Phandar Hydropower Station (Pakistan)
- Kayan River Hydropower Plant (Indonesia)

So, is hydropower the secret winner of BRI?

China has about 36 renewable energy investment projects in BRI countries, with an installed capacity of 15.75GW (China as the project owner or investor). With around 10 of these schemes including hydropower or involving a hydropower business, the technology is well placed to reap the benefits of the BRI. There are two other possible measures of success for hydropower as part of BRI. The first is that it has enabled a proliferation of hydropower to other countries. The second measure will be whether it translates to wider international success for Chinese businesses in the emerging pumped hydro storage market. Whilst undoubtedly pumped hydro also carries several of the same environmental hazards and biodiversity risks as hydropower, it does not attract the same opprobrium.

However, it is possible to overstate the case for hydropower being the biggest winner. It certainly has done well so far from BRI, but as the scheme widens, it is likely that solar and wind energy will become more dominant. As technologies they are more popular, more flexible – especially geographically and supported by large domestic manufacturing bases.

Asia Jobs

Project Manager-Hydropower

Location: Pakistan & Beijing

Salary: RMB600k+

Contact: Amy Wu – amy@greenrecruitmentcompany.com

This is a role for a Project Manager for the construction phase of a new hydropower station. The company has built its investment business by developing a supply chain structure that reinforces each other business, including electricity, highway, high-speed railway, mining, and many other traditional areas of industry. The firm is now focused on advancing its investment businesses in strategic new industries, such as; water, pollution control, and new energy. It has invested in more than 20 hydropower stations and thermal power stations around the world.



Design Manager

Location: Beijing

Salary: RMB400k-600k

Contact: Amy Wu – amy@greenrecruitmentcompany.com

This role is responsible for hydropower design and review. The company has built its investment business by developing a supply chain structure that reinforces each other business, including electricity, highway, high-speed railway, mining, and many other traditional areas of industry. The firm is now focused on advancing its investment businesses in strategic new industries, such as water, pollution control, and new energy. It has invested in more than 20 hydropower stations and thermal power stations around the world.

Clean Power Program Officer

Location: Beijing

Salary: Competitive

Contact: Qihan Geng – qihan@greenrecruitmentcompany.com

Responsible for supporting the Program Director (PD) to identify strategies and manage a grants portfolio to achieve the program's goals. This person will support the PD to manage budget and grants, represent the program internally and externally. The ideal candidate will have several years of experience in the energy/power field, plus an extensive network of contacts across government, private sector and NGO professionals globally. Experience or expertise in primary energy would be of benefit.

Greener Energy: bringing the circular economy to solar energy

Nathan Quinn, Senior Consultant, nathan@greenrecruitmentcompany.com



The past few years have brought many landmarks for renewable energy, whether it is the number of days a country goes without fossil fuels, a new record height for a wind turbine or some new cost efficiency. Of these it is potentially the cost dynamic that has been behind the success of renewable energy, after all when something is both cheap and good its logic becomes undeniable. The International Renewable Energy Agency (IRENA) estimates that in 2019 half of all solar and wind installations undercut fossil fuels on price, whilst since 2010 the cost of solar photovoltaic projects has fallen by 82%.

However, there is a need to move beyond price, in truth there is no such thing as a sustainable material and solar panels contain both valuable materials and potential hazards. A report from Arup, an engineering consultancy, at the start of the year focused solely on Australia anticipated between 300,000 and 450,000 tonnes of panel waste by 2040. This article aims to look at how solar panels are being better integrated into the circular economy and will look at how circular design, use and recovery is being applied to solar panels in different regions.

Asia

Solar panel usage is growing fastest in Asia. No single country in the world has adequate recycling laws when it comes to solar panels, however it is Asia where the impact of this situation is likely to be felt first. There is no complacency on the issue of solar waste, however. A good example is the response of South Korea. Following the Korea Environment Institute's 2018 statistic report – the last two years have seen a combined public and private effort to promote circular concepts into the solar industry. The Korea Institute of Energy Research (KIER) has invested a lot of effort in how to recycle panels, focusing on chemical separation and the retrieval of materials for future solar panel manufacture. Similar results have also been achieved in a public-private research project based at the Chungbuk Technopark. In the private sector, a notable success story has been Line Tech Solar, a firm based in Hwaseong – they work on deconstructing and then “repowering” solar panels – typically extending the panel life by 10 years and still maintaining an efficiency level over 20%.

Australia

As mentioned earlier, solar waste is a significant and visible topic in Australia. With a potential 18GW of solar in the country by the end of 2020, Australia has the makings of a large solar waste challenge. Although there has been some government engagement – most momentum is coming from the private sector. A key player in the Australia PV waste sector is Reclaim PV Recycling that has already formed partnerships with major players such as Canadian Solar, Suntech, Sunpower, Yingli and QCells. The firm's emphasis is on recovering components for reuse, with a focus on refining existing components rather than repurposing them. The rapid rise of a firm like Reclaim augers well for the PV recycling sector – it may encourage manufacturers to embed future recycling capability into their panel designs and motivate others to set up similar firms in Australia and overseas.

Europe

Europe imports a significant proportion of its solar panels from Asia. There is an increasing sense that European countries are keen to regain some form of initiative for its local solar PV manufacturing base. A leading exponent of this move has been France, with President Macron making significant pledges in 2019 to aid solar innovation. The EU has a research programme called Horizon 2020, the programme includes three solar PV schemes; Circsol, Cabriss and Super PV. A brief overview of each scheme is listed below:

- Circsol – launched in 2018, this scheme has five demonstration projects that focuses on how circular economy principles can be applied to solar PV.
- Cabriss – is the acronym for a “circular economy based on recycled, reused and recovered indium, silicon and silver materials for photovoltaic and other applications”. The scheme started in 2015 and looks at co0st effective manufacturing and materials use by design.
- Super PV – is a scheme started in 2018 that focuses on technological and process innovations. As a project it is very much focused on giving European solar PV a competitive advantage in terms of sophistication and efficiency.

USA

In the US, the main organisation looking to lead on circular solar technology is the National Renewable Energy Laboratory (NREL). The lab recently published a report in *Nature Energy* focused on the solar recycling sector. The principal issue at the present is a lack of a recycling framework for solar PV in the US, whether in terms of policy, actual recyclers, and regulation at state level. In fact, only one state, Washington, which is home to a photovoltaic module stewardship and takeback program seems to have the issue on their agenda. A good microcosm of the issue is that the Solar Energy Industries Association (SEIA) itself lacks any single recycling partner facility that could handle a whole solar panel, instead its partners are capable of handling different parts of a solar panel each. However, the recent report should help to drive discussion of how the US tackles the issue.

UK Jobs

Origination Director

Location: London

Sector: Asset Finance

Salary: Flexible Depending on Experience

Contact: Rory Chandler – rory@greenrecruitmentcompany.com

The Green Recruitment Company is partnered with a long established structured finance specialist who are growing the business development & origination team. The business is a leader in providing asset finance services across several industries, including green energy, waste, infrastructure, construction and more. They provide a unique offering of structuring, arranging and Residual Value Risk financing to the UK Mid & Large ticket asset finance market.

An ideal candidate will be someone working in a bank, advisory or similar where they have an excellent knowledge of asset finance (or similar) and possess an excellent network and existing client base that they can utilise from day 1. This person needs to be commercial and comfortable in canvassing and pitching financing solutions to large firms across several industries.

Head of Client Services

Location: UK (Flexible)

Sector: Energy Consultancy

Salary: Competitive Salary

Contact: Jess Carpenter – jess.carpenter@greenrecruitmentcompany.com

The Green Recruitment Company are working with one of the leading energy consultancy firms in the UK, driving the net zero carbon agenda through energy/property services and technologies. They are looking for a Head of Client Services (Commercial Real Estate) to execute their sector strategy and accelerate growth.

Presales Executive

Location: UK (Flexible)

Sector: Demand Response/VPP

Salary: £45,000-£80,000

Contact: Tom Brookes – tom.brookes@greenrecruitmentcompany.com

As part of the Business Development department, the Presales Executive is a key contributor to the commercial success of this multinational demand response company. The Presales Executive uses their commercial awareness and software/product and technology experience to support Sales in licensing the VPP platform solution to new clients across target geographies.

Partnering with sales managers in delivering a consultative software sales cycle; the Presales Executive helps uncover our prospects' business problems, desired Positive Business Outcomes and defines a solution to said problems that delivers those outcomes. They do this by working with prospects in a consultative way, aiming to understand their pain points first and demonstrate through presentations, demos, and discussions how their solutions deliver unique benefits.

The Presales Executive takes responsibility for pulling together proposals (i.e. an RFP response), creating a high-level solution architecture and answering functional or technical queries

The Presales Executive must passionately promote distributed energy; always looking for opportunities to help target companies make the process of unlocking DER asset value more clear, straightforward, and effective through licensing the VPP platform.

Bouncing back from *un été pourri* – French solar energy

By Harry Moncur, Head of European Energy Generation, harry.moncur@greenrecruitmentcompany.com

A (Weather) Forecast for French Solar

Normally it is common to think of weather as a British obsession (it is), however French has its own wonderful array of idioms covering the weather. Metaphorically, solar energy in France should be *Il fait un soleil de plomb*, literally “made of lead”, but meant to mean blistering hot. Last year (2019) the government made solar energy a real mission, with significant statements made at the European Solar Manufacturing Council (ESMC) with President Macron vowing a major reindustrialisation of French (and European) solar manufacturing.



Fast forward a year and the solar sector in France is experiencing *un été pourri* – a rotten summer. This is largely due to the Coronavirus, in Q1 2020 France added 176MW of solar capacity, down 15% on Q4 2019. However despite the impact of the pandemic, the outlook for the solar sector in France is actually very positive.

Effective Tenders & Growing PPAs

The French solar sector is largely blessed by an efficient and effective tender system. Utilising a contract-for-difference-system (*Complément de Rémunération*), with clear parallels to other European tender system, offers bidders 20 year contracts that at compensates them for the difference between the market price and the tariff proposed in their bid. There also appears to be good levels of bonhomie between developers and the government, with many industry figures praising how well the tenders are run.

The results of this cordiality between stakeholders, speak for themselves – at the latest auction, France

awarded 960MW of solar projects of which nearly 68% when to large scale schemes. The organisation and transparency of the process also provides other benefits, it has proactively encouraged the development of brownfield sites and has made the financing of projects easier for the developers.

An interesting development in France has been the emergence of more power purchase agreements (PPAs) for solar. As in other countries, renewable energy technologies are reaching market parity. This is certainly the case for ground mounted solar. Volterra, has recently secured its fourth large scale solar PPA in France with a 61MW 20 year deal with Auchan retail. Other clients include the retailer Boulanger, state-owned railway SNCF and financial services provider Crédit Mutuel. French firms have been effective at agreeing PPAs overseas, Engie for example has recently created innovative PPA agreements in the UK, Australia, and Poland, however it now seems like the PPA has come of age domestically in France now too.

Innovation

An important aspect of the French solar space is the effort France puts into offering leadership and innovation in solar technology. It is clear that, France has ambitions to rebuild its domestic solar manufacturing base, however it is also apparent that integral to this ambition is an intention to make sure that the focus is on innovative design. France has been leading on the EU's NEXT-CSP project to help improve the efficiency of concentrated solar power. The project is entering its next stage and aims to increase efficiency from 42% to 48% and if successful offers the potential for creating a solar “peaker” plant via the use of thermal energy storage.

Chaleur d'août, c'est du bien partout (In the heat of August everything is fine)

Despite a slow start to the year, the signs are good for the French solar sector. Many countries would be right to cast an envious glance at how well the public sector and private sector cooperate on new schemes, whilst the emergence of a PPA market will only serve to unlock greater solar deployments going forward. If the above trends are supported by a resurgent domestic manufacturing space that prioritises innovative and more efficient solar technology, then it's hard to see a scenario where France doesn't achieve its solar aims.

It's always sunny in Iberia

By Rory Chandler, Head of Energy & Infrastructure Investment, rory@greenrecruitmentcompany.com



There is no doubt Spain is the hottest renewables market in Europe right now. According to Solar Asset Management Europe, the country added three times the amount of solar PV in 2019 than in the entire last decade. In the first seven months of 2020 alone, renewables achieved a 44.7% share of the national electricity mix.

In Q2 2020, Spain had the highest proportion of projects with a PPA agreement in place (26%). This was the highest in Europe, and for comparison the UK was in second place (14%).

It's easy to understand the appeal – favourable legislation, yearlong sunshine and windy coastlines make it an ideal hunting ground for developers, banks and funds alike looking for reliable income-generating assets. Subsidy schemes, low cost and abundance of land and a stable regulatory framework all contribute to making Spain an attractive market for investment.

We have witnessed the boom first-hand from a recruitment perspective. Many of our UK & European clients have established local offices in Madrid to develop or acquire projects across Spain and Portugal. While the UK market slowed down in March with many companies implementing hiring freezes to take stock about strategy, internal resources and headcount, the Spanish sector has continued to thrive and has become the busiest market for the Renewable Generation team here at Green Recruitment Company.

The most desired candidates in the current landscape are Senior Greenfield Developers with a track record originating and delivering projects in Spain. Given the competition from so many companies entering the market, the top talent are spoilt for choice when looking for a new opportunity. These professionals are well sought after if they have delivered utility scale wind and

solar projects and led the entire land acquisition, permitting and grid connection procedures in Spain.

Aside from full project development, we are also seeing acquisitions of newly constructed or RTB stage projects. This has led to many investors seeking strong M&A professionals who can spot an opportunity to grow portfolios with operational or in construction assets, without the headache of the various authorisations required in delivering a greenfield project.

"IN Q2 2020, SPAIN HAD THE HIGHEST PROPORTION OF PROJECTS WITH A PPA AGREEMENT IN PLACE (26%). THIS WAS THE HIGHEST IN EUROPE, AND FOR COMPARISON THE UK WAS IN SECOND PLACE (14%)."

However, all the competition means smaller players are finding it hard to compete and are subsequently outbid for grid connections by the well-backed funds, multinational developers, IPPs or large utilities who are dominating the market. It is a crowded market, and the companies who are yet to enter the Spanish market are probably too late. Our clients' strategy has already started to shift with Eastern Europe and Scandinavia being attractive propositions for development and investment.

It comes as no surprise that renewable energy was the only European energy source that grew throughout the pandemic. We expect this growth to continue as the ex-O&G players shift entirely to clean energy, legislation continues to be favourable, construction costs continue to fall, and corporates continue to push wide ranging ESG agendas.

It seems the current crisis has aided the widespread adoption of renewable energy in Europe and it is a trend that shows no sign of slowing down.

If you are an experienced greenfield development professional looking for a new challenge, please do not hesitate to get in touch. Our latest European roles within investment, asset management, wider finance and development are listed on our website – rory@greenrecruitmentcompany.com

Europe Jobs

Senior Sustainability Consultant

Location: Germany

Salary: Flexible Depending on Experience

Contact: Andrew Green – andrew@greenrecruitmentcompany.com

Fantastic opportunity to work with one of the pioneers of the global energy and sustainability space. This position will work with some of the biggest energy users internationally in helping reduce their environmental impacts. The company has one of the strongest brands in the global energy and environmental space and will be looking for someone to lead their sustainability practice from Germany. The Senior Sustainability Consultant will be responsible for GHG reporting, setting and managing sustainability strategies for large corporates and ensuring an exceptionally high level of service.



International Business Development Manager

Location: Bavaria, Germany

Salary: €90,000 + car + bonus - Flexible

Contact: Andrew Green – andrew@greenrecruitmentcompany.com

An excellent opportunity to work with one of the leading names in the global energy and sustainability space. This position will work with some of the largest energy users internationally in helping reduce their environmental impact and sourcing renewable energy.

The position needs someone with experience at one of the larger energy consultancies with experience of winning pan-European business. The business has a wide service offering, including but not limited to energy procurement, bureau, energy management, electric vehicles, renewables, and products. In order to be considered for this position, you will need to have a very strong track record in over-achieving sales targets consistently. Fluent German is required to be considered.

Land Manager – Onshore Wind

Location: Sweden

Salary: Competitive DOE

Contact: Rory Chandler – rory@greenrecruitmentcompany.com

TGRC is working with a European renewable energy investor & developer who are growing rapidly their onshore wind portfolio in Europe, focused on the Scottish and Nordic (Swedish) markets. The business has already identified around 1GW projects across these markets. They are seeking a Land Manager to assist developing the onshore wind pipeline in Sweden. The Land & Stakeholder Manager will be responsible for managing all landowner and community relationships to secure land access rights and development agreements for a portfolio of onshore wind projects in Sweden.

This role can be based remotely but will have regular travel to sites etc. The company fully support flexible working practices.

Are renewable energy prices about to rise in Europe? A PPA perspective

By Andrew Green, Head of Energy Solutions & Wind, andrew@greenrecruitmentcompany.com



Recent data from LevelTen Energy has shown year over year price increases for renewable energy power purchase agreements (PPA) in Europe (in their Q2 2020 PPA Price Index). This would seem to buck the trend for renewables over the last few years, where there has been one headline after another about dropping PPA prices. LevelTen Energy have mainly attributed this to the phasing out of tax credits alongside other factors. The question is what is driving this increase, is it a long term trend? And, finally what it might mean for the PPA space going forward.

Key factors that may be increasing PPA prices

Having already considered the phasing out of tax credits, what other factors may lead to increasing PPA prices?

Covid-19: a short term factor will be any costs associated with project delays caused by Covid-19.

Demand: a very clear trend that has emerged is that the PPA space isn't keeping up the pace with demand. A recent study suggested that by 2030, clean electricity demand will reach 224 terawatt-hours. In places like Denmark there is already a concern that tech giants are taking too much of new renewable energy capacity through PPAs. Although Denmark is considering making large energy users like the tech giants contribute to the cost of building renewable energy infrastructure, that has not happened yet. Increasing demand and a supply struggling to keep up is going to put an upward pressure on prices.

Grid Connection Costs: the elephant in the room when it comes to renewable energy the world over is often the state of the grid and its responsiveness in connecting new schemes. The problem is more nuanced than it seems, recently a high strike price on solar in Ireland was the result of the high future proofing standards employed on the Irish grid driving costs up. Elsewhere issues can arise because of a lack of modernization

delays the completion of grid connection. It's clear that as demand increases the PPA space needs a more effective strategy for grid connection.

PPA lengths: A study of PPA lengths in Texas found that the length of agreements in the state went on average from 20-25 years in 2017 to 12-15 years in 2019. It appears a similar trend may be emerging in Europe, with shorter PPA lengths being associated with higher prices. Whilst it's not a slide from PPA to merchant, suppliers are going to want better prices in exchange for shorter deals.

Statistics: One point to be mindful of is a statistical one – the two largest European PPA markets in the price index are Spain (26% of projects with PPA offers and the UK (14%). Whilst Spain is one of the cheapest markets of PPAs (especially for solar). The UK is one of the most expensive. A recent BloombergNEF report found that for a solar PPA Spain had an average EUR/MWh price of 35.3 versus the UK's 52.3 – even for onshore wind the UK has an average EUR/MWh price of 49.7. Increased UK PPA activity will always drag the average price up in the long term, there is also a wider point – very few European countries will be able to match Spain's solar PPA pricing. As PPA adoption spreads across the rest of Europe the average price is going to increase.

The long term position and what it means for the sector

A CRUCIAL POINT IS THAT DESPITE RISING COSTS, RENEWABLE ENERGY WILL REMAIN HIGHLY COMPETITIVE VERSUS FOSSIL FUELS

A crucial point is that despite rising costs, renewable energy will remain highly competitive versus fossil fuels and has the advantage of legislation (in relation to national targets for 2030 and beyond). The likelihood is that rising costs will be self-sustaining for a while, as buyers seek to accelerate their timetable for PPA procurement, it will fuel greater PPA scarcity. It is likely that increased costs will level off in a few years.

Future technologies may also help to reduce energy costs, green hydrogen, energy storage and some experimental projects on Solar CSP & thermal storage may help renewables replace "peaker" costs and improve grid efficiencies but the principal issue will be how supply can be made to meet demand going forward.

Is It Time to Go with the Flow?

By Cory Rogers, Head of Disruptive Technology, cory@greenrecruitmentcompany.com

The global shift towards clean energy alternatives has been a key area of innovation and progress over the last decade. Just like the internet revolution changed the world in the 1990s, clean energy promises to usher in a sustainable and clean approach to meeting our energy needs. However, how we store the clean energy we generate is still a major point of debate and continual research.



With the recent widespread uptake of electric vehicles, lithium-ion batteries have been the primary focus of energy storage research. However, some industry leaders are now asking whether we should set our sights on flow batteries and asking, "is it time to go with the flow?". With the global renewables market expected to reach \$1.5 trillion by 2025, and with solar and wind accounting for 86% of global renewable capacity additions this year, there's never been a better time to ask this question.

The Case for Flow Batteries

Flow batteries look set to play an important role in renewable energy storage solutions. Flow batteries work by exploiting energy differences in the oxidation states of elements (usually metals) within the battery. This allows the batteries to store or discharge energy as required. Although there are three types of flow batteries (hybrid flow, membrane-less flow, and redox flow), they all involve a liquid electrolyte that "flows" - which, you guessed it, is how they get their name.

The key difference between flow batteries and lithium-ion batteries is that in flow batteries, their energy and

power is decoupled. With lithium-ion batteries, these are not decoupled. If you are struggling to visualise why this is important, then imagine a car. In a car, the internal combustion engine and the fuel tank are separate. If you want the car to run for longer, then you simply need to increase the size of the fuel tank, not both the fuel tank and the engine. With lithium-ion batteries, both the energy (fuel) and the power (engine) need to be increased to achieve a longer battery life (allow the car to run for longer).

The main reported benefits of flow batteries is that degradation is low, they can increase energy output without increasing power, and they are safer (lower fire risk). They are also simpler to monitor because there is no cell-cell or stack-stack balancing, unlike lithium-ion batteries.

The Case for Lithium-Ion Batteries

Lithium-ion batteries have a considerable head start on flow batteries and have been widely utilized all over the world in a range of industries. This means that the cost of lithium-ion batteries has been continually dropping, making them a very affordable option. This looks set to continue and they will presumably get even cheaper. There's also much more research into these batteries when compared to flow batteries. While there is evidence of the reported benefits of flow batteries over lithium-ion batteries, more research is needed in this area.

The extraction of Vanadium for flow batteries is, at present, inefficient and wasteful. This is going in lithium-ion's favour right now, but this could change in the future. Vanadium extraction can be made more sustainable, and vanadium can also be recycled which will reduce demand for mining in the future.

What is the Verdict? Is It Time to Go with the Flow?

For large scale energy storage, it looks like flow batteries could be the future. However, lithium-ion batteries aren't going anywhere either. It's predicted that by 2025, Lithium-ion batteries will account for 60% of the sustainable storage market, and Vanadium flow will account for 30%. For small scale use (electric vehicles and home storage) lithium-ion batteries will likely remain the dominant form of storage. Looking to the future, the sustainable energy market will likely continue to be made up of a combination of lithium-ion batteries and flow batteries depending on the situation.

Tech Jobs

Senior Product Specialist – Emobility & Battery Storage

Location: London

Salary: £70,000+

Contact: Cory Rogers - cory@greenrecruitmentcompany.com

The Green Recruitment Company are delighted to be partnered with a leading & well-regarded innovator in the energy field to identify a new Product Specialist - Energy Storage & Electric Vehicles

As the business continues to strive & diversify its energy solution portfolio in prominent areas such as emobility, virtual power plants, battery storage & smart metering, this new requirement for a Solution Architect to join the Digital Conversion team has arisen.

This position would suit a technology evangelist, with a passion for sustainability & renewable energy, who's ready to transition into a challenging but rewarding work environment.



Technical Innovation Manager – EMS & EVs

Location: West London

Salary: £70,000 +

Contact: Cory Rogers - cory@greenrecruitmentcompany.com

The Green Recruitment Company are delighted to be partnered with a leading clean mobility developer in the UK. This global organisation is at the forefront of new technologies within the clean energy & emobility sector, particularly pivotal in new SMART Tech. The latest requirement for this already, rapidly growing team is that of a Technical Innovation Manager to lead on new idea origination within disruptive tech, linking in to emobility, taking new concepts through the commercial & technical feasibility, converting them into market-ready solutions & products.

Senior Programme Manager – Battery Storage

Location: Home Counties

Salary: Circa £80,000

Contact: Cory Rogers - cory@greenrecruitmentcompany.com

The Green Recruitment Company are pleased to be partnered with a leading renewable energy developer with a large focus on one of the most innovative new-emerging technologies - Battery Storage. The compact nature of the business means that the successful individual will have the significant opportunity to develop their career in a friendly, notable environment yet taking a lead & ownership over a significant, flagship project for the business - with the hope of developing a blueprint to replicate around the country.

The project is the first of its kind, incorporating multi-vector sustainable, renewable generation sources into a large-scale storage site.

Cyber Security in Smart Grids

By Liam Thomson, Senior Associate, Disruptive Technology
liam.thomson@greenrecruitmentcompany.com

What Aesop can teach us about Cybersecurity

In Aesop's fables an eagle is shot by arrow that had been feathered with one of its own plumes, in its dying breath the eagle bemoans the fact that we often give our enemies the means of our own destruction. Whilst Aesop was no specialist in cybersecurity the nature of his dilemma will be familiar to those that are. In 2019 a solar and wind business Utah became the first US power grid operator to be disconnected from its power generation station. The cause was an unpatched firewall, a 21st century equivalent of a discarded eagle's feather.

The benefits of smart grids are largely derived from their connectivity, giving the traditionally creaking energy grid significant flexibility. The ability of a smart grid to use data flows also contributes to their vulnerability, unethical or malicious actors could launch an attack on the IoT infrastructure that makes up the grid, which in turn could unbalance the load in unpredictable ways. Increasing use of microgrids makes the impact of these attacks more local in nature, which is an improvement on the centralised infrastructure of the past, however it is not enough to merely limit the damage of a potential attack and the tech sector is coming up with some innovative ways to help improve grid security.

Cybersecurity

A smart grid offers plenty of avenues of attack for those with malicious intent. A smart grid is an ecosystem of operational technologies including power line communication devices, supervisory control, intelligent electronic devices, and data acquisition (SCADA) and energy management systems. Alongside these specific technologies are generic problems for cybersecurity including organisational communication systems and electronic information, from a security perspective a smart grid has a large attack surface. The key challenge historically for the cybersecurity sector has been the lack of standard reference architecture and a lack of release mechanisms have hampered the growth of the sector.

A positive step towards common standards has occurred this August (2020) with US' Smart Electric Power Alliance (SEPA) adding standards governing distributed energy resources (DER), smart energy, and data exchange to its *Catalog of Standards* for the first time. Given the centrality of the US to the global cybersecurity industry these new standards may lay the groundwork for improved interoperability in the sector; the standard includes requirements for interconnection & interoperability, information exchange between

networks and a very focused smart energy profile application protocol.

Hopefully more common ground will help the industry develop a more robust response against would be attackers.

AI, Machine Learning & 5G

The sophistication of smart grids represents another challenge for security, there is also an issue from a security perspective of having too much data. This means that any effective cybersecurity solution for smart grids needs to embrace automation and the benefits of AI and machine learning. AI can be deployed to help resist malware, ransomware attacks and social engineering attacks, whilst machine learning is critical to threat intelligence, identifying new cyber-attacks, drawing statistical inferences, and getting that information to endpoint security systems. The value of detecting anomalies in the data of smart grids will see increased deployment of AI and machine learning in the sector.

In the EU, AI, Cyber Security and Renewable Energy are among three of the technologies being targeted in €750bn pan-EU support package agreed in May 2020 as part of the coronavirus recovery plan. The grouping of these technologies together in the stimulus package hopefully bodes well for the future of this approach.

Another technology that received EU funding was 5G. There seems to be a growing belief that 5G will be an important part of the cybersecurity landscape for utilities. However, it is early days, the sector is largely split between those using fibre or 3G and 4G solutions (utilities were big adopters of 4G). The cost aspect of helping to develop 5G resources for the grid may be less appealing to those who have already invested in other technologies, but it is certainly a space to watch.

Will ESG offer the best impetus to improve smart grid cyber security?

The modern sector of clean energy may benefit from the attentions of an older sector. The first rule of business is to protect your investment. As renewable energy developers and providers globally adjust to a post-subsidy world, the role of sustainable impact funds and green finance becomes increasingly large. Finance is very good at understanding and managing risk, it is likely that this will provide increased impetus to improve the cybersecurity profile of projects if they want to be attractive to investors.

Final Thoughts

By Dominic Wall, Director

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Thank You

Thank you for taking the time to read the latest edition of the Green Insider. We hope you enjoyed reading it as much as we enjoyed putting it together. As a business our consultants are all keen advocates for the green economy and especially green energy and technology.

Whilst you are here

Hopefully, you have heard of us before you read the Green Insider. If you have not then we're the Green Recruitment Company and we have a vision to be the premium provider of global recruitment solutions to the green energy and technology sector.

We remain committed to offering the best possible recruitment experience for our candidates and clients. We augment traditional recruitment methods with the best of new technology to offer an innovative hiring process. Our team can offer video interviewing, competency, and psychometric testing as well market research alongside executive search, permanent and freelance recruitment.

If you are interested in our market research offering, we have recently completed a salary survey for c-suite executives in Europe that work at renewable energy developers. If you would like a free copy, please email me using the contact information at the top of the page. I am also happy to discuss any bespoke intelligence reports you might be interested in.

Once again, we would like to thank you for reading and we hope to be in touch again in the future!

Best Wishes,

Dominic Wall
Managing Director



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