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Project Finance & Infrastructure Journal



ESG Report 2023

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The ESG conundrum – sorting wheat from chaff

ESG... it's all the rage these days. Just take a look at **IJGlobal ESG Awards 2023** that we will shortly be hosting in London, and brace for impact

It was back in 2018 that due diligence was completed for an ESG awards night to be hosted by *IJGlobal*, celebrating achievements by the industry across environmental, social and governance in the delivery and operation of infrastructure and energy.

However, it was not until 2021 as we slingshot ourselves out of the Covid-19 pandemic that the event gained traction and we hosted the first event to celebrate achievements from 1 April 2020 to 31 March 2021.

And we haven't looked back since.

In fact, it's only a matter of time before we geo-clone the event to other regions as there is clearly appetite for us to do more. *IJGlobal* is an international title, with teams all around the world, tracking daily developments in greenfield, brownfield and infrastructure fund activity – so it only makes sense that we complete this circle and provide the awards to match.

This year we pulled in a record number of submissions – 350 in total – from all corners of the planet, giving our independent panel of judges a long afternoon to wade through all of them (OK, maybe we removed some stinkers, the ones that were totally irrelevant or fell outside of the judging period).

And when it comes to judging, it's not an easy thing to do. With *IJGlobal Awards* (greenfield and refinance) transactions have to have closed in the judging period – clear-cut and defined. With *IJInvestor Awards* (M&A and infra fund activity) this reflects acquisitions that actually closed with approvals in place and money changing hands, or real events... again within the judging period.

However, for ESG it's not quite so crystal-clear. The ideal scenario is that they reflect concrete actions and policies enacted, but it's not that simple. The implementation

of strategies is sufficient in this case to be rewarded as we seek to identify (and recognise) the direction of travel and shift in behaviour... which sometimes will take years to be evidenced, but the groundwork has been laid today.

The bottom line is, the independent panel of judges assess submissions with their real-world view of the market and vote to recognise the best and brightest. Stated intentions and concrete action taken today for a long-lasting result in the future is enough to win them over – but they didn't come down in the last shower!

In keeping with the nature of the ESG awards, we identify all judges – most of whom are exceedingly senior and have ESG in their job titles – and we met in person in London and over Teams. To be fair, we identify judges on all our awards as we believe in absolute transparency and that this process makes our trophies the most valued in the sector.

However, when it comes to ESG awards we open up all categories – company and transaction awards – to the judges for the final decision. In the *IJGlobal Awards*, there are just too many for all of them to be reviewed as our panels would (quite rightly) dig their heels in.

The efforts that submitters put into their submissions frequently impresses us and it's inspiring to learn about what is being done as – with an eye firmly set to financing – we often miss the ESG details that sit behind transactions, and until we created these awards this element had not been recognised.

So, with that in mind, and in the run-up to this year's awards, I encourage you to brace for impact as we have a fabulous spread of awards to hand out on 19 October at The Carlton Tower, Jumeirah, in London.



Angus Leslie Melville
Editorial Director
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The latest issue

This is the third issue of the *IJGlobal ESG Report* as we continue to integrate this element of our coverage into our calendar as an event and an annual publication. In fact, there's no reason why we don't publish more of these throughout the year as they are so well received.

In this issue, we have 3 sponsored articles – by Edmond de Rothschild Asset Management, PEI Global Partners and Vauban Infrastructure Partners – followed by a slew of features written especially for this publication and some relevant case studies that shine a light on key developments.

If you're not already involved in the *IJGlobal ESG Awards* and this publication – which we will be updating after the event with more content on winners – then you really should be. ■



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Essential Infrastructure: Built to Last

The finance and infrastructure industries have spent the last years honing an emissions-focused sustainability strategy that has enthused both staff and external stakeholders.

Vauban Infrastructure Partners ("Vauban IP") is going a step further, notably by leading public research on how to improve the sustainability of the infrastructure sector and enhance its essential role in society for the benefit of all.

After focusing on the Social License to Operate in 2022, the firm is now studying circular economy principles with a primary focus on its involvement in telecommunications, transportation, social buildings and energy transition. These four infrastructure sectors must by their very nature be built to last, and offer opportunities to reuse, recycle, and reduce the materials that enable them.

Vauban IP invests in public utility infrastructure projects using a 25-year buy & hold strategy. This long-term horizon is well-suited for the purpose of generating positive impacts on local communities over several generations.

Gwen Colin, the asset manager's Head of ESG, oversees Vauban IP's sustainability engagements. Announcing her promotion to partner in April of this year, the firm described her as enabling it to "remain at the forefront of sustainability and climate change actions for infrastructure investments."

What's clear is that Mrs Colin is thinking differently about ESG and is determined to avoid virtue signaling. She argues that until now, there's been a "patchy approach to ESG" and that infrastructure firms like Vauban IP can help combat this by spearheading a joined-up approach. What this requires is regulators, academicians, and financial & industry experts working together, sharing a sustainability-first mindset.

"Humanity has prospered immensely in recent decades, which has come at a devastating cost in terms of carbon emissions, biodiversity loss, and resource consumption. As of today, it would require 1.6 Earths to maintain the world's current living standards and, without action, resource extraction will likely double by 2060."

Gwen Colin, ESG Director, **Vauban Infrastructure Partners**



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Circular Infrastructure: A “Must-Have”

This year's report, to be disclosed during Paris Infrastructure Week on October 10th, analyses the impact of the circular economy urgency on the infrastructure sector. As Mrs Colin points out: “the circular revolution can no longer be overlooked. Humanity has prospered immensely in recent decades, which has come at a devastating cost in terms of carbon emissions, biodiversity loss, and resource consumption. As of today, it would require 1.6 Earths to maintain the world's current living standards and, without action, resource extraction will likely double by 2060.”

This report, which has been conducted alongside the academic-driven consultancy firm Altermind, states the world needs more “circular infrastructure,” i.e. a system of infrastructures that either contribute directly to circular economy activity (Infrastructure for Circularity), or minimise & manage the amount of material used across the infrastructure lifecycle (Circularity of Infrastructure). “Considering its massive impact on the environment, the infrastructure sector is at the forefront of the circular revolution, either as an obstruction for a circular economy (especially for construction and end life of an asset) or as a catalyst (with waste management facilities for instance) with wide-ranging implications for governments and business leaders. To trend towards more sustainability, we need a major paradigm shift; circularity embeds so much potential in this respect,” Mrs Colin says.

In this context, this study adopted a unique methodology, reflecting Vauban IP's DNA, combining academic expertise with business insights from Vauban IP's asset portfolio. “The study relies on the outcomes of a series of thematic events with a multistakeholder approach to fully comprehend the impact of circularity.” Among those events, Vauban IP organized a masterclass on circular economy by Dr Janez Potocnik (former European Commissioner for Environment and co-chair of the International Resource Panel), a panel on the regulatory catalysts for circularity, three podcasts on the most innovative circular business models, and an Innovation Morning highlighting four disruptive start-ups.

“Considering its massive impact on the environment, the infrastructure sector is at the forefront of the circular revolution, either as an obstruction for a circular economy or as a catalyst.”

Gwen Colin, ESG Director, Vauban Infrastructure Partners

Looking for the Most Innovative Levers for Circularity

Going beyond traditional analyses on the circular economy, Vauban IP's research has uncovered key levers to accelerate the transition of infrastructure towards more circularity: “In addition to the indispensable R-ladder strategies (recycling, reuse, reducing with sober behaviors, etc.), we have outlined new and most innovative circular business models particularly relevant for infrastructure: infrastructure-as-a-service, sharing economy, track & trace digitally, infrastructure retrofit, etc.” Mrs Colin notes. One of the most compelling cases is clearly the concept of “road-as-a-service”: instead of using heavy and hard to recycle EV batteries for trucks, building an electric road infrastructure can provide energy while the truck is moving avoiding waste and optimizing the use of the infrastructure.

“We also wanted to emphasise the critical role of regulations to speed the transition. At this stage, although many advances have been made, a margin of progress does exist for public policy makers and the pace of public policies must be accelerated both in the EU and the US. At this stage, most national-level circular economy plans are based on recycling and/or substitution, but a systems-level approach is necessary to embrace the full scope of circularity,” Mrs Colin adds.

Vauban IP and its portfolio on the “circular path”

While solutions do exist, including comprehensive and consistent regulations with new incentives within procurement schemes and contractual arrangements

or industrial collaborations to leverage on network, technologies, resources, the task will not be easy. The circular transition of the infrastructure sector still faces massive challenges due to large-scale and external trends (urbanisation considering that 80% of the global population will live in cities by 2050, rising demand for infrastructure, etc.) and the nature of infrastructure itself (a long lifespan, a high carbon footprint of the built environment, long planning processes, etc.).

“But the case is strong and Vauban's asset portfolio has already taken the leap of circularity,” Mrs Colin notes. As a committed highway operator, Sacyr has showcased cutting-edge expertise in circular economy through multiple rehabilitation and construction projects: Sacyr successfully completed the first sustainable asphalt-paved stretch of a highway in Spain. In the telecom sector, Telefónica's dedication to doubling recycling rates illustrates its determination to drive positive change on a global scale. Telefónica's targets are: 90% of refurbished and reused fixed customer equipment by 2024; 100% of B2B/B2C customer equipment purchased following circularity criteria; and 100% of eco-designed new Telefónica-branded customer equipment.

Facing the coming upsurge in waste, Vauban IP is also present on the “infrastructure for circularity” side through its investment in the waste management operator Paprec, which is constantly focused on improving waste recovery rates, and fostering environmental protection & responsible management of natural resources through cutting-edge technologies, including the industry 4.0.

Mrs Colin specifies that “Vauban IP is committed to developing a circular approach framework in response to evolving infrastructure challenges. This framework, under development, aligns with circular economy principles and offers guidance rooted in best practices & KPIs. We want to continue to collaborate with NGOs such as the Circle Economy and the infrastructure market, by sharing best practices and fostering sector research on circularity alongside experts and practitioners.” ■



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LONG-TERM INVESTING, SUSTAINABLE VALUE

Vauban Infrastructure Partners is a leading infrastructure asset manager focused on European core infrastructure investments which contribute to the sustainable development of local communities and their environments through a long-term commitment to all stakeholders.

Since 2019, Vauban has conducted annual open research studies alongside academics, industry experts, public authorities, and industrial partners. Our 2023 iteration focuses on the “circular economy” and explores how the adoption of circular best practices can help the infrastructure sector tackle present challenges such as climate change, resource depletion, and biodiversity loss.



Explore our findings
on Vauban's website

[Vauban-ip.com](https://vauban-ip.com)

Mobility | Digital Infrastructure | Social Infrastructure | Energy Transition

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Project Ares 2 – ESGenius in action

Edmond de Rothschild Asset Management embraces the second iteration of its Project Ares that lives up to being named after the Greek god of courage as an ESG leader, writes *IJGlobal* editorial director **Angus Leslie Melville**

Francaise de l'Energie (FDE) – the carbon negative energy producer – in October 2022 issued a second green bond for the development of its low carbon energy portfolio in Europe, working in partnership with Edmond de Rothschild Asset Management (EDRAM).

This follows FDE's successful €40 million (\$42m) bond issuance in 2021 (Project Ares 1) through EDRAM's BRIDGE (Benjamin de Rothschild Infrastructure Debt Generation) platform, a leading energy and infrastructure investment manager.

This 2021 deal involved the green bond financing of FDE which won an IJGlobal ESG Award last year (2022) to recognise its main activity of capturing methane emissions (CH₄) from abandoned coal mines in France and Belgium.

FDE converts or monetises this gas into electricity, gas and heat sales under long-term regulated tariffs – feed-in tariff in France and green certificates in Belgium – or long-term private contracts with local stakeholders including industrials and municipalities that are willing to offer local and affordable green energy to surrounding communities.

At the time, Jean Francis Dusch, managing director and global head of infrastructure and structured finance at EDRAM, said: "What we liked about this opportunity is that it is good energy transition play, where we start with closed mines but from that create something that has positive impact on the environment. From the moment we talked to them, we

could see their conviction and the CEO had a clear view on how to implement it."

He added: "We also liked that there was a true conviction on what the positive impact on environment could be, which was important in putting together a financing structure that would finance this investment.

"Importantly, we also had a kind of framework finance agreement in place, where – if the next project fitted certain environmental, social impact, operational and financial criteria – we would then finance the next phase."

And here, Dusch was referring to the latest financing – Project Ares 2 – which is valued at €20 million and is a genuine example of an innovative bilateral energy investment.

In April 2022, FDE acquired 94% of the capital of Cryo Pur, a French company specialising in the treatment of biogas and its liquefaction into liquefied biogas (LBG) and Bio CO₂ (as by-product from the liquefaction process of biogas).

BRIDGE extended the second financing to FDE – Project Ares 2 – to support the application of the Cryo Pur technologies on several biogas production site across Europe, in particular in Norway where fish waste is being treated in biomethanisation plants and then liquefied thanks to its technology.

Marriage of equals

Francaise de l'Energie (FDE) is now a multi-technology energy producer active in emissions capture and recovery (CH₄



Jean-Francis Dusch

"What we liked about this opportunity is that it is good energy transition play, where we start with closed mines but from that create something that has positive impact on the environment."

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and CO₂), solar energy and biogas, staking its position as a positive influence on the market transition toward lower carbon emitting activities.

The projects that are being financed by BRIDGE have an important sustainability impact in terms of reducing greenhouse gas (GHG) emissions into the atmosphere. This is particularly relevant given CH₄ is considered by scientists to have 82.5x more greenhouse impact than CO₂ over a 20-year period.

The proceeds of this latest bond enable the construction and installation of further capacity over the next 3 years. Beyond that, the recovery of CO₂ from the Cryo Pur process is also key as it can be used as a carbon capture technology across a long list of carbon intensive activities.

As an extra bonus, the biogas liquefaction is becoming increasingly important as – once liquefied – it allows the efficient transport of biogas that is usually produced in remote areas, therefore allowing for its deployment in applications as diverse as road transportation and shipping industries.

Cryo Pur acquisition

The Ares 2 financing was put in place for the Cryo Pur acquisition by FDE and to finance its ramp up across several European countries.

Cryo Pur's technology is based on a cryogenic system that combines a system of integrated refrigeration cascades to separate the different gas components and liquefy them. Thanks to these processes, based on international patents, the LBG and Bio-CO₂ obtained meet the needs of numerous applications.

In addition, the processes invented by Cryo Pur – combining purification and liquefaction – have a decisive competitive advantage, particularly in terms of energy costs, and give it a unique positioning compared to biogas purification techniques that do not involve liquefaction, like membrane processes.

This technology allows farmers, cooperatives, industrialists and energy companies efficiently to recover the full energy potential of their products and waste while reducing methane and CO₂ emissions.

The Bio-CO₂ produced, thanks to the process, can be used in short circuits throughout the value chain – including by

the food industry – and Bio-LNG is sold to consumers as a substitute for fossil gas.

Cryo Pur technology – which has a useful life of up to 30 years – is currently used in the UK and Norway on 3 biogas sites operated by leading industrial and agricultural players (Greenville and Renevo) with a production capacity of 5,000 tonnes of Bio-LNG and 5,000 tonnes of Bio-CO₂ per annum.

Given the biogas sector relies primarily on supply from waste being managed and used as part of a circular economy solution there is a positive social impact for the nearby communities on top of providing local sources of energy.

FDE is a local energy producer by nature with a strong focus on circular economy and local sources of energy. It focuses on offering affordable energy to local stakeholders in regions where this additional support is welcomed by consumers.

Advisers on Project Ares 2:

- Bentam – legal
- Naldeo – lender technical adviser
- Ethifinance – green bond framework
- Marsh – insurance ■



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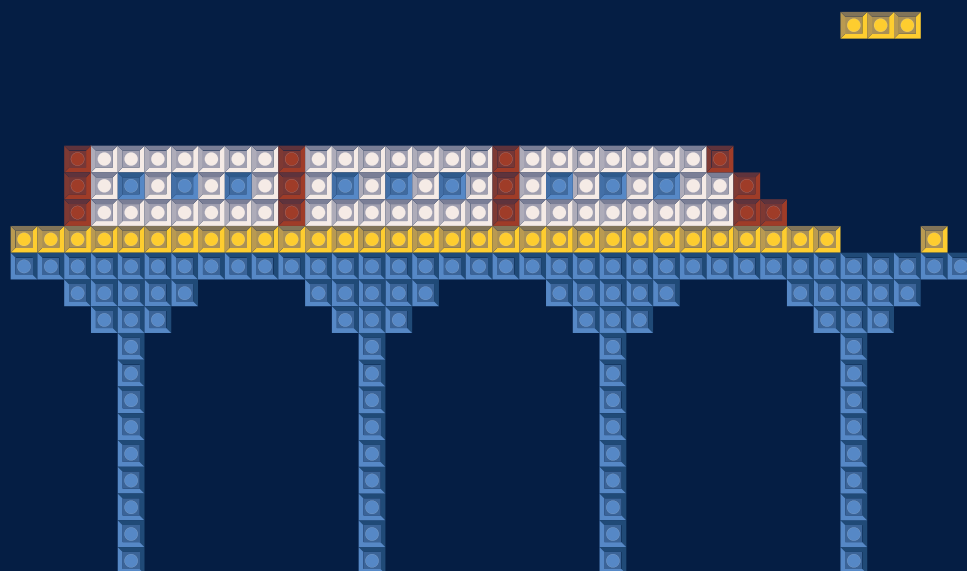


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Project Galaxy – a North American ESG leader

A ground-breaking transaction led by PEI Global Partners in support of Hecate Energy's renewables evolution across North America – an innovative financing with the ESG credentials to match...

Project Galaxy stands out as a pioneering transaction in support of Hecate Energy's US ambition to provide access to diverse and cheaper funding sources, accelerating the transition to renewable energy, reducing greenhouse gas emissions, and contributing to the creation of a carbon-free power grid.

As the third largest renewables developer in North America with more than 120 solar, wind and battery energy storage systems amounting to more than 35GW of capacity, Hecate brought on PEI Global to arrange an innovative financing package to drive its continued growth.

PEI Global Partners was awarded the mandate as exclusive financial adviser and delivered a highly-flexible, corporate-style \$550 million loan – a 5-year \$250 million term loan and a \$300 million letter of credit facility – a deal that closed late last year (December 2022).

The loans were underwritten by 4 initial co-ordinating lead arrangers (ICLAs) – Investec Bank, Nomura Securities International, National Bank of Canada and Deutsche Bank – with pricing achieving 400bp over SOFR, allowing Hecate to refinance higher-cost debt that had burdensome borrowing base restrictions.

The \$300 million LC facility meets Hecate's needs to post enough interconnection (IX) and power purchase agreement (PPA) collateral to sell 4GW to 5GW per annum

while also allowing for 100% advance rates and full discretionary LC issuance with no borrowing base burden.

This financing has been lauded for its success in supporting Hecate's 35GW renewables pipeline, directly contributing to the expansion of alternative energy capacity, displacing fossil fuel-based electricity generation.

This provides critical LCs for early-stage projects that have larger needs due to IX costs and queue requirement increases, power price and PPA LC increases and longer development times with queue issues.

The 5-year facility, meanwhile, provides critical support for the largest pure-play renewables developer on the planet. Its (up to) 5GW of projects sold each year will displace more than 7 million tons of CO2 per annum for several decades, allowing it to increase its total pipeline to well over 35GW.

Given that renewable energy projects often face complex financial challenges, including high security needs and requirements for IX and PPAs, the financing structure addresses these challenges, making it easier for projects to secure the necessary funding and progress to completion.

Adil Sener, partner at PEI Global, said: "Hecate Energy stands out as a forward-thinking pioneer in the renewable energy industry. Since its establishment in 2012, Hecate has successfully completed more



Adil Sener

"Since its establishment in 2012, Hecate has successfully completed more than 36 transactions, totaling over 6,500MW of renewable capacity."

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than 36 transactions, totaling over 6,500MW of renewable capacity. Leveraging our long-standing partnership and our deep industry knowledge, the PEI team remains dedicated to advancing Hecate's mission of expediting investments in clean energy solutions."

Pioneer finance at work

The Galaxy financing by Hecate Energy showcases innovation within the renewable energy sector by securing first-of-a-kind financing for pre-notice to proceed (NTP) development projects.

This innovative approach expands finance options, unlocking potential for new entrants, while also catalysing the development of renewable energy projects, contributing to the sector's growth and sustainability.

This transaction was a first-of-its-kind in the commercial bank market, replacing traditional financing for energy projects that often rely on renewable energy assets that are already at the NTP stage or have already started operations.

In contrast, the Galaxy financing relies solely on pre-NTP development projects with no operating capacity – an innovative approach that expands financing opportunities for renewable energy developers at an earlier stage of project development.

The facilities expand the range of finance options available to renewable energy developers by providing the option to finance pre-NTP projects, diversifying sources of capital.

By securing financing for greenfield developments – early-stage projects with no operating history – Hecate Energy is empowered to invest in projects from their very inception, navigating risks associated with early-stage developments.

John Bills, partner at PEI Global, said: "Hecate's financing transaction represents a groundbreaking milestone within the commercial bank market. This transaction, conducted at the corporate level, granted discretion in issuing letters of credit and exclusively relied on the cash flows generated from the sales of pre-NTP development projects as the foundation of the business's value.

"This streamlined approach marked a substantial improvement over the more complex borrowing base facilities, catering to the requirements of a rapidly expanding and agile



John Bills

"Hecate's financing transaction represents a groundbreaking milestone within the commercial bank market."

renewable energy developer with substantial and adaptable LC capacity needs for its numerous gigawatts of solar and battery projects."

Project Galaxy – ESG credentials

When it comes to ESG, simply delivering renewable energy assets is not sufficient to gain plaudits in this highly-scrutinised sector, and Hecate Energy has an established reputation for making an impact where it operates.

The Project Galaxy financing enhances Hecate's commitment to local communities where it demonstrates broader social impact through community engagement, job creation, education, economic benefits, environmental improvements, and achieving long-term sustainability.

These efforts support the transition to clean energy solutions and positively impact the well-being and development of the communities in which the renewable energy projects are developed around the US.

PEI Global partner Adil Sener added: "Hecate Energy's extensive renewable project portfolio covers a vast geographic footprint, spanning multiple states. This showcases a firm dedication to reshaping the energy landscape in diverse regions on an unprecedented scale, offering solar gigawatts for purchase. These combined initiatives make a significant contribution to nationwide decarbonisation endeavours.

"With the introduction of this facility, Hecate Energy will further streamline and enhance its pivotal role in reducing dependence on fossil fuels and promoting the development of a more sustainable energy ecosystem."

Hecate's mission to develop relationships with local communities demonstrates its commitment to engage with – and support – the people living in the areas where it develops renewable energy projects. This engagement in turn fosters a positive relationship between the company and the communities.

On the education and awareness front, Hecate expends substantial resource on educating communities as to the benefits of renewable energy, raising awareness and promoting understanding of clean energy solutions.

By providing information on the environmental benefits and economic opportunities associated with renewable projects, the company helps empower local communities to make informed decisions about their energy future.

And much of that impact comes down to fundamental job creation. As Hecate develops these projects, it creates employment opportunities for local residents – from construction through to engineering, operations and maintenance – stimulating economic development in the area. ■



NORTH AMERICA CASE STUDY

Forum Mobility – joining transport ESG dots in California

A transport project combining ESG credentials with Californian policy to reduce localised pollution is ticking an awful lot of the right boxes, writes *IJGlobal* editorial director **Angus Leslie Melville**

There are few developments in the US that achieve the goals quite so elegantly as Forum Mobility that it is providing charging solutions for electric drayage truck fleets in California and helping achieve state goals.

Forum Mobility was founded in 2021 and is focused on electrifying the short-haul trucking of freight from ports to transloading facilities, forming a \$400 million joint venture in January 2023 with CBRE IM and minority shareholder Homecoming Capital to develop and operate charging depots and a fleet of electric trucks to service the ports of Los Angeles, Long Beach and Oakland.

The transportation sector is recognised as one of the largest contributors to greenhouse gas (GHG) emissions, and this development is celebrated as a pathfinder for heavy-duty transportation which has long been considered one of the hardest to decarbonise.

While efforts are increasingly being driven into reducing the carbon impact of shipping

with electrification of vessels, hydrogen increasingly deployed in maritime services and old-world technology – sails – being rolled out (among others), Mobility Forum is playing a lead role in driving innovation on land.

Homecoming Capital provided \$100 million into the JV and the trucking-as-a-service (TaaS) startup also closed a \$15 million Series A funding round at the start of this year which saw participation from all existing seed investors:

- Obvious Ventures
- Edison International
- Overture
- Homecoming Capital

New investors include:

- CBRE IM
- Elemental Excelsior – nonprofit focused on scaling climate technologies
- Amazon's Climate Pledge Fund – corporate venture programme that invests in companies accelerating Amazon's

path to meeting the commitments of The Climate Pledge

The need for investment is driven by regulations mandating the electrification of drayage trucks in California through a number of initiatives, including developments by the California Air Resources Board (CARB) and its Advanced Clean Fleet (ACF).

CARB is developing a medium and heavy-duty zero-emission fleet regulation with the goal of achieving a zero-emission truck and bus California fleet by 2045 (where this is feasible) and significantly earlier for certain market segments such as last mile delivery and drayage applications.

To achieve ACF certification, California needs to install 53 medium-heavy duty (MHD) chargers per day until 2030, followed by 200 MHD chargers from 2030 to 2045. This will require more than \$90 billion of MHD charging infrastructure in California alone... and Forum Mobility gets it off to a flying start with this project.

The beauty of Forum's approach is that it simplifies the process of transitioning to electrified operations for drayage operators and provides a comprehensive solution that addresses multiple challenges faced by small, independent owner-operators.

It will achieve this goal by developing and operating large-scale charging depots near ports and along key drayage routes deploying economies of scale to drive costs down. And given its real estate credentials, CBRE is ideally positioned to drive this.

Forum creates value for operators by managing the complexities of acquiring land, procuring charging equipment, obtaining utility interconnection, zoning approvals and government incentives.





NORTH AMERICA CASE STUDY

The end result of this is an ability to provide customers with a simple integrated electrification-as-a-service solution that includes EV charging and – if needed – an EV truck for one monthly price over a medium-to-long-term contract.

Forum stands out as a first mover in the market and has a competitive advantage to acquire scarce land with available power along the key drayage routes servicing the ports of LA, Long Beach and Oakland.

What makes this development so attractive is that Forum can leverage the broader CBRE platform, giving it the ability to develop depots on otherwise hard to access land owned by a fund managed by CBRE IM.

Furthermore, the company is collaborating closely with the wider CBRE platform for site selection, project management, facilities management, and regulatory compliance activities.

The drivers

Given activity levels at ports along the 840-mile Californian coast – 12 ports in total (11 of them publicly owned) processing some 40% of all containerised imports and 30% of all exports in the US – drayage is big business.

Drayage trucks in 2020 emitted nearly 400 million metric tons of greenhouse gases (GHG) at the Port of Long Beach. Electrifying the whole drayage fleet operating in the ports of LA, Long Beach and Oakland would result in a reduction of annually of at least 2.5m tons of CO₂.

Over a decade of operations, this represents close to 25 million tons of CO₂ emissions reduction which is the equivalent of the annual emissions of 567,452 gasoline-powered passenger vehicles driven for 1 year.

This is a significant positive impact on the regional environment and also on the health of local communities (see next section).

However, the goal for developments of this nature is also to ensure that green credentials are maintained and – to this end – Forum is pursuing microgrid opportunities which will allow the business to self-generate renewable energy once existing power is secured on site.

As the individual sites progress, Forum will submit interconnection applications to build solar and storage at its charging depots, thereby reducing reliance on the grid. It also plans to install battery energy storage systems (BESS) to reduce peak demand and provide grid resiliency.

The heavy-duty chargers and the electric trucks used by Forum will be bi-directional, capable of returning power to the grid. The combination of onsite solar, battery storage and bi-directional chargers will minimise peak loads and electricity costs at depots while providing ancillary services and resiliency to the grid, serving as a clean dispatchable microgrid.

Social impact

As part of Forum Mobility's ESG credentials, one aspect that should not be overlooked is the impact on local populations from reduced localised pollution from heavy goods vehicles.

It is a reality that low-income communities are more likely to live near ports and freight hubs and – as a result – these communities have increased risks of asthma, cancer and cardiovascular disease. According to sources, life expectancy near the Port of Oakland is 6.6 years lower than surrounding areas of the county.

By building charging depots required to electrify drayage trucking, Forum will help reduce emissions, improve air quality and health outcomes for these communities.

A recent EDF study estimated that transitioning to 100% zero-emission truck sales by 2040 would generate nearly \$500 billion in health benefits and avoid more than 57,000 premature deaths in the US.

Furthermore, more than 80% of drayage truckers in California are small independent owner-operators (IOOs) who often do not have the financial capacity to fund the purchase of an expensive new EV truck or the technical capability to develop and operate EV charging infrastructure.

By shifting the high upfront costs of buying an EV truck and building charging infrastructure to recurring monthly opex payments, Forum is providing equitable access to IOOs to electrify their operations.

This not only supports the transition to cleaner transportation but also provides economic benefits to small business owners that might otherwise be forced out of the industry.

Commentary

Forum Mobility's plan to enable the transition of drayage services in the port areas for Los Angeles and Long Beach has been widely celebrated as a pathfinder for similar developments.

However, it is the combination of CBRE IM alongside the wider CBRE Group – as well as the impressive line-up of investors – that makes this transaction stand out.

Matt LeDucq, chief executive and co-founder of Forum Mobility, said earlier this year: "This network will need a lot of infrastructure and real estate, and CBRE IM is the perfect partner to help us build charging where it's needed most."

"Fleets can bring their trucks to our network, or we can provide electric trucks bundled with charging. Today we can provide a Class 8 electric truck, and all its charging needs, at a monthly price that's competitive with diesel – without the emissions."

"With new rules coming soon from the California Air Resources Board, we help fleets and drivers looking to make the jump to electric."

Rodrigo Prudencio, principal at Amazon's Climate Pledge Fund, added: "To address global warming at scale, we need solutions that support the transition to electric vehicles, especially in hard-to-decarbonise sectors like heavy duty trucking."

"Forum Mobility's solution will help small business owners electrify their transportation fleets, remove air pollution from California's ports, and provide the charging infrastructure needed to support the growing use of electric trucks."

Pat Arnold of Homecoming Capital rounded off: "Electric trucks work. But to deploy them at scale, we need to build a tremendous amount of charging infrastructure. The Forum Mobility team has construction in their DNA – and is perfectly suited to deploy the infrastructure required to enable drayage truck electrification." ■



EUROPE CASE STUDY

Repowering wind farms, Germany

Renewables investor Qualitas Energy, through its German subsidiary, in May (2023) closed the acquisition of 3 German wind farms with plans to repower the assets. *IJGlobal* reporter **Yancy Villarroel** takes a look

The move is another step to investing half of the company's Q-Energy Fund V in the German wind market. Moreover, it is a business model that Germany needs to achieve its energy transition and economic goals, said a source.

The deal is also a step towards reaching a portfolio of about 6.2GW in the country, which consists of wind farm acquisitions for repowering and greenfield projects.

Background and Qualitas' business model in Germany

Germany significantly entered the wind sector in the late 1990s, making the country the largest onshore wind market in Europe, with some 60GW of installed capacity by the end of last year (2022).

However, with German authorities planning to double wind targets to around 115GW by 2030 to meet energy transition

goals and accelerate its independence from Russian energy, an old fleet has posed challenges, including:

- about 15GW of assets due to go offline soon
- installed turbines have a capacity of 1-2MW, generating less energy

Slow licensing procedures and limited land are additional factors that increase the barriers to achieving the targets.

Repowering existing farms and building new ones is therefore a business model that Germany needs to advance its energy transition and boost its economy, and Qualitas decided to "take an active position" in this process.

The investor set up its local subsidiary Qualitas Energy Deutschland in 2018 with 4 offices – and 2 to open this year (2023) – and has since increased its portfolio in

the country, either operational or under development, to more than 3GW.

Local experience and expertise of the evolving German energy landscape motivated Qualitas to make wind farm repowering the main investment focus of its Q-Energy V fund, a vehicle launched in August last year (2022) that reached a first close at €1.1 billion (\$1.2bn).

Qualitas expects to invest half of its fund in the German market to reach 6.2GW in the next 2 years by acquiring:

- repowering projects
- greenfield projects

The portfolio to be repowered

The portfolio, developed and initially operated by Prokon Nord Energiesysteme, consists of 3 wind farms with a total capacity of 21MW.

The Quenstedt II farm, located in



Qualitas expects to invest half of its fund in the German market to reach 6.2GW in the next 2 years

Image sourced from Qualitas



EUROPE CASE STUDY

Arnstein in the Mansfeld-Südharz district, has 3 Enercon-E66/18.70 turbines with an installed capacity of 6MW. It was switched on in 2004 and, since then, its annual production is about 9,800MWh with an average annual wind speed of 6.4m/s.

The Heldrungen farm, in the Kyffhäuser district of Thuringia, through 5 Enercon-E66/18.70 turbines has an installed capacity of 9MW.

It was commissioned in 2004 and has an annual production of about 15,500MWh, with a wind speed of 6.2m/s.

The 6MW Dornstedt II wind farm is located in the municipality of Teutschenthal in the Saalekreis district of Saxony-Anhalt and was commissioned in 2006.

The plant produces annually around 16,000MWh with an average wind speed of 6.9m/s.

As of 2022, the last registered owner of the plants was German developer PN Power Plants, which focuses its business on the sale of its 13 wind farms for repowering and 2 offshore wind test fields.

The transaction

The negotiation for the farms started at the end of last year (2022).

In repowering transactions, technical and development issues are key aspects to be analysed, as studies will suggest whether and to what extent a plant can be repowered, a source said.

An analysis process that could have taken months for a new investor in the German market, Qualitas did in about 4 weeks.

Qualitas' internal team carried out the planning for the repowering of the farms, including possible turbine types, and TÜV contributed to the due diligence of the existing parks.

Discussions with stakeholders were swift and the investor secured approvals to proceed with the deal within a short period of time.

In particular, Qualitas' track record and presence in the German market, as well as the realisation of previous projects, allowed it to approach stakeholders in "an effective way."

Following the positive results of the analysis, Qualitas determined that the

"With Qualitas Energy we have found a partner on an equal footing. The whole process was transparent, uncomplicated, and fair – from the initial contact through the evaluation of the projects to the final transaction."



assets were "attractive" and pursued the closing of the deal.

According to a source, the fact that the seller and the buyer knew each other's high reputation in the German market also accelerated the process.

"With Qualitas Energy we have found a partner on an equal footing. The whole process was transparent, uncomplicated, and fair – from the initial contact through the evaluation of the projects to the final transaction," said the seller at the announcement of the deal.

The parties, only around 5 months after the start of negotiations, closed the transaction in May (2023) and the deal was publicly announced in July.

The plans for the farms

The repowering process has already started and could be completed in 3-4 years.

The capacity of the parks as a whole will be increased by 1.5-1.6 times.

Qualitas aims to dismantle the old plants and install "new, more efficient turbines" to double power generation and reduce the number of turbines, while reducing the environmental impact.

The investor will multiply the generation capacity by 2.3 times, and the plants will have a new lifetime of 35-40 years.

The manufacturer of the turbines and the model have not yet been decided, as this is one of the last stages of the process, a source said, and Qualitas plans to pursue the most efficient turbines on the markets

at the time of that phase. The renewable investor, however, has a technical notion of the turbine model to be used.

Once the repowering of the assets is completed, the plants will supply power to around 20,000 German households.

Qualitas' upcoming moves

Qualitas is on track to achieve its goals in Europe's largest wind market.

The company intends to replicate similar operations in the country and is "pursuing many opportunities".

Through its various departments, Qualitas is also following different markets, talking to manufacturers and being "aware of the latest trends to analyse and apply them".

The renewables developer thus does not close the door to repowering technologies in other assets, such as solar farms, or adopting a similar business model in other countries.

Advisers

Advisers to Qualitas on the transaction:

- Qualitas internal – financial, legal and technical
- Reuther Rieche – legal
- TÜV – technical

Advisers to Qualitas in establishing Q-Energy V:

- Campbell Lutyens – placement agent
- King & Wood Mallesons – legal
- Linklaters – legal and tax ■



LATIN AMERICA CASE STUDY

Feijão Wind Farm, Brazil

After a few years in the making, financing for the Feijão Wind Farm has wrapped up – making the \$700 million deal the first large-scale PF transaction in Brazil with full USD backing from commercial lenders. *IJGlobal* reporter **Adrian Ganic** takes a look.

Norsk Hydro's Hydro Rein and Macquarie Asset Management's Green Investment Group (GIG) reached financial close on their 456MW Feijão Wind Farm – part of a 586MW combined wind and solar project in north eastern Brazil.

This deal marks the first time a project of this size has secured full USD financing in Brazil without the involvement of an international financial institution.

The wind project's total investment cost is around \$700 million – with a 52/48 debt-equity ratio – provided by a consortium of international commercial lenders.

The project

Hydro Rein and GIG formed a JV to develop the solar-wind complex across the states of Pernambuco and Piauí in June 2022.

Mark Dooley, global head of GIG, said when the JV was formed: "Hydro Rein's Brazilian energy market expertise and regional presence, combined with our global wind and infrastructure experience, make for a strong partnership that can provide a boost to Brazil's supply chain and ambitions to engage with the global wind opportunity."

The wind project will be partially financed by Macquarie GIG Renewable Energy Fund 2, which will hold a 50.1% equity stake in the wind farm with the remainder owned by Hydro Rein.

The complex will comprise 80x N163 turbines of 5.7MW each, supplied by Nordex Group – which has also entered into a long-term service and availability agreement for the project.

Brazilian wind giant Casa dos Ventos will also be involved in the final stages of the project's development, while Elecnor do Brasil will build the civil and mechanical BOP of the plant.

Upon completion, Hydro Rein's Alunorte

refinery and Mineração Paragominas bauxite mine will be the wind farm's offtakers, with 20-year PPAs in place and an initial supply starting in 2025.

Financing

If securing technical partners for the wind farm proved relatively easy, obtaining financing was a bit more challenging. Informal talks between GIG, Hydro Rein and potential lenders started 2 years ago, in 2021, while formal talks commenced around 6 months later.

Banks were unsure what their ticket allocation would be until "the last minute", sources said, as the sponsors were holding "bilateral talks with individual banks until like a week before the deadline".

In the end, \$346 million of the total \$700 million deal value will be debt financed, structured as a term loan, working capital loan and project LC facilities.

The credit agreement was signed on 30 March (2023) with a first disbursement made in June.

The debt, which includes exclusively dollar-linked facilities, breaks down across 3 tranches.

Green loan – \$290 million:

- BNP Paribas – \$52 million
- Citibank – \$42 million
- HSBC – \$42 million
- Société Générale – \$42 million
- Natixis – \$42 million
- JP Morgan – \$35 million
- Santander – \$25 million

The loan has a 5-year tenor and has a margin over reference of 300-325 bps.

Letter of credit – \$46 million:

- Santander – \$22 million
- BNP Paribas – \$11 million
- Societe Generale – \$5 million
- Natixis – \$4 million

The LC loan has tenor of 2 years and 3 months.

"Under the project LC loan, certain lenders will be issuing letters of credit to secure certain obligations under project contracts, such as payment guarantees and performance guarantees," sources told *IJGlobal*.

Working capital loan – \$10 million:

- BNP Paribas – \$5 million
- Citibank – \$5 million

With the wind complex estimated to be commissioned next year (2024), long-term PPAs in place and financing secured, things seem to be going according to plan. Next step: the solar farm.

Deal advisers

Advisers to Hydro Rein and GIG include:

- Macquarie Capital – financial
- Allen & Overy – international legal
- Machado Meyer – local legal
- PMC Treasury – hedging

Advisers to the lenders include:

- Hinckley Allen – international legal
- White & Case – international legal
- Dias Carnerio – local legal
- Pinheiro Neto – local legal
- ERM Group – environmental
- Thymos Energia – market adviser
- Grupo Mercados Energeticos Consultores – market adviser

Other advisers:

- Mattos Filho – local legal
- Veirano – local legal
- DNV GL – technical
- Lockton – insurance
- Mazars – model auditor
- EY – tax ■

ReNew bets on round-the-clock hybrid

ReNew is doubling down on its commitment to 24/7 clean power with innovative hybrid solutions, aiming to revolutionise the way sustainable energy sources are harnessed. *IJGlobal's* **Manju Dalal** takes a closer look at India's first round-the-clock project and how it will change the energy transition space in the country.

ReNew – one of the largest green energy producers in the world – is on its way to create history by lighting up India's first round-the-clock (RTC) project.

Consisting 3 wind farms, 1 solar park and a battery energy storage system (BESS), the RTC is spread across 3 Indian states – Rajasthan, Karnataka and Maharashtra.

The 1.3GW project will start commercial operations in phases and began in August (2023).

"This is a first of its kind project with a round-the-clock feature that addresses intermittency issues in renewable energy projects," says Anita Bharathidasan, executive director on the energy and infrastructure Asia group at Credit Agricole. "As the name indicates, this technological configuration is aimed at delivering power on a continuous basis."

Credit Agricole is part of the 12-bank club that provided a \$985 million, 5-year mini-perm financing to the project, that achieved financial close earlier this year (2023).

As RTCs solve the biggest challenge of renewable projects – of providing nonstop power – the Indian government wants to come out with 3-5 RTCs every year, helping the country meet its net zero GHG-emission target of 2070 (with renewables contributing 500MW).

"RTC renewables align very nicely with India's net zero targets," says Rajiv Vishwanathan, executive director of project finance in the institutional banking group at DBS Bank.

As the country of more than 1 billion people still heavily relies on thermal power, India Inc is betting big on RTCs to help the country meet its energy transition needs.

Hybridization of renewables is necessary to achieve a longer period of firm power supply through the day with storage systems addressing the intermittency issues, reckons Vishwanathan.

"Ultimately, RTCs are a response to the net zero theme. These solutions address the challenges pertaining to the need for firm base load power for longer part of the day".

Overcoming initial challenges

Kailash Vaswani, president corporate finance at ReNew (formerly ReNew Power), recalls discussions with India's Ministry of New and Renewable Energy (MNRE) ahead of the Solar Energy Corporation of India (SECI) releasing the RTC tender for the project on 18 October 2019.

At that time the hybrid projects (at planning stage) still had a plant load factor (PLF) of 30-40%, falling short of resolving the grid requirements as coal projects were operating at a PLF of 70-80%, reckons Vaswani.

Overcoming the intermittency of power generation and providing stable power to the grid round the clock is the biggest hurdle that renewables needs to overcome.

The central government-controlled nodal agency, SECI, also wanted to achieve a minimum PLF or capacity utilization, of 70% per month for the RTCs.



Anita Bharathidasan

"This is a first of its kind project with a round-the-clock feature that addresses intermittency issues in renewable energy projects."



ASIA PACIFIC CASE STUDY

However, for RTC to generate a standard capacity – the on-ground capacity is usually 2.5 to 3 times higher. This meant that optimizing capacity and keeping the tariffs reasonable was another big challenge to overcome.

From the developer's side, the proportion in which the wind, solar and the battery storage was to be set up, would impact the cost. Sorting this combination hasn't been an easy task.

"We had to do a lot of modelling simulation to reach an optimum solution so that we could basically use as much of renewable energy and as little of battery or storage capacities to reach the same outcome," said Vaswani.

The process helped ReNew to remain competitive, helping the company to bag India's first RTC project.

In June 2020, ReNew won the bid, pipping 3 others contenders (Greenko Energies, HES Infra and Ayana Renewables). Under the bid terms, ReNew is supposed to provide 400MW of power to SECI.

"The key challenge with RTCs is to develop a project that has components complementary to each other," says DBS' Vishwanathan. "For instance, for the RTC project incorporating solar and wind sites, the optimal synergy arises when wind power becomes operational in sync with the cessation of solar power," he added.

ReNew is setting up 900MW of wind capacity and 400MW of solar capacity, further supplemented by batteries of 100MWph. This mix eventually helped the company bid the lowest tariff while promising to deliver the minimum capacity requirement of 70% to SECI, ensuring enough power was generated during a low-wind month and sell excess power during high-wind months.

A 25-year PPA was signed on 7 August 2021 with SECI. Under the agreement, ReNew will supply power in the first year at Rs2.90/kWh (\$0.0352/kWh), with a 3% step each year for the first 15 years. After that, the tariff will stabilize for the rest of the 10 years.

IJGlobal understands SECI signed back-to-back PPAs with discoms:



Kailash Vaswani

"We had to do a lot of modelling simulation to reach an optimum solution so that we could basically use as much of renewable energy and as little of battery or storage capacities to reach the same outcome."

- UPCL – Uttarakhand
- IPCL – West Bengal
- WBSEDCL – West Bengal
- Indian Railways

ReNew is expected to sell almost 20% of the power generated from the RTC in the open market, another unique feature of the project.

Addressing financing amid complexities

Not only the planning but structuring and executing the RTC has been a complex process given its various moving parts.

For instance, on the technical side, the project configuration is complex with multiple technologies (solar, wind, and battery), locations across multiple states and some merchant risk, said Hong Kong-based Credit Agricole's Bharathidasan.

The small element of merchant risk in ReNew's project was addressed by assessing it through market studies and had a higher debt sizing criteria compared to the contracted revenues, Bharathidasan reckons.

Another unique element was the hybrid nature of the project, she said. "The project had to ensure that in the unlikely event of a partial commissioning, the constructed project would still continue to provide round-the-clock power supply, and the financing structure was adapted accordingly," she added.

Pointing to one variable that impacts most renewable projects is the cost economic predictions, says Noida-based Abhishek Singh, co-founder and CEO of OGO Energy, an energy storage system integrator.

From the bidding to the procurement stage, cost of batteries may change. As most power projects have a minimum capacity requirement (of around 80% generally), the battery storage costs become critical, according to Singh.

ReNew addressed the intricacies of the project structuring. The company adopted turnkey solutions to address project complexities. Local, international as well as in-house resources are being tapped to ensure timely commissioning of the project. Each of the solar, wind and BESS components are procured through dozens of project contracts, and this also meant curtailing the financing structure to address all the risks.

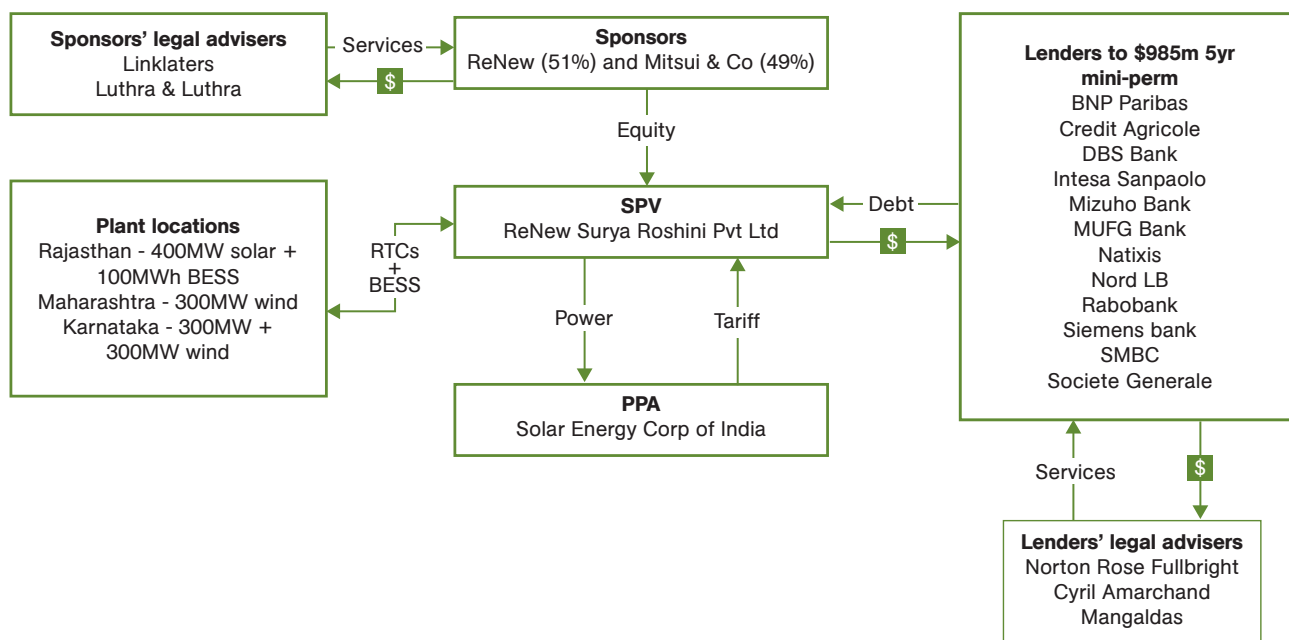
Nasdaq-listed Fluence will be providing the storage products to the RTC through a new JV set up with ReNew.

Not to mention, each project involves obtaining land and transmission approvals among many other procurement needs, making the RTC more complex.



ASIA PACIFIC CASE STUDY

ReNew RTC - hybrid wind and solar project



From the financing perspective, the key factor lies in the analysis of the individual underlying projects or power source within the RTC's projects and how these components integrate to stretch the sun hours and eventually meet PPA requirements, reckons DBS' Vishwanathan.

The Indian RTC also had to overcome the hurdle of rising interest rates. "We wanted to use LC (letter of credit) structures, which are not fund based to have the arbitrage on ECB (external commercial borrowing) vs LC based financing structures," said ReNew's Vaswani.

Irrespective of the complexities and that RTCs are still untested fully, the financing of the \$1.32 billion was well-received. Credit Agricole's Bharathidasan credited the response to appetite for well-structured projects.

Strong developers such as ReNew which have experience in developing renewable projects across technologies can address all the nuances and bring it all together, Singapore-based Vishwanathan said.

DBS is one of the lenders to the RTC project providing syndicated project

finance facilities and is the letter of credit issuer. The complexity of the RTC was addressed by incorporating additional risk mitigation structures to minimize delays and cost overruns to meet ReNew's commitments, said Vishwanathan.

Given its strong standing in the market, ReNew got the pricing it desired, though Vaswani agrees that the lenders did a heavy credit lifting by taking a view on merchant revenue, the RTC, the modelling work and how price escalation will work.

The 5-year mini-perm loan pays a margin of 225bp over SOFR, IJGlobal understands. The loan may get refinanced after year 3, likely with a bond.

In April 2022, Mitsui Power India Co partnered with ReNew to buy a 49% in the SPV.

What the future holds?

OGO Energy's Singh says battery augmentation is another area to watch for in renewable projects.

Batteries need augmentation each year. Depending upon site conditions, Singh

says, degradation of lithium batters can be in the 2% to 5% range.

"Augmentation is crucial to maintain a consistent throughput and prevent any power supply issues," he added.

OGO has a 100MWh battery manufacturing plant in Uttar Pradesh in northern India and the company plans to set up a 1GW factory with indigenous battery management system by Q2 of 2024.

"It remains to be seen how big RTCs will function alongside their augmentations issues," Singh said.

According to DBS's Vishwanathan, in future, technological advancements – especially on the power storage front – will be a key factor to watch. As RTCs continue to grow in size, storage capacities and their costs will be more relevant for the success of such projects, he said.

Meanwhile, the construction of ReNew's RTC is progressing well. "We are looking forward to seeing how the project actually works operationally when it connects to the grid and starts producing power," Vishwanathan added. ■



MENA CASE STUDY

MIRFA 2 IWP, United Arab Emirates

Engie signed off on a soft mini-perm with Islamic financing for the Mirfa 2 IWP – although the deal indicates a slowdown for desalination prices in the MENA region after successive new lows over the past few years. *IJGlobal* reporter **James Hebert** investigates.

Engie in May reached financial close on yet another sustainable, utility-scale independent water plant (IWP) in the United Arab Emirates – a well-funded deal that otherwise suggests a cooling off of record desalination prices in the MENA region.

The SWRO Mirfa 2 is the follow-up to the \$1.8 billion Mirfa IWPP – Engie (then GDF Suez) had also won this scheme and brought it to FC on 2 October 2014. Mirfa 2 will be built adjacent to the IWPP.

The offtaker – Emirates Water & Electricity Company (EWEC) – considers Mirfa 2 to be the UAE's fifth low-carbon intensive reverse osmosis desalination project and thus the asset is part of the utility's long-term goal to source 90% of its water production from sustainable desal technology by 2030.

Furthermore, Mirfa 2 is said to be the third largest desalination plant in the UAE to reach financial close – adding 550,000 cubic metres of water per day (m3pd, equal to 120 million MIGD) of production capacity.

Financial close was achieved on 31 May (2023).

Tender

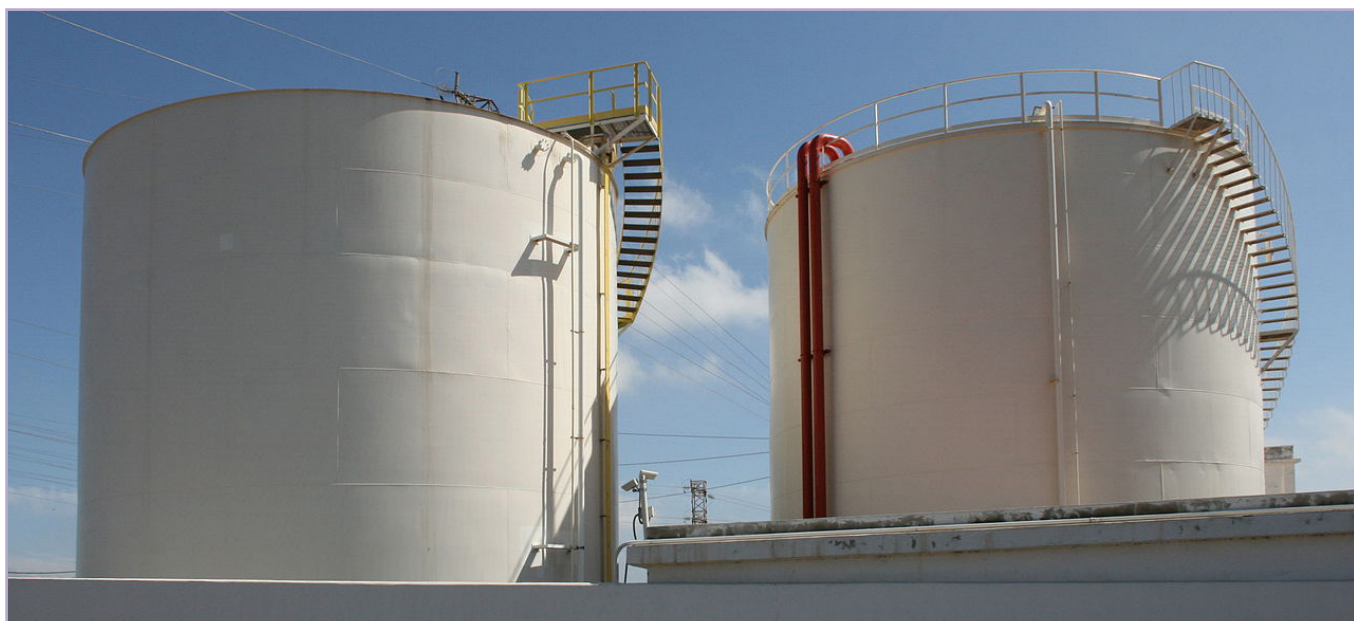
Mirfa 2 started life near the end of 2020 before being issued to the market in January 2021. EWEC launched the project with the stellar success of the \$1.2 billion Taweelah IWP still fresh in mind, following that desal's financial close little over a year earlier (October 2019). EWEC opted to emulate the structure for Taweelah as closely as possible.

The bids submitted in June 2022 for the 550,000 m3pd scheme were:

- Engie – \$0.4832/m3
- Acciona – \$0.5228/m3
- GS – \$0.5341/m3
- ACWA Power – \$0.5359/m3

The developers were asked to bid on a 360,000 m3pd (80 MIGD) version of the project as well, which was bid lowest by Acciona with its offer of \$0.5464/m3, but EWEC elected for the larger of the 2 capacities offered to market.

Engie was awarded preferred bidder status on the project in September 2022. Consortium partner TAQA took the majority equity share in the project company, same as the model for Taweelah.



Emirates Water & Electricity Company's long-term goal is to source 90% of its water production from sustainable desal technology by 2030



MENA CASE STUDY

The shareholding structure is:

- TAQA – 60%
- Engie – 40%

Engie then signed with EWEC a 30-year water purchase agreement (WPA) in February this year (2023).

Financing

Mirfa 2 is physically comparable to the near-equally sized \$821 million Shuaibah 3 IWP that made it to financial close on 7 October 2022 as part of a restructuring to convert it from an IWPP, but the Engie-led team was able to achieve a much lower capex for its own IWP at some \$200 million less.

ACWA Power's Shuaibah 3 involved a \$632 million debt package using a soft mini-perm in mid-October 2022, while the sponsors of Mirfa 2 arranged a Dh1.8 billion (\$490m) deal on a soft mini-perm with Islamic financing. Mirfa 2's deal is understood to have a debt pricing starting around 130bp, also similar to Shuaibah 3.

Mirfa 2 was debt-financed with a USD-denominated bank syndicate and includes an Islamic tranche based on Istisna and Ijara. Istisna will be for the almost 2-year construction period and the Ijara for the O&M phase kicks in at the start of commercial operations, which is scheduled for 2025.

The lenders are:

- Abu Dhabi Islamic Bank (ADIB)
- BNP Paribas Fortis
- BNP Paribas
- KfW IPEX-Bank
- Norinchukin Bank
- SMBC

The debt/equity ratio is 78/22, as confirmed by a source close to the deal. The debt is non-recourse project finance with a fully amortizing repayment structure. The project capex is Dh2.3 billion (\$626m).

Mirfa 2 has debt facilities reminiscent of Acciona's \$630 million wastewater batch (located in Saudi Arabia) which made it to financial close last year (3 March 2022) using Ijara facilities provided by regional banks. As with Acciona's own deal, Mirfa 2 is understood to satisfy the criteria for green loan principles. The SWRO format has cropped up as the most sustainable solution for water demand in the MENA region.



Mirfa 2 IWP is expected to start commercial operations in Q2 2025

The presence of TAQA on the sponsor-side assisted greatly with the Islamic portion of the debt financing for Mirfa 2, as well as the criteria for green loans. TAQA signed a \$1.5 billion dual tranche green bond on 18 April (2023) and then subsequently it launched its green finance framework.

Rising tide lifts all costs

EWEC's bidding process for Mirfa 2 over the course of 2022 indicates that the costs for unsubsidised water projects in the MENA region appear to be on the rise following a steady reduction in preceding years.

In October 2019, Engie's biggest rival in the MENA water industry – ACWA Power – brought its \$1.2 billion, 909,200 m3pd Taweelah IWP in the UAE to financial close. After interest rate swaps, the scheme achieved a then-world record tariff that pushed well below the \$0.5/m3 mark.

Engie proved it could go yet further with its \$0.423/m3 tariff for the 570,000 m3pd Jubail 3A IWP which made it to financial close in October 2021, thus matching another sub-\$0.5/m3 tariff signed by ACWA Power for the Jubail 3A sister scheme the year before (April 2020).

However, when 2022 rolled along, the bids for the Mirfa 2 in Abu Dhabi suggested a trend reversal after years of low interest rates. As already described, Engie won the scheme with its \$0.4832/m3 bid – the lowest on the project but higher than its winning bid for Jubail 3B.

A few months after the June 2022 opening of Mirfa 2 bids, EWEC received 3 bids (October 2022) for the 320,000 m3pd Shuweihat S4 IWP in the Al Dhafra region with prices understood to have been submitted at:

- GS Inima – \$0.56/m3

- Acciona – \$0.578/m3
- Engie – \$0.6/m3

GS Inima is thought to be the prospective winner for Shuweihat S4 but neither the WPA nor the preferred bidder had been announced by the time of writing this case study. Engie, for its part, lagged behind with a much higher bid than it was able to offer for Jubail 3B and Mirfa 2.

This is certainly not an Engie problem, and certainly not an Emirati problem. GS Inima's bid was still slightly higher than what it was able to offer for Mirfa 2 earlier in the year, the same also for Acciona. All developers have been forced to take fewer risks in the bidding phase in the Emirati water sector.

Besides the changing lending environment around the world, there are other factors that impact upon levelised water costs, such as the additional costs for EPC, materials, and power. The aforementioned developers nonetheless remain confident that inflation will be tamed within a year.

Veolia-owned SIDEM is the EPC contractor on Mirfa 2. The value of the contract is at least €300 million, and construction is underway.

Mirfa 2 IWP is expected to start commercial operations in Q2 2025 and become fully operational by the end of the same year.

Advisers

EWEC was advised by:

- Alderbrook – financial
- White & Case – legal
- Fichtner – technical

Engie was advised by:

- Loyens & Loeff – legal

The lenders were advised by:

- Herbert Smith Freehills – legal ■



IJGlobal PODCASTS **INFRA DIG**

***IJGlobal* is host of this podcast series where members of the editorial team delve into matters relating to the finance, procurement, delivery and operation of infrastructure and energy projects around the world.**

This coverage ranges from greenfield project/corporate finance through to M&A activity in this space, and infra fund activity... all of it in the infrastructure and energy world.

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